VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF ECONOMICS

Proceedings of the 14th International Scientific Conference

Public Economics and Administration 2021

2021

Ostrava, Czech Republic

ISBN 978-80-248-4581-4 (On-line)

Proceedings of the 14th International Scientific Conference

Public Economics and Administration 2021

8th September 2021

https://www.ekf.vsb.cz/ves/en

Ostrava, Czech Republic

Programme Committee

Ing. Bc. Jiří Bečica, Ph.D., VSB – Technical University of Ostrava, Czech Republic

prof. Ing. Marin Dlouhý, Dr., MSc., University of Economics, Prague, Czech Republic

prof. Olena Dymchenko, DSc., O. M. Beketov National University of Urban Economy in Kharkiv, Ukraine

prof. Ing. Beáta Gavurová, PhD. MBA, Technical University of Košice, Slovak Republic

Salomon Alcocer Guajardo, Ph.D., Nova Southeastern University, USA

doc. Ing. Martina Halásková, Ph.D., VSB – Technical University of Ostrava, Czech Republic

dr. Grażyna Kozuń-Cieślak, Kazimierz Pułaski University of Technology and Humanities in Radom, Poland

doc. Ing. Igor Ivan, Ph.D., VSB – Technical University of Ostrava, Czech Republic

prof. Ing. Vojtěch Krebs, CSc., University of Economics, Prague, Czech Republic

doc. Ing. Martin Kvizda, Ph.D., Masaryk University, Brno, Czech Republic

prof. Ing. Beáta Mikušová Meričková, PhD., Matej Bel University in Banská Bystrica, Slovak Republic

doc. Ing. Erika Neubauerová, PhD., University of Economics in Bratislava, Slovak Republic

prof. PhDr. František Ochrana, DrSc., Charles University, Prague, Czech Republic

doc. Ing. Romana Provazníková, Ph.D., University of Pardubice, Czech Republic

doc. Ing. Lucie Sedmihradská, Ph.D., University of Economics, Prague, Czech Republic

prof. dr hab. Janusz Słodczyk, University of Opole, Poland

prof. Ing. Jan Stejskal, Ph.D., University of Pardubice, Czech Republic

doc. Mgr. Pavel Šaradín, Ph.D., Palacký University Olomouc, Czech Republic

doc. Ing. Petr Tománek, CSc., VSB – Technical University of Ostrava, Czech Republic

Ing. Ivana Vaňková, Ph.D., VSB – Technical University of Ostrava, Czech Republic

prof. PhDr. František Varadzin, CSc., Silesian University in Opava, Czech Republic

doc. Ing. Iveta Vozňáková, Ph.D., VSB – Technical University of Ostrava, Czech Republic

doc. Ing. Iveta Vrabková, Ph.D., VSB – Technical University of Ostrava, Czech Republic

prof. Ing. Elena Žárska, CSc., University of Economics in Bratislava, Slovak Republic

Conference Guarantee

doc. Ing. Iveta Vrabková, Ph.D., VSB – Technical University of Ostrava, Czech Republic

Conference Organizing Guarantee

Ing. Ivana Vaňková, Ph.D., VSB – Technical University of Ostrava, Czech Republic

Editor and Technical Editor

Ing. Ivana Vaňková, Ph.D., VSB – Technical University of Ostrava, Czech Republic

Suggested Citation:

AUTHOR, A. Title of paper. In: VAŇKOVÁ, I. (ed.). *Proceedings of the 14th International Scientific Conference Public Economics and Administration 2021*. Ostrava: VSB – Technical University of Ostrava, 2021. pp. xxx-xxx. ISBN 978-80-248-4580-7. ISSN 1805-9104. ISBN 978-80-248-4581-4 (On-line).

ISBN 978-80-248-4580-7

ISBN 978-80-248-4581-4 (On-line)

ISSN 1805-9104

Reviewers (in alphabetical order)

Ing. Eva Ardielli, Ph.D., VSB – Technical University of Ostrava, Czech Republic

Ing. Bc. Jiří Bečica, Ph.D., VSB – Technical University of Ostrava, Czech Republic

Ing. Izabela Ertingerová, Ph.D., VSB – Technical University of Ostrava, Czech Republic

doc. Ing. Martina Halásková, Ph.D., VSB - Technical University of Ostrava, Czech Republic

Ing. Eva Kovářová, Ph.D., VSB - Technical University of Ostrava, Czech Republic

prof. Ing. Vojtěch Krebs, CSc., University of Economics, Prague, Czech Republic

Ing. David Lenert, Ph.D., MBA, VSB - Technical University of Ostrava, Czech Republic

prof. Ing. Beáta Mikušová Meričková, PhD., Matej Bel University in Banská Bystrica, Slovak Republic

prof. PhDr. František Ochrana, DrSc., Charles University in Prague, Czech Republic

doc. Ing. Romana Provazníková, Ph.D., University of Pardubice, Czech Republic

doc. Ing. Lucie Sedmihradská, Ph.D., University of Economics, Prague, Czech Republic

Ing. David Slavata, Ph.D., VSB - Technical University of Ostrava, Czech Republic

doc. Mgr. Pavel Šaradín, Ph.D., Palacký University Olomouc, Czech Republic

doc. Ing. Petr Tománek, CSc., VSB – Technical University of Ostrava, Czech Republic

PhDr. Roman Vavrek, PhD., VSB - Technical University of Ostrava, Czech Republic

doc. Ing. Iveta Vrabková, Ph.D., VSB - Technical University of Ostrava, Czech Republic

Prologue

The International Conference on Public Economics and Administration is organized by members of the Department of Public Economics, Faculty of Economics, VSB – Technical University of Ostrava, in two-year cycles since 1995. This year's conference was a one-day conference on September 8, 2021, because the COVID 19 pandemic did not allow for multi-day planning.

The conference creates a space for the presentation of new findings in the field of public economics and management from the research by scientists, academics, and practitioners.

These proceedings summarize the contributions, which are aimed at presenting the results of research on issues of public economics and administration. The international character of the proceedings is due to the representation of the contributions of experts from Poland, Ukraine, Slovakia, and the Czech Republic.

The papers registered at the conference were subjected to peer review and the proceedings of the conference include 41 peer-reviewed contributions. Peer review of the contributions focused on the scientific benefits, application of appropriate research methods, evaluation of the conclusions, etc. The reviews were carried out by the members of the Scientific Committee of the conference and other experts.

The issue of the public economics and administration is going through a series of changes within the changing economic conditions of the current period, changes in connection with computerization, etc., which place demands on relevant research. Proceedings bring new knowledge of this issue that has meaning not only for applications, but also for the development of theoretical knowledge.

The importance of the proceedings is due to the fact that they represent a broad spectrum of new knowledge concerning the functioning of public economics and administration, which is intended for the further development of public economics and administration, and it is already applicable in practice, but it may also serve for further development of scientific knowledge, for teaching, or focusing of students' theses as well as exchange of scientific knowledge at international level.

doc. Ing. Iveta Vrabková, Ph.D.
Head of the Department of Public Economics
Faculty of Economics
VSB – Technical University of Ostrava

CONTENTS

Performance Evaluation of Health Care in the European Union Member Countries

Eva Ardielli, Dominika Bémová

Abstract: Health policy of European Union aims to protect and improve citizens' health, support the modernization of health infrastructure and improve the efficiency of European healthcare systems. However, each European Union member country is responsible for its own health policy and has its legislative and financial instruments at its disposal. The paper is focused on the performance evaluation of health care systems of the European Union member countries. The importance of international performance evaluation lies in particular in the possibility of developing more responsible health policies, improving the quality of health care and increasing general government capacity. The result of the research is a comparison of health care performance in the EU member countries in the period 2012 - 2018. The outputs are processed using the Technique for Order of Preference by Similarity to Ideal Solution method. Large differences in the performance of health systems in EU countries were found. The highest health care performance was confirmed in the case of Germany, Austria, Finland, Belgium and France, while the lowest performance was found in the case of Poland, Slovakia, Bulgaria, Latvia and Romania.

Keywords: EU countries, evaluation, health care systems, health indicators, performance, TOPSIS

JEL Classification: C10, I14, I15, I18

1 Introduction

International comparison of health system performance is a significant topic at all levels of government. Based on international comparisons, practical decisions are made that affect the health and lives of patients as well as the operation of medical facilities (Fuchs, 2018). In general, international comparisons are very appropriate and desirable, however, it is necessary to pay attention to its implementation and especially to the interpretation of the acquired knowledge (Barták, 2012).

The topic is significantly addressed by the WHO, which in recent years has published a series of publications European Observatory on Health Systems and Policies (WHO, 2000 or WHO, 2014). In the Czech environment, a number of authors also deal with this topic, such as (Barták 2012, Björkman and Nemec 2013 or Dlouhý, 2016). At EU level, comparisons of progress in this area in EU countries have been also carried out every two years since 2010, see Health at a Glance: Europe (OECD/EU, 2020). This publication provides analysis of the state of health of EU citizens and the performance of EU health systems. The long-time monitoring activity is carried out in cooperation with the OECD. The increasing availability of health data allows for international performance comparisons, which is currently becoming the most important lever in driving health care reforms (Barták, 2016).

Currently, the health care systems in the European Union are managed in a different way because there are distinguished three health care models in EU countries (Beveridge, Bismarck and Mixed system), see Gaeta et al. (2017). The organization and provision of healthcare is the responsibility of the EU member states (Svejkovský, Vojtek and Arnoštová, 2016). The EU's role is to complement national policies - to help achieve common goals, economies of scale, share resources and help countries address common challenges such as pandemics, chronic diseases and the impact of rising life expectancy on healthcare systems. It generates global public

health legislation and standards, but also provides funding for health-related projects (European Commission, 2019).

The European Union is working to modernize health systems across Europe. For this reason, it is very important to monitor health indicators in individual countries and evaluate the quality of health care provided. Based on these evaluations, appropriate recommendations for the modernization of health care systems in EU countries are adopted. Assessing the development of health indicators in EU countries is therefore an important topic (Björkman and Nemec, 2013). Among the very important indicators are health expenditure. Gaeta et al. (2017) points out that the total health expenditure is a crucial part for a good performing health system. Public expenditure on health care has been increasing over the last decades in all EU member countries, and is expected to rise even further as a consequence of an ageing population (OECD, 2018). In 2015, it accounted for 8.7% of GDP in the EU and could reach up to 12.6% of GDP in 2060 (European Commission, 2019).

Evaluation of performance is also addressed on areas such as population health, results in health, equity (fairness in health), finance and sensitivity to the needs of patients, see Hurst and Jee-Hughes (2021) or Barták (2012). For example, indicators such as life expectancy, overall and specific mortality, morbidity, preventable mortality or population risk factors are used. The performance and functioning of individual areas of health care, such as preventive care, primary, secondary care, long-term care or mental health, are measured (WHO, 2000). Inequality in access to health services, inequality in the financing of health services and also inequality in the sensitivity of the health care system to individual population groups are also examined. Patient satisfaction, patient choice, respect for patient dignity and speed of care provision are evaluated, i.e. for how long the patient's health situation is resolved (Čeladová and Holčík, 2017).

The aim of the paper is to evaluate the performance of health care in the EU member countries based on selected health indicators for the period 2012 - 2018. Two research questions are solved:

- RQ1: Is there a linkage between a country's healthcare performance and the healthcare model applied?
- RQ2: In the long run, which countries have shown the greatest health care readiness for the *COVID 19 pandemic?*

The assumption is that there may be a linkage between the applied model of health care and the performance of health care in the country.

Given that the data examined cover the period 2012-2018, the intention is to verify which countries had the highest pandemic preparedness in terms of access to health care and population health.

1.1 Health Care Models in the European Union

There is great diversity in the provision and financing of health care in the EU countries which is reflected in the application of different health care models. For the typology of health care models, the criteria for the breakdown of the predominant source of funding from which health care is paid are used.

According to the criterion of the predominant source of funding, health care models are divided into four types:

- Market model
- Bismarckian model (financed by health insurance)
- Beveridge model (financed from taxes)
- Mixed model.

These models mostly answer the questions:

- Who guarantees citizens health care and how does the population react to it?
- From what resources is health care financed?
- What is the role of health care providers?

Market model is applied especially in the USA where health care is not guaranteed by the state. Thus, the state does not interfere in any way with the decision of individuals, as it depends on the free choice of each individual. The state does not enter into a relationship between provider and patient, but through programs in the public interest solves the problem of access to health care for social groups. Healthcare is considered a commodity at a certain price. Physicians are in the role of private entities, both for-profit and non-profit. The patient can choose a doctor and a medical facility according to their requirements and possibilities. Like doctors, hospitals provide healthcare privately, but sometimes in combination with public providers. Under the market model, health care is reimbursed from private sources either by direct payment or by private health insurance companies of a commercial nature. Health insurance is voluntary here and can be insured by the insured himself or by the employer. Funding is based on performance payments. The problem with this model is mainly inequality in access to health care, high health care costs and a lack of complexity of care (Durdisová, 2005).

The Bismarckian model (also referred as Social Health Insurance System) is based on general health insurance. Relations between providers and payers are a compromise combination of market share and public oversight. Sources of financing selected in the form of insurance premiums are mandatory payments arising from the law. In this model, health care is guaranteed by the state in such a way that the law stipulates the obligation to pay premiums to the health insurance fund, which is administered by the health insurance company (Kos, 2019). The principle of solidarity applies here, which means that everyone pays according to their income and then receives health care according to their needs, while the scope and quality of care provided is determined by the doctor. The predominant method of payment here is payment for performance, which is usually combined with capitalization payment. This model is used, among others, by the Czech Republic, but also by other EU countries such as Germany, Poland and others.

The traditional representative the Beveridge model (also referred to as National Health System) is the National Health Service, which is a funding model used in the United Kingdom. A characteristic feature of the model is the provision of free health care guaranteed by the state. Health care here is financed from the state budget, especially from public budgets. Within the model, the source of health care financing is not insurance, but taxes (Delnoij, 2013). The level of financial participation is very low here. Medical facilities are owned by the state and medical workers are state employees, or private entities of a profit or non-profit nature. The basic element of the health care system are general practitioners who control the patient's entry into specialized care and are the coordinators of the provided health services. This model is mainly used in United Kingdom, but also in Spain and other countries.

While the market model of health care does not apply in EU countries, we often encounter a Mixed model (also referred as the Private Health Insurance System), which is based on the principles of the Beveridge and Bismarck models. In the Mixed model, private funding from voluntary insurance schemes or upfront payments is significant (Gaeta et al., 2017). In the EU the mixed model is adopted for example in Austria. The division of EU countries by adopted model of health care including the United Kingdom is summarized in Table 1.

Table 1 – Division of EU countries by adopted model of health care

Model of health care	EU member countries
Bismarck health care system	Belgium, Czech Republic, Estonia, France, Lithuania, Luxembourg, Hungary, Germany, Netherlands, Poland, Romania, Slovakia, Slovenia
Beveridge's health care system	Denmark, Finland, Ireland, Italy, Cyprus, Latvia, Malta, Portugal, Spain, Sweden, United Kingdom
Mixed model	Austria, Bulgaria, Greece, Croatia

Source: Durdisová (2005), Gaeta et al. (2017), own processing

2 Material and Methods

The aim of the paper is to evaluate the performance of health care in the EU member countries based on selected health indicators for the period 2012 - 2018. The evaluation is performed by usage of the multi-criteria decision-making methods. The selected method for calculation is TOPSIS method. Two research questions were also solved in the research:

- RQ1: Is there a linkage between a country's healthcare performance and the healthcare model applied?
- RQ2: In the long run, w*hich countries have shown the greatest health care readiness for the COVID 19 pandemic?*

In the presented research the performance of health care is evaluated based on 8 health indicators. The data were obtained from the database Eurostat (Eurostat, 2021). The research monitors the period 2012 - 2018.

2.1 TOPSIS

The TOPSIS method is one of the methods of multicriteria evaluation of variants. The aim of the methods of multi-criteria evaluation of variants is, in addition to finding the best variant, also to determine the order of individual variants according to the specified criteria. The basis of the TOPSIS method is the search for the degree of conformity of the assessed variants with the so-called ideal variant (Technique for Order of Preference by Similarity to Ideal Solution) and the distance from basal variant, viz Kubišová (2014).

The ideal variant is represented by the vector H_1 to H_k, the basal variant by the vector D_1 to D_k. The compromise variant according to the TOPSIS method is then the one that is closest to the ideal variant and, conversely, the furthest from the basal variant.

The process of TOPSIS procedure is as follow:

- data are organized into the criteria data matrix
- the normalized data matrix is created
- weight normalized data matrix is created
- determination of the ideal and basal variant relative to the matrix values
- distance calculation of variants from the ideal variant, respectively basal variant is made

The result of the TOPSIS method is the calculation of the relative indicator of the distances of individual variants from the basal variant according to the relation (1):

$$c_i = \frac{d_i^-}{d_i^+ + d_i^-} \quad (1)$$

where $i = 1,2, \ldots m;$

The indicator c_i takes values from 0 to 1, where 0 indicates the basal variant and 1 the ideal variant. Finally, a descending order of all variants is performed according to the indicator of the relative distance from the basal variant, while the variants with the highest values are then referred to as the solution of a multicriteria problem (Šubrt, 2011).

2.2 Weights of Criteria

The performance of health care in the EU member countries is analysed on the basis of the following selected indicators, see Table 2. Indicators $I_1 – I_8$ comprise the area of:

- availability and capacity of healthcare and
- health care system performance

Table 2 – Weights of individual indicators

Indicator $I_1 – I_8$	Weight of indicator
Availability and capacity of healthcare	50 %
- Available beds in hospitals (I_1)	0,125
- Medical doctors (I_2)	0,125
- Share of nurses on total employment (I_3)	0,125
- Health care expenditure by all healthcare providers (I_4)	0,125
Health care system performance	50 %
- Healthy life years (I_5)	0,125
- Infant mortality (I_6)	0,125
- Health expectancy at birth (I_7)	0,125
- Health expectancy at 65 (I_8)	0,125

Source: Eurostat (2021), own processing

Indicators I_1 - I_4 indicate the importance of health care in a given country, the capacity readiness of the system and the availability of health care. Indicators I_5 - I_8 are performance indicators of population health. They describe how health systems and health services contribute to the health of the population.

In calculations using TOPSIS, there are considered also the weights of individual criteria. All criteria are maximizing nature with the exception of indicator I_6, which is of a minimizing nature. The weights were determined by equal weight method.

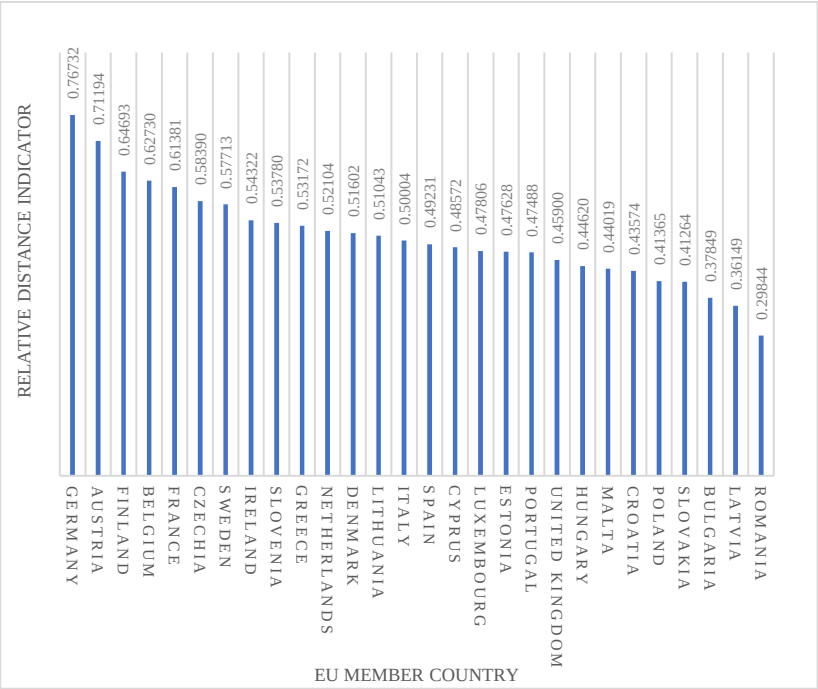
3 Results and Discussion

In this part of the article, there are presented the results of research. First, the EU countries are evaluated in terms of health care performance using the TOPSIS method. Furthermore, the grouping of countries according to the achieved health care performance is performed using cluster analysis and research questions are verified.

3.1 Performance Evaluation of Health Care in EU Member Countries

On Figure 1 there are shown the results of the TOPSIS method for period 2012 - 2018. EU member countries are ranked according to health care performance from best to worst. It is evident that Germany, Austria, Finland, Belgium and France ranked best within the EU member countries. According to the monitored health indicators, Poland, Slovakia, Bulgaria, Latvia and Romania were in the worst positions.

Figure 1 – Evaluation of health care performance in EU member countries (period 2012 – 2018)
Source: Eurostat (2021), own calculations



3.2 Clustering of EU Countries According to the Health Care Performance

In Table 3, there are evaluated the EU member states according to the performance of health care based on the Cluster analysis, Ward´s method. The countries are divided into 3 groups on Above-average countries, Average countries and Below-average countries.

Table 3 –Distribution of EU countries according to cluster analysis

Above-average countries	Average countries	Below-average countries
Austria, Belgium, Czech Republic, Finland, France, Germany, Sweden	Cyprus, Denmark, Estonia, Greece, Italy, Ireland, Lithuania, Luxembourg, Netherlands, Portugal, Slovenia, Spain, United Kingdom	Bulgaria, Croatia, Hungary, Latvia, Malta, Poland, Romania, Slovakia

Source: Eurostat (2021), own processing

The most successful group of countries with high pandemic preparedness includes Austria, Belgium, Czech Republic, Finland, France, Germany and Sweden. These are countries with a

high number of beds per capita, a high number of doctors and nurses per capita, high health expenditures and good population health. Although the health preparedness of these countries is good, in some countries the capacities of hospitals have been filled and some have been on the edge of their potential (for example France, Czech Republic).

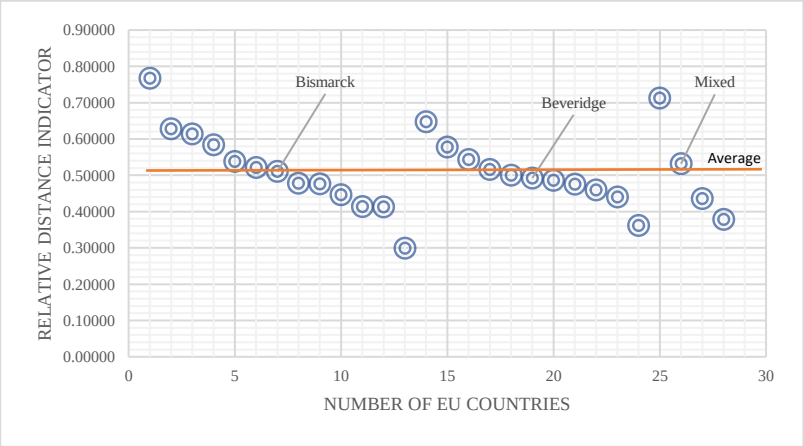
On the contrary, the countries in the third group, namely Bulgaria, Croatia, Hungary, Latvia, Malta, Poland, Romania and Slovakia, showed the least preparedness. Nevertheless, during the pandemic, their healthcare systems did not collapse. In some cases, strong restrictive measures have been taken to restrict movement and economic activity, which have prevented the massive spread of the disease (for example Slovakia, Hungary, Poland).

Research question RQ2 was solved. According to the performance evaluation of EU countries by usage of TOPSIS method and clustering of countries was confirmed the long-term readiness for *COVID 19 pandemic above all in case of the countries placed in the first cluster: Austria, Belgium, Czech Republic, Finland, France, Germany and Sweden.*

3.3 Evaluation of Health Care Systems in EU Member Countries

Figure 2 shows the values of the c_i indicator of the EU countries according to the affiliation to the health care model. The red line represents an average value of 0.50863. It can be stated that in all types of health care systems both above-average and below-average countries in terms of health care are represented. It can only be stated that in the first and in the third cluster there are more countries applying the Bismarck model (4 from 7 items and 4 from 8 items), while in the second cluster there are more countries of the Beveridge model (7 from 13 items). Representatives of the Mixed model (Austria, Bulgaria, Greece, Croatia) are also found in all clusters.

Figure 2 – Evaluation of health care performance according to the applied health care system
Source: Eurostat (2021), own calculations



The research question RQ1 was verified. It has not been confirmed that there is any demonstrable dependence between the performance of health care in the country and the applied health care model.

This result is also confirmed by other authors, see Gaeta et al. (2017), OECD (2002) or OECD (2019). Other factors, such as the geographical area, have a greater influence on the achieved values in the health indicators than the applied model of health care (Papanicolas and Smith, 2013).

4 Conclusion

International comparisons of the performance of health systems are increasingly established in academic and public policy discourse. The topic is relevant at all levels of government. International institutions often reflect the work of national governments within the health system, make recommendations, deal with general health requirements, while national governments usually have full competence in health care, legislative, financial and other tools for its administration and management.

The presented paper deals with the evaluation of health care performance in EU member countries with regard to the applied health care model. Significant differences were found between health care performance in individual countries, which can imply how the country is prepared for a possible pandemic. This knowledge has a direct application in the country's national policy. In the event of a pandemic, countries with below-average performance and low health capacity must pursue more restrictive policies to prevent health care collapse than in countries with above-average performance. The linkage between the applied health care model and the level of performance has not been confirmed.

Acknowledgements

This paper was supported within the project SGS No. SP2021/67, International Evaluation of the Performance of Health and Social Services with a Focus on the Application of Multicriteria Methods, Faculty of Economics, VSB - Technical University of Ostrava.

References

[1] BARTÁK, M. (2012). Mezinárodní srovnávání zdravotnických systémů. Praha: Wolters Kluwer Česká republika.

[2] BARTÁK, M., V. ROGALEWICZ, J. JÍLKOVÁ and S. JEŘÁBKOVÁ. (2016). Přeshraniční zdravotní péče v Evropské unii a ČR. Časopis Lékařů českých. Vol. 5, pp. 247–253.

[3] BJÖRKMAN, J.W. and J. NEMEC. (2013). Health Reforms in Central and Eastern Europe: Options, Obstacles, Limited Outcomes. Eleven International Publishing. Den Haag: Eleven International Publishing.

[4] DELNOIJ, D.M. (2013). Bismarck or Beveridge: primary care matters. Eur J Public Health. Vol.23, No.3, pp:349–349. doi: 10.1093/eurpub/ckt021.

[5] DLOUHÝ, M. (2016). Mezinárodní srovnání výkonnosti zdravotnictví ve Visegradských zemích. Čas. Lék. čes. Vol. 5, pp. 242-246.

[6] EUROPEAN COMMISSION (2019). Joint Report on Health Care and Long-Term Care Systems & Fiscal Sustainability. Luxembourg: Publications Office of the European Union.

[7] FUCHS, R. V. (2018). Health economics and policy: selected writings by Victor Fuchs. Singapore: World Scientific.

[8] GAETA, M. et al. (2017). An overview of different health indicators used in the European Health Systems. J Prev Med Hyg. Vol. 58, No. 2, pp:E114–20.

[9] HURST, J., and M. JEE-HUGHES. (2021). Performance measurement and performance management in OECD health systems. Paris: OECD

[10] KOS, M. (2019). Introduction to Healthcare Systems. In: Alves da Costa F., van Mil J., Alvarez-Risco A. (eds) The Pharmacist Guide to Implementing Pharmaceutical Care. Cham: Springer. doi: https://doi.org/10.1007/978-3-319-92576-9_34

[11] KUBIŠOVÁ, A. (2014). Operační výzkum. Jihlava: Vysoká škola polytechnická Jihlava.

[12] ČELEDOVÁ, L. and J. HOLČÍK et al. (2017). Nové kapitoly ze sociálního lékařství a veřejného zdravotnictví. Praha: Univerzita Karlova.

[13] DURDISOVÁ J. (2005). Ekonomika zdraví. Praha: Oeconomica, 2005.

[14] OECD (2002). Measuring up: improving health system performance in OECD countries. Paris: OECD Publishing.

[15] OECD (2018). Health at a Glance 2019 [online]. [cit.2021-07-15]. Available: http://www.oecd.org/health/health-systems/health-at-a-glance-19991312.htm

[16] OECD/EU (2020). Health at a Glance: Europe 2020: State of Health in the EU Cycle. Paris: OECD Publishing

[17] PAPANICOLAS, I., and P. SMITH. (2013). Health system performance comparison: an agenda for policy, information and research. London: McGraw-Hill Education (UK).

[18] SVEJKOVSKÝ, J., P. VOJTEK and L. T. ARNOŠTOVÁ (2016). Zdravotnictví a právo. Praha: C.H. Beck

[19] ŠUBRT, T. (2011). Ekonomicko-matematické metody. Plzeň: Vydavatelství a nakladatelství Aleš Čeněk.

[20] WHO (2000). The Word health report 2000: health systems: improving performance. Geneva: World Health Organization.

[21] WHO (2014). Health in all policies. Helsinki statement Framework for country action. Geneva: World Health Organization, 2014.

Contact information

Ing. Eva Ardielli, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: eva.ardielli@vsb.cz

Bc. Dominika Bémová
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: dominika.bemova.st@vsb.cz

Technical Efficiency Evaluation of Acute Care Public Hospitals in the Czech Republic and Baden-Württemberg

Eva Ardielli, Ivana Vaňková, Sabrina Lee

Abstract: International evaluation of the efficiency of health care is a very appropriate and desirable topic. Based on international comparisons, practical decisions are made that affect the health and lives of patients as well as the functioning of medical facilities. Presented paper is focused on the international comparison of the efficiency of selected public acute care hospitals in the Czech Republic and Germany. The aim is to evaluate the technical efficiency of selected public acute care hospitals of regional level in the Czech Republic and the chosen federal state of Germany - Baden-Württemberg in the year 2018. The assessment of the efficiency of hospitals is performed by usage of Data Envelopment Analysis (DEA) models. Based on the results it was confirmed, that the hospitals with 250-500 beds achieve a higher value of the degree of technical efficiency than hospitals with 501-1000 beds and that the acute care hospitals in Baden-Württemberg achieve higher levels of technical efficiency than hospitals in the Czech Republic.

Keywords: Baden-Württemberg, Czech Republic, DEA, efficiency, healthcare, hospitals, Germany

JEL Classification: C10, D24, I10

1 Introduction

International comparisons necessarily differ from national comparisons, in particular because international comparisons must inevitably consider a certain global consensus on the objectives and different parts of the health system and must focus on a number of actors (Barták et al, 2016; Varabyova et al., 2017). International institutions often reflect the work of national governments within the health system, make recommendations, deal with general health requirements, while national governments usually have full competence in health care, legislative, financial and other tools for its administration and management (Svejkovský at al., 2016; European Commission, 2019).

Evaluating of the efficiency of health systems is more desirable than widely implemented (Barták, 2010). The WHO Health Report of 2000 (WHO, 2000) showed how complex this assessment is from both a methodological and a practical point of view. The problem is both the large number of existing definitions of efficiency and no international agreement on them, as well as a number of methods and their very different reliability. Another problem is their procession, which can lead to significant distortion (Barták, 2012). When taking over the results of an international comparison, it is always necessary to carefully consider not only the compared quantities, but also the broader context of the health care system (Dlouhý, 2016; Gaeta et al., 2017).

Health is a key category that affects all other levels of human life, such as family, work, education, etc. There is a relationship between the level of health and economic prosperity both at the level of the individual and from the point of view of society as a whole (Transparency International, 2020). In addition to various socio-economic and individual factors, the level of health is also directly and significantly affected by the availability, quality and efficiency of health services in the country (Suhrcke, 2006).

The public economy and public policy of each developed country addresses the issue of possible efficiency gains in health care. The aim of health policy is primarily to increase efficiency on the part of health care providers, such as hospitals (Dlouhý, Jablonský and Novosádová, 2007).

The subject of the presented paper is an international comparison of the efficiency of hospitals in a selected federal state of Germany and in the Czech Republic. Both countries are quite similar in terms of the functioning of the health system. Bismarck's model of healthcare is applied in the Czech Republic and Germany as well (Hamplová, 2019). The structure and organization of health care in the Czech Republic and Germany is very similar, see Ardielli, Lee and Vaňková (2021). The efficiency of public district hospitals is an important topic of many authors (Ahmed et al., 2019; Blatnik et al., 2017; Vrabková and Vaňková, 2015).

The aim of the paper is to evaluate the technical efficiency of selected public acute care hospitals of regional level in the Czech Republic and the chosen federal state of Germany - Baden-Württemberg in the year 2018.

As there are a total of tens of thousands of medical facilities in the Czech Republic, for the purposes of our analysis we limited ourselves only to medical facilities of institutional care, namely acute care hospitals in public ownership.

To maintain the condition of homogeneity of production units, the selection of hospitals was targeted at medium-sized and large acute care hospitals in terms of the size of the inpatient fund, which provide a comprehensive range of health care for their patients. This condition to some extent limits the selection of the examined sample of production units, but on the other hand it is necessary for the rational interpretation of the achieved results and recommendations.

Two research questions (RQ1 and RQ2) were formulated to support the aim of the paper:

- RQ1: "Do hospitals with 250-500 beds achieve a lower value of the average level of technical efficiency than hospitals with 501-1000 beds?"
- RQ2: "Do acute care hospitals in Baden-Württemberg achieve better average level of technical efficiency than hospitals in the Czech Republic?"

The scope and size division of hospitals is not uniform in the Czech Republic and Germany. For the purposes of the analysis, predominantly medium-sized and large hospitals with a number of beds from 250 to 1000 were selected. The research did not monitor hospitals with fewer than 250 beds and more than 1000 beds, as their number would not be significant for regional level. In the Czech Republic and Germany, in these categories are predominantly aftercare hospitals, preventive or rehabilitation institutions and university hospitals, which were not included in the research. The research focused only on regional-level acute care hospitals.

The research question RQ1 assumes that within this category of hospitals it is possible to distinguish the level of technical efficiency in hospitals of medium size (examined sample of hospitals with 250-500 beds) and hospitals of large size (examined sample of hospitals with 501-1000 beds).

The research question RQ2 assumes that the analysis according to the DEA model works with only one output parameter, namely the number of hospitalization cases. This parameter is closely related to the valuation (reimbursement) of acute inpatient care through the DRG classification system. The implementation of the DRG classification system is different in each state in terms of time period and the setting of basic economic standards in the provision of health services, which can also affect the production of hospital activities.

2 Property Structure of Acute Care Hospitals in the Czech Republic and Baden-Württemberg

Comparison of the number of individual types of hospitals and the number of available beds in the Czech Republic and Germany is given in Table 1, see (ÚZIS, 2019; State statistical office, 2018; Joint federal committee, 2021). Acute care hospitals in the Czech Republic make up 79% of all facilities in the Czech Republic, and aftercare hospitals account about 21%. Of the total capacity of the fund, acute inpatient care makes about 95%, aftercare makes about 5%. The vast majority of bed capacity (73%) is located in general hospitals, which have a non-state owner as region, municipality or private entity.

Table 1 – Hospital facilities in the Czech Republic

Type of health care provider	Number of hospital facilities		Number of available beds	
	Czech Republic	Baden-Württemberg	Czech Republic	Baden-Württemberg
University hospital	10	6	13 757	8 228
General hospital	144	250	46 571	55 570
Acute care hospital (university and general hospital)	154	256	60 328	63 798
Aftercare hospital and preventive or rehabilitation institutions	40	198	3 123	25 911
Total number of facilities	194	454	63 451	89 709

Source: (ÚZIS, 2019; State statistical office, 2018; Joint federal committee, 2021), own processing

In the Czech Republic, hospitals are divided according to the size of the bed stock into:

- Small hospitals (less than 100 beds),
- medium-sized hospitals (100-499 beds),
- large hospitals (500 and more beds).

In Germany there are about 2000 acute care hospitals. They differ by sponsorship and by service level. German state laws mostly regulate four types of hospitals:

- Basic service hospitals – (usually up to 200 beds),
- Regular service hospitals – (up to 300 beds),
- Central service hospitals – (usually up to 500 beds),
- Maximum care hospitals – (usually more than 1000 beds).

Acute care hospitals in Baden-Württemberg make up 56% of all facilities in the Czech Republic, and aftercare hospitals account about 44%. Of the total capacity of the fund, acute inpatient care makes about 71%, aftercare makes about 29%. Similarly, as in the Czech Republic, the vast majority of bed capacity (62%) is located in general hospitals that have a non-state sponsor as a region, municipality or private entity.

2.1 Property Structure of Medical Facilities in the Czech Republic

The property structure of medical facilities in the Czech Republic is very diverse and very inconsistent. The public law element in the form of ownership of facilities, which was 100 % present before 1989, was maintained even after 1989. However, medical facilities logically had to deal with a change in the economic system. Some thus remained in the hands of public (i.e. in the hands of municipalities, regions, state) but in the form of limited liability companies, joint

stock companies (form of private entities), or in the form of contributory organizations or university hospitals. Some facilities were privatized to private hands.

Acute care hospitals in the Czech Republic currently have the following types of ownership structure:

- State
  - established by the Ministry of Health of the Czech Republic (university hospitals, general hospitals)
  - established by the Ministry of Defense of the Czech Republic (military hospitals)
- Non-state
  - regional hospitals
  - municipal hospitals
  - private hospitals
  - church hospitals

Due to the absence of a comprehensive database of medical facilities in the Czech Republic and their ownership, our summary of ownership structure of hospitals in the Czech Republic is based on an Analysis of the Quality of Hospitals performed by Transparency International on a sample of 146 acute care hospitals in the Czech Republic (Transparency International, 2020). In the research, there was analyzed a total of 146 hospital acute care facilities in the Czech Republic in the year 2020.

A significant part of acute care hospitals throughout the Czech Republic is concentrated in the center of the country (the capital city of Prague, or the Central Bohemian Region) and then in the largest regional cities (Brno, Ostrava, Ústí nad Labem). Hospitals established by the state (university hospitals, general hospitals and military hospitals) can be found primarily in large university cities - Prague (7), Brno (3), Ostrava (1), Pilsen (1), Olomouc (2) and Hradec Králové (1). Regarding the type of ownership of medical facilities in the Czech Republic, the largest representation is owned by the region, followed by private, municipal, state and church ownership and mixed form with representation of public and private element, see Table 2.

Table 2 – Ownership structure of acute care hospitals in the Czech Republic

Ownership	Number of acute care hospitals	Percentage (%)
State	15	10.3
Region	65	44.5
Municipality	24	16.4
Church	4	2.7
Private	37	25.3
Mixed form	1	0.7

Source: (ÚZIS, 2019; Transparency International, 2020, own research), own processing

In total, regional hospitals account for almost half of the hospitals surveyed (65 out of 146). The most regional hospitals were found out in the South Moravian Region (9) and the South Bohemian Region (8). In addition, the region also owns the vast majority of the total number of hospitals in the Vysočina Region (5 out of 7), Pardubice Region (6 out of 7) and Hradec Králové Region (6 out of 9) regions. Hradec Králové Region, Pardubice Region, Vysočina Region, Liberec Region, South Bohemian Region, Plzeň Region - these six regions are united by the fact that the medical facilities located here are almost entirely owned by the regions, resp. municipalities or the state. The private owner is always represented only marginally.

In contrast, in the Central Bohemian Region and the Olomouc Region, hospitals are mostly owned by private owners (9 out of 19 and 6 out of 8). The highest share of private facilities is in the Central Bohemian Region (9), where dominates, in terms of ownership, the Austrian joint-stock company VAMED Mediterra a.s., owned by the global company VAMED a.s., based in Vienna. In the Czech Republic, this company is owned by a total of 5 acute care hospitals - in the Central Bohemian (3) and Liberec (1) regions and in the Vysočina region (1). However, in terms of the number of medical facilities, the largest private player in the Czech Republic is AGEL a.s., which owns a total of 12 acute care hospitals. The company dominates mainly in Moravia, namely in the Moravian-Silesian Region (5), the Olomouc Region (4), the Zlín Region (1) and also operates in the Ústí Region (1) and the Central Bohemian Region (1). On the contrary, in addition to VAMED, Penta Hospitals CZ, s.r.o. is also present in the Czech Republic. in the Karlovy Vary Region (2), the Ústí Region (1) and the Hradec Králové Region (1).

2.2 Property Structure of Medical Facilities in Baden-Württemberg

In Germany, too, the trend toward privatization has led to more private and non-profit hospitals and fewer purely state-run hospitals. Germany has a mixed healthcare system with state and market-oriented components. The underlying welfare state principle is anchored in the Basic Law. In accordance with the federal principle, regulation is carried out at the federal, state and municipal (districts and municipalities) levels (Augurzky and Penter, 2014).

Acute care hospitals in Germany currently have the following types of ownership structure:

- State
  - Federal Republic of Germany (military hospitals; one in Baden-Württemberg)
  - State of Baden-Württemberg (Ministry of Social Affairs, Health and Integration) (university hospitals)
- Non-state
  - public: district hospitals
  - public: municipal hospitals
  - private hospitals
  - non-profit hospitals (welfare association of churches, non-profit registered associations, non-profit foundations)

Table 3 – Ownership structure of acute care hospitals in Baden-Württemberg

Ownership	Number of acute care hospitals	Percentage (%)
State	6	2.4
District	80	32.0
Municipality	6	2.4
Non-profit	54	21.6
Private	63	25.2
Separately listed day clinics and centres for psychiatry (partly state owned)	41	16.4

Source: (state statistical office, 2018; Ministry of social affairs Baden-Württemberg 2019; own research), own processing

As Table 3 shows, the ownership structure in Baden-Württemberg is also uneven. Slightly more than one-third (36.8 %) are publicly owned (state, district or municipality). At 25.2%, private providers of hospital services are the second strongest group of owners, followed by non-profit

providers with around one fifth. Hospitals in the form of day clinics and centers for psychiatry are not included in the calculation for this paper.

The legal forms in Germany also present a mixed picture. Only public hospitals can choose the public legal forms such as public law institution (Anstalt öffentlichen Rechts) and public law corporation (Körperschaft öffentlichen Rechts). All university hospitals, for example, have these public legal forms. Public and private operators can furthermore run their hospitals in the form of a limited liability company or a hospital association. Private operators may even run their hospitals in the legal form of a capital stock company.

Baden-Württemberg is divided into four administrative regions (Stuttgart, Tübingen, Karlsruhe and Freiburg), including 12 regions and then 35 administrative districts. In these areas, however, the respective districts are responsible for the hospitals. With approx. 28.22 %, the administrative region of Stuttgart has the most hospitals in percentage terms, and the administrative region of Tübingen has the least with approx. 20.57 %. Nevertheless, according to the regional distribution of hospitals, no real clusters can be identified and the hospitals are relatively evenly distributed in terms of number.

3 Material and Methods

The aim of the paper is to evaluate the technical efficiency of selected public acute care hospitals of regional level in the Czech Republic and the chosen federal state of Germany - of Baden-Württemberg in the year 2018. The evaluation is performed by usage of output-oriented DEA models.

Authors using multicriteria decision-making methods in the healthcare sector focus mainly on the micro level. Evaluating of the efficiency of healthcare facilities is a very common issue (e.g. Ahmed et al., 2019; Blatnik et al., 2017; Ghahremanloo, M. et al., 2020; Varabyova, et al., 2017). Many articles are also aimed at modeling efficiency at the meso or macro level (e.g. Stefko, Gavurová and Kocisová, 2018; Ravangard et al., 2014, Dlouhý, Jablonský and Zýková, 2018).

3.1 Data

Due to the absence of a comprehensive database of medical facilities in the Czech Republic, data for the Czech Republic were collected using several different sources. Information on the existence of university hospitals and other state-owned hospitals was drawn from the website of the Ministry of Health and other Czech ministries. Information on regional hospitals was taken from the regions' websites and their annual reports. The same procedure was followed in case of general hospitals. Some data were also taken from the research of the Quality Analysis of Hospitals in the Czech Republic (Transparency International, 2020). An important source was also The Medical Yearbook for 2018 (ÚZIS, 2019). All information about specific hospitals was then drawn from the websites and annual reports of individual hospitals. The result was the collection of data for a total of 146 acute care facilities in the Czech Republic of which 65 are regional hospitals.

For the hospital sector in Baden-Württemberg, general data were taken, on the one hand, from the statistical hospital reports of the Baden-Württemberg State Statistical Office and from an overview of the Baden-Württemberg Ministry of Social Affairs. On the other hand, information on individual hospitals could be collected from the quality reports to be prepared annually by the hospitals. The obligation of each licensed hospital to publish an annual structured quality report is even legally regulated under §§ 136 ff. of the Social Code V on Statutory Health Insurance. The contents to be published here are determined by the Federal Joint Committee. As a result,

out of a total of 250 hospitals in Baden-Württemberg, 80 public hospitals under municipal ownership and six university hospitals under state ownership could be identified.

3.2 Methods

The methodology for evaluating the technical efficiency of selected public hospitals in an international comparison includes specific input parameters and one output parameter. The definition of individual parameters and their statistical characteristics is given in Table 4.

As can be seen from Table 4, a total of 58 regional hospitals from the Czech Republic (29 hospitals) and Baden-Württemberg (29 hospitals) represent different size groups of hospitals according to the extent of inpatient fund, which also reflects the values of other selected parameters. In particular, the staffing of acute inpatient care is determined according to the individual specializations of health care workers and other professionals according to the type and field of health care provided. The requirements for the staffing of this care are based on the size of the bed stock, and these are usually calculated for 30 beds.

Table 4 - Statistical characteristics of input parameters (x1, x2, x3) and output parameter (y1), 2018

Inputs/Outputs		Min.	Max.	Average	Mean	St. deviation
Inputs	Number of beds	251	969	451.52	420.50	157.01
	Number of physicians by recalculated number of working hours (x1)	68.26	372.90	143.64	126.00	57.29
	Number of general nurses by recalculated number of working hours (x2)	150.50	925.75	376.59	349.65	144.63
Outputs	Number of hospitalization cases (y1)	8 681	50 350	19 298.67	18 504.50	7 202.36

Source: Own calculations and processing

The evaluation of selected production units was made according to the output-oriented DEA model with the assumption of constant revenues from the scope, the so-called CCR DEA model. The CCR model belongs to the group of radial models and expresses the overall technical efficiency. Radial efficiency is based on the Pareto-Koopmans efficiency concept, which is defined as follows: *"A homogeneous production unit is fully efficient if and only if it is no longer possible to improve any of the inputs or outputs without deteriorating another input or output"* (Coelli et al., 2005).

The mathematical notation of the primary output-oriented CCR model is determined by relation (1):

minimize	$g = \sum_j^m v_j x_{jq,}$	(1)
under conditions	$\sum_i^r u_i y_{ik} \leq \sum_j^m v_j x_{jk,}$	$k = 1, 2, \ldots, n,$
	$\sum_i^r u_i y_{iq} = 1,$	
	$u_I \geq \varepsilon$	$I = 1, 2, \ldots, r,$
	$v_j \geq \varepsilon,$	$j = 1, 2, \ldots, m.$

where: u_i is the weight given to output i, y_{iq} is the amount of output i produced by DMU q, v_j is the weight given to input j, x_{jq} is the amount of input i produced by DMU q.

The optimal value of the purpose function is $U_q \geq 1$. The degree of technical efficiency is given by the ratio of the weighted sum of inputs to the weighted sum of outputs, but weights are sought such that the value of the efficiency measure is equal to or greater than one. A value of 1 is therefore assigned to effective units, a value greater than 1 to inefficient units.

4 Results and Discussion

The analysis of the calculations of the technical efficiency degree of a selected set of hospitals from the Czech Republic and Baden-Württemberg proved the following findings.

Out of the total set of 58 acute care hospitals, only five hospitals reached the effective production limit (Kliniken Böblingen, Ostalb-Klinikum Aalen, Rems-Murr-Klinikum Winnenden, Spital Waldshut and Sdružené zdravotnické zařízení Krnov, p.o.). Other hospitals have achieved technical efficiency rates greater than 1, so they have become inefficient units and are advised to increase the output value while maintaining the same input parameter value. The worst results were achieved by BG Klinik Tübingen Hospital, Jindrichův Hradec Hospital, a.s. and Karlovy Vary Regional Hospital a.s., whose value of the degree of technical efficiency exceeded the number 2.

The summary results of the technical efficiency modeling by usage of the output-oriented CCR model are documented in Table 5 and Annex 1. From Table 5 and Annex 1 it is clear that in the output-oriented model assuming constant economies of scale, technical efficiency expressed as a percentage in case of 17 hospitals ranges from 80-89 % and in case of 14 hospitals the rate of this efficiency was less than 59%.

Table 5 - Summary results of technical efficiency of CCR-DEA model

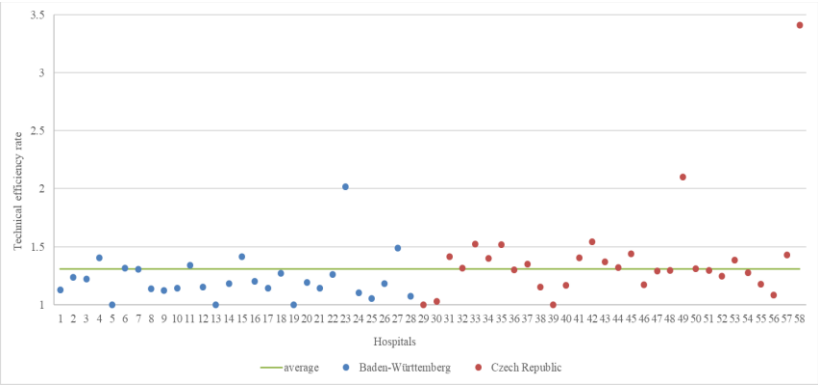
%	Number DMUs	DMUs
[100]	5	H5, H13, H19, H29, H39
[99-90]	4	H25, H28, H30, H56
[89-80]	17	H1, H8, H9, H10, H12, H14, H17, H20, H21, H24, H26, H38, H40, H43, H44, H46, H55
[79-70]	10	H2, H16, H18, H22, H47, H48, H50, H51, H52, H54
[69-60]	8	H3, H6, H7, H11, H32, H36, H37, H53
[59-10]	14	H4, H15, H23, H27, H31, H33, H34, H35, H41, H42, H45, H49, H57, H58

Source: Own calculations and processing

In Figure 1, there is illustrated the achieved level of technical efficiency according to individual production units. Fig. 1 shows which production units oscillate around the average value of the degree of technical efficiency of the whole examined sample. Hospitals N23 GRN-Klinik

Tübingen and two hospitals from the Czech Republic differ significantly from the average value, specifically N49 Jindřichův Hradec Hospital, a.s. and N 58 Karlovy Vary Regional Hospital a.s. These hospitals achieve the worst levels of technical efficiency.

Figure 1 - Technical efficiency rate of production units
Source: Own calculations and processing



5 Conclusion

The paper was focused on the evaluation of technical efficiency of selected public acute care hospitals in 2018. The subject of the analysis were selected hospitals of regional character from the Czech Republic and the federal state of Baden-Württemberg.

An output-oriented DEA model was assumed to model the technical efficiency of hospitals, assuming constant returns to scale.

The evaluation of technical efficiency followed two research questions. The first research question (RQ1) "Do hospitals with 250-500 beds achieve a lower value of the degree of technical efficiency than hospitals with 501-1000 beds" can be answered as follows:

- the average level of technical efficiency of a total of 39 hospitals with 250-500 beds reached 1.26714. This value is below the average technical efficiency of the total set of hospitals (i.e. 58 hospitals), which is 1.30926. The closer the value of the average technical efficiency rate is to 1, the more efficient the production unit is;
- The average level of technical efficiency of hospitals with a bed stock capacity of 501-1000 beds is 1.40423. This value is higher than the average level of technical efficiency of the whole set of production units;
- Based on the above-mentioned results, it is necessary to refute the research question RQ1.

Research question RQ2 was as follows: "Do acute care hospitals in Baden-Württemberg achieve higher levels of technical efficiency than hospitals in the Czech Republic?" Based on the results presented in Fig. 1, it can be stated that hospitals from the federal state of Baden-Württemberg achieve better values of the average level of technical efficiency (1.21470) compared to hospitals from the Czech Republic (1.40382). Therefore, RQ2 is confirmed based on the results of the analysis.

International comparisons at the micro level provide many suggestions on how production units can improve technical efficiency, but it is also necessary to perceive possible limits, which are associated with both the chosen method of researching selected problem and the collection of necessary data. The selected input and output parameters that were included in the analysis have the same methodological reporting in both countries, thus they are reflecting the relevant obtained results.

Acknowledgements

This paper was supported within the project SGS No. SP2021/67, International Evaluation of the Performance of Health and Social Services with a Focus on the Application of Multicriteria Methods, Faculty of Economics, VSB - Technical University of Ostrava.

References

[1] AHMED, S., HASAN, M.Z. and LAOKRI, S., et al. (2019). Technical efficiency of public district hospitals in Bangladesh: a data envelopment analysis. Cost Eff Resour Alloc. Vol. 17, No. 15. DOI: https:10.1186/s12962-019-0183-6.

[2] ARDIELLI, E., LEE, S. and VAŇKOVÁ, I. (2021). International Evaluation of Technical Efficiency of Hospital Care. In: Proceedings of the 4th International Scientific Conference Development and Administration of Border Areas of the Czech Republic and Poland – Support for Sustainable Development, 2021. Ostrava: VŠB – Technical University of Ostrava, pp. 11-19.

[3] AUGURZKY, B. and PENTER, V. (2014). Gesundheitswesen für Praktiker: System, Akteure, Perspektiven. Deutschland: Springer Fachmedien Wiesbaden.

[4] BARTÁK, M. (2010).Výzkum public health – 1. část: využití v praxi zdravotní politiky. Zdravotnictví v České republice. No. 3, pp. 92-94.

[5] BARTÁK, M. (2012). Mezinárodní srovnávání zdravotnických systémů. Praha: Wolters Kluwer Česká republika.

[6] BARTÁK, M., V. ROGALEWICZ, J. JÍLKOVÁ and S. JEŘÁBKOVÁ. (2016). Přeshraniční zdravotní péče v Evropské unii a ČR. Časopis Lékařů českých. No. 5, pp. 247–253.

[7] BLATNIK, P., BOJNEC, S. and TUŠAK, M. (2017). Measuring Efficiency of Secondary Healthcare Providers in Slovenia. Open Medicine. Vol. 12. DOI: 10.1515/med-2017-0031.

[8] COELLI, T. J. et al. (2005). An Introduction to Efficiency and Productivity Analysis. New York: Springer Science.

[9] DLOUHÝ, M., JABLONSKÝ, J. and I. NOVOSÁDOVÁ. (2007). Use of data envelopment analysis for efficiency evaluation of Czech hospitals. Politická ekonomie. Vol.55, No. 1, pp. 60-71.

[10] DLOUHÝ, M., JABLONSKÝ, J., ZÝKOVÁ P. (2018). Analýza obalu dat. Praha: Professional Publishing.

[11] DLOUHÝ, M. (2016). Mezinárodní srovnání výkonnosti zdravotnictví ve Visegradských zemích. Čas. Lék. čes. Vol. 5, pp. 242-246.

[12] EUROPEAN COMMISSION (2019). Joint Report on Health Care and Long-Term Care Systems & Fiscal Sustainability. Luxembourg: Publications Office of the European Union.

[13] GAETA, M. et al. (2017). An overview of different health indicators used in the European Health Systems. J Prev Med Hyg. Vol. 58, No. 2, pp:E114–20.

[14] GHAHREMANLOO, M. et al. (2020). A novel DEA model for hospital performance evaluation based on the measurement of efficiency, effectiveness, and productivity. Engineering Management in Production and Services. Vol. 12, No. 1, pp. 7-19. DOI: 10.2478/emj-2020-000.

[15] HAMPLOVÁ, L. (2019). Veřejné zdravotnictví a výchova ke zdraví: pro zdravotnické obory. Praha: Grada Publishing.

[16] JOINT FEDERAL COMMITTEE (2021). Gemeinsamer Bundesausschuss: Die Qualitätsberichte der Krankenhäuser [online]. 2021 [cit. 2021-05-24]. Available from https://www.g-ba-qualitaetsberichte.de/#/search

[17] RAVANGARD, R., HATAM, N., TEIMOURIZAD, A. and JAFARI, A. (2014). Factors affecting the technical efficiency of health systems: A case study of Economic Cooperation Organization (ECO) countries (2004–10). Int J Health Policy Manag, Vol.3, pp: 63–69. DOI: 10.15171/ijhpm.2014.60.

[18] STATE STATISTICAL OFFICE (2018). Statistisches Landesamt Baden-Württemberg: Krankenhausstatistiken Baden-Württemberg [online]. 2018 [cit. 2021-05-24]. Available from https://www.statistik-bw.de/Suche-und-Bestellung/statBerPage.xhtml?thema=A4

[19] STEFKO, R., GAVUROVA, B. and KOCISOVA, K. (2018). Healthcare efficiency assessment using DEA analysis in the Slovak Republic. Health Econ Rev. Vol. 8, No.6. DOI: 10.1186/s13561-018-0191-9.

[20] SUHRCKE, M., et al. (2006). The contribution of health to the economy in the European Union. Public Health. Vol.120, No.11, pp:994-1001.

[21] SVEJKOVSKÝ, J., VOJTEK, P. and L. T. ARNOŠTOVÁ (2016). Zdravotnictví a právo. Praha: C.H. Beck

[22] TRANSPARENCY INTERNATIONAL (2020). Mapa nemocnic v ČR. [online]. 2020 [cit. 2021-05-14]. Available from https://maphub.net/mapanemocnic/mapa-nemocnic-v-cr

[23] ÚZIS (2019). Zdravotnická ročenka České republiky 2018 [online]. 2019 [cit. 2021-04-14]. Available from https://www.uzis.cz/res/f/008280/zdrroccz-2018.pdf

[24] VARABYOVA, Y., BLANKART, C.R., TORBICA, A. and SCHREYÖGG, J. (2017). Comparing the Efficiency of Hospitals in Italy and Germany: Nonparametric Conditional Approach Based on Partial Frontier. Health Care Management Science. Vol. 20, No. 3, pp: 379-394. DOI: 10.1007/s10729-016-9359-1.

[25] VRABKOVÁ, I. and VAŇKOVÁ, I. (2015). Evaluation models of efficiency and quality of bed care in hospitals, Series on advanced economic issues. Ostrava: VŠB-TU Ostrava.

[26] WHO (2000). The Word health report 2000: health systems: improving performance. Geneva: World Health Organization

Annex 1 - Results of technical efficiency of output-oriented CCR DEA model

DMUs (n=58)	Name of hospital	**Number of beds**	**Technical efficiency rate**	Rank
H1	Fürst-Stirum-Klinik Bruchsal	364	1.12989	8.
H2	Hegau-Bodensee-Klinikum Singen	465	1.23379	23.
H3	Kliniken des Landkreises Lörrach GmbH	308	1.22286	22.
H4	Klinik am Eichert	839	1.40506	42.
H5	Kliniken Böblingen	327	1.00000	1.
H6	Kliniken Landkreis Heidenheim GmbH	568	1.31689	35.
H7	Kliniken Sindelfingen	383	1.30657	32.
H8	Klinikum Konstanz	350	1.13652	9.
H9	Klinikum am Steinenberg	589	1.12367	7.
H10	Krankenhaus Freudenstadt	340	1.14252	11.
H11	Ortenau Klinikum Lahr-Ettenheim Standort Lahr	411	1.33785	37.
H12	Ortenau Klinikum Offenburg-Gengenbach Standort Ebertplatz	461	1.15243	14.
H13	Ostalb-Klinikum Aalen	399	1.00000	1.
H14	Stauferklinikum Schwäbisch-Gmünd	401	1.18004	18.
H15	Medius Klinik Kirchheim	429	1.41273	44.
H16	Medius Klinik Nürtingen	331	1.20302	21.
H17	St. Elisabethen-Klinikum	542	1.14423	12.
H18	SLK-Kliniken Heilbronn GmbH - Klinikum am Plattenwald	325	1.27137	26.
H19	Rems-Murr-Klinikum Winnenden	570	1.00000	1.
H20	Klinikum am Gesundbrunnen	969	1.18936	20.
H21	Klinikum Mittelbaden Baden-Baden Balg	380	1.14206	10.
H22	GRN-Klinik Schwetzingen	295	1.25830	25.
H23	BG Klinik Tübingen	340	2.01926	52.
H24	Klinikum Mittelbaden Rastatt	260	1.10400	6.
H25	Kreiskrankenhaus Emmendingen	263	1.05427	3.
H26	Rems-Murr-Klinik Schorndorf	277	1.18043	19.
H27	Schwarzwald-Baar Klinikum Villingen-Schwenningen GmbH	269	1.48831	48.
H28	Medius Klinik Ostfildern-Ruit	280	1.07193	4.
H29	Spital Waldshut	251	1.00000	1.
H30	Nemocnice Břeclav, p.o.	419	1.02615	2.
H31	Nemocnice Kyjov, p.o.	478	1.41370	45.
H32	Nemocnice Vyškov, p.o.	431	1.31532	34.
H33	Nemocnice Znojmo, p.o.	590	1.52036	50.
H34	Nemocnice Havlíčkův Brod, p.o.	534	1.40078	41.
H35	Nemocnice Jihlava, p.o.	649	1.51802	49.
H36	Nemocnice Nové Město na Moravě, p.o.	457	1.30151	31.
H37	Nemocnice Pelhřimov, p.o.	340	1.34973	38.
H38	Nemocnice Třebíč, p.o.	422	1.14992	13.
H39	Sdružené zdravotnické zařízení Krnov, p.o.	532	1.00000	1.
H40	Nemocnice Třinec, p.o.	355	1.16811	15.
H41	Nemocnice ve Frýdku-Místku, p.o.	477	1.40582	43.

H42	Nemocnice s poliklinikou Havířov, p.o.	413	1.54418	51.
H43	Nemocnice s poliklinikou Karviná-Ráj, p.o.	511	1.37031	39.
H44	Slezská nemocnice v Opavě, p.o.	535	1.32181	36.
H45	Krajská nemocnice T. Bati, a.s.	914	1.43684	47.
H46	Kroměřížská nemocnice a.s.	391	1.17235	16.
H47	Uherskohradišťská nemocnice a.s.	609	1.29257	28.
H48	Vsetínská nemocnice a.s.	344	1.29431	30.
H49	Nemocnice Jindřichův Hradec, a.s.	343	2.09965	53.
H50	Nemocnice Písek, a.s	423	1.30946	33.
H51	Nemocnice Strakonice, a.s.	314	1.29300	29.
H52	Nemocnice Tábor, a.s.	466	1.24584	24.
H53	Oblastní nemocnice Jičín a.s	505	1.38185	40.
H54	Oblastní nemocnice Náchod a.s.	845	1.27537	27.
H55	Oblastní nemocnice Trutnov a.s.	300	1.17861	17.
H56	Nemocnice s poliklinikou Česká Lípa, a.s.	488	1.08457	5.
H57	Oblastní nemocnice Kolín, a.s.,	541	1.42878	46.
H58	Karlovarská krajská nemocnice a.s.	576	3.41186	54.

Source: Own calculations and processing

Contact information

Ing. Eva Ardielli, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: eva.ardielli@vsb.cz

Ing. Ivana Vaňková, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: ivana.vankova@vsb.cz

Sabrina Lee
VSB - Technical University of Ostrava, Faculty of Economics, Department of Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: sabrina.lee.st@vsb.cz

Public Property in the French Law

Richard Bartes

Abstract: The paper focuses on the comparison of basis between Czech and French conception of public property with regard to the introduction of the French legal model of public property. The principle objective of the paper is to analyze main characteristics of the conception of public property in France and to present some differences between Czech and French conception of public property. For this reason, the analytical, comparative and descriptive methods were used to write this paper and to fulfil its objective. A descriptive method is used for a presentation of French and Czech conception of the public property and a historical background. Afterwards, the comparative method is applied for a comparison and an emphasis on differences in French and Czech legal regulation of public property. Owing to the analytical method is possible to gain required results concerned to global distinctions between French and Czech system of legal regulation of public property. As for results, it is necessary to mention the accomplished analysis of comparison of public property conceptions in the Czech Republic and in France.

Keywords: France, public property, public sector

JEL Classification: K19, H40, H82

1 Introduction

The right to own property is one of the fundamental human rights guaranteed by the constitutional order. In every modern democratic state, a property is protected, regardless of whether it is owned by a natural or a legal person. In the same way, the property is protected regardless of whether it is owned by a person of private or public law. Simultaneously it holds true, that property rights have the same legal content and protection. On the other hand, the right to own property is one of the fundamental right though, but there are also obligations attached to this right – for example: all persons owning property are obliged to take care of their property (the principle of "ownership is binding") or a property have not be abused to the detriment of the rights of others. The property have not be abused in conflict with the generally protected public interests and its performance have not harm human health, nature and the environment beyond the limits set by law.

The specific kind of property is a public property. The mentioned specificity lies not only in the type of property, but also in the entity handling this property and also in the purpose for which this property is used. A public property as the legal institute belongs to the public law, specifically an administrative law with possible overlap into other branches of law as an environmental law (administration of the protected landscape area), as a financial law (administration of foreign exchange reserves of the Central Bank) or as a public international law (for example issues of acquiring territory as a result of annexation or *debellatio*). Although a public property is connected with the public law, it is not possible to completely ignore certain "private law aspects". Such cases will include, for example, the acquisition of public property by a purchase contract (in the case of acquisition of property against payment) or by a gift contract (in the case of gratuitous acquisition of property). In any case, the legal regulation of these institutes can be found in the relevant civil code, although these legal institutes have often public law restrictions or "specifics" regulated by other laws.

These elemental facts are common to many states without regard to their legal system (it makes no difference if the state belongs to the Anglo-Saxon or Continental system, which is divided besides other things into the French and German branch). Nevertheless, these different legal

systems have a different opinion of individual legal aspects and kinds of property. This could be visible in the case of France, which has a different legal model compared to the Czech Republic.

The reason why the author has chosen the concerned topic of the article is the fact that the author focuses on the French legal system and its comparison with the Czech one. In this field, the author dedicates to the French conception of public finance or to the French public administration and administrative law.

Finally, it is possible to see the intersection between a financial law and a public property, because the state or other public entity has to match the territory where the public property will be used with the territory to cover its operating costs. (Powadová, 2020: 709)

The objective of the paper is to analyze main characteristics of the conception of public property in France and to present some differences between Czech and French conception of public property.

Here we may formulate hypothesis as follows: The set of public property in France is defined more broadly than the set of public property in the Czech Republic. To confirm or to disprove this hypothesis, the author uses appropriate methodology and methods working on verification or falsification.

2 Material and Methods

Regarding to the scientific literature, it is necessary to base on the French and Czech scientific literature. Nowadays, the most important French authors in this field are Yves Gaudemet or Christophe Roux. In the past, authors as Philippe Foillard, Jacqueline Morand or Bertrand Serrand could be mentioned. Petr Havlan is a great specialist in the field of public property in the Czech Republic and he is a francophone academic.

To fulfil the aim of the paper, which is determined in the introduction, analytical, comparative and descriptive methods were used. First, it is necessary to use a descriptive method for a presentation of the French and the Czech conception of the public property. Afterwards, the comparative method is important for a comparison and an emphasis on differences in the French and the Czech public property issue. Owing to the analytical method is possible to gain required results concerned to global distinctions between French and Czech model of the public property.

3 Results and Discussion

Within the chapter “Results and Discussion” is necessary to clarify crucial term of “public property” and to explain its historical and factual context. Generally, acts regulating public property provides for a legal framework for a treatment of public property, especially rights and obligations of owners or holders of public property; legal regime of handling of public property or general theoretical background of public property as a legal institute.

Public property is usually defined as "*ownership whose entity is an entity of public nature (state, territorial self-governing unit, other public corporation, independent public institute, public fund ...), typically an entity of public administration as a so-called legal person of public law, or rather in general a "public body", and whose object is a public matter in the broad sense, that is to say, a matter intended for public purposes without further”*. (Havlan, 2016: 11)

Thanks to this definition, several main features necessarily associated with the institute of public property can be discovered, namely: (1) feature of the ownership, (2) feature of the entity of public nature, (3) feature of public matter in the broad sense as the object of public property, (4) feature of public purposes without further.

3.1 Legal Framework of Public Property in the Czech Republic and in France

In the Czech Republic, the basic legal framework for the general regulation of state property is act no. 219/2000 Coll., on the property of the Czech Republic and its behavior in legal relations. The act regulates only a property of the state and not a property of other public entities. In any case, this is a *lex generalis* regulating the management of state property. However, in addition to the above-mentioned act, it is necessary to reflect acts such as the (already mentioned) Civil Code (Act No. 89/2012 Coll., Civil Code) or the Public Procurement Act (Act. No. 134/2016 Coll., on Public Procurement Act). There are also acts regulating other public entities different from the state, then it is appropriate to mention the Act on Municipalities (Act No.128/2000 Coll., on Municipalities), the Act on Regions (Act No. 129/2000, on Regions), or rather the Act on the Capital City of Prague (Act No. 131/2000 Coll., on the capital City of Prague).

Since there are many acts, it is therefore possible to speak about the fragmentation of the national legislation. Due to this fragmentation, the national legislation is incoherent, confusing and difficult to apply. If we focus on France, as a country that is subject to comparison with the Czech Republic in the subject matter, or rather to its legal regulation regulating public property, then we could see the opposite phenomenon. France is an example of country that codifies individual branches of law or its sub branches – e.g. French general Tax Code, Sport Code or Tourism Code etc. However, with regard to the topic of the paper, the most important is the General Code of Public Property. This code contains a compact and comprehensive legal regulation of property belonging to the so-called public persons under French law. The concept of "public persons" may seem unusual from the point of view the Czech law, but this concept corresponds to the concept of public corporation under the Czech law.

The General Code of Public Property has a following structure: (1) Methods of acquiring property (the Code distinguishes between acquisition of property against payment and gratuitous acquisition of property by public persons); (2) Procedures for the acquisition of property (the Code distinguishes the case of property located in France from property located abroad); (3) Property belonging to public property (in this part the Code defines public property, states its legal classification, its use, administration and legal protection); (4) Property belonging to private property (the Code defines methods of allocating private property to public persons, its administration, the possibility of transfers of private property); (5) Regulation of disputes related to public and private property of public persons; (6) Special provisions for overseas self-government units.

The public property of territorial self-governing units is regulated by the General Code of Territorial Self-Government Units. In the case of France, departments, so-called overseas departments (e.g. Martinique, Guadeloupe), regions, municipalities or arrondissement (e.g. in Paris, Marseille, Bordeaux or Lyon) are considered to be territorial self-governing units. The General Code of Territorial Self-Government Units is *lex specialis* in relation to the General Code of Public Property. (Bartes, 2018: 146-147)

As can be seen from the text above, one of the main differences between the Czech and French legal regulation of public property consist in the approach to a lawmaking. Whereas there are many acts regulating the handling of public property in the Czech Republic (i.e. a fragmentation of legislation), France is characterized by codification of this issue.

3.2 History of Public Property in France

Jean Bodin wrote in the 16th century: "*We can only speak of a state if there is a sovereign power that unites all families and collegiums. In addition to sovereign power, there must be something common and something public to al (*i.e. in French *communauté), such as public state property, public treasure, streets, ramparts, squares, churches, markets..*" (Bodin, 1994: 43) The concept

of "public property" in France is usually derived from an edict issued by Charles IX. in 1566 (i.e. in French *Édit de Moulins*). However, it can be stated that the concept of "public property" dates back to the *Ancien Régime*, i.e. the 15th century. In a broader sense, it is possible to go even further into history and mention the period of the so-called *Ancien Domaine royal*, or rather *Domaine de la Couronne*.

The conception of *Ancien Domaine royal* (i.e. in English "Old Royal Property") has been typical for the period of the 10th century. This conception was formed by a set of estates and property directly under the authority of the king within the kingdom of France. At the time of Hugo Capet (10th century), the royal property was relatively small and was located mainly in *l'Île-de-France* and *Orléanais*. In addition, this property consisted mainly of the property of the Robertians family (the forerunner of the Capetians family).

The conception of *Domaine de la Couronne* (i.e. in English Property of the Crown) includes a set of property belonging to royal power, where this property was associated with sovereignty and was considered public and inalienable. In this sense, its opposite was private and foreign property. The Property of the Crown was divided into so-called great and small property. The "great property" was royal and therefore public property, and "small property" was considered property owned by the king. The "great property" included land, underground, and generally everything that had been marked as royal (and since the Great French Revolution as state), rivers, canals, harbors, fortifications, and royal armories, royal forests. On the other hand the "small property" was made up, for example, of royal palaces or financial resources belonging to the king. It can be noted that the "small property", from today's point of view, almost corresponds to the British Crown Estate.

Another interesting historical story associated with a public property is the story of the *Banque de France*, which was established by the *Banque de France* Decree in 19th century. This central bank was originally independent of the French government because it was a private enterprise, a join-stock company maintaining privileged ties by the State. It was not until 1945 that the bank became public, or rather state property, as the state became the sole shareholder. (Bartes, 2020: 61)

3.3 Public Property under the French Law

The public property of public entities consists of movable or immovable property that belongs to these public entities. This property is meant for use by the public or by public service (in French *le service publique*). The definition of public property under the French law bases on the article 2111-L of the General Code of Public Property.

The foundation of public property in France lies in the public interest, which is in acts frequently designated as the public utility. The relevant act states that public property is either "intended for direct use by the public" or "intended for public service". In such a case, the public property has to have an ability to be integrate with "the necessary planning for the performance of the public service tasks" (the conception of the "*special planning*", later "*necessary planning*" will play the part of the case of Dauphin, see below).

The public property of public entities in France is subjected to a highly protected legal regime, which is based on an imprescriptible and inalienable aspect. The condition for classification of property into the category of public property is the fulfilment of two preconditions – (1) the entity owning the property must be a legal person of public law and (2) the property must be intended either for direct use by the public or for public service (see above).

The decision of the Council of State (in French *Conseil d'État*) in the Dauphin case of 1959 entered the French legal history. Mr. Dauphin was used to get by a car to his house via Alyscamp

Avenue located in the village of Arles. However, the village decided to close this alley with barriers and chains, as an archeological site was discovered at the place. In this way, on the one hand, the alley was putted into a cultural public service, but on the other hand, the access to this alley was closed, thus fulfilling the so-called "special planning" for the performance of cultural public service tasks.

In reality, this fact had a negative impact on Mr. Dauphin, as he could not get to his property across the alley, although the passage easement was established in his favor here. For that reason, in 1949, Mr. Dauphin lodged a complaint with the Interdisciplinary Council of the Prefecture of Marseille, seeking the annulment of that measure and, at the same time, a compensation for difficulties. The Interdisciplinary Council stated that there is the absence of its competencies, because an assessment of the existence of the easement, and therefore the claim for compensation comes under the competence of judiciary and not under the competence of the administrative authority. That is why Mr. Dauphin turned to the French Council of State, which issued a final decision in plenary on 11 May 1959.

The Council of State ruled that Mr. Dauphin can not seek the annulment of the measure taken by the Interdisciplinary Council (i.e. the annulment of the closure of the alley), because the alley is both public property belonging to the municipality, is assigned to the cultural and tourist public service and the alley is the subject of the so-called (already mentioned) special planning established for this purpose. The Council of State also ruled that the alley cannot be considered a public road and therefore Mr. Dauphine cannot seek his right of access to his property by a car. However, Mr. Dauphine could claim damages for not being able to access his property if he proves the existence of a passage easement through the alley, which had been already established before the ban on access to the alley. The Council of State thus stated in its decision that it is necessary to examine in the first place the so-called "special planning" as an aspect of a public property, if a public property is intended for a public service.

The so-called "special planning" as an aspect of public property, or rather ownership was found by the professional and non-professional public as inaccurate, or rather an abstract conception which is difficult to determine. For this reason, although the General Code on the Property has partially taken over this conception, this Code has clarified that the planning must be "necessary" for the performance of the public service task. This clarification has deliberately slowed down the development of a case law, which has tended to expand the material content of public property too much. Thus, it is possible to observe the political will to limit the scope of public property in France – this was practically reflected in the article L-2111-1 of the Code, where the aspect of "necessary planning" was introduced. However, in my opinion, the conception of “necessary planning” is still too abstract.

It could be mentioned that the conception of public property in France is more sophisticated than the one in the Czech Republic. That is evident from the legal construction, or rather legal regime of public property in France, which is based on firm and clear preconditions. On the contrary, the Czech conception of public property is insufficiently defined compared to the French conception defined in such detail.

3.4 Illustrations of Public Property in France and legal protection

Hertz waves are a typical and interesting example of public property in France. Unlike the legal regime in the Czech Republic (Havlan, 2008: 11), the Hertz waves in France are the subject of property rights and are legally established as the property of radio frequencies. However, as early as 1989 in France, there was adopted the act, which laid down, that radio waves constituted a private use of public property.

Nowadays, frequency bands are allocated by the Office for the Regulation of Electronic Communications and Mail (in French *Autorité de régulation des communications électroniques et des poste*) on instruction of the French State. This fact was also reflected in the General Code by explicitly stipulating that "*Radio frequencies in the territory of the Republic belong to the public property of the State*". The General Code also stipulates, that "*the use of radio frequencies in the territory of the Republic is a private way of using public property of the* state".

Another example of public property in France is maritime property. Maritime property was defined by Colbert's Maritime Decree of 1681, which has been applying (with some modifications) until 2006, when the General Code has been adopted. The General Code has amended this regulation and subsumed it under the so-called *Domaine public naturel*. Originally, Colbert's decree defined the shore and the coast as "*everything that the sea covers and reveals during the new and full moon phases, up to the distance where the March high Tide can spread*". This was a difference from Roman law, or rather Justinian's decree, which stated that this limit was not a "March high tide" but a "large winter watercourse". Until 1973, case law has been used in France to determine the boundaries of maritime public property on the Mediterranean coast. In 1973, the Council of State unified the rule by ruling that maritime public property extends to "*as far as the sea can expand without causing extraordinary disruption to life on shore*". In other words, it does not matter whether the sea level is highest in winter or March, and the threat of a possible storm or flood is taken into consideration. The case law was subsequently reflected in the General Code.

A special category is an artificially created public property. This kind of property includes a property intended for a direct use by the public and certain property intended for public services. Property intended for direct use by the public includes road public ownership, consisting of "all public property of the state, departments and municipalities intended for the needs of land transport, with the exception of railways", which are regulated separately by the Road Traffic Code. This group of property also includes property of public entities intended for a public service, such as museums, schools, prisons, defense facilities or airports.

For the record, the Council of State ruled in its decision of 8 March 1993, that there was no above-ground public property.

The legal protection of public property in France is based on these aspects: (1) inalienability - no one can renounce relevant rights; (2) unseizable – inability to apply forms of private law to public entities (e.g. a creditor cannot seize public property through execution in order to satisfy his debt); (3) no statute of limitations – it makes impossible to accomplish the legal institute of *usucapio* (under the French law, for example, in the case of immovable property, *usucapio* occurs after 30 years).

The French legislature has introduced additional special protection for public property in the following form: public property must be excluded from the category of public property (and take out of assignment for public use) before it is subsequently transferred to an entity of private law. However, the process of transferring public property to a private person in some cases requires the form of an act. E.g. in 2006, this was an example of the act on the privatization of the energy sector (the privatization of *EDF* being probably the most well - known case, just to name a few) or the privatization of *France Télécom* by *Orange* in 2000. Furthermore, as an interesting example of the same issue, it could be mentioned the case of the so-called Maori heads from 2010.

In selected cases, a person of private law may use property in the public ownership regardless of the transfer of the ownership. In the practice, it is the case of an interim use of public property for a remuneration and the relevant public entity has to authorize such use. The important condition, however, is that this interim use of public property by a person of private law must be

necessarily compatible with original function of this property. Public property is further protected by many sanctions, whose purpose is to prevent endangering the property or reducing its value.

The process of a taking out property of the category of public property of public entities is regulated in the General Code on the Public Property as follows: "*The property of public entity referred to in Article L. 1, which is no longer assigned to public service or direct use by the public is no longer part of the public property, from the time when the administrative act declaring its exclusion was put out".*

The taking property out of the category of public property of public entities can be characterized in French law as a two-phase process. In the first phase (in French *la désaffectation*), the public property must be separated either from direct use by the public or from assignment to a public service. After the successful implementation of the first phase, it is possible to proceed to the second phase, i.e. a taking a property out (in French *le déclassement*) of the category of public property of a public entity. While the first phase (i.e. *de facto* a separation of property) could be characterized as a factual situation (i.e. separation either from direct use by the public or from assignment to a public service), the second phase (i.e. taking a property out) presupposes a decision of the relevant public entity in the form of a decree as a result of an administrative procedure, which in some cases involves a public inquiry or the need to obtain the consent of a third public entity. The eliminated property of public entity becomes a private property of a public person. (Bartes, 2018: 148-149)

If there is a situation when the property of a public entity is straight take out of the public property without its factual separation from the direct use of the public or the separation from the public service assignment, such property remains classified as public property. It follows from the above that both of the phases of the two-phase process of exempting property from public property of public entities are obligatory. (Bartes, 2018: 149)

4 Conclusion

The presented paper was dealing with differences between Czech and French conception of public property and its legal regulation. This fact means that theoretical questions relating to the conception of public property were also solved. The principal objective of the paper was to analyze main characteristics of the conception of public property in France and to present some differences between Czech and French conception of public property.

Having analysed first the Czech form and construction of the legal regulation of public property, it can be noted that there are differences consisting in approach to the legislation of public property. While in the Czech Republic, there are many acts regulating field of public property and this field is thus fragmented, in France this field is on the contrary codified and therefore it is better arranged and approachable for citizens.

Another interesting juridical phenomenon is a legal protection of public property. We can see a standard legal protection of public property in the Czech Republic, which is comparable to most European Union countries. In France, there is a special and increased legal protection of public property concerning an ownership transfer of public property to private entities; thereby the public interest and the legal certainty are provided.

In the paper, there were also described the history of public property in France starting from 10th century to the present day.

Therefore, I focused on the essence of the legal construction of public property in France, especially on its purpose. The role, or rather the function of public property was illustrated in

a specific case from the French history, which showed the importance of a precise conceptual definition of the purpose of public property in practice.

The article also mentioned individual examples of public property in France. The example of Hertz waves proved that the Czech and French conceptions of public property approach to this area differently.

In the conclusion, I can say that the hypothesis given at the beginning was confirmed thanks to a comparison of the French and Czech legislation regulating the definition of public property in the relevant country. The French legislative approach shows, that a more comprehensive legislation guarantees a strongest legal certainty. Another fact that helped confirmed this hypothesis is a comparison of the French and Czech examples of public property. This comparison showed that the French examples of public property are more varied as for kinds of public property.

References

[1] BARTES, R. (2018). Legal Aspects of Public Property in the Selected EU Countries. In Proceedings of the 2018 4th International Conference on European Integration, ICEI 2018. pp. 145-150.

[2] BARTES, R. (2020). Monetary Aggregates in Selected EU Country. In Proceedings of the 2020 5th International Conference on European Integration, ICEI 2020. pp. 60-67.

[3] BODIN, J. (1994). Les six livres de la République. In Proceedings of the 1994 Dejiny politického a právního myslenia, ELFA 1994. p. 43.

[4] HAVLAN, P. (2008). Veřejné vlastnictví v právu a společnosti. Praha: C. H. Beck.

[5] HAVLAN, P. (2016). Veřejný Majetek. Brno: Masarykova univerzita, Právnická fakulta.

[6] POWADOVÁ, T. (2020). The Theory of the Fiscal Decentralization and Its Impact on the Economic Growth. In Proceedings of the 2020 5th International Conference on European Integration, ICEI 2020. pp. 705-712.

[7] Act no. 128/2000 Coll., on Municipalities. In: 128/2000 Coll., 2000.

[8] Act no. 129/2000 Coll., on Regions. In: 129/2000 Coll., 2000.

[9] Act no. 131/2000 Coll., on Capital City of Prague. In: 131/2000 Coll., 2000.

[10] Act no. 219/2000 Coll., on Property of the Czech Republic. In: 219/2000 Coll., 2000

[11] Act no. 89/2012 Coll., Civil Code. In: 89/2012 Coll., 2012.

[12] Act no. 134/2016 Coll., on Public Procurement Act. In: 134/2016 Coll., 2016.

[13] General Code of Public Property.

[14] General Code of Territorial Self-Governing Units.

Contact information

Mgr. Richard Bartes
VSB - Technical University of Ostrava, Faculty of Economics, Department of Law
Sokolská třída 33, Ostrava 1, 702 00 Czech Republic
E-mail: richard.bartes@vsb.cz

Using the theories of behavioral economics in the process of analyzing the financial market as a method of increasing the efficiency of the functioning of the state economy

Hanna Bazetska, Daria Serogina, Nataliia Obukhova

Abstract: The aim of the article is to substantiate the need to use the postulates of behavioral economics and behavioral finance as a tool for analyzing the financial market to improve the efficiency of the public economy. The article examines the theories of behavioral economics and behavioral finance, which allow us to conclude that economic agents behave irrationally when forming financial strategies in the market. The study uses research methods such as analysis and synthesis, generalization, definition of concepts, modeling. Main findings of the study is that an economic agent is significantly influenced by such psychological factors as the phase of his life cycle, type of temperament, psychological type, archetype and metaprograms. The authors offer a psychological portrait of the "ideal" financial market participant, but they note that anyone can function in the market. Sometimes the behavior of economic agents is explained by the peculiarities of collective consciousness and behavior. Economic and psychological factors influence the group behavior of investors and issuers and determine the pricing model and market efficiency. Thus, the functioning of the financial market depends on the degree of irrationality of its participants whose behavior is determined by psychological characteristics. In turn, the efficiency of the functioning of the financial market will determine the degree of efficiency of the public economy.

Keywords: Behavioral economics, behavioral finance, financial market, public economy

JEL Classification: D91, E71, G19, G41, H89

1 Introduction

Behavioral economics is a relatively young science, thanks to which it became clear why classical economic theories "do not work". And namely thanks to it the economists drew attention to the relationship of the economic behavior of subjects with their various behavioral characteristics. The classical ideas about the functioning and development of the economies of the countries of the world could not predict and explain the occurrence of financial crises and the formation of financial bubbles. The development and functioning of financial markets, which are the supporting sphere of any financial system, is subject to the influence of distorted behavior not only of investors and traders, but also of ordinary consumers, producers, managers and their irrationality. Behavioral economics, combining the research of psychologists, sociologists and economists, explains the behavior of economic actors in conditions of uncertainty and risk. Consequently, we can say that behavioral economics is a new paradigm for the functioning of economic systems.

Based on empirical studies of people's behavior in the process of making economic decisions, behavioral economics has formed complex models that describe the main behavioral trends. This made it possible to expand the understanding of the principles and peculiarities of the functioning of financial systems and move away from traditional theories based on the rationality of economic behavior.

Behavioral economics explains the behavior of economic actors in general, but their behavior in financial markets is investigated by its branch - behavioral finance. Thanks to these sciences, the propensity to take risks and to the formation of aggressive financial strategies is determined. Studies in the field of behavioral economics and behavioral finance have shown that the

functioning of the financial market is not always determined by the rationality of the behavior of economic agents. On the contrary, market agents often behave irrationally, which can explain the propensity to take risks or avoid them. Therefore, behavioral finance involves a non-standard approach to the analysis of the behavior of investors and traders in the financial market. Assessment and forecast of their behavior in the modern sense should be based on the study of behavioral characteristics, such as the way of perceived information and its volume, attitude to the reliability of information, the level of optimism, emotional background, the presence of positive or negative experiences in the past, etc. In addition, behavioral finance is able to explain the behavior that leads to a financial crisis, as well as predict how the market will react to them.

Since the financial market largely determines the direction of development of the public economy, forecasting fluctuations in it and the behavior of traders and investors will contribute to the effective functioning of the public administration system in the economy. That is why it is advisable to use the tools of behavioral economics and behavioral finance for analyzing the financial market and forecasting crises in it, which will avoid significant losses for the public economy.

The aim of the article is to substantiate the need to use the postulates of behavioral economics and behavioral finance as a tool for analyzing the financial market to improve the efficiency of the public economy.

Thus, the following hypothesis can be formulated: it is impossible to assess and predict the functioning of financial markets without the application of the theory of behavioral finance and behavioral economics. To confirm or refute this hypothesis, the authors use the appropriate methodology and research methods.

2 Material and Methods

Behavioral economics and behavioral finance have been studied relatively recently, but there is no coherent system that would fully describe all processes in a single terminology. In our opinion, this is due to the unification of psychological, sociological and economic terminology. It is the description of the same process from the standpoint of different sciences that leads to some discrepancy in concepts. However, all these sciences help to explain why a person makes this or that economic decision under the influence of certain factors of the external and internal environment.

Adam Smith (2005) ("Theory of Moral Sentiments") spoke about the fact that the "economic man" is rational and always seeks to benefit from his activities. J.M. Keynes (Keynes, 1936) in his works talked about a certain dependence of a person on a variety of psychological factors that cause a subject's tendency to different, often irrational, patterns of behavior. For example, J.M. Keynes identified among such factors inexplicable or excessive greed, inclination to accumulate, unwillingness to take risks, wave-like outbursts of optimism and pessimism, "crowd effect", etc. Subsequently, scientists from different scientific schools found confirmation of cases of the influence of psychology on economic behavior, and also identified new patterns in the relationship between economics and psychology and sociology. This is how behavioral economics first appeared, and then its branch - behavioral finance.

Economic behavior due to the influence of various factors and situations has been considered by many scientists. For example, Gary Becker (Becker, Murphy, 2009) published “Crime and Punishment: An Economic Approach” which laid the foundation for the economics of crime. He investigated the optimal cost of catching and punishing criminals by conducting an economic analysis of the losses to society from the acts committed by criminals, ranging from murder to tax evasion. M. Rabin (1998) considered many issues of behavioral economics, such as unselfish preferences of economic agents, behavioral anomalies of a systemic nature, problems of self-

control, and many others. V. Pesendorfer (Gul, Pesendorfer, 2004) specializes in game theory and choice theory, a toolkit that is actively used in behavioral economics. J. Gynakoplos, D. Pearce and E. Stechet (Geanakoplos, Pearce, Stacchetti, 1989) considered psychological games and their influence on human behavior, including the economic agent. Herbert's theory of bounded rationality (1978) focuses on the study of organizational behavior and decision-making processes. The essence of the theory is that the behavior of a person making a decision in a rapidly changing environment and conditions of uncertainty cannot always be explained by a rational theory of expectations. I. Fisher (Fisher, 1930) proposed the theory of intertemporal choice, which shows what constraints consumers face when making decisions about consumption and savings. However, the starting point for normative theories of intertemporal choice is the discounted utility model proposed by P. Samuelson (Samuelson, 1937). According to this model, the consumer finds himself in a situation of choice between a small benefit that can be obtained immediately, and a large benefit that can be obtained with a degree of probability in the future.

Of interest are the studies of M. Statman (Statman, 2018) in which alternatives to classical finance were considered. As a result, he came to the conclusion that people are normal, and not always rational (the main postulate of classical economic theories), the formation of the portfolio will be influenced by social responsibility and status, and not by high expected profitability and low risk, and that accumulation and consumption processes are determined by the characteristics of human behavior at different stages of the life cycle, the expected return on investment is calculated based on the behavioral rather than the standard theory of asset pricing (the Capital Asset Pricing Model - CAPM) and the markets are not efficient, since the price of assets sold at them is usually far from real or fair price.

Among the most significant works on behavioral economics from a practical point of view, one should single out "Prospect Theory: An Analysis of Decision under Risk" by Amos Tversky and Daniel Kahneman (Kahneman, Tversky, 1979), since it is they who, studying the behavior of people in conditions of risk and uncertainty, refuted the validity of the expected utility theory. The work of these scientists was largely based on the behavioral economics program “The Sloan and Russell Sage Foundations”, which ran from 1984 to 1992 (Heukelom, 2012). A. Tversky and D. Kahneman revealed the predisposition of a person's consciousness to making irrational decisions and introduced the concept of “deviation from a rational decision”. Later on, Richard Thaler (Thaler, 1980) relied on the works of A. Tversky and D. Kahneman while considering how psychology affects the decision-making process. He also studied the process of nudging people to behave correctly for them and proved that the nudging system works (Thaler, Sunstein, 2008). It should be noted that in many ways the theories that have received their development in behavioral economics are based on the research of M. Allais (1953) who studied the theory of risk and decision-making and proposed the term "Allais paradox". This paradox demonstrates the impossibility of applying the theory of the expected utility maximization under the conditions of uncertainty and in the face of real risk. This problem is considered in the work “Rational human behavior in the face of risk. Criticism of the postulates and axioms of the American school”. By the way, no less valuable are the studies of D. Ellsberg (Ellsberg, 1961) who made the empirical conclusion that known probabilities for a person are preferable to unknown ones (Ellsberg's paradox).

Further noteworthy is the study of the “crowd effect” or “bandwagon effect”. Gustave Le Bon (1920) began to study the psychology of the masses, and his research formed the basis for the study of the "crowd effect". This is the most common model of human behavior and one of the main ones in behavioral finance. The behavior of people described by this effect is often typical precisely for the financial market, when while purchasing assets, an economic agent does not rely on available information, but follows other market participants in his acquisition. The appearance of the crowd effect is often influenced by information cascades. It is the decision-

making by the subjects not on the basis of the available information in full, but under the influence of the behavior of other economic agents (market participants), which is an information cascade, and entails the appearance of the “crowd effect”. R. Shiller (2006) in his work "Irrational optimism", describing the crises and collapses faced by the financial market, paid attention to how cultural traditions, rumors, speeches and statements of famous personalities, publications in the media, etc. affect market processes. Thus, he considered the influence of the "crowd effect" on the economic behavior of people. Also in his work "From efficient markets theory to behavioral finance" (Shiller, 2003), he proved by tests that market prices cannot be stationary, and the level of asset volatility, which allows an investor to weigh the risks and reliability of their investments, is often unpredictable.

One of the striking examples of the "crowd effect", the appearance of which is caused by information cascades, is described in the work of Charles Mackay (Mackay, 1995) "Extraordinary Popular Delusions & the Madness of Crowds". There he described the "soap bubbles" that had appeared as a result of the successful spread of rumors about an agreement between England and Spain to allow the last the unrestricted trade with Latin America. The emphasis was on the possibility and necessity of creating joint stock companies, which will be provided with profits from trade with the countries of South America, which are rich in gold and silver deposits in Peru and Mexico. Thus the triumphant march of the South Seas Company began, which proposed its famous plan to pay off the national debt. As a result, a bill was passed that raised the value of the company's shares several times. Having succumbed to the general excitement and the thirst for speculative profit, lovers of easy money lost about one and a half million pounds.

Behavioral finance provides an explanation for the deviation of the fair or base value of an asset from its market value. This branch of behavioral economics proves that the price of an asset rarely reflects its real value. This is due to the fact that prices for assets, for example, for shares, are not formed under the influence of fundamental macroeconomic indicators, but are influenced by the emotional factor. For example, an unexplained rise in the value of shares and the formation of a "soap bubble" can be caused not only by the "crowd effect", but also by the "disposition effect", which was described in the article by G. Shefrin and M. Statman (Shefrin, Statman, 1985) "The disposition to sell winners too early and ride losers too long: Theory and evidence". This effect is observed among investors and traders in the stock market. It consists in the fact that investors (traders) receive less profit, because they hold (do not sell) stocks that are falling in price until the last moment and sell stocks that are growing in price, although the rational behavior is that falling stocks should be sold as early as possible, and stocks that are more expensive are more prudent to be held back.

In this case, we should also mention the work by Andrei Shleifer (Shleifer, 2000) "Inefficient markets: An introduction to behavioral finance", in which he considers the problem of the influence of rationality (irrationality) of investors on the degree of market efficiency. He says that the irrationality of investors and the correlation of their strategies lead to the emergence of an ineffective market, therefore, portfolio management in such a market is an inappropriate process. The phenomenon of market psychology or "marketing psychology" which examines the psychological mechanisms that create price movement in the stock market, is considered by L. Tvede (2002) in his work "The Psychology of Finance: Understanding the Behavioral Dynamics of Markets, Revised Edition".

Particular attention should be paid to the noise trading theory which is based on two assumptions: firstly, there are two types of operators functioning in the market - rational and irrational, and secondly, decisions of rational investors are based only on fundamental information. Thus, rational investors use only the data on the basis of which the pricing process can be justified. Irrational investors, when perceiving information, pay attention not only to macroeconomic

indicators or forecasts, but also include various emotional components in the basis of their decision: attitude to a particular event, their own assumptions, reaction to rumors, etc. This theory is especially relevant for the financial market, since despite the fact that its assumptions contradict classical financial theories, the whole process of the stock market functioning completely fits into its framework, although the behavior of this market is often impossible to predict.

Thus, in recent decades, scientists have come to understand that rationality in the behavior of both economic agents and the financial market (providing the spheres of any economic system) often "does not work". Increasingly, we are faced with irrational behavior of investors and traders, which is explained by the influence of not economic, but psychological and social factors. That is why it is necessary to apply the tools of behavioral economics and behavioral finance in studies of the functioning of the financial market.

The study uses research methods such as analysis and synthesis, generalization, definition of concepts, modeling.

3 Results and Discussion

When considering the influence of various psychological and social factors on the process of market functioning and efficiency, it is first of all necessary to separate the actions of individual economic agents and the collective actions of investors (traders).

Of course, many scientists are inclined to believe that it is the individual behavior of economic agents that ultimately forms the model of behavior in the market. This is partly true, therefore, it is necessary to take into account the fact that forecasting the dynamics of the financial market will be based on the characteristics of the behavior of its participants and it is primarily due to the influence of psychological mechanisms and factors.

In the case when it is necessary to predict the action of a specific market participant (this may be a company manager, a large investor or a trader), it is advisable to draw up and consider his approximate psychological portrait. This definition of the type of behavior contributes, firstly, to winning negotiations, and, secondly, significantly increases the likelihood of making a forecast for transactions and trades. An individual approach to assessing the behavior of an economic agent assumes that typing is carried out according to the following criteria:

- life cycle stages;
- psychological type;
- type of temperament;
- archetype;
- metaprogram.

It is these parameters that will determine a person as an active and effective participant in the financial market, and will also help predict the possibility of impulsive actions and, in general, determine the general strategy of behavior in the market.

The human life cycle is represented by four phases: origin (childhood), development (adolescence), stability (maturity, adulthood) and decline (advanced age, old age). Of course, the phase of Childhood does not interest us, because at this age a person cannot yet make economic decisions. The same can be said about the phase of Old Age, when a person can no longer actively participate in economic life, it is increasingly difficult for him to master new technologies (for example, online auctions or auctions), to accept new forms of interaction between market participants, etc. Thus, two middle phases - Youth and Maturity - will be of particular interest in determining the psychological profile of a potential or real investor (trader). These phases are

characterized by the desire to tap the market, and then become its effective participant. It is at a young and mature age when a person strives to run into money, gain status and respect, acquire connections, establish a business and increase income.

When considering psychotypes, attention is most often paid to the main seven ones: hysteroid, epileptoid, paranoid, hyperthymic, hypothymic and emotive. In an individual assessment of economic agents in the market, determining the psychotype is most important, since depending on which radical turns out to be the leading one, the market participant will depend on the level of his excitement or the degree of caution and the desire to avoid risks. Returning to the topic of the influence of rumors and the formation of the "herd effect", it is the assessment of potential market participants by their prevailing psychotype that can make it possible to determine whether certain participants will be exposed to pseudo-signals and become noise traders or remain rational investors.

Of course, any psychotype can be a participant in the financial market, but the behavioral features of each of them will be as follows:

- hysteroid is an excellent manipulator, he is distinguished by demonstrative behavior, can fall under the influence of third-party players if their actions satisfy his ego, can also make an impulsive deal under the influence of emotions;
- epileptoid is a fan of control, therefore, he will most likely be inclined to collect and analyze fundamental information, he will check rumors, he seeks to systematize everything, gets annoyed if the rules are violated;
- paranoid - a person of a goal, an excellent achiever, always effective, very energetic, however, excessive stubbornness can lead to the loss of profits and unprofitable trades;
- schizoid - despite the fact that this radical is inclined to reflection and in-depth study of an interesting subject for him, he is a master of finding an extraordinary solution to a problem;
- hypertim - is not capable of deep analysis, since he is constantly distracted, but it will be invaluable if it is necessary to form an information cascade, since he is perfectly able to find an approach to anyone;
- hypotim - this radical is also called "alarming", since he is inclined to double-check the data, relies on previous experience, is not inclined to rash actions;
- emotive - he is distinguished by an increased level of responsibility for others, it is quite easy to manipulate him, he is easy money in the market.

In addition to the psychotype, as a rule, the types of temperament are also considered: sanguine, choleric, phlegmatic and melancholic:

- a sanguine person is consistent in his activities in the market, he is not upset with failures, his main goal is to make money, and he makes every effort for this, he is characterized by a strategy of a balanced ratio of profit and risk;
- choleric is too hasty, he is not suitable for long-term positions, but he will be effective in medium-term interday trading;
- a phlegmatic person knows how to wait; as a rule, he has good analytical skills, therefore he makes decisions weighed and deliberate, which is why he is the most promising ally and one of the most dangerous opponents on the market;
- melancholic is prone to impulsive and chaotic decisions, so short-term operations are his niche.

It should also be noted that behavioral finance also distinguishes three types of traders in the market:

- intellectual player (active and passive) - makes quick decisions, but gets tired very quickly;
- an intuitive trader - he knows how to play in conditions of uncertainty, despite his nervous nature and a tendency to breakdowns;
- an instinctive trader - hard-working, but overly emotional, can be stubborn and implicit.

However, in our opinion, these features are considered more fully in the typology of radicals and temperament, and will not play a special role in predicting market behavior.

Archetypes are usually viewed from the perspective of the archetypal square (circle) of Tom Chetwynd (1993), which demonstrates the influence of the unconscious on human behavior at various stages of his life cycle. T. Chetwynd built his model of the archetypal square (circle) on the basis of the "archetypal constructions" of C.G. Jung, who distinguished between the personal unconscious, based on the life experience of an individual, and the collective unconscious transmitted from generation to generation. Each of the four quadrants considered (Divine Child, Wisdom, Power and Self) has a “light” and “dark” side.

Divine Child (prince/princess - vagrant/mean girl) is the archetype of the child. As well as in the Childhood stage of the life cycle, a person of this archetype cannot yet be a market participant, therefore, he is not of interest to us. As in the case of the Old Age phase of the life cycle, the archetype of the Self (master/mistress - cannibal/terrible mother) does not interest us. People in this archetype no longer want to earn anything, their desire is to keep what they have, so we will not consider them either. Therefore, it is necessary to consider the features of the archetypes Wisdom and Strength.

The Wisdom archetype (trickster / priestess - black magician/witch) is the phase of intellectual development of both men and women. It is in this archetype that young people study science, master new professions and look for ways to make money (but they easily abandon some in favor of others, as they are “looking for themselves”). When moving to the dark side of the archetype (black magician/witch), these people learn to manipulate people and build various schemes. It is in this phase that economic agents entering the market gain experience and become powerful players.

The Power archetype (warrior hunter - assassin/amazon) is a phase of strong material interest. People in this archetype have already “played enough” with intellectual growth, settled on a certain profession and now they are only improving their skills and acquiring new abilities that will help them acquire status, position and money.

The last criterion we are considering in the psychological profile of a market participant is a metaprogram, that is, a feature of a person's way of thinking and actions, which will determine his behavior. In general, there are more than fifty metaprograms, but it is for financial market participants that two should be considered: referencing and "proactivity / self-reflection".

Referencing can be internal and external. Traders with internal referencing tend to be overly stubborn as they rely solely on their own opinions. Traders with external referencing have two directions: they listen to other people (that is, they can become a victim of manipulation) or rely on facts and indicators (the most advantageous option).

The "Proactivity/Self-reflection" metaprogram will determine whether a trader is a person of action, aimed at achieving, or he is the one who, before making a deal, collects the maximum amount of information, but who needs to be pushed into action.

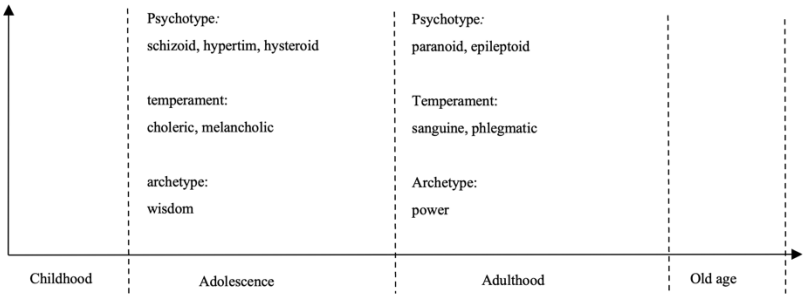
There is an opinion that traders in the financial market must have positive qualities, which in a certain way will correlate with the success of their career. For example, a trader should not strive to conquer the entire market and establish control over it, he should know his ability to

take risks, should not be tied to the financial instruments already known to him, have the ability to foresee several scenarios for the development of events, focus on the long term perspectives, etc. These qualities form a trader's "trader optimism" capable of ensuring successful activities, but practice shows that not all market participants have these abilities. For this, it is necessary to use the theories of behavioral economics and behavioral finance in the financial market, since they are the ones who explain the actions of investors (traders) in the market and help predict their behavior in the future.

In addition, in practice, it is impossible to say unequivocally which psychological profile is ideal for participating in operations in the financial market. All temperaments, psychotypes and metaprograms are needed for certain phases of the financial process: some must be able to collect information, others to analyze it, and still others to make decisions. Therefore, it is not possible to say unequivocally who “can be allowed” to the financial market and who cannot. But it is precisely the understanding of the characteristics of the behavior of investors (traders) in the market that will help to largely explain their committed actions and predict the future.

Sumarizing what has been said above, we propose a scheme that is designed to show who is the most effective in the market, based on the criteria considered. However, it should be noted right away that the given model of “ideal participants” can be an object of discussion, since we have already talked about the possible applicability of people with any psychological profiles in this area of the economy.

Figure 1 - Correlation of psychological profile criteria for financial market participants



Recent studies also show the need to consider the characteristics of the manifestation of behavioral finance at the collective level, since collective assessments, for example, volatility are usually more accurate than individual ones.

So, the collective decision-making process by investors (traders) in the financial market is influenced by such factors as:

- presence and level of risk;
- access to the information;
- completeness of the information received;
- collusion between buyers and sellers.

These factors will shape rational or irrational behavior among market participants.

Rational behavior is characteristic of those spheres where industrial or production capital functions (dominates). This behavior is characterized by the assessment of the probabilities of the distribution of returns on investments and the determination of the fair value of the asset.

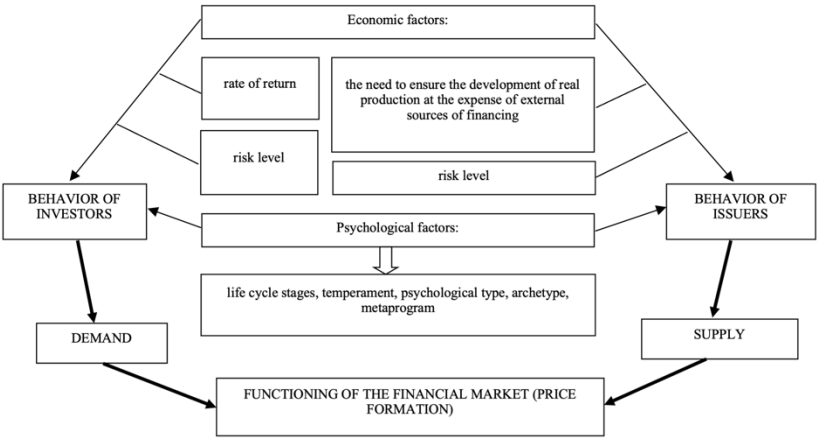
Irrational behavior is typical for the spheres of the post-industrial economy, where cognitive processes push participants to perceive and make subjective judgments. But the irrational behavior of the collective is due precisely to the behavioral reactions of the members of this collective. Individual behavioral response leads to a change in behavior in the group, and this, in turn, determines the vector of collective behavior. These individual cognitive processes leading to a change in perception include the following:

- heuristics (availability and representativeness);
- overconfidence;
- conservatism;
- the desire to avoid loss;
- the desire to avoid disappointment and responsibility for the decisions made;
- framing;
- fixation.

These cognitive distortions lead to the formation of a certain style of behavior among investors (traders) and ultimately contribute to the development of the market or the emergence of a crisis in it.

Note that the functioning of the financial market and the pricing process on it are influenced by supply and demand, which, in turn, are influenced by economic and psychological factors that determine the behavior of participants. It looks schematically as follows.

Figure 2 - Influence of factors on the process of the financial market functioning



4 Conclusion

Today, we can say with confidence that behavioral economics and behavioral finance are the leading trend in modern scientific research. This confirms the fact that the Nobel Prizes in economics over the past two decades have been awarded specifically to studies of various aspects of behavioral economics.

The theory of behavioral economics and behavioral finance has a great influence on the process of functioning of the financial market, since they allow us to identify what caused this or that behavior of investors (traders) in the market and what to expect from them in the future.

The process of making economic decisions, regardless of which of the market participants makes it, is subject to certain behavioral characteristics that lead to making mistakes. Among them are the following:

- errors in the perception and processing of information;
- participants are exposed to information cascades;
- the probability of occurrence of familiar (or already occurring) events is estimated higher than the probability of occurrence of an unfamiliar (hardly probable) event;
- often, status is more important than the actual ratio of profit and loss;
- overestimation of their own intellectual abilities and capabilities;
- formation of incorrect conclusions for various subjective reasons;
- belief in the ability to control random processes;
- the belief that a certain mechanism of behavior will lead to an accurately predictable result;
- exposure to the influence of the group.

These and other features were identified as a result of research in the framework of behavioral economics and behavioral finance, which made it possible to understand the past behavior of financial market subjects and make predictions of their future behavior. The practical significance of these theories as a modern approach lies in the fact that their application makes it possible not only to evaluate, but also to predict the investment preferences of investors (traders), it allows you to control the budget and form the optimal structure of the organization's capital and determine promising directions for the development of the public economy. This approach explains many events in the market, predicts the behavior of participants in various situations, and helps to develop effective strategies. Thus, the departure from rational behavior and the acceptance of the irrationality of investors (traders) makes it possible to form effective strategies in the market and improve the efficiency of the public economy management system.

References

[1] ALLAIS, M. (1953). Le comportement de l'homme rationnel devant le risque: Critique des postulats et axiomes de l'ecole Americaine [Rational man's behavior in the presence of risk: critique of the postulates and axioms of the American school]. Econometrica, 21. pp. 503–546.

[2] BECKER, G. S., MURPHY, K. M. (2009). *Social economics: Market behavior in a social environment.* Harvard University Press. 2009. 190 P.

[3] CHETWYND, T. *Dictionary for dreamers*. London: Aquarian Press, 1993. 208 p.

[4] ELLSBERG, D. (1961). *Risk, Ambiguity, and the Savage Axioms.* Quarterly Journal of Economics. 75 (4). pp. 643–669.

[5] FISHER, I. (1930). *The Theory of Interest, as determined by Impatience to Spend Income and Opportunity to Invest it* (New York: Macmillan, 1930). [online]. [cit.2021-07-04]. Available: https://oll.libertyfund.org/title/fisher-the-theory-of-interest#Fisher_0219_1837

[6] GEANAKOPLOS, J., PEARCE, D., STACCHETTI, E. (1989). *Psychological games and sequential rationality.* Games and Economic Behavior. 1989. Vol. 1. № 1. pp. 60–79.

[7] GUL, F., PESENDORFER, W. (2004). *Self-Control and the Theory of Consumption*. Econometrica. Vol. 72. Issue 1. pp. 119–158.

[8] HERBERT, A. (1978). *Rationality as Process and as Product of Thought*. American Economic Review. May. Vol. 68. № 2. pp. 1–16.

[9] HEUKELOM, F. (2012). A Sense of Mission: The Alfred P. Sloan and Russell Sage Foundations' Behavioral Economics Program, 1984–1992. Science in Context. № 2 (25). pp. 263–286.

[10] KAHNEMAN, D., TVERSKY, A. (1992). *Advances in Prospect Theory : Cumulative Representation of Uncertainty.* Journal of Risk and Uncertainty. Vol. 5. pp. 297–323.

[11] KAHNEMAN, D., TVERSKY, A. (1979). *Prospect Theory : An Analysis of Decision under Risk.* Econometrica. Vol. XVLII. pp. 263–291.

[12] KEYNES, J. (1936). The general theory of interest, employment and money. London: Macmillian. 394 P.

[13] LE BON, G. *The Crowd: A study of the Popular Mind*. (London: T. Fisher Unwin, 1920). [online]. [cit.2021-07-12]. Available: https://iiif.wellcomecollection.org/pdf/b29815642

[14] MACKAY, C. (1995). *Extraordinary Popular Delusions & the Madness of Crowds*. New York: Broadway Books; Reprint edition. 768 p.

[15] RABIN, M. (1998). *Psychology and Economics*. Journal of Economic Literature. 1998. Vol. 36, № 3. P. 11–46.

[16] SAMUELSON, P. A. (1937). *Note on Measurement of Utility*. Review of Economics Studies. 1937. № 4. pp. 155–161.

[17] SHEFRIN, H., STATMAN, M. (2000). *Behavioral portfolio theory.* The Journal of Financial and Quantitative Analysis. 35(2). 127–151.

[18] SHEFRIN, H., STATMAN, M. (1985). The disposition to sell winners too early and ride losers too long: Theory and evidence. The Journal of Finance. 40(3). pp. 777–790.

[19] SHLEIFER, A. (2000). *Inefficient markets: An introduction to behavioral finance*. UK: Oxford University Press. 224 P.

[20] SHILLER, R. J. (2006). *Irrational Exuberance.* New York: Crown Business; 2nd edition. 336 p.

[21] SHILLER, R. J. (2003). *From efficient markets theory to behavioral finance.* The Journal of Economic Perspectives, 17(1). pp. 83–104.

[22] SMITH, A. (2005). The Theory of Moral Sentiments. Edited by Sálvio M. Soares. MetaLibri. [online]. [cit.2021-07-04]. Available: https://www.ibiblio.org/ml/libri/s/SmithA_MoralSentiments_p.pdf

[23] STATMAN, M. (2018). *Behavioral finance moves into its second generation*. Journal of Financial Planning. May 2018. pp. 30–32.

[24] THALER, R.H., SUNSTEIN, C.R. (2008). *Improving Decisions About Health, Wealth and Happiness.* New Haven: Yale University Press. 293 P.

[25] THALER, R. (1980). *Toward a positive theory of consumer choice.* Journal of Economic Behavior and Organization. 1980. № 1. pp. 39–60.

[26] TVEDE, L. (2002). The Psychology of Finance: Understanding the Behavioral Dynamics of Markets, Revised Edition. New York: John Wiley and Sons. 332 p.

Contact information

Hanna Bazetska
O. M. Beketov National University of Urban Economy, Faculty of Economics and Management, Department of Economics
Marshal Bazhanov Str. 17, 61002, Kharkiv, Ukraine
E-mail: bazana1721@gmail.com

Daria Serogina
O. M. Beketov National University of Urban Economy, Faculty of Economics and Management, Department of Economics
Marshal Bazhanov Str. 17, 61002, Kharkiv, Ukraine
E-mail: seroginado@gmail.com

Nataliia Obukhova
O. M. Beketov National University of Urban Economy, Faculty of Economics and Management, Department of Economics
Marshal Bazhanov Str. 17, 61002, Kharkiv, Ukraine
E-mail: onvnatalija@gmail.com

The innovative tools to support the employment of people with mental illness in the context of psychiatric care reform in the Czech Republic

Vojtěch Beck, Ivo Škrabal

Abstract: The aim of the paper is to draw attention to the problem of employing people with mental illness, when there is still no systemic tool in the Czech Republic to register this group and provide targeted support for their employment. The paper highlights the vulnerability of persons with disabilities in the context of unequal access to employment in the EU. The Czech Republic is currently undergoing a reform of psychiatric care, which addresses not only changes in the medical part of services, but also in the field of social services, education and employment. The aim of these changes is to enable people with mental illness to function in mainstream society as much as possible. The main prerequisite is to get a suitable job. Existing tools to support the employment of people with mental illness are not sufficient and it is therefore desirable to support the development of innovative tools that suitably complement the current tools of state employment policy. The paper presents a proven innovative tool to support employment in the form of the BEC model, which is based on the principle of supporting the employment of people in cooperatives that employ paid entrepreneurs.

Keywords: BEC model, employment, mental illness, psychiatric care, Social Impact Voucher

JEL Classification: H59, I19, J14, O35

1 Introduction

The issue of employing people with mental illness is a very broad and urgent topic, which is currently gaining in importance. The topicality of the topic results from the defined priorities of strategic and development documents at the national level - National Action Plan for Mental Health 2020 - 2030, National Strategy for Health Protection and Promotion and Disease Prevention - Health 2020. The main goal is to draw attention to emphasis on the group of people with mental illness, on existing barriers to employment in the European context, on emphasizing new approaches in the context of psychiatric care reform and on the need to find new tools to support employment. A partial goal is to present the BEC cooperative model as an innovative tool for supporting employment in modern labour market conditions in the Czech Republic. To achieve the goal, the method of descriptive analysis, deductive method and synthesis method are used.

In the period after the COVID-19 pandemic, or in the meantime of individual waves of the disease, many people are facing a difficult situation of losing their jobs. Unfortunately, this situation is not avoided even by people with disabilities, who perceive the loss of employment even worse. This situation has a very negative impact on people with mental illness, who generally find it very difficult to get any job on the labour market, and the loss of a job often has strong negative consequences for them, with an impact on their worsening illness and poor mental condition. These people are at risk of falling, both health and social, as a result of losing their jobs or long-term or repeated unemployment. In 2018, a total of 1,152 thousand were registered in the Czech Republic. persons with disabilities, of which 172 thousand (15%) were persons with mental illness or behaviour disorders. Most of these people end up at the labour office, where there is no special register of people with mental illness, the labour office does not monitor these characteristics and even the existing instruments of active employment policy are not so purposefully and effectively used to support these people.

2 The psychiatric care in the Czech Republic

In 2019, more than 637 thousand patients were registered with outpatient psychiatric service providers. Compared to 2018, there was an increase of 13,636 patients (around 2%). Most patients were aged 40-49 and 50-59, with 61% of women. In the Czech Republic, there are 100 thousand population of 5,962 patients treated in psychiatric outpatient clinics, with the highest number of patients registered in Prague and the Olomouc Region. On the contrary, the fewest patients were registered in the Central Bohemian Region. Most providers of outpatient psychiatric services occur in the Capital City of Prague and the South Moravian Region. The highest number of providers, per 100 thousand citizens, is in the Capital City of Prague and the Olomouc Region.

Inpatient psychiatric care is provided in psychiatric hospitals and medical centers, of which there are 22 in the Czech Republic. Of these, 12 hospitals are for adult patients, 3 hospitals for pediatric patients, 3 addiction hospitals and 4 other psychiatric facilities. A total of 8,618 beds were registered in these facilities. The number of beds in psychiatric facilities has been declining every year since 2010, by about 1% a year. The highest number of beds is registered in the Vysočina Region (1,303 beds), Prague (1,275 beds) and the Pilsen Region (1,210 beds). The least beds are reported by the Pardubický (36 beds) and Královéhradecký (56 beds) regions, no beds were registered in the Liberec and Karlovy Vary regions.

In 2019, inpatient psychiatric care was provided in the psychiatric wards of 28 facilities. Most beds are registered in Prague (320 beds), the South Moravian Region (174 beds) and the Hradec Králové Region (167 beds). The number of beds in psychiatric wards makes up about 5% of the total number of beds. In the years 2010 - 2013 there was a slight decrease in the number of beds, since 2014 the number of beds has fluctuated. The average length of hospitalization in psychiatric wards in 2019 was 17 days, of which 15.7 days for men and 18.3 days for women. Disability pensions paid in 2019 for psychiatric diagnoses were registered in the 1st degree 26,434, in the 2nd degree 13,610, in the 3rd degree 63,439. [8,9]

2.1 The reform of psychiatric care in the Czech Republic

The strategy of psychiatric care reform was approved by the Ministry of Health in October 2013. Real implementation began in 2017 with support for the implementation of projects financed from the European Investment and Structural Funds. The reform of psychiatric care is a systemic change in the provision of psychiatric care, where the main goal is to increase its quality and effectiveness and especially to increase the quality of life and reduce the stigma of people with mental illness. Reform of psychiatric care is a complex and long-term process that includes not only changes in the medical field of psychiatry or in the field of health care, but its successful implementation also requires significant changes in other areas, such as social systems, education, employment or legal the status of people with mental illness. The aim is to ensure a sufficient offer of quality community social and other related services. The aim is to build and develop mental health centers that reinforce the principle of a multidisciplinary approach. [5]

The National Action Plan for Mental Health 2020 - 2030 declares that mental health is a state that enables people to live meaningful lives, happiness and fulfilling relationships, realize and realize their own potential, work productively and contribute to the well-being of society. Mental health care includes not only health services and social rehabilitation, but also stress and psychosocial stress prevention, education and other key areas for people's lives, such as housing and employment.

The purpose of the reform is to enable people with mental illness to live a free and full life. Achieving this goal is not possible without profound structural changes in the care system, without effective efforts to reduce stigma and discrimination against people with mental illness,

and without the active involvement of people with mental illness in decision-making at all levels. The global goal of the reform strategy is to improve the quality of life of people with mental illness. The global goal is developed into seven strategic goals [6]:

- To increase the quality of psychiatric care by a systemic change in the organization of its provision
- To reduce the stigma of the mentally ill and the field of psychiatry in general
- To increase user satisfaction with the psychiatric care provided
- To increase the effectiveness of psychiatric care by early diagnosis and identification of hidden psychiatric illness
- To increase the success of the full integration of the mentally ill into society (employment, housing, education, etc.)
- To improve the coherence of health, social and other related services
- To humanize psychiatric care

The main volume of care for the mentally ill takes place in institutions. People with severe mental disorders use the largest number of hospitalization days. There are practically no capacities (services, experts, competencies) to take care of the mentally ill effectively in a normal community environment. In the more economically developed EU countries, a wide range of multidisciplinary community care services are available to people with mental illness, with most people being treated outside of psychiatric hospitals. Psychiatric hospitals in these countries are relatively small and close to communities, psychiatric beds are usually located in acute wards of general hospitals and the length of hospitalization is as short as possible. The system of psychiatric care in the Czech Republic is most similar to the countries of the former Soviet Union and the Balkans. The system is characterized by a low share of psychiatry in total health expenditures and concentrations of care in psychiatric hospitals. [7]

3 The employment of people with disabilities in the EU

The European Disability Forum points out that being a person with a disability continues to be synonymous with an increased risk of poverty, unemployment and social exclusion. In April 2020, the European Disability Forum issued the Poverty and Social Exclusion of Persons with Disabilities report, European Human Rights Report Issue 4-2020, which examines the living standards of people with disabilities from EU countries, in particular experiences of poverty and inclusion into society. The report focuses on the living standards of people with disabilities from various social groups, and addresses the issue of unemployment for people with disabilities.

The report points out that 100 million people with disabilities live in EU countries, almost 30% of whom are at risk of poverty. According to EDF, this number is expected to increase due to the effects of the COVID-19 pandemic. All EU countries have adopted the United Nations Convention on the Rights of Persons with Disabilities, in which they have committed themselves to guaranteeing their rights, but not all countries have taken effective action. The report states that people with disabilities still face a number of obstacles that affect their standard of living. These are in particular [11]:

- Unequal access to employment
- Lack of educational opportunities
- Absence of providing a personal assistance service
- Failure to ensure adequate adjustments in the workplace
- Incompatibility of paid employment with the receipt of benefits

However, paid employment does not yet guarantee protection against poverty. People with disabilities have to pay additional costs related to their disability. However, paid employment

may not sufficiently cover these expenses and, in the end, their standard of living may be worse because they have paid employment.

According to the EDF report, the following are most exposed to the risk of poverty:

- Young people with disabilities
- People with disabilities among ethnic minorities
- People with disabilities not born in the EU
- People with disabilities living in small towns and in the countryside
- Women are more at risk of poverty than men

The EDF calls on the EU and Member States' legislators to take the necessary measures and address the situation of people with disabilities effectively. Legislation to protect people with disabilities from discrimination, introduce special employment support programs, minimize additional costs for people with disabilities, invest in adapting structures and services that are commonly available to the majority society. [11]

Across the EU, persons with disabilities are far less likely to be employed than persons without disabilities. On average, only 50,8 % of persons with disabilities are in employment, compared to 74,8 % for persons without disabilities. Unemployment is of course only one of several factors affecting the risk of poverty and social exclusion, and having a job is by no means a guarantee of avoiding poverty. Nevertheless, inclusion in the labour market undoubtedly still has a significant role to play in improving outcomes regarding poverty and social exclusion.

While the average EU employment rate for persons with disabilities is already low, in certain EU Member States the situation appears worse than in others. EU figures show Ireland to be the country with the lowest employment rate of persons with disabilities, at 32,3 %. By contrast Estonia (62,15 %), Latvia (61,75 %) and Denmark (58,1 %) are among the countries with the highest employment rate of persons with disabilities. The Czech Republic achieves at 50,2 %. [3]

The interesting point of view is to compare member states of the EU with the biggest gaps between persons with disabilities and the general population. The country with the largest difference in percentage points is Ireland, where persons with disabilities are a staggering 42,1 pp less likely to be employed than persons without disabilities. The following countries are Malta (36 pp), Bulgaria (34,2 pp) and Croatia (32,1 pp). By contrast Italy (13 pp), Luxembourg (15,3 pp) and Latvia (17,3 pp) are among the countries with the smallest difference in percentage points. The Czech Republic achieves 30,4 pp.

On average only 48,3 % of women with disabilities are in employment in the EU, compared with 53,3 % of men. In Malta, 2017 EU figures show that women with disabilities were 20,5 percentage points less likely to be employed than men with disabilities. Other countries where women with disabilities are far less likely than men to have jobs are Italy (17,1 pp), Luxembourg (15 pp), Romania (14,6 pp), Denmark (12,4 pp). In only four countries are women with disabilities more likely to be employed than men with disabilities. [3]

Significant is the impact of type of disability on employment rates. Statistics collected in Spain suggest that the type of disability has a significant impact on employment levels. People with psychosocial disabilities were shown to be the most affected by unemployment, with an estimated employment rate of only 18 % in Spain.

There are a huge number of barriers to employment and here are some of the most frequent issues persons with disabilities face:

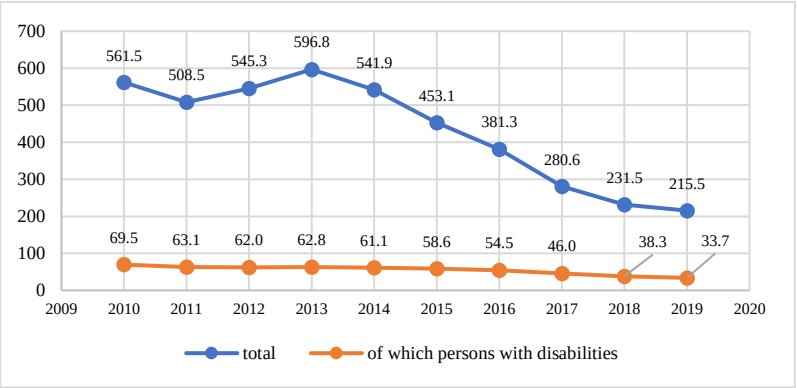
- Incompatible benefits – the lack of flexibility in disability benefit entitlement affects employment. Taking up paid work often results in the irreversible loss of benefits, and thus the loss of a person´s safety net. Persons with disabilities are particularly prone to in-work poverty. In fact, figures from 2018 show that 11 % nof working persons with disabilities in the EU were at risk of in-work poverty, compared to 9,1 % for those without disabilities.
- Lack of assistance and/or support – a significant barrier is the provision of personal assistance. In countries, even if personal assistance can sometimes be provided, there are restrictive rules on how much time they can dedicate to assistance in the workplace.
- Lack of sign language interpretation
- Absence of reasonable accommodation
- Lack of opportunities in education – persons with disabilities in the EU are shown to be on average 10,1 pp more likely to be early school leavers than the general population, and 10,5 pp less likely to complete tertiary education. There is lack of support for students with disabilities in most mainstream educational setings. Quality education is naturally a prerequisite for entering most labour market sectors, meaning exclusion from mainstream education puts persons with disabilities at a huge disadvantage. [3]

4 The employment of people with mental illness

As mentioned above, one of the strategic goals of the psychiatric care reform is also to strive for the integration of people with mental illness into society and to create conditions for their meaningful lives. For this to really happen, it is necessary to support the area of employment of these people, who are stigmatized and neglected in the labour market for a long time as a result of their illness.

The following graph provides an overview of the development of the structure of job seekers in the records of the labour office, where it compares the total numbers of unemployed in individual years with the numbers of unemployed people with disabilities. Unfortunately, the Labour Office does not record statistics that would record the number of unemployed according to individual types of disability.

Figure 1 – The structure of job seekers in the records of the labour office in the years 2010 – 2019 (in thousands)
Source: Statistická ročenka České republiky 2020, ČSÚ (2021)

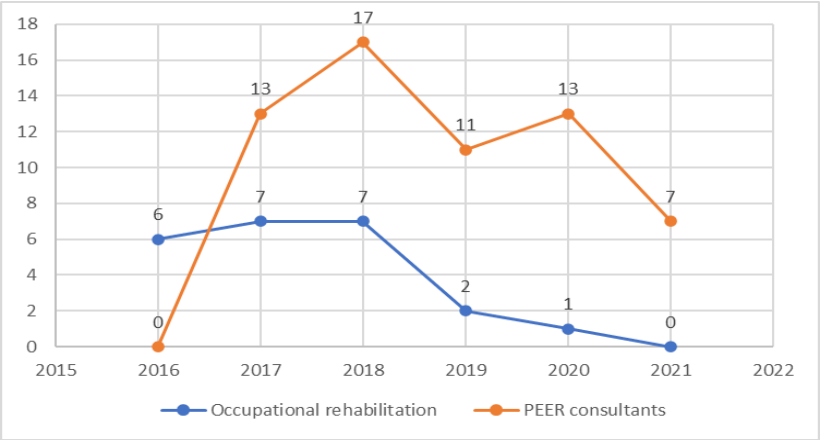


Work is an important factor in mental health and a socially integrating force. When people are excluded from the labour market, they suffer from material deprivation, self-confidence, feelings of isolation and marginalization, and these are key risk factors for people with mental illness. Mental illness is difficult for the majority society to understand. It manifests itself differently than physical disability. Stigmatization, which is significantly associated with mental illness, is one of the reasons for the low success of people with mental health problems in the regular labour market. People with mental illness are sometimes referred to as "problem workers" because they temporarily or permanently demonstrate certain personality traits, unusualness, or atypicalities in their behavior and actions.

Statistical data show that among the population of the Czech Republic, about 13% are people with disabilities. These people are more likely to receive lower education. Two thirds of them do not have a high school diploma. 19% of people with disabilities work. The majority (59%) of people with disabilities receive a retirement pension and do not work. Almost a third of people with disabilities are recipients of a disability pension, one in three of whom works. Most importantly, people with disabilities are limited in their ability to pursue their hobbies and hobbies and find and keep a job, which is increasingly troubling younger people in particular. [2]

One of the organizations that help people with mental illness and creates an adequate job for them is the non-profit organization MENS SANA based in Ostrava. It has been providing professional services to people with mental illness for 25 years and to people with traumatic brain damage for 10 years. The main field of activity of the organization is the provision of registered social services - social rehabilitation and support of independent living in accordance with the Act on Social Services. It also offers people with disabilities cognitive rehabilitation in the Memory Training Center, sociotherapeutic and educational programs, leisure activities and occupational rehabilitation. It deals with the prevention of negative phenomena in society and public education in the field of mental health. The company is a responsible employer that employs people with disabilities and disadvantages, especially people with mental illness. In 2017, MENS SANA founded the social enterprise BOTUMY.

Figure 2 – The number of employees in occupational rehabilitation and PEER consultants of the company MENS SANA in the years 2016 – 2021
Source: Internal statistical data of the MENS SANA



To employ this target group, the organization seeks to secure funding from a variety of sources and grant titles. Thanks to participation in the implementation of EU projects, it was possible to employ people with mental illness in 2018-2020, who were helped by the project called "Breaking down Barriers" to return to work after a long time. Thanks to the project, it was possible to employ people with mental illness as peer consultants, which are people who have experienced with mental illness themselves, their health is compensated and can thus help other people with mental illness. As Figure 2 illustrates, most people in the position of PEER consultants were employed by the organization in 2018.

To support the employment of people with mental illness, MENS SANA also tries to use the tools of active employment policy through the employment office. Unfortunately, objectively, the volume of funds allocated to active employment policy instruments decreases over the years, which directly affects the declining trend in the number of people that the organization can afford to employ. While in 2017 it still employed 13 people with mental illness for community service, in 2020 it was only one person. The same is true of another tool in the form of occupational rehabilitation, where the number of jobs is constantly declining every year due to declining financial support from the employment office.

Supporting the employment of people with mental illness is also a very strong element by which MENS SANA has long contributed to social responsibility. All financial support that can be obtained is limited in time, usually for one year and carries with it the risk that if it fails to obtain financial support in the following year, then unfortunately the organization is forced to release people with mental illness with all consequences.

Due to the complete inflexibility and rigidity of state administration and territorial self-government, the non-profit organization try to look for other alternative tools to support employment and establish cooperation with innovative organizations and companies.

5 The innovative models of the employment of people with disabilities

BEC Družstvo is a Business and Employment Co-operative (BEC) that operates in the Olomouc and Moravian-Silesian Region, which are the regions with one of the highest unemployment rate in the Czech Republic. BEC Družstvo was formally established in January 2012 by three founding members, even if the idea of founding a BEC dates back to 2004, thanks to the meeting with similar cooperatives in France, Spain, and Sweden. Until 2012, the BEC operates as an social business oriented entity because it took several years to clarify the procedure to establish a cooperative in the Czech legislation because there was no specific legislation about social enterpreneurship in the country (the legal act was still not announced).

The first BEC was created in Lyon, France, in 1994 (where it is called: Coopérative d'Activités et d'Emploi, CAE), to answer the social need of isolated self-entrepreneurs and offer them a valid alternative to the individual creation of an enterprise allowing testing a project within the framework of a shared company, the cooperative. In France, at an operating level, the new entrepreneur who enters a BEC benefits from a legal framework and social protection through the acquisition of the status of "employee entrepreneur" (LOI n° 2014-856 du 31 juillet 2014 relative à l'économie sociale et solidaire or Loi Hamon) signing a CESA (Contrat d'entrepreneur salarié associé, Contract of employee entrepreneur member), a contract with essentially the same characteristics as a permanent contract.[4]

Figure 3 - The model CAE
Source: Own processing

A BEC is then an entrepreneurial platform supporting entrepreneurs in many ways: legal, administrative, and accounting management, entrepreneurial education (e.g. in communication, marketing, sales, etc.), experiences sharing with other entrepreneurs, and participation in the governance. The entrepreneur keeps his autonomy in the management of his business (brand name, customer management, fare's definition, etc.), but at the same time becomes an employee of the cooperative, where he can even practice "multi-activity", which means that he can put in place different and various economic activities.

The main objective of BEC Družstvo is to support employment through the implementation of the BEC methodology. It focuses on supporting the development of micro-businesses of disadvantaged people, especially the unemployed people, with the disabilities but also people without stable work and people that desire to legalize their activities coming out from undeclared work.

People that are disadvantaged or has a disabilities usually face discouraging conditions to enter in the labour market, which are isolation, lack of ambition, knowledge, and confidence needed to develop a business career. In this context, BEC Družstvo has the purpose to set up a sustainable model to support disadvantaged people in the transition from inactivity to employment in the frame of a cooperative providing a safe environment to experiment with new business idea. The cooperative acts as a non-traditional business incubator for new entrepreneurs where disadvantaged people have the opportunity to test their business idea with the support of experts and a group of peers who are dealing with similar problems while benefiting from appropriate working conditions and a secure income both provided by the BEC. For this reason, BEC participants are also called "paid entrepreneurs". Their economic model is based on 60-70% of public resources (regional authorities offices, EU Minister of Social Affairs and Employment) and 30-40% of own resources, of which 10-13% from the turnover of workers testing their activity in the cooperative and the remaining is covered by the sale of services and products to consumers. They are searching for new ways to fund them: social funds, establish a foundation to support entrepreneurs' wages, public and private investors. The total net turnover they achieved is about 130k euros. [10]

Following the French pathway, when disadvantaged or unemployed people enter the BEC they have to go through three phases: preparation, testing a business, and independent business activities. During Covid-19, BEC had problems with the incubation of new projects, and 2020 was affected by a decline of 20% of the revenue. In the preparation phase, BEC participants are trained on how to become an entrepreneur via interactive educational programs and training approaches that include business support (law, marketing, sales, identifying clients, …), counselling, exchange and dissemination of examples of good practice, and innovation in social entrepreneurship. In the second phase, they become employees of the cooperative and have from 6 to 12 months salaries so called "paid entrepreneurs" to verify whether their business is competitive in the real market testing their business plan and selling their services or products. During this testing phase, entrepreneurs receive a salary for 6 to 12 months even if their activity is not making profits. In the end of this phase advisers from BEC Družstvo in cooperation with the testing entrepreneurs analyse the results of their activity and if it is sustainable. If the business activity is viable, entrepreneurs have two choices in the third phase of their incubation: become self-employed and enter independently in the labour market to develop it; if they have produced profit during the testing phase, they can choose to use this profit to prologue their permanence in the cooperative, and develop their business activity within the cooperative as employees and in meantime become full member participating in the cooperative development. Since the beginning of their activity, BEC has employed 5-10 entrepreneurs each year. Most of their participants come from one of the 14 Labour Office presented in each Czechia region.

Thanks to this structure, the cooperative is the combination of micro-enterprises that together form one multi-activity enterprise whose members provide a mutually supportive environment for each other. The primary BEC goal to support business activities in rural areas, regardless of their legal form, and ensure the long-term sustainability of created jobs, developing and expanding business skills, implies that BEC has to offer to the external national market a wide range of business activities in many fields (accounting, manicure, massage, education, crafts, …).

In Czech society, the BEC represents an innovative incubator for entrepreneurs. The BEC method is a commonly and participatory approach where groups of entrepreneurs are trained together in gaining entrepreneurial skills through training, coaching, and mentoring, supporting a valuable knowledge transfer. Then, BEC enables entrepreneurs to experiment with their business idea while benefiting from a secure income, unlike already existing business support instruments that do not focus on stabilizing the incomes for start-up entrepreneurs in their early days. And once the business is established the entrepreneur is not forced to leave and set up independently but can stay and become a full member of the co-operative. [10]

This approach leads to long-term stabilization and development of entrepreneurial activities and self-employment with a success rate of new business created around 40% (against the 16% of unemployed people supported by Active employment policy implemented by government-based Labour offices in the Czech Republic) based on a turnover of 5-10 entrepreneurs incubated each year (for a total of 65 "paid entrepreneurs" in total till the end of 2020). In this way, the BEC support system is an example of an active policy for disadvantaged workers because it reduces the amount of undeclared work and helps people to stop being dependent on minimum social benefits, with an actual save of money for the Government (saving more than 60% of expenditures). Moreover, the choice to improve the business performance of disadvantaged people especially in rural areas, where most of the people are unemployed, provides an increase in economic activity and helps maintain a social life in rural areas.

In the present time is supporting this BEC model by implementing the Social Impact Vouchers (SIV) programme in the Czech Republic which are set up as the employment vouchers that have a social impact on the labour market. In the current time is the system of the Social impact vouchers presenting and implementing on the website (https://pracuj-podnikej.cz). The innovative voucher system brings together employee seeking companies as well BEC cooperative providers and job seeking disadvantaged people in a very simple way. The free and uncomplicated employment vouchers enable companies and applicants to get to know each other and test each other with the aim of creation of the permanent employment. [10]

SIV is a new additional opportunity to test and hire exceptional and motivated employees and self-employees/new entrepreneurs. A specific project related to undeclared work is SIV (SOCIAL IMPACT VOUCHERS) financed by Interreg Central Europe programme, eight countries in Central Europe are testing the innovative project simultaneously and jointly. In their cooperation, they benefit from each other's country-specific innovations and special features. The project aims to develop their entrepreneurship in Czech-Republic supporting their transition from informal workers to formal workers. See more (https://www.interreg-central.eu/Content.Node/SIV-.html).

For applicants with limitations (disadvantaged usually on the labour market), SIV offers an authentic platform to introduce themselves to companies with their strengths and weaknesses and to prove themselves in a test phase.

The innovative vouchers will be financed by a INNOFUND endowment fund which is set up as a social impact fund, which is funded by private entities, crowdfunding and donations.

All applicants will be coached, prepare for integration on the labour market without the pressure of state job brokers or job agencies. Based on free of charge support in a testing phase with the help of a voucher. During this period, applicants will receive payment on a wage basis.

6 Conclusion

The position of people with disabilities, and especially people with mental illness, is unequal in society. These people face considerable stigma due to their health restrictions and this has direct consequences for their quality of life, difficult access to education, employment, etc. In terms of the representation of these people in the majority society, it is a marginalized social group, there are no specific tools to support them in the labour market, which would reflect their specific personal needs and thus enable the systematic employment of these people with the necessary sustainability. Fortunately, there are employers - organizations, companies that create job opportunities for people with mental illness, despite the great annual uncertainty in terms of supporting their activities from the usual instruments, which are financed from public budgets. In the Czech Republic, there are people and non-profit organizations that are trying to come up with new innovative methods and approaches to help support the employment of people and groups that are on the margins of interest. One of the innovative tools, which draws on experience from abroad, is the BEC model of the cooperative, which was pilot-tested on specific examples of clients. So far, however, this tool is struggling for its recognition in the Czech Republic at the level of state administration and self-government in order to become a full-fledged support tool, complementary to existing resources.

The article shows a year-on-year increase in the number of people who are experiencing manifestations of a mental illness and require the visit of an outpatient specialist in psychiatry. Conclusions at European level also point to the urgency of tackling the problem of stigmatization and social exclusion of people with disabilities, with an emphasis on unequal access to employment. One of the strategic goals of the ongoing reform of psychiatric care in the Czech Republic is to increase the success of the full integration of the mentally ill into society, including support for the employment of these people. The BEC model of cooperatives was introduced as a non-traditional business incubator, which offers a completely different and innovative approach to employing people with disabilities. Because the philosophy of this new approach is shared in the Czech Republic "only" by a relatively small team of people, organizations and companies, it is a general effort to spread this concept across companies and seek systemic support from the public and business sector, which is a way to effectively, socially and economically support this project for the benefit of affected groups and society as a whole.

References

[1] ČSÚ (2021). *Statistická ročenka České republiky 2020*. [online]. [cit.2021-07-22]. Available from https://www.czso.cz/documents/10180/123503153/32019820.pdf

[2] ČSÚ (2019). *Výběrové šetření osob se zdravotním postižením 2018*. [online]. [cit.2021-08-06]. Available from: https://www.czso.cz/documents/10180/90600407/26000619.pdf

[3] European Disability Forum (2020). *Poverty and Social Exclusion of Persons with Disabilities, European Human Rights Report Issue 4 – 2020*. [online]. [cit.2021-07-20]. Available from https://www.edf-feph.org/publications/european-human-rights-report/

[4] Martinelli and Bozzoni et al. (2019) Platform Cooperativism in Italy and in Europe Platform Cooperativism in Italy and in Europe, in «Working Paper CIRIEC» [online]. [cit.2021-08-10]. Available from https://www.ciriec.uliege.be/repec/WP19-27.pdf

[5] MZČR (2019). *Průvodce reformou psychiatrické péče*. [online]. [cit.2021-07-28]. Available from https://www.mzcr.cz/wp-content/uploads/wepub/18149/39439/PruvodceReformou_komplet.pdf

[6] PDZ (2019). *Reforma psychiatrické péče v České republice*. [online]. [cit.2021-07-22]. Available from https://www.pdz.cz/uploaded/data/files/Dokumenty/Reforma.pdf

[7] Psychiatrické centrum Praha (2013). *Reforma systému psychiatrické péče: mezinárodní politika, zkušenost a doporučení* [online]. [cit.2021-07-15]. ISBN 978-80-87142-21-9. Available from https://www.nudz.cz/files/common/reforma_systemu_psychiat_pece.pdf

[8] ÚZIS ČR (2019). *Psychiatrická péče 2018*. [online]. [cit.2021-07-15]. Available from https://www.uzis.cz/res/f/008308/psych2018.pdf ISBN 978-80-7472-183-0

[9] ÚZIS ČR (2020). *Psychiatrická péče 2019*. [online]. [cit.2021-07-20]. Available from https://www.uzis.cz/res/f/008348/psych2019.pdf ISBN 978-80-7472-188-5

[10] Centrum pro komunitní práci (2021). [online]. [cit.2021-08-15]. Available from https://www.cpkp.cz

[11] Veřejný ochránce práv (2020). *Nová zpráva zkoumá zkušenosti s chudobou a sociálním vyloučením u lidí s postižením v EU* [online]. [cit.2021-07-08]. Available from https://test.ochrance.cz/diskriminace/aktuality-z-diskriminace/aktuality-z-diskriminace-2020/

Contact information

Ing. Vojtěch Beck
MENS SANA, z.ú.
Ukrajinská 1533/13, 708 00 Ostrava - Poruba, Czech Republic
E-mail: v.beck@menssana.cz

Mgr. Ivo Škrabal
Centrum pro komunitní práci Severní Morava
V Zátiší 810/1, 709 00 Ostrava - Mariánské Hory, Czech Republic
E-mail: ivo.skrabal@cpkp.cz

Real estate tax in the budgets of Czech municipalities

Jiří Bečica, Marcela Vašatová

Abstract: The Czech Republic is characterized by a very fragmented settlement structure, characterized by many small municipalities (up to a thousand inhabitants). One of the few ways to increase the amount of funds in the municipal budget is the introduction of a local coefficient according to § 12, Act No. 338/1992 Coll. on real estate tax. The paper evaluates the role of real estate tax in 2013-2020 from three perspectives: 1) according to the role of real estate tax (DzNV) in the budgets of municipalities in the Czech Republic; 2) according to the number of established local coefficients according to the size structure of municipalities; 3) according to the number of established local coefficients in municipalities within the territorial jurisdiction of the region of the Czech Republic in which the municipality is located. The analysis show that the share of the tax decreases in the observed period, although the collection of real estate tax itself increases over time. The number of introduced local coefficients in municipalities in the monitored period increased by 2.2% and the highest average growth rate in introduction was found in municipalities with less than 1,000 inhabitants. The regional comparison showed that the most frequently used local coefficient has the value "2", but the share of municipalities with the established local coefficient is not comparable in the regions. The municipalities within the Central Bohemian Region most often introduce a higher local coefficient, while the smallest share is observed in municipalities in the Pardubice Region.

Keywords: Czech Republic, municipality, public budget, real estate tax, region,

JEL Classification: H71, J18, M48, D72

1 Introduction

Territorial self-government and its role have undergone several changes in the territory of today's Czech Republic in the last hundred years. We can talk both about extremely centralizing tendencies, which led to the reduction of self-government status and autonomy of individual units (after 1948 and then in the 70s and 80s of the 20th century) to the opposite, strongly decentralizing tendencies, which are characterized by significant autonomy (in the period the so-called First Republic or since the 1990s). The growing role of decentralization in many Western countries is supported by the development of the theory of fiscal federalism, which first appeared in literature shortly after World War II (Musgrave, 1994) and gradually developed throughout the second half of the 20th century. Most authors understand the theory of fiscal federalism as a system of redistribution of public funds, the purpose of which is to allow different groups living in different areas (states, regions, municipalities) to express their preferences regarding the demand for public goods. In practice, there are geographical differences in the supply of public services, which is closely related to securing their financing. One of the possibilities of financing these services is through additional taxation in a defined area (Radvan, 2012), which is possible in the current Czech Republic, for example, through the introduction of a local coefficient according to § 12, Act No. 338/1992 Coll., On real estate tax (DzNV), where the revenue from this tax is 100% transferred (entrusted) to the budget of self-governing municipalities by the financial administration (Act No. 243/2000 Coll.). Among Czech authors, for example, Peková states that fiscal federalism deals, among other things, with the theoretical justification of the optimal allocation of public revenues and public expenditures to the budgets of individual government levels, including optimizing financial relations between them in practical budget policy to increase allocation efficiency (Peková, 2008 , 390).

Given that the real estate tax and the revenue from this tax is fully allocated to the budget of the municipality in which the taxed real estate is located, the aim of the paper is to assess the role of real estate tax (DzNV): 1) in the context of total tax revenue in the Czech Republic, including the role in municipal budgets in 2013-2019; 2) according to the number of established local coefficients according to the size structure of municipalities; 3) according to the number of established local coefficients in municipalities within the territorial jurisdiction of the region of the Czech Republic in which the municipality is located.

These three views were formulated based on partial outputs of professional articles by various authors within the subject area, which are listed in the literature review below. Within the individual regions of the Czech Republic, a different approach of municipalities to the use of real estate tax is not expected according to the size structure of municipalities and territorial jurisdiction within the Czech regions, as the amount of real estate tax is generally not a fundamental income for municipal budgets. confirm the results of the analysis within the first formulated view. The selection of a longer monitoring period of 2013-2020 should show a different approach of elected municipal bodies in the subject matter and at least partially show different approaches of municipal councils operating in a total of three different election periods (period 2010-2014; 2014-2018; 2018-2022). The municipality may, by its decision (elected municipal council), introduce a coefficient of 2, 3, 4 or 5 by means of a generally binding decree and thus directly partially influence the amount of income from real estate tax. The municipal council will thus secure additional funds for its budget, as they are an interesting opportunity for it. By using this option, the real estate tax can become not only a permanent but also a certain income of the municipal budget, but also a fiscal instrument of municipal policy. Due to the impossibility to influence other tax revenues of the municipal budget, it can be assumed that the use of this legal option for real estate tax will grow in municipalities over time.

The real estate tax is an exclusive tax in the Czech Republic and, like shared taxes and fee income, enters the budgets of municipalities as tax revenues, which represent one of the most important sources of municipal income. The number of individual types of revenues in municipal budgets is shown by Tománek (2017) and evaluates their stability in the size categories of municipalities. Sedmihradská and Bakoš (2016) show the impact of increased tax autonomy in the tax revenues of municipalities. Zdražil and Pernica (2018) look at the real estate tax in the context of quality of life in municipalities. Janoušková and Sobotovičová (2016) view the tax as a tool for fiscal decentralization. Pfeifer et al. (2020), resp. Kukalová et al. (2021) then evaluate the use of coefficients for real estate tax on a sample of selected cities in the Czech Republic. Sobotovičová and Janoušková (2017, 2020) also reflect on the specifics and regional differences of municipalities in the Czech Republic. Vavrek and Admisin (2018) not only put property taxes in context within municipal budgets in Slovakia. The effectiveness of the use of tax coefficients in Slovakia is then examined by Balazova, Bulla and Papcunová (2017). Vavrek (2018) also works with property taxes in the context of the financial health of municipalities and in the context of the economic potential of regions.

From the list of authors and their focus, it can be seen, that the role of real estate tax in municipal budgets is a grateful topic that can be perceived from different angles. This is due to the construction of the real estate tax, which is the only one for the municipalities to have a way to influence the amount of the tax, and thus the amount of their revenues to the budget, through their own decision. Due to the circumstances regarding the amount of other revenues in the budgets of municipalities, an increasing number of municipalities and cities are considering the possibility of increasing the revenue from real estate tax. This is done through a local coefficient, mostly to cover expenses related to the need to ensure the renewal of infrastructure, to maintain the development of tourism, restoration and reconstruction of facilities, improvement of civic amenities, to cover increased costs of waste management or other reasons.

2 Material and Methods

The introduction of a local coefficient for real estate tax was made possible for the first time by Act No. 261/2007 Coll., On the stabilization of public budgets only from 2009. Until the end of 2020, the municipality could set a local coefficient municipality of 2, 3, 4 or 5, but excluding the taxation of arable land, hop gardens, vineyards, gardens, orchards and permanent grassland. The original Real Estate Tax Act has already undergone 39 amendments since its inception in 1992, the latest amendment being Act No. 609/2020 Coll., Which amends some tax laws and some other acts, and the sixth part of which an amendment to the Real Estate Tax Act is also included. This concerns in particular the local coefficient in § 12, where it is stated that the municipality may, on the basis of its decision and by means of a generally binding decree, set a coefficient of 2, 3, 4, 5 and thus increase the tax by multiples of whole numbers, only in one amount for all real estate in the territory of the municipality, except for arable land, hop gardens, vineyards, gardens, orchards and permanent grassland. From 1 January 2021, the authority of municipalities is extended and the municipality is entitled (not obliged) to set a local coefficient not only for the whole municipality but also for individual parts of the municipality and it is possible to introduce a coefficient not only in whole numbers, but the coefficient can be set at one decimal place, which may not be such a visible change for property owners at first sight, but which will financially affect their overall taxation.

The period 2013-2020 was chosen for the practical part of the paper, due to the availability of data from the General Finance Directorate on all municipalities that used the opportunity to increase the value of real estate tax through a local coefficient in the legal range of 2, 3, 4 and 5. It also works with data from the websites of the Czech Statistical Office (CSO) for the same period, which contain data on the number of inhabitants of municipalities, numerical designation of municipalities, their classification into LAU1 (districts) and NUTS3 (regions). The obtained databases of both institutions were interconnected in the IDEA system according to the key value (unique identifier), which is the numerical designation of municipalities from the Code of Municipalities used by the CZSO. The codes of districts and regions on whose territory the municipalities are located and the number of inhabitants of the municipalities were assigned to individual municipalities that used the possibility to determine the local coefficient. The data were processed so that some of them could be used in the QGIS system, the output of which is a map showing the individual amounts (values) of local coefficients in the municipalities of the Czech Republic. In 2013, the data of the financial administration also included the city districts of Pardubice, Ústí and Labem and Liberec, the data of this year are included in the tables as provided by the financial administration, so it is possible that the total number of municipalities that have a local coefficient in 2013, they may differ from other sources, where these municipalities would be counted only once. If the number of inhabitants in municipalities and regions is stated, it is drawn as of 1 January 2020 from the Czech Statistical Office. When setting hypotheses, a difference of five percent was chosen to determine a possible insignificant deviation. The following three hypotheses are verified in the paper:

Hypothesis H1**:** In individual categories of municipalities according to the size of the population in municipalities, no significant differences can be observed in the percentage of the number of municipalities that have decided to introduce a higher local coefficient. The difference of + - 5% compared to the observed average in the categories of municipalities according to the number of inhabitants that introduced the local coefficient is a fundamental difference.

Hypothesis H2: In individual regions, no significant differences can be observed in the percentage of the number of municipalities that have decided to introduce a higher local coefficient. The difference of + - 5% compared to the observed average for all regions of the Czech Republic is a fundamental difference.

Hypothesis H3: The growth of the role of real estate tax through local coefficients is reflected in the growth of the number of introduced local coefficients within the values of 2, 3, 4 and 5.

For the analysis of changes in the use of the local coefficient by individual municipalities in the Czech Republic, two criteria of classification of municipalities are used, namely classification according to regions in whose administrative district the municipality is located and classification according to population in the municipality, broken down by the Real Estate Tax Act.

3 Results and Discussion

The results are divided into three parts. The first part deals with the role of real estate tax in the context of the collection of all taxes in the Czech Republic and the role of real estate tax in the tax and total revenues in the budgets of municipalities, of which it is the sole revenue. The second part deals with the evaluation of the number of local coefficients according to § 12, the Real Estate Tax Act in the budgets of municipalities according to the size structure of municipalities in the Czech Republic, which is used by the Real Estate Tax Act. The third part shows the results regarding the number of established local real estate tax coefficients in municipalities according to geographical affiliation within individual regions of the Czech Republic.

3.1 The role of real estate tax in the budgets of Czech municipalities

The share of real estate tax collection in the total collection of taxes by tax authorities is shown in Table one, which shows the collection of all taxes, real estate tax collection and the percentage share of real estate tax collection in the total collection of all taxes in the period years 2013 - 2019.

Table 1 - The share of DzNV collection in the total tax collection in 2013 - 2019

In millions of CZK	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
All taxes	610 603	639 007	610 603	732 202	795 573	853 728	906 948
Real estate tax (DzNV)	9 847	9 910	10 313	10 582	10 758	10 829	10 935
Share in % (DzNV)	1,61	1,55	1,69	1,45	1,35	1,27	1,21

Source: Own processing. Reports on the activities of the financial and customs administration

The table shows that the share of real estate tax collection is marginal in relation to the collection of all taxes and ranges from 1.69% to 1.21% in the total collection of taxes. The share has a declining trend outside 2015, although the total revenue from real estate tax is growing over time. However, the total revenue from the collection of real estate tax is slower than the growth of other taxes (especially income tax and general excise duty) and the share of real estate tax in public budgets is thus gradually degrading. This is also confirmed by the values of the shares of real estate tax in the tax and total revenues of municipalities after consolidation in 2013-2019, which is shown in table number two.

Table 2 - The role of real estate tax on tax and total revenues of municipalities in 2013-2019

In millions of CZK	2013	2014	2015	2016	2017	2018	2019
All tax revenues	161 726	170 087	175 394	190 751	206 316	226 220	245 199
Of which Real estate tax (DzNV)	9 736	9 974	10 334	10 586	10 765	10 856	10 909
Total municipal revenues	261 095	277 717	287 692	282 031	297 635	334 633	364 589
Share (DzNV/tax revenues) in %	6,02	5,86	5,89	5,55	5,22	4,80	4,45
Share (DzNV/total revenues) in %	3,73	3,59	3,59	3,75	3,62	3,24	2,99

Source: Own processing

From table number two, it is clear, that the share of real estate tax revenues in tax revenues in the monitored period ranges from 6.02% in 2013 to 4.45% in 2019. The reason for the decrease is the fact that although both revenues are growing (excluding total revenues in 2016), tax revenues are growing more progressively than real estate tax revenues. The continuous growth of tax revenues in the period under review confirms that the economy in the Czech Republic was in the phase of the economic cycle, which is called the boom or expansion. Revenue from real estate tax accounted for only 3.73% of the total revenues of municipalities in the period under review and decreased to 2.99% in 2019. From the individual values, it is clear at first sight that the revenue represented by collection Real estate tax is a rather marginal issue for municipalities in terms of total and tax revenues.

3.2 Evaluation of the number of local coefficients according to the number of inhabitants in municipalities

At the beginning of the observed period, a total of 508 municipalities (city districts) used the possibility to influence the amount of real estate tax by setting different amounts of the local coefficient, which is 8.1% of the total number of municipalities in the Czech Republic.

Table 3 - Number of municipalities with established local coefficient in the Czech Republic according to the size category of municipalities in 2013 - 2020

velikost obcí	2013			2014			2015			2016			2017			2018			2019			2020		
	počet obcí		%	počet obcí		%	počet obcí		%	počet obcí		%	počet obcí		%	počet obcí		%	počet obcí		%	počet obcí		%
	všech	s MK	podíl	všech	s MK	podíl	všech	s MK	podíl	všech	s MK	podíl	všech	MK	podíl	všech	s MK	podíl	všech	s MK	podíl	všech	s MK	podíl
do 1000 obyvatel	4829	242	5,0%	4825	259	5,4%	4819	263	5,5%	4824	282	5,8%	4814	305	6,3%	4803	310	6,5%	4786	313	6,5%	4775	350	7,3%
1001 do 6000 obyvatel	1200	184	15,3%	1204	186	15,4%	1210	186	15,4%	1210	203	16,8%	1219	208	17,1%	1230	212	17,2%	1246	212	17,0%	1257	222	17,7%
6001 do 10000 obyvatel	91	25	27,5%	91	25	27,5%	91	25	27,5%	91	27	29,7%	93	27	29,0%	92	27	29,3%	94	27	28,7%	95	29	30,5%
10001 do 25000 obyvatel	85	28	32,9%	85	29	34,1%	89	29	32,6%	88	29	33,0%	87	29	33,3%	88	28	31,8%	87	28	32,2%	86	30	34,9%
25001 do 50000 obyvatel	18	6	33,3%	18	6	33,3%	14	6	42,9%	15	7	46,7%	15	7	46,7%	15	7	46,7%	14	7	50,0%	14	7	50,0%
nad 50001 obyvatel statutární města, Poděbrady, Františkovy Lázně, Luhačovice,Mariánské Lázně	29	23	79,3%	29	9	31,0%	29	9	31,0%	29	10	34,5%	29	10	34,5%	29	9	31,0%	30	9	30,0%	30	9	30,0%
celkem obcí	6253	508	8,1%	6253	514	8,2%	6253	518	8,3%	6258	558	8,9%	6258	586	9,4%	6258	593	9,5%	6258	596	9,5%	6258	647	10,3%

Source: Own processing

Notes: Velikost obcí – The size of municipalities (inhabitants); počet obcí – number of municipalities; všech – all municipalities; s MK – municipalities with local coefficient; nárůst – increase; podíl – share in %

Although five new municipalities were established in the Czech Republic in 2016, the gradual growth of the total percentage share of municipalities with an established local coefficient in the total number of municipalities is not interrupted. At the beginning of 2020, a total of 647 municipalities used the local coefficient (an increase of 139 municipalities compared to 2013), which represents 10.3 % of the total number of municipalities and is an average percentage increase of 2.2% for the period 2013 to 2020, which is based on the values given in table number four.

Table 4 - Percentage or increase of municipalities with local coefficient in 2013 and 2020

velikost obcí	2013			2020			Nárůst	
	počet obcí		%	počet obcí		%	obcí	%
	všech	s MK	podíl	všech	s MK	podíl	s MK	podíl
do 1000 obyvatel	4 829	242	5,0	4 775	350	7,3	108	2,3
1001 do 6000 obyvatel	1 200	184	15,3	1 257	222	17,7	38	2,3
6001 do 10000 obyvatel	91	25	27,5	95	29	30,5	4	3,1
10001 do 25000 obyvatel	85	28	32,9	86	30	34,9	2	1,9
25001 do 50000 obyvatel	18	6	33,3	14	7	50,0	1	16,7
nad 50001 obyvatel, statutární města, Poděbrady, Františkovy Lázně, Luhačovice,Mariánské Lázně	29	12	41,4	30	9	30,0	- 3	- 11,4

Source: Own processing

Notes: Velikost obcí – The size of municipalities (inhabitants); počet obcí – number of municipalities; všech – all municipalities; s MK – municipalities with local coefficient; nárůst – increase; podíl – share in %

From the values given in table number four for 2013 and 2020, the column "increase" calculates the increase of municipalities with the introduced local coefficient in absolute terms and the increase in percentage, which indicates the "interest" in realistically introducing a local coefficient in individual groups of municipalities in the period. The increase in the introduction of the local coefficient in the monitored period is evident in all size categories of municipalities, except for the last one, ie statutory and statutory spa towns. As the number of established local coefficients in municipalities grows over time, the average, which in 2019 was 27.4%, is also growing. The decrease in the number of municipalities with the established local coefficient in the highest category is caused by the abolition of local coefficients in the city districts of the statutory cities of Pardubice, Liberec and Ústí nad Labem.

Municipalities with less than 1,000 inhabitants and municipalities with 1,001 to 6,000 inhabitants recorded the highest absolute increase in the number of municipalities that introduced a local coefficient in the observed period, because the number of municipalities in these groups is the highest, only 2.3%, in both groups. The highest absolute increase of municipalities with the established local coefficient is for municipalities with less than 1,000 inhabitants, which is 108 municipalities. From table number three both groups recorded the highest increase in the number of municipalities with established local coefficients in 2020, the increase was by 37 and 10 municipalities, respectively. Municipalities with less than 1,000 inhabitants show the highest average growth rate of the number of local coefficients of all size groups, namely 18%. The average annual growth rate in the introduction of local coefficients in municipalities from 1,001 to 6,000 inhabitants is 2.76%.

From table number three and four it is evident that the group of municipalities from 6001 to 10,000 inhabitants did not make too many changes. In 2013, the local coefficient was introduced

by 25 municipalities, and subsequently only in 2016 and 2020, two municipalities were added in each of the years. The average annual growth rate of the number of local coefficients is thus 2.20%. In the group of municipalities with a population of 10,001 to 25,000 inhabitants, a local coefficient of 28 municipalities was introduced in 2013, to which the town of Kralupy nad Vltavou was added in 2014 and another change did not occur until 2018, when the town of Jeseník abolished the local coefficient. The average annual growth rate of the number of local coefficients in this group is 1.04%.

The highest percentage increase in the number of local coefficients was recorded by municipalities with a population of 25,001 to 50,000, but in absolute terms it was an increase in only one municipality for the entire period under review. The decline of municipalities in this size category from the original 18 to 14 municipalities in 2020 also plays a role here. In 2013, they introduced a local coefficient to two and did not change the municipalities of Kolín, Cheb, Znojmo, Tábor, Česká Lípa and Uherské Hradiště until 2020. In 2016, the city of Příbram joined them. The average annual growth rate of the number of local coefficients in this category is 2.38%.

An interesting category consists of municipalities with more than 50,001 inhabitants, which includes all statutory towns and the spa towns Poděbrady, Františkovy Lázně, Luhačovice and Mariánské Lázně, which are listed by law. In this size category, there was a decrease in the number of established local coefficients, when the introduction of the local coefficient was "reconsidered" by the cities of Opava, Liberec, Pardubice and Ústí nad Labem, which have not used this institute at all since 2014. In 2018, the local coefficient was last used by the town of Frýdek Místek. The statutory city of Mladá Boleslav underwent the most changes, where they originally introduced a local coefficient of two, raised it to a local coefficient of 4 for 2016 and 2017 and reduced it to a local coefficient of 3 in 2018. Since 2016, the introduction of the local coefficient has been used by Karviná. According to the law of the mentioned spa towns, only the town of Mariánské Lázně uses the local coefficient.

3.3 Evaluation of the number of local coefficients in municipalities by regions of the Czech Republic

Another criterion according to which changes in local coefficients in individual municipalities can be analyzed is the division of municipalities according to the regions in whose administrative district the municipality is located. The division of the Czech Republic into 14 regions is determined by Constitutional Act No. 347/1997 Coll., On the creation of higher territorial self-governing units.

Table number five shows how much money the real estate tax brought in total to the budgets of municipalities in individual regions in the observed period from 2013 to 2019. Real estate tax revenue is incomparable in individual regions of the Czech Republic over time, just as individual regions are incomparable in the Czech Republic, both in terms of their area, population, or number of municipalities. Outputs regarding the growth of real estate tax revenue values across the observed period 2013-2019 in the individual regions of the Czech Republic as a whole, should serve to raise awareness of the issue in the context of the construction of real estate tax, where the decision to introduce a higher coefficient does not affect all types of land and buildings in individual municipalities, and therefore the tax revenue in the regions does not develop at the same rate over time.

Table 5 - Real estate tax in municipal budgets in aggregate for individual regions (in thousands of CZK)

KRAJ	2013	2014	2015	2016	2017	2018	2019	průměrný % podíl*
PRAHA	751 200	787 458	800 207	827 195	840 382	853 812	859 854	7,8
Jihočeský	675 329	675 636	704 579	714 926	719 376	727 360	710 834	6,7
Jihomoravský	983 916	999 794	1 049 742	1 066 027	1 083 447	1 092 963	1 094 806	10,1
Karlovarský	332 161	342 267	348 918	363 663	356 876	367 014	370 956	3,4
Vysočina	516 409	522 653	541 720	543 595	551 274	557 696	563 475	5,2
Královehoradecký	614 086	618 176	639 323	648 965	662 405	669 604	677 855	6,2
Liberecký	464 072	427 627	451 535	449 627	452 895	464 807	466 397	4,3
Moravskoslezský	964 087	998 991	1 001 170	1 031 321	1 043 835	1 063 105	1 057 909	9,8
Olomoucký	558 480	592 001	608 372	620 089	629 502	628 737	634 932	5,8
Pardubický	523 770	534 520	554 396	564 183	568 756	567 950	574 385	5,3
Plzeňský	533 853	542 301	562 840	574 850	582 541	593 160	598 140	5,4
Středočeský	1 470 564	1 511 712	1 602 685	1 691 757	1 760 325	1 749 290	1 771 853	15,8
Ústecký	915 285	942 287	971 418	987 710	998 615	999 973	1 009 560	9,3
Zlínský	475 571	478 140	496 914	501 747	514 821	520 200	517 810	4,8
CELKEM	**9 778 783**	**9 973 563**	**10 333 819**	**10 585 655**	**10 765 050**	**10 855 671**	**10 908 766**	**100**

Source: Own processing, Monitor

*Notes: Kraj – region; celkem – total; * average percentage of real estate tax in national collection of real estate tax in the Czech republic*

The last column in table number five shows the percentage share of individual regions in the national real estate tax revenue. The average value of the percentage share for the region is 7.14%. The table shows that the smallest tax collection of real estate tax flows into the budget of municipalities in the Karlovy Vary region, in whose district there are also the fewest municipalities and the most in the Central Bohemian Region, which has the largest number of municipalities in the Czech Republic and the third highest percentage. municipalities with an established local coefficient. The agreement of the smallest and largest tax collection of real estate tax with the smallest and largest number of municipalities in the region is accidental, it is not a relationship of dependence. Table number six shows how many in the given year there were municipalities (in 2013 also city districts) in the territory of the given region, which had introduced any multiple of the local coefficient.

Table 6 - Number of local real estate tax coefficients in the regions of the Czech Republic in 2013 – 2020

	2013			2014		2015		2016			2017		2018		2019		2020	
	počet obcí		MK	obce	MK	obce	MK	počet obcí		MK	obce	MK	obce	MK	obce	MK	obce	MK
KRAJ	všech	s MK	v %	s MK	v %	s MK	v %	všech	s MK	v %	s MK	v %	s MK	v %	s MK	v %	s MK	v %
Praha	**1**							**1**										
Jihočeský	**623**	30	4,8	32	5,1	33	5,3	**624**	36	5,8	36	5,8	35	5,6	35	5,6	38	6,1
Jihomoravský	**673**	33	4,9	34	5,1	34	5,1	**673**	40	5,9	40	5,9	40	5,9	40	5,9	48	7,1
Karlovarský	**132**	31	23,5	33	25,0	34	25,8	**134**	36	26,9	35	26,1	35	26,1	35	26,1	38	28,4
Vysočina	**704**	19	2,7	20	2,8	20	2,8	**704**	20	2,8	21	3,0	21	3,0	21	3,0	21	3,0
Královehradecký	**448**	30	6,7	31	6,9	32	7,1	**448**	35	7,8	36	8,0	38	8,5	38	8,5	39	8,7
Liberecký	**215**	30	14,0	29	13,5	30	14,0	**215**	31	14,4	35	16,3	36	16,7	36	16,7	37	17,2
Moravskoslezský	**300**	41	13,7	40	13,3	40	13,3	**300**	42	14,0	44	14,7	44	14,7	45	15,0	45	15,0
Olomoucký	**399**	16	4,0	16	4,0	17	4,3	**402**	18	4,5	18	4,5	17	4,2	17	4,2	19	4,7
Pardubický	**451**	18	4,0	10	2,2	10	2,2	**451**	12	2,7	12	2,7	13	2,9	13	2,9	15	3,3
Plzeňský	**501**	20	4,0	21	4,2	21	4,2	**501**	23	4,6	23	4,6	24	4,8	24	4,8	24	4,8
Středočeský	**1145**	161	14,1	171	14,9	170	14,8	**1144**	179	15,6	194	17,0	195	17,0	198	17,3	221	19,3
Ústecký	**354**	65	18,4	64	18,1	64	18,1	**354**	71	20,1	75	21,2	78	22,0	78	22,0	84	23,7
Zlínský	**307**	14	4,6	13	4,2	13	4,2	**307**	15	4,9	17	5,5	17	5,5	16	5,2	18	5,9
CELKEM	**6253**	**508**	**8,1**	**514**	**8,2**	**518**	**8,3**	**6258**	**558**	**8,9**	**586**	**9,4**	**593**	**9,5**	**596**	**9,5**	**647**	**10,3**

Source: Own processing from data from the Financial Administration of the Czech Republic and the Czech Statistical Office

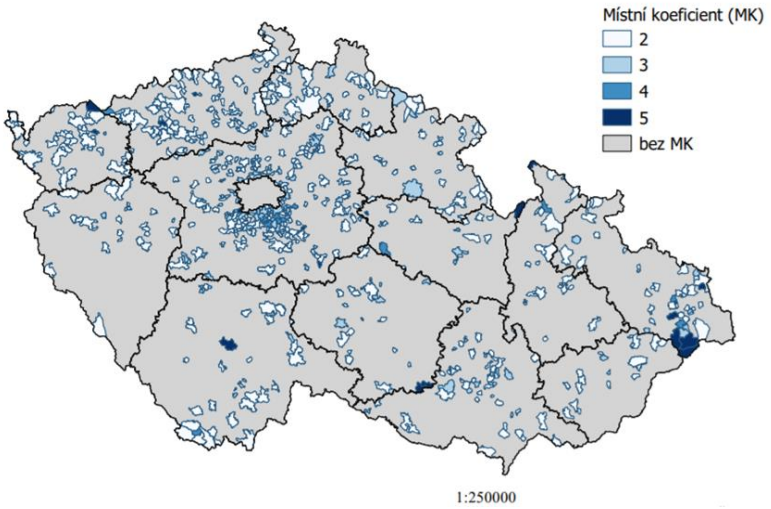
Notes: MK – local coefficient; počet obcí – number of municipalities; všech – all municipalities; s MK – municipalities with local coefficient; kraj – region; celkem - total

From the total percentage captured in Table Six, the use of this economic instrument leading to an increase in income of individual municipalities in the regions is growing. The analysis according to the number of inhabitants in the municipalities showed that the municipalities not only introduce and change, but also abolish the local coefficient. From the analysis by region, this fact can be traced in year-on-year declines within individual regions. This table also reflected the abolition of local coefficients in Pardubice, thanks to which the Pardubice Region is the only one that recorded a decrease in local coefficients in the observed period. It is also clear from the table that the highest number of municipalities with a local coefficient is in municipalities in the Central Bohemian Region and the least in the Pardubice Region. The highest percentage of established local coefficients in the total number of municipalities is in the Karlovy Vary region and the lowest in the Vysočina region.

The map in Figure One shows very interesting results, where the frequency of established local coefficients in individual regions of the Czech Republic in 2020 is graphically transferred. The change in individual amounts of local coefficients in the period from 2013 to 2020 is as follows:

- Local coefficient 2, compared to 2013 (431), in 2020 an increase of 81 municipalities.
- Local coefficient 3, compared to 2013 (53), in 2020 an increase of 40 municipalities.
- Local coefficient 4, compared to 2013 (7) in 2020 an increase of 9 municipalities.
- Local coefficient 5, compared to 2013 (17) in 2020 an increase of 2 municipalities.

Figure 1 - Local real estate tax coefficients in Czech municipalities in 2020
Source: Own processing, QGIS



From the map in figure number one it is evident that the most used by municipalities is the local coefficient in the value "2". In the monitored period of 2013-2020, a smaller number of municipalities introduced a local coefficient of "3" and even fewer municipalities introduced a local coefficient of "4". This corresponds to the total number of local coefficients, when as of 1 January 2020 the local coefficient "2" was used by a total of 519 municipalities in the Czech Republic, the local coefficient in value "3" was used by 93 Czech municipalities and the local coefficient with value "4" was used by only 16 municipalities in CR. The highest local coefficient with the value "5" was used by a total of 19 municipalities in the Czech Republic and the change from 2013 did not occur until 2020, when it was introduced by the municipalities of Ledvice and Dolní Morava.

Visualization of local coefficients in the map in figure number one brings a topographical view, which is related to the borders of individual regions, or the borders of the Czech Republic with other countries and certainly encourages several questions and reflections, which are the subject of some of the other contributions on this topic.

4 Conclusion

The analysis of real estate tax revenues for municipalities in the czech republic shows that the share of this tax in the total revenues of municipalities is 2.99 - 3.75% and in tax revenues of 4.45 - 6.02%. The share of real estate tax collection in the total tax collection in the czech republic accounts for 1.21 - 1.69%, and this share is declining in the period under review, although the real estate tax collection itself is growing over time.

The analysis of the introduction of the local coefficient according to the number of inhabitants in municipalities showed that the number of local coefficients in the period from 2013 to 2020 increased by 2.2% and the highest average growth rate in the introduction of local coefficients was found in municipalities up to 1,000 inhabitants, this is an 18% increase, while other groups (excluding statutory cities) range from 1.04% to 2.76%. The percentage of municipalities with an established local coefficient in all municipalities of a given size group is not balanced. The highest, 50% share of municipalities with a local coefficient in the number of all municipalities in the group is represented by a group of municipalities with a population of 25,001 to 50,000 inhabitants, which also has the largest percentage increase in the number of municipalities with a newly introduced local coefficient. This increase is 16.7%. The agreement of the percentage increase with the share is only accidental. The smallest, 7.3% share of municipalities with an established local coefficient in the number of municipalities in each group is for municipalities in the group of municipalities with less than 1,000 inhabitants. The increase in the number of municipalities with a newly introduced local coefficient for the observed period is the same as in the category of municipalities from 1,001 to 6,000 inhabitants and amounts to 2.3%. If we omit the category of cities with the highest population, then it is true that the more municipalities in each category, the smaller the percentage of municipalities with an established local coefficient. The category of municipalities with more than 50,001 inhabitants and statutory cities, although the share of municipalities with an established local coefficient in the total number of municipalities in this category is 30%, is the only group in which there was a decrease in municipalities with an established local coefficient. 11.4%. Not only is the percentage of municipalities with the established local coefficient in all municipalities of a given size group not balanced, but it also does not meet the conditions of the established hypothesis h1, ie that in individual categories of municipalities according to population size in municipalities which have decided to introduce a higher local coefficient. The observed average in 2020 is 28.4% and the selected range of + - 5% is satisfied by only two of the six size categories of municipalities (categories of statutory cities and categories of municipalities from 6,001 to 10,000 inhabitants). Hypothesis h1 set in the methodology must therefore be rejected based on the findings in the practical part of the work.

For the analysis of local real estate tax coefficients by region, income overviews of individual regions were prepared. It was found that the largest income from real estate tax has municipalities in the central bohemian region (the average for the observed period is 15.8% of the total collection of real estate tax in the czech republic) and the south moravian region (10.1%), the lowest income is then in the zlín region (4.8%) and the liberec region (4.3%). The largest percentage increase in revenues for the period from 2013 to 2019 was recorded by the central bohemian region (increase by 20.5%) and the olomouc region (increase by 17.5%), the lowest revenues increased in the observed period to the budgets of liberec region municipalities (increase by 0.5 %). Not only the largest percentage increase in income, but also the most changes in local coefficients in absolute terms took place in the municipalities of the central bohemian region, in percentage terms it is the second highest increase in the observed period (increase by 5.3%), after the ústí region (increase by 5.4%). %). The highest percentage of municipalities with an established local coefficient is in the karlovy vary region (28.4%), the lowest in the pardubice region (3.3%). The range of 25.1% shows that hypothesis h2 that no fundamental differences in the percentage of the number of municipalities that have decided to introduce a higher local coefficient can be observed must be rejected. The ascertained average in 2020 is 11.32% and only 6 regions meet the set range of + - 5%.

The analysis, which touched on the issue of different levels of local coefficients and was captured in the map in Figure number one, can confirm hypothesis H3, ie that the growth of the role of real estate tax through local coefficients is reflected in the growth of the number of introduced local coefficients within 2, 3, 4 and 5.

All performed analysis have shown that in some regions or size groups of municipalities the number of established local coefficients is growing slowly, but the income from real estate tax is growing. Only the category of statutory cities goes beyond this statement. It can thus be confirmed at the outset that the possibility for municipalities to introduce a higher coefficient for § 12 of the Real Estate Tax Act is an interesting matter and at the same time an opportunity to influence the amount of the municipal budget based on a generally binding decree.

In all monitored municipalities, it was confirmed that in the period when there are no changes in local coefficients, real estate tax is rising, but more slowly than tax revenues, which is accompanied by the fact that the percentage of tax revenues is slightly decreasing. A great boom in the introduction of local coefficients was shown in the municipalities of the Central Bohemian Region. Based on the map output, it can be stated that the commuting distance to Prague and the connection of municipalities to the motorway network play an important role here. The influx of inhabitants into the Central Bohemian Region causes a higher increase in tax revenues in most municipalities, and these municipalities not only introduce a local coefficient, but also increase it quite often. The limit for them so far is the local coefficient 4, but in connection with the local coefficient 2 chosen by the capital city of Prague, a further increase in the number of municipalities that will introduce the local coefficient can be expected. The role of the local coefficient in real estate tax in municipal budgets is very individual and is more important in general for smaller municipalities and municipalities in the Central Bohemian Region.

As part of the real estate tax, it is important to realize that on the one hand it is income to the municipal budget, but on the other hand there should be a specific expenditure from the municipal budget, which will be appreciated by residents or property owners who pay tax from their budget. . Municipalities should behave with the "care of a proper manager" in their management, which expresses the abstract degree of expected behavior. As part of this "care", municipalities should not leave any possible and legal sources of income or funding unnoticed. Especially when there is the support of the Ministry of the Interior of the Czech Republic, which on its website in Methodological Recommendation P124 02 issued a model of a generally

binding decree for municipalities considering the introduction of a local coefficient in their territory.

Acknowledgements

The paper was created within the financial support of the student grant project SGS No. SP2021/18 on Faculty of Economics, VSB-Technical University of Ostrava.

References

[1] BALAZOVA, E., BULLA, P., PAPCUNOVA, V. (2017). Evaluation of the Efficiency of the Using of the Municipal Property in Dependence of the Size of Municipalities in Conditions of Slovak Republic. In Proceedings of the 2017 *12th International Scientific Conference Publics Economics and Administration 2017*. Ostrava: VŠB-TU Ostrava 2017. pp 24-31. ISBN 978-80-248-4131-1. ISSN 1805-9104.

[2] Czech republic. Zákon č. 338/1992 Sb. ze dne 4.5.1992 o dani z nemovitých věcí. In: Sbírka zákonů České republiky. 1992, částka 71/1992. Available from: http://www.zakonyprolidi.cz/cs/1992-338

[3] Czech republic. Zákon č. 261/2007 Sb. ze dne 19.9.2007 o stabilizaci veřejných rozpočtů. In: Sbírka zákonů České republiky. 2000, částka 85/2000. Available from: http://www.zakonyprolidi.cz/cs/2007-261

[4] Czech republic. Zákon č. 243/2000 Sb. ze dne 29.6.2000 o rozpočtovém určení daní. In: Sbírka zákonů České republiky. 2000, částka 73/2000. Available from: http://www.zakonyprolidi.cz/cs/2000-243

[5] Czech republic. Zákon č. 609/2020 Sb. ze dne 31.12.2020 kterým se mění některé zákony v oblasti daní a některé další zákony. In: Sbírka zákonů České republiky. 2020, částka 246/2020. Available from: http://www.zakonyprolidi.cz/cs/2020-609

[6] Czech Statistical Office (2021). Public Database, Municipalities Budgets. [online]. [cit.2021-08-10]. Available from http://vdb.czso.cz/vdbvo/tabparam.jsp?vo=tabulka&childsel0=3&cislotab=FIN4010UC_KR&kapitola_id=24&voa=tabulka&go_zobraz=1&aktualizuj=Aktualizovat&childsel0=3&pro_4_45=CZ

[7] Financial Administration of the Czech Republic (2021). Daň z nemovitých věcí v letech 2013-2019. [online]. [cit.2021-08-10]. Available from http://www.financnisprava.cz/cs/dane-a-pojistne/dane/dan-z-nemovitych-veci/informace-stanoviska-a-sdeleni/2013-2019/dan-z-nemovitych-veci-v-roce-2013-2019.

[8] JANOUŠKOVÁ, J., SOBOTOVIČOVÁ, Š. (2016). Immovable property tax in the Czech Republic as an instrument of fiscal decentralization. *Technological and economic development of Economy*. Vol. 22 (6), pp. 767-782. ISSN: 2029-4913, 2029-4921 DOI: 10.3846/20294913.2016.1236355.

[9] JANOUŠKOVÁ, J., SOBOTOVIČOVÁ, Š. (2017). Property tax in the regions of the Czech Republic. *Economics and Management (E+M).* Vol. 20 (4), pp. 120-134. ISSN: 1212-3609, 2336-5604. DOI: 10.15240/tul/001/2017-4-009.

[10] KUKALOVÁ, G., PFEIFEROVÁ, D., KUCHAŘOVÁ, I., REGNEROVÁ, O., ŠTURMOVÁ, D. (2021). Coefficients of Real Estate Tax: Case Study of the Czech

Republic. In Proceedings of the 2021 *International Scientific Conference on Hradec Economic Days (HED 2021)*, Hradec Králové: University of Hradec Králové 2021. Vol. 11 (1), pp. 484-494. DOI: 10.36689/uhk/hed/2021-01-048. ISBN 978-80-7435-822-7. ISSN 2464-6067.

[11] MUSGRAVE, R. A., MUSGRAVE, P. B. (1994). Public finance in theory and practice. Prague: Management Press.

[12] PEKOVÁ, J. (2008). Veřejná správa a finance veřejného sektoru. Prague: ASPI.

[13] PFEIFEROVÁ, D., ULRYCH, M., KUCHAŘOVÁ, I., KOZLOVÁ, H. (2020). Usage of Coefficients for Real Estate Tax in Regional Cities of the Czech Republic. In Proceedings of the 2020 *International Scientific Conference on Hradec Economic Days (HED 2020)*, Hradec Králové: Gaudeamus 2020. Vol. 10 (1), pp. 598-605. DOI: 10.36689/uhk/hed/2020-01-068. ISBN 978-80-7435-366-6.

[14] RADVAN, M. (2012): *Místní daně.* Prague: Wolters Kluwer ČR.

[15] SEDMIHRADSKÁ, L., BAKOŠ, E. (2016). Municipal Tax Autonomy and Tax Mimicking in Czech Municipalities. *Lex Localis – Journal of local self-government*. Vol. 14 (1), pp 75-92. Available from http://pub.lex-localis.info/index.php/LexLocalis/article/view/14.1.75-92%282016%29.

[16] SOBOTOVIČOVÁ, Š., JANOUŠKOVÁ, J. (2020). Specifics of Real Estate Taxation in the Czech and Slovak Republics. *International Advances in Economic Research.* Vol. 26 (3), pp. 273-287. DOI: 10.1007/s11294-020-09800-5.

[17] TOMÁNEK, P. (2017). Tax revenues structure of municipal budgets in size groups of municipalities In Proceedings of the 2017 *12th International Scientific Conference Publics Economics and Administration 2017.* Ostrava: VŠB-TU Ostrava 2017. ISBN 978-80-248-4131-1. ISSN 1805-9104.

[18] VAVREK, R. (2018). Evaluation of the financial health of a municipal as a factor of economic Potential of a region. (Hodnotenie finančného zdravia obce ako faktor ekonomického potenciálu regiónu) In Proceedings of the 2018 *Klímová, V., Žítek, V. (eds.) XXI. mezinárodní kolokvium o regionálních vědách. Sborník příspěvků.* Brno: Masarykova univerzita 2018, pp. 425-432. ISBN 978-80-210-8969-3. DOI: 10.5817/CZ.MUNI.P210-8970-2018-56**.**

[19] VAVREK, R., ADMISIN, P. (2018). International Comparison of Sources of Municipal Budget. In Proceedings of the 2018 *Development and administration of border areas of the Czech republic and Poland.* Ostrava: VŠB-TU Ostrava 2018. ISBN 978-80-248-4229-5.

[20] ZDRAŹIL, P., PERNICA, B. (2018). Property Tax and Quality of Life in the Czech Municipalities: Does the Policy of Raising Local Coefficient Imply Potential or Risk for Development? *Review of Economic Perspectives. Vol. 18 (2), pp. 123–136.* DOI: https://doi.org/10.2478/revecp-2018-0007.

Contact information

Ing. Bc. Jiří Bečica, Ph.D., Ing. Marcela Vašatová
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: jiri.becica@vsb.cz

Impacts of the COVID-19 pandemic on public finances in EU countries

Lukáš Cíbik, Dušan Guťan

Abstract: The aim of our paper is to analyze long-term development trends and year-on-year changes in public finances (revenues, expenditures, debt / indebtedness) in EU countries since 2009 and compare them with the year-on-year change brought by the pandemic year 2020. We focus on relative values of revenue, expenditure and indebtedness general government expressed as a percentage of GDP. Subsequently, we converted the relative indicators of revenue, expenditure and debt into an absolute form in mil. €. The results of our contribution show a slight year-on-year increase in relative indicators (expenditures, indebtedness). Absolute data indicate a sharp, often more than 500%, year-on-year increase in expenditure and debt in 2020 compared to the long-term average of the year-on-year change. The decrease in the absolute value of the year-on-year change in revenue in 2020 compared to the long-term average is also significant. In the case of absolute average values of year-on-year changes in revenue, expenditure and debt, EU general governments show a reversal of long-term trends compared to 2020.

Keywords: Debt, EU countries, expenditure, general government, indebtedness, revenue

JEL Classification: H87, H60, H50

1 Introduction

The countries of the European Union have been (and still are) heavily affected by the COVID-19 pandemic. The general government also had to react flexibly to the significant economic downturn and related social changes. Several measures, we could call them global or basic, have been copied within all EU member states (Botta, Caverzasi, Russo, 2020; Švikruha, Richvalský, 2020; Cantó et. Al. 2021). General governments in EU countries complemented these basic measures with a mix of specifically designed procedures, designed for the specific situation in specific countries. These were most often various forms of financial assistance to vulnerable individuals, entrepreneurs and companies, tax breaks and, in part, contracting of public contracts and building of infrastructure. The management, control and elimination of the effects of a pandemic have automatically increased the pressure to increase spending at all levels of government (Foremny, Sorribas-Navarro, Castelló, 2020; Conte et al. 2020).

The year 2020 acted as a significant catalyst for changes in the public finances of all EU countries and often reversed the long-term development trend (Baldwin, Mauro, 2020; Mura et al. 2014; Billio, Varotto, 2020). Our contribution focuses on these year-on-year changes and compares them with the long-term development trend. The subsequently identified disparities in government revenue, expenditure and debt / indebtedness are identified as the consequences of combating the effects of the pandemic on both the private and public sectors. At the same time, the efforts of member countries to manage the COVID-19 pandemic in 2020 at various levels (local, regional, national) and in various public and private sectors (Heald, Hodges, 2020) are reflected in this way.

2 Material and Methods

The aim of our paper is to analyze long-term development trends and year-on-year changes in public finances (revenues, expenditures, debt) in EU countries since 2009 and compare them with the year-on-year change brought by the pandemic year 2020. We focus first on relative revenue, expenditure and indebtedness values general government expressed as a percentage of

GDP. Subsequently, we will convert the relative indicators of revenue, expenditure and debt into an absolute form in mil. €.

To identify the impacts of the COVID-19 pandemic, we selected three basic indicators of public finances in EU countries : revenue, expenditure and debt / indebtedness. These indicators represent the most important categories of public finances of general government and have long been the most frequent object of research, the core of policy debates or discussions between experts in various fields.

The indicators are compiled on a national accounts (ESA 2010) basis. They comprise main aggregates (total revenue and expenditure, main components) for the general government sector and its subsectors (central, state, local government and social security funds).

The institutional units included to general government sector (S.13) according to ESA2010 (paragraph 2.112) are the following:

- general government units which exist through a legal process to have judicial authority over other units in the economic territory, and administer and finance a group of activities, principally providing non-market goods and services, intended for the benefit of the community,
- a corporation or quasi-corporation which is a government unit, if its output is mainly non-market and a government unit controls it,
- non-profit institutions recognized as independent legal entities which are non-market producers and which are controlled by general government,
- autonomous pension funds, where there is a legal obligation to contribute, and where general government manages the funds with respect to the settlement and approval of contributions and benefits (Eurostat, 2020).

The first monitored area of public finances is general government revenues. In our article, they represent total general government revenue and are based on the national accounts indicator (ESA 2010). Total general government revenue is defined in ESA 2010 8.100 and chapter 20 by reference to a list of categories: market output, output for own final use, payments for non-market output, taxes on production and imports, other subsidies on production, receivable property income, current taxes on income, wealth, etc., net social contributions, other current transfers and capital transfers.

In the case of expenditures, we operate with total general government expenditure. Total government expenditure comprises all transactions recorded under positive uses in the ESA framework, and subsidies payable, in the current accounts as well as transactions in the capital account of the government.

We will consider general government gross debt as public debt. The Treaty on the Functioning of the European Union defines this indicator as the ratio of government debt outstanding at the end of the year to gross domestic product at current market prices. For this calculation, government debt is defined as the total consolidated gross debt at nominal value in the following categories of government liabilities (as defined in ESA 2010): currency and deposits (AF.2), debt securities (AF.3) and loans (AF.4).

We monitor the year-on-year change in the three monitored areas of public finances in relative and absolute form. Revenues, expenditures and indebtedness are first expressed in relation to the GDP of a particular country in a given year. The absolute values of revenues, expenditures and debt of the general government of the EU countries are quantified in mil. €.

We decided to monitor, analyze and compare the year-on-year change for several reasons. In the first place, this approach has the advantage of not focusing on the total amount of revenue,

expenditure and debt, which have been growing steadily for decades. It can therefore bring more interesting and less obvious knowledge. At the same time, the advantage of our approach is that we monitor year-on-year changes in relative and absolute form. Thanks to relative indicators, it is also possible to compare heterogeneous groups of EU countries. Absolute indicators can clearly quantify the increase or decrease in the single currency (€) and are not directly linked to highly volatile variables such as GDP.

Our work is designed to monitor the long-term average of the year-on-year change during 2009-2019 and the year-on-year change in 2020. The long-term average of the year-on-year change in all monitored indicators represents the arithmetic average of the year-on-year change from 2009 to 2019 long-term development trend (decrease, stagnation, increase).

The paper focused on a time period of twelve years and monitors the development of year-on-year changes from 2009 to 2020. The time series is divided into two stages - from 2009-2019, when we analyzed and surveyed long-term average year-on-year change in revenue, expenditure and debt. The second stage includes the year-on-year change of 2019-2020, which we consider to be largely the result of the COVID-19 pandemic.

The object of our research is EU countries, without Great Britain. Together there are 27 countries: Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland and Sweden.

The source of primary data was predominantly Eurostat. In this online database, we have found data on general government revenue and expenditure in EU countries in the Annual government finance statistic sections. Information on government debt and indebtedness can be found in Theme: Economy and finance.

3 Results and Discussion

From a global perspective, EU countries in 2009-2019 show an average year-on-year increase in general government revenue of + 0.15% of GDP. The relative average year-on-year change in general government revenue during 2009-2019 divided EU countries into two groups. The larger group (19) consists of Member States, which increased their general government revenue on average from 0.02% to 1.01% of GDP each year from 2009 to 2019. The highest year-on-year increase was recorded in Greece, Cyprus and Slovakia. The second group of EU countries consists of countries that have seen an average year-on-year decrease in general government revenue over the past ten years. This includes a total of seven EU countries (Denmark, Estonia, Ireland, Lithuania, Luxembourg, Hungary, Malta and Sweden), which on average record an average year-on-year decline in relative government revenue from -0.02% to -0.82% of GDP.

Table 1 – Relative year-on-year change in general government financial indicators in EU countries 2009-2020 (% of GDP)

	Revenue		Expenditure		Indebtedness	
	Average 2009-2019	Change 2019/2020	Average 2009-2019	Change 2019/2020	Average 2009-2019	Change 2019/2020
European Union (27)	0,15	0,4	-0,41	6,8	0,18	13,2
Belgium	0,10	0,4	-0,30	7,9	-0,21	16,0
Bulgaria	0,33	1,0	-0,32	6,6	0,65	4,8
Czechia	0,28	-0,4	-0,30	6,1	-0,31	7,8
Denmark	-0,07	-0,2	-0,70	4,8	-0,69	8,9
Germany	0,17	0,2	-0,30	5,9	-1,35	10,1
Estonia	-0,44	1,2	-0,67	6,2	0,12	9,8
Ireland	-0,82	-1,7	-2,25	3,8	-0,43	2,1
Greece	1,01	2,0	-0,62	12,8	5,38	25,1
Spain	0,42	2,1	-0,41	10,2	4,22	24,5
France	0,23	0,6	-0,18	6,7	1,46	18,1
Croatia	0,44	0,5	-0,21	8,2	2,41	15,9
Italy	0,11	0,7	-0,25	8,7	1,80	21,2
Cyprus	0,45	-0,6	-0,24	6,6	3,97	24,2
Latvia	0,21	1,3	-0,68	5,2	0,02	6,5
Lithuania	-0,07	1,0	-1,04	8,9	0,79	11,4
Luxembourg	-0,02	-1,0	-0,28	5,5	0,59	2,9
Hungary	-0,23	-0,1	-0,50	5,9	-1,27	14,9
Malta	-0,08	-0,7	-0,43	9,8	-2,43	12,3
Netherlands	0,12	0,2	-0,57	6,1	-0,81	5,8
Austria	0,04	-0,2	-0,55	9,3	-0,94	13,4
Poland	0,33	0,6	-0,32	6,9	-0,42	11,9
Portugal	0,22	0,2	-0,77	5,9	2,90	16,8
Romania	0,15	1,3	-0,32	6,2	1,35	12,0
Slovenia	0,02	-0,1	-0,61	8,7	3,11	15,2
Slovakia	0,51	0,4	-0,20	5,3	1,18	12,4
Finland	0,06	-1,0	-0,09	3,5	1,80	9,7
Sweden	-0,16	0,1	-0,30	3,6	-0,57	4,9

Source: own processing based on Eurostat (2021)

In the pandemic year 2020, the relative indicator of the year-on-year change in EU government revenues increased (27 countries). The year-on-year aggregate change represents an average increase in revenues of 0.4% of GDP compared to 2019 and is more than double the ten-year average. Comparing the ten-year average of the year-on-year change in general government revenue with 2020, we find that several countries show a higher year-on-year increase in 2020 than their ten-year average. We identified the highest year-on-year increase in general government revenue in the pandemic year 2020 in the case of Spain (+ 2.1% of GDP) and Greece (+ 2.0% of GDP). The highest year-on-year decline in revenues in 2020 compared to the average for 2009-2019 is recorded by general government revenues in Ireland (-1.7% of GDP), Finland and Luxembourg (both -1% of GDP).

If we look at the difference between the ten-year year-on-year average and the year-on-year change in 2019/2020, we find that most EU member states show a year-on-year increase in general government revenue in 2020. This increase is particularly evident in Spain (+ 1.68% of GDP) and Estonia (1.64% of GDP). A comparison of the ten-year average of year-on-year changes in general government revenues with the change in this quantity in 2020 also gives us

information that a total of 11 EU countries have recorded a decline in revenues. This situation was most pronounced in the decline in general government revenue in Finland (-1.06% of GDP) and Cyprus (-1.05% of GDP).

Average general government expenditure in the EU countries during the years 2009-2019, expressed in relation to GDP, usually decreases year-on-year. Across the EU, the average year-on-year change in general government expenditure is declining by -0.4% of GDP. During 2009-2019, general government in Ireland recorded the most progressive expenditure cuts, falling by -2.25% of GDP on average year-on-year. Lithuania also shows a year-on-year average decline in general government expenditure of more than 1%. We identified the lowest average year-on-year decline in government expenditure in the case of France (-0.18% of GDP) and Finland (-0.09% of GDP). Thus, these countries have the slowest average year-on-year decline in government expenditure in the EU. As already mentioned, all EU countries are experiencing a long-term average year-on-year decline in general government expenditure as a share of GDP.

The year-on-year change in the level of general government expenditure in EU countries between 2019 and 2020 completely reversed the long-term trend. In the pandemic year 2020, the year-on-year change in general government expenditure of all EU member states was in positive numbers and showed a sharp increase. The result is also an average year-on-year increase in general government expenditure in the EU, which rose by 6.8% of GDP. The highest year-on-year increases in general government expenditure in 2020 were 12.8% of GDP (Greece) and 10.2% of GDP (Spain). On the other side were Ireland, Sweden and Finland, whose expenditure on the report of the report increased by only 3.5% and 3.8% of GDP year-on-year in 2020.

The differences in the average long-term year-on-year level (trend) of general government expenditure during 2009-2019 and the year-on-year change during 2020 are marked and antagonistic. The long-term trend of year-on-year changes tended to decline gradually. The year-on-year change in 2020 completely reversed this trend and general government expenditures in EU countries increased year-on-year from 3.5% to 12.8% of GDP. When comparing the long-term development of the year-on-year change in expenditure and the year-on-year change in 2020, we identified the highest increase in expenditure, expressed in the country's GDP, in the case of Greece (+ 12.18% of GDP compared to the long-term average). More than eight percent of the long-term year-on-year average and the year-on-year change in 2020 were achieved by general government in Spain, Italy, Malta, Austria and Slovenia.

The last monitored relative indicator is indebtedness. During the years 2009-2019, the general government of the EU Member States achieved on average a year-on-year increase in debt of 0.18% of GDP. The long-term development trends of year-on-year changes in indebtedness divided EU countries into two camps. One group of EU countries (11) reduced its debt on average between 2009 and 2019. In these countries, general government debt is declining year-on-year, from -0.21% of GDP (Belgium) to -2.43% of GDP (Malta). For the rest of the EU countries (16), public debt is increasing year-on-year in the long term 2009-2019. The average year-on-year increase in government debt in these countries ranges from 0.18% of GDP to 5.38% of GDP. The highest year-on-year increase in indebtedness was achieved by general government in Greece, Spain, Cyprus and Slovenia.

In 2020, all EU member states recorded a sharp year-on-year increase in general government debt. This increase for the whole of the EU represents an increase in general government debt by 13.2% of GDP year-on-year. The change in general government debt in 2020 represents a year-on-year increase of 25.1% of GDP in Greece, 24.5% of GDP in Spain and 24.2% of GDP in Cyprus. The lowest year-on-year increase in general government debt in 2020 was achieved by Ireland and Luxembourg. General government in both countries achieved a year-on-year increase in debt below 3% of GDP.

The long-term development trend of year-on-year changes in general government debt in EU countries was in the range of <-2.43% in 2009-2019; 5.38%> GDP. The year 2020 brought a significant year-on-year increase in debt to many general governments in EU countries, up to 25.1% of GDP. The highest year-on-year increase in indebtedness in 2020 compared to the long-term average was achieved by general government in Spain in Cyprus (just above 20% of GDP) and in Greece and Italy (above 19% of GDP).

We supplement the informative value of relative indicators of the year-on-year change in revenue, expenditure and debt to their absolute amount. Thanks to this, we are able to complete the mosaic of the effects of the pandemic on public finances in EU countries. In several areas, they serve us better than a relative indicator because they are not linked to fluctuating GDP. Absolute height of monitored areas in mil. € clearly captures the financial side of the observed changes.

Table 2 – Absolute year-on-year change in general government financial indicators in EU countries 2009-2020 (mil. €)

	Revenue		Expenditure		Debt	
	Average 2009-2019	Change 2019/2020	Average 2009-2019	Change 2019/2020	Average 2009-2019	Change 2019/2020
European Union (27)	171 846,9	-248 985,5	115 561,65	600 470,1	282 112,7	1 239 949,8
Belgium	6 838,5	-10 770,8	5 864,74	22 468,0	11 994,8	47 792,9
Bulgaria	1 038,1	365,1	755,84	3 747,3	726,8	2 807,8
Czechia	3 505,5	-4 985,9	2 626,44	8 862,4	1 865,5	13 565,6
Denmark	4 207,1	-239,7	2 298,17	14 256,9	1 116,0	27 739,1
Germany	50 876,3	-47 604,0	37 924,0	144 482,0	26 841,4	267 835,8
Estonia	479,6	-37,8	446,49	1 315,5	134,9	2 580,7
Ireland	3 218,8	-3 604,1	759,94	16 227,7	9 953,8	13 934,2
Greece	-262,4	-5 349,0	-4 070,4	12 880,0	3 001,1	9 950,0
Spain	11 402,5	-24 487,0	2 908,6	62 948,0	61 928,5	156 750,0
France	30 680,3	-63 122,0	24 257,4	73 642,0	77 152,0	270 613,4
Croatia	632,1	-2 063,0	336,32	1 746,5	1 729,6	4 282,2
Italy	11 772,4	-53 743,0	6 485,3	75 216,0	57 070,9	163 444,0
Cyprus	232,9	-652,3	98,75	867,2	1 081,9	3 870,7
Latvia	478,9	-50,1	315,49	1 104,9	433,5	1 503,3
Lithuania	748,6	490,3	480,94	4 312,8	999,5	5 536,6
Luxembourg	1 179,2	-347,7	1 020,38	3 776,7	800,7	1 963,8
Hungary	2 040,9	-4 601,7	1 895,2	3 378,2	1 763,1	11 389,3
Malta	267,9	-378,1	243,09	972,1	155,0	1 257,2
Netherlands	8 999,9	-4 548,0	4 371,9	42 863,0	3 971,8	40 261,0
Austria	5 487,4	-11 316,6	3 709,8	24 351,5	5 032,6	34 819,3
Poland	9 950,1	-1 062,7	8 018,43	31 621,2	7 910,3	47 265,9
Portugal	2 038,0	-4 574,8	288,5	7 103,3	9 596,4	20 514,2
Romania	3 304,0	1 286,0	3 143,94	11 720,1	5 079,3	24 442,9
Slovenia	537,2	-986,6	305,69	3 113,7	1 922,7	5 684,3
Slovakia	1 557,8	-707,7	1 160,29	3 652,4	2 196,9	9 905,5
Finland	3 172,5	-3 844,0	2 948,9	6 801,0	6 739,2	21 392,0
Sweden	7 462,9	-1 114,6	6 967,51	15 714,9	3 581,5	28 170,7

Source: own processing based on Eurostat (2021)

The absolute average year-on-year change in the revenue of all EU countries during the years 2009-2019 represented an increase of 171.8 billion. € per year. It is therefore not surprising that,

with one objective exception (Greece), all Member States increased their government revenues year-on-year. The highest long-term average year-on-year increase in revenue is clearly recorded in general government in Germany. During the years 2019-2019, the general government in Germany increased its revenues by an average of 50.8 billion year-on-year. €. The general government in France follows with a significant gap, with an average year-on-year increase in revenues of more than 30 billion. € and the Italian general government with a year-on-year increase in revenues of 11.7 billion. €. In the long run, the average year-on-year increase in general government revenue is lowest in Malta (€ 267 million) and Cyprus (€ 232). The only EU country that did not record an increase in the average year-on-year increase in general government revenue in 2009-2019 was Greece. The Greek government reported the only decline in the average year-on-year change in revenue during this period. Over the period under review, general government revenue in Greece decreased by 262 mil. €.

The long-term trend of increasing general government revenues in EU countries was significantly weakened in 2020. The initial signal can be seen in the EU aggregate data, when general government revenues in the EU fell by more than 248 billion year-on-year. €. A more detailed analysis of the year-on-year changes is found in the finding that general government in only three EU countries (Bulgaria, Lithuania and Romania) maintained a positive revenue growth in 2020 as well. However, all three countries saw a significant decline in average long-term year-on-year growth, which was 65% lower in Bulgaria, 35% lower in Lithuania and 61% lower in Romania. In contrast to these three countries, which also recorded a positive year-on-year increase in general government revenue in 2020, are other EU countries, which recorded a year-on-year decline in general government revenue in 2020. France has the strongest year-on-year decline in general government revenue (€ -63 billion). Italy (€ -53 billion) and Germany (€ -47 billion). Logically, smaller EU countries, including Estonia, Latvia and Malta, achieved the smallest absolute year-on-year decline in government revenue.

The year-on-year change in the level of government revenue in EU countries in 2020 was indeed dramatic and reversed the long-term trend of year-on-year revenue growth. The year-on-year decline in revenue in 2020 compared with the long-term average was most pronounced for general government in Germany (€ -98 billion), France (€ -93 billion) and Italy (€ -65 billion). Year-on-year decrease in general government revenues in 2020 compared to the long-term value of the year-on-year change by less than one billion € was recorded by general government mainly of smaller EU countries: Malta, Cyprus, Latvia, Lithuania, Bulgaria and Estonia.

Aggregate general government expenditures in the EU show a year-on-year increase of 115 billion € in the time horizon 2009-2019. €. General government of all EU member states increase their expenditures year-on-year on average in the long run, with the exception of Greece. Clearly, the highest average year-on-year increase in general government expenditure was achieved in Germany, where expenditure increased by an average of 37 billion € year-on-year. €. France is also a very progressive long-term average year-on-year increase in expenditure (€ 24 billion). By far the smallest average year-on-year increase in general government expenditure is in the case of Cyprus (€ 98 million), Malta (€ 243 million) and Portugal (€ 288 million).

The year 2020 also had a significant impact on the absolute value of general government expenditure in all EU countries. The aggregate data for the whole EU also told us about it, where general government expenditures increased by more than 600 billion year-on-year. €. This means a more than fivefold increase in the average values of the year-on-year change during the years 2009-2019. In absolute terms, general government expenditure increased the most in 2020 in Germany (€ 144 billion), Italy (€ 75 billion) and France (€ 73 billion). Malta and Cyprus achieved the lowest year-on-year increase in general government expenditure in 2020.

The year-on-year change in general government expenditure in 2020 in all EU countries meant a sharp increase in expenditure, which is many times higher than the gradual long-term rate of

increase in expenditure. By comparing the year-on-year change in the amount of absolute expenditure in 2020 with the long-term average, we find that the highest difference is shown by general government in the largest European countries (Germany, Italy, Spain and France). The lowest year-on-year increase in 2020 compared to the long-term average year-on-year growth of general government expenditure was achieved by general government in Latvia, Cyprus and Malta, where the difference was in the range of 729 mil. € - 789 mil. €.

The last monitored indicator of absolute values was general government debt. EU government aggregate debt tended to grow during 2009-2019. Year-on-year, aggregate debt increased by 282 € billion on average. €. None of the EU countries showed an average year-on-year decline in general government debt in the long run. In 2009-2019, general government debt grew the most year-on-year in France (€ 77 billion), Spain (€ 61 billion) and Italy (€ 57 billion). The average year-on-year increase in general government debt in the case of Malta was 155 mil. € and Estonia 134 mil. € and is the lowest among all EU countries.

During 2020, these long-term averages increased several times in all EU countries. Aggregate general government debt in the EU in 2020 increased by € 1.2 trillion year-on-year. The largest contributors to this marked year-on-year increase are government debt increases in France (€ 270 billion), Germany (€ 267 billion), Italy (€ 163 billion) and Spain (€ 156 billion). These four countries account for almost 70% of the year-on-year increase in government debt in the EU. The year-on-year increase in debt in 2020 was kept below € 2 billion by general government in Latvia, Luxembourg and Malta.

Public finances in EU countries went through a difficult test during 2020. The year-on-year change in revenues, expenditures and indebtedness in relation to GDP indicates a deteriorating situation. On the one hand, we see, with few exceptions, a general slight increase in revenue. On the other hand, there has been a significant increase in general government expenditure in EU countries and a marked increase in indebtedness. However, in the case of relative indicators expressed in relation to GDP, the variable of GDP itself should not be forgotten. The volatility of GDP and the related fluctuations in the economies of individual countries must be perceived very sensitively and cautiously. A more significant drop in GDP than we experienced in 2020 may distort the real year-on-year changes in general government revenue, expenditure and indebtedness expressed in relation to the GDP ratio. At the same time, however, we add that it is these relative indicators that are used quite extensively for comparative analyzes between heterogeneous groups of countries, as is the case in the EU.

Absolute indicators help us to better and more accurately identify the development trends of general government revenues, expenditures and debt in EU countries. The capture of absolute values abstractes from possible distortions due to the dynamic development of GDP. Thanks to this, we were able to clearly confirm and specify the long-term year-on-year development trends of general government revenues, expenditures and debt.

In the area of general government revenues in EU countries during 2020, we recorded a significant year-on-year decline and a decrease in financial resources compared to the long-term average. The exceptions are three countries (Bulgaria, Latvia and Romania), which were able to increase the revenues of their general government even during the COVID-19 pandemic. The general decline in government revenues in 2020 is largely linked to the effects of the COVID-19 pandemic on the economies of individual EU countries. During the pandemic, there was a decline in GDP, an increase in unemployment, a deferral and reduction of tax liability, the granting of exemptions and deferrals in levies and fees, and other measures, which were reflected in declining government revenues.

The economic situation deteriorated in 2020, which is why EU governments have gradually increased public spending in order to stabilize and revitalize national economies. This

corresponds to the sharp year-on-year increase in expenditure in 2020 compared to the previous long-term trend of only a gradual increase in expenditure. If we understand the long-term average of the year-on-year change in expenditures and debt as a constant by which expenditures and debt are to increase each year, we will find several significant results by comparing it with the real year-on-year change in 2020. The first logical result is that the largest EU countries have pumped the most funds into their economies through absolute public spending. Another very important finding is the identification of countries that have exceeded the long-term rate of year-on-year growth in general government expenditure to the greatest extent. Portugal, Spain and Ireland have emerged as the countries that have most increased their long-term year-on-year increase in expenditure and increased it by more than 2 000% year-on-year in 2020. On the other side are the Nordic countries (Finland, Sweden) and Hungary, where the year-on-year increase in general government expenditure was only about 211% higher than the long-term average change. This is not an increase in total general government expenditure, but an increase in the year-on-year growth rate of expenditure compared to the 2009-2019 average.

During the years 2009-2019, we recorded an average positive increase in general government debt in all EU countries, the amount of which varies. The year 2020 also brought a change in the amount of public debt of EU general government. In the observed period, general government debt in EU countries never grew as progressively year-on-year as in 2020. A comparison of the long-term value of the year-on-year change in debt and the year-on-year change in 2020 shows a sharp increase in debt in all countries. The countries that, in the long run, are among the more responsible members of the EU in terms of indebtedness, debt and both year-on-year debt growth exceeded the average year-on-year growth of general government debt the most. Compared to the long-term average rate of debt growth, in 2020 the general government of Denmark shows a year-on-year increase of 2485% and the general government of Estonia an increase of 1912%. During 2020, year-on-year general government debt recorded the lowest increase in Ireland (+ 40%) compared to the long-term average.

General governments in Spain, Portugal and Ireland, on the other hand, are characterized by the highest year-on-year percentage increase in spending among EU countries in 2020 compared to the long-term development trend. This group of countries shows a more than 20-fold increase in the year-on-year increase in general government expenditure in 2020 compared to the average during 2009-2019. However, this sharp increase does not concern the increase in the year-on-year value of debt, which is rather among the lower ones within the EU countries. For most EU countries, they recorded a year-on-year increase in government debt of 520% and government expenditure of 440% in 2020 compared to the long-term average for 2009-2019. At the same time, a situation is created where countries with a higher difference in the year-on-year change (difference between 2020 and the long-term average) of general government expenditure show, in principle, a lower difference between similar values in the case of debt. The causality of these variables indicates a weaker indirect relationship.

The relative average indicator of the year-on-year change in general government revenue in EU countries indicates a slight increase in revenue in most countries (20) over the long term. The year-on-year change in revenue, expressed in relation to GDP, in the pandemic year 2020, did not automatically mean a general and frontal decline in general government revenue in EU countries. Although the number of countries (10) where general government revenue fell year-on-year compared to the long-term average increased, paradoxically, in most countries (17), general government revenue increased year-on-year. We could look for an answer to such a paradoxical development of revenues, especially with regard to the significant decline in GDP, from which the relative level of all the relative indicators we have chosen is subsequently derived.

The long-term development of the year-on-year relative change in expenditure shows a permanent decline in all countries. On average, general government expenditure in EU member states decreased by 0.4% of GDP year-on-year between 2009 and 2019. The year-on-year change in expenditures in 2020 had the opposite direction, when all 27 EU countries sharply increased their general government expenditures from 3.5% to 12.8% of GDP.

During 2009-2019, EU general government recorded a positive year-on-year increase in debt of 0.18% of GDP. A total of 11 countries were able to reduce their indebtedness year-on-year in this period, and in the case of the other 16 we recorded a slight year-on-year increase in general government debt to a maximum of 5.38% of GDP. In 2020, general governments in all EU countries showed a significant and leap year-on-year increase in their indebtedness. The maximum value of the year-on-year change in 2020 was approximately 5 times higher than the long-term average.

The year-on-year average change in the level of general government revenue in the EU countries from 2009 to 2019 showed a permanent increase in absolute terms. The only exception was Greece, which implemented a comprehensive reform program of its public finances during this period. In 2020, the entire general government in the EU recorded a year-on-year decrease in revenues of up to almost CZK 250 billion. €. A significant year-on-year decline in government revenues affected all EU countries, without exception. Only three countries (Bulgaria, Lithuania and Romania) continued to show a positive year-on-year increase in government revenue in 2020.

The absolute indicator of the long-term year-on-year change in expenditure indicates a growth trend in all EU countries, with the exception of Greece. The average long-term year-on-year increase in expenditures is from 305 mil. € up to 37.9 billion €. This gradual development trend increased markedly in 2020. All EU countries showed a markedly increased year-on-year change in general government expenditure. On average, it increased year-on-year by more than 5 times the long-term year-on-year average.

The level of the average year-on-year change in general government debt indicates to us that no EU country has managed to reduce its absolute debt in the long run. In the period 2009-2019, all EU countries achieved a positive increase in the debt of their general government. General government in the EU borrowed at a rate of 282 billion. € year-on-year. The year 2020 significantly increased this pace. Compared to the long-term average of the year-on-year change in debt and the year-on-year change in debt in 2020, it appears that in 2020 the year-on-year increase in debt increased several times. The highest year-on-year increase compared to the average was at the level of 24 times (Denmark).

4 Conclusion

The aim of our paper was to analyze long-term development trends and year-on-year changes in public finances (revenues, expenditures, debt) in EU countries since 2009 and compare them with the year-on-year change brought by the pandemic year 2020. We focused first on relative indicators (% GDP) and then to absolute indicators (million €). In the case of the relative indicator of the year-on-year change in general government expenditure, we found that the general long-term year-on-year development trend (decline) reversed in 2020. In 2020, there was a sharp year-on-year increase in spending in all countries and growth. Also in the case of indebtedness, we can state that in 2020 there is a year-on-year increase in all EU countries.

We obtained clearer results by analyzing absolute indicators. In all EU general governments, except Greece, we recorded an absolute average long-term year-on-year increase in revenue in 2009-2019. However, the year 2020 brought with it the neglect of this development trend. Year-on-year, general government revenues fell sharply in all EU countries, except Bulgaria, Lithuania

and Romania. In the long term, general governments in the EU countries, with the exception of Greece, are increasing their expenditures every year and gaining a growth trend in 2009-2019. This gradual increase was inflated in 2020. Year-on-year, general governments across the EU achieved a jump (on average 5 times higher) increase in the volume of their general government expenditures compared to the amount of the long-term average year-on-year increase. In the period 2009-2019, all EU countries achieved a positive increase in the debt of their general government. This trend was further intensified in 2020 and is again jumping sharply from the long-term average.

Acknowledgements

This paper is based on the KEGA project: KEGA 001 UCM-4/2019 - Dynamics of Public Administration Transformation in the Slovak Republic.

References

[1] BALDWIN, R., WEDER DI MAURO, B. (2020). *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever It Takes*. London: Centre for Economic Policy Research

[2] BILLIO, M., VAROTTO, S. (2020). A New World Post COVID-19: Lessons for Business, the Finance Industry and Policy Makers. Venezia: Edizioni Ca' Foscari.

[3] BOTTA, A., CAVERZASI, E., RUSSO, A. (2020). Fighting the COVID-19 Crisis: Debt Monétisation and EU Recovery Bonds. *Intereconomics*. Vol. 55, pp. 239–244.

[4] CANTÓ, O. et. al. (2021). Welfare Resilience at the Onset of the COVID-19 Pandemic in a Selection of European Countries. *Review of Income and Wealth*. Vol. 67, pp. 481-508.

[5] CONTE. A. et al. (2020). *The territorial economic impact of covid-19 in the EU: a rhomolo analysis*. JRC Working Papers JRC121261. Seville: European Commission (JRC).

[6] EUROSTAT.(2021). *Government revenue, expenditure and main aggregates* [online]. [cit.2021-06-06]. Available: <https://ec.europa.eu/eurostat/databrowser/view/GOV_10A_MAIN__custom_1182480/default/table?lang=en>.

[7] EUROSTAT.(2020). *Eurostat metadata* [online]. [cit.2021-06-06]. Available: <https://ec.europa.eu/eurostat/cache/metadata/en/gov_10a_main_esms.htm>.

[8] FOREMNY, D., SORRIBAS-NAVARRO, P., CASTELLÓ, J. (2020). *Living at the Peak: Health and Public Finance During the Covid-19 Pandemic*. Working Paper. Rochester : SSRN.

[9] HEALD, D., HODGES, R. (2020). *The accounting, budgeting and fiscal impact of COVID-19 on the United Kingdom*. Journal of Public Budgeting, Accounting & Financial Management. Vol. 32, pp. 785-795.

[10] MURA, L. ET AL. (2014). Identification of Funding of Regional Governments Using Correlation Analysis. *Procedia Economics and Finance*. Vol. 15. pp. 154-161.

[11] ŠVIKRUHA, M., RICHVALSKÝ, L. (2020). The multi-level dynamics of state governance: decentralization tendencies in European countries. In *Public administration 2020: Proceedings of the 13th international scientific conference:*

Three decades of challenges, reforms, and uncertain results, Univerzita Pardubice 2020. pp. 126-138.

Contact information

PhDr. Lukáš Cíbik, PhD.
University of St. Cyril and Methodius in Trnava, Faculty of Social Studies, Department of Public Administration
Bučianska 4/A, 917 01 Trnava, Slovak Republic
E-mail: lukas.cibik@ucm.sk

doc. Ing. Dušan Guťan, PhD.
University of St. Cyril and Methodius in Trnava, Faculty of Social Studies, Department of Public Administration
Bučianska 4/A, 917 01 Trnava, Slovak Republic
E-mail: dusan.gutan@ucm.sk

Gender and Expenditure Structure of Slovak Local Governments

Tomáš Černěnko

Abstract: Women represent more than half of the population of Slovakia. We are therefore interested in the extent to which their needs are reflected in the public space in the production of public services. As a large part of public everyday consumption services is produced locally, we will focus our paper on the local government units. The aim of our paper is to find out whether the structure of expenditures is changing together with the level of representation of women in the local council or in the position of mayor. To do so, we use a regression analysis of selected groups of local government expenditures (expressed through the COFOG classification). At the same time, we wanted to find out whether the level of representation of women in local councils differs across Slovakia and, if so, in what way. The results show that the representation of women in local councils is not the same across Slovakia. Likewise, we were not able to prove the influence of the number of women in elected positions on the structure of local government expenditures in Slovakia. One of main reasons could be the fragmented administrative structure of the Slovak Republic.

Keywords: COFOG, gender, local government expenditures, sensitive budgeting

JEL Classification: H11, H72, H75

1 Introduction

Women represent more than half of the population of Slovakia, but their representation in politics is significantly lower. According to the UN (2019), the representation of women in the National Council of the Slovak Republic (Parliament) is 20% (30 seats out of 150) and in the case of ministerial positions 35.7% (5 seats out of 14).

The aim of our paper is not to analyse the reasons why do women actively participate in public space to a lesser extent than men and to propose solutions to increase this participation. The aim of our paper is to find out whether the higher representation of women in public space (elected positions in local governments) leads to a change in the structure of public services offered. At the same time, we will examine whether there are differences in the representation of women at the local level across Slovakia.

Since most of daily consumption public services are produced locally, we will focus on services produced by local governments. The volume of services produced will be measured by the size of expenditure per capita to areas specified through the Classification of Functional Expenditure (COFOG). For our research, we choose services that affect women the most - safety, care for children and other family members, health, environment, and social affairs. The investigated areas were chosen based on following research.

Sätre (2014), on the example of Russia, shows the contribution of women politicians at the local level in addressing local development issues, especially in areas focused on social welfare. In the case of Russia (and post-communist countries), we can also see the historical involvement of women in politics, especially in the areas of family (social policy), education, culture, tourism. Specific in the case of Russia is the strengthening of women's entrepreneurial skills (in politics) caused by insufficient state support for the sectors they manage. To be able to ensure the functioning of the authorities and policies entrusted to them, they had to learn to turn any income into useful necessities. A study by Baskaran and Hessami (2019) on the example of Bavarian municipalities shows that if there were more women in the local council, the supply of places in

kindergartens (child spots) grew faster than in local governments with a lower representation of women. The share of the topic of "child care" in council meetings has also increased. The study of the influence of women on decisions about the provision of public services through budgets was carried out by Cuadrado-Ballesteros, Guillamón and Ríos (2021) on a sample of 140 local governments in the period 2008-2018. They found that "*municipalities with women mayors and more female members tend to overestimate revenues and underestimate expenditures; but these effects turn contrary when the number of female councillors increases, resulting in a better financial situation. Then, we may conclude that women could contribute to the financial health of local governments once they have enough representation*". As Hessami and Lopes da Fonseca (2020) states in their review article on women and their impact on policymaking, the higher participation of women in politics is reflected in greater support for redistributive policies and thus the provision of more public services and goods. These focus on industries such as health, the environment, defence spending, and welfare policy. Drage (2001) comes to similar conclusions, adding education and social implications of policies. In the context of the expenditure structure, the influence of women Baltrunaite, Casarico, Profeta and Savio (2019) was examined in Italy. However, they found that increasing the proportion of women in the council does not change the structure of expenditure. Jung (2021) worked on similar results, examining the influence of the mayor's gender on the expenditure structure using the example of South Korea. He also concluded that the gender of the mayor does not affect the structure of expenditures. However, he sees the reasons mainly (1) in other demands of the median voter to contribute to the re-election of the mayor, (2) the adoption of male attitudes is "more successful" and more politically effective, and (3) the topics are determined by the needs of the local government unit or party. Another explanation could be the findings of the already mentioned Baskaran & Hessami (2019), who rather talk about the influence of women on the content of politics.

Elomäki and Ylöstalo (2021) show in the example of Finland that gender budgeting itself, without the necessary broader concept - feminist economic expertise - reduces it to a purely technical process, without higher added value. Said with their own words: *„such an approach leaves very little room for feminist economic knowledge to raise awareness of the gendered impacts of economic policies and challenge the gender biases of macroeconomic policy".*

2 Material and Methods

As mentioned above, the aim of our paper is to find out whether the structure of local government expenditures is changing along with the level of representation of women in the municipal council or in the position of mayor or mayor. At the same time, we want to find out whether the level of representation of women in local councils differs across Slovakia and, if so, in what way.

2.1 Methods and Model

To answer the question of how the level of representation of women in local parliaments changes across Slovakia, we decided on regression analysis and the use of a standard regression model:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon \quad (1)$$

Where:

- y was represented by the share of women in local council
- β_0 represented the constant value,
- x_1 represented the gender of the mayor
- x_2 represented the region of the local government
- x_3 represented the size category of the local government

As in the previous case, we decided to use a standard regression model to determine the influence of women on the structure of local government expenditures:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \varepsilon \quad (2)$$

Where:

- y was represented by the expenditure category[1] (see chapter Data)
- β_0 represented the constant value,
- x_1 represented the gender of the mayor
- x_2 represented the share of women in local council
- x_3 represented the region of the local government
- x_4 represented the size category of the local government

The identification of women in local councils and as mayors took place as follows. The female gender was assigned to elected candidates whose first name ends in "a" and the last name to "á". The chosen method of identifying the candidate's gender has shortcomings in the fact that more and more often women after marriage keep their male surname in a form (suffix "-ová"), nor does it recognize women with foreign names, or foreigners or members of national minorities.

Table 1 - Indexes of local government size groups and regions

Indexes of local government size categories	
Index No.	*population*
1	up to 250
2	251-500
3	501-1000
4	1001-2000
5	2001-3000
6	3001-4000
7	4001-5000
8	5001-10000
9	10001-20000
10	20001-50000
11	50001-100000
12	more than 100001

Indexes of regions	
Index No.	*region*
1	Bratislava (Bratislavský)
2	Trnava (Trnavský)
3	Trenčín (Trenčiansky)
4	Nitra (Nitriansky)
5	Žilina (Žilinský)
6	Banská Bystrica (Banskobystrický)
7	Prešov (Prešovský)
8	Košice (Košický)

Source: author

2.2 Data

Data on mayors as well as representatives elected in the 2018 municipal elections come from the website of the Statistical Office of the Slovak Republic. In the case of election of mayors and mayors, results are available for 2906 cities, communes, or city districts. In the case of elected deputies, candidate lists are available for 2929 municipalities and city districts. The difference is due to the absence of candidates for mayor in several municipalities. Due to the design of the model, the election of the mayor is a necessary condition. As a result, the final sample after the

[1] For our research, we choose services that affect women the most - safety, care for children and other family members, health, environment, and social affairs. The investigated areas were chosen based on research mentioned in Chapter 1.

clean-up of the city districts of Bratislava and Košice and municipalities that did not have an elected mayor in the regular municipal elections in 2018 represents 2862 cities and communes.

Expenditures used for the analysis: (according to COFOG classification)

- 0111 Executive and legislative organs, 0310 Police services, 05 Environmental protection, 06 Housing and community amenities, 07 Health, 08 Recreation, culture, and religion, 0911 Pre-primary education, 0912 Primary education, 09 Education, 1020 Old age, 1040 Family and children, 1070 Social exclusion and 10 Social protection.

Data on expenditures of local governments for the year 2019 come from the Budget Information System of Ministry of Finance of the Slovak Republic.

3 Results

Our first goal was to find out how the representation of women in local councils is changing across Slovakia. Based on the results of the regression analysis presented in the table below, we can see that the level of representation of women in local councils varies with the region and the size of the municipality.

Table 2 - Women in local councils - Model 1 regression results

Source	SS	df	MS		
				Number of obs	= 2,862
				F(19, 2842)	= 9.60
Model	62247.1936	19	3276.16808	Prob > F	= 0.0000
Residual	970315.255	2,842	341.419864	R-squared	= 0.0603
				Adj R-squared	= 0.0540
Total	1032562.45	2,861	360.909629	Root MSE	= 18.478

zast_100	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
mayor_g						
M	-5.762176	.8214417	-7.01	0.000	-7.372858	-4.151494
regio_codes						
Trnavský	-1.923399	2.498881	-0.77	0.442	-6.823203	2.976404
Nitriansky	-1.161185	2.425962	-0.48	0.632	-5.91801	3.595639
Trenčiansky	.1839176	2.485553	0.07	0.941	-4.689752	5.057587
Žilinský	-1.827276	2.445587	-0.75	0.455	-6.622581	2.968028
Banskobystrický	.293322	2.389299	0.12	0.902	-4.391613	4.978257
Prešovský	-7.923244	2.355492	-3.36	0.001	-12.54189	-3.304598
Košický	-2.949025	2.397433	-1.23	0.219	-7.64991	1.751859
size_cat						
2	-5.636138	1.128785	-4.99	0.000	-7.849459	-3.422817
3	-6.052335	1.087361	-5.57	0.000	-8.18443	-3.920239
4	-6.79242	1.178465	-5.76	0.000	-9.103154	-4.481687
5	-5.681247	1.619883	-3.51	0.000	-8.857511	-2.504982
6	-8.438721	2.312847	-3.65	0.000	-12.97375	-3.903692
7	-5.875465	3.100885	-1.89	0.058	-11.95568	.204747
8	-7.184856	2.505736	-2.87	0.004	-12.0981	-2.27161
9	-9.70192	3.291821	-2.95	0.003	-16.15652	-3.247321
10	-11.04246	3.608192	-3.06	0.002	-18.1174	-3.967524
11	-8.377654	6.594327	-1.27	0.204	-21.3078	4.552497
12	-10.59192	13.15086	-0.81	0.421	-36.37812	15.19428
_cons	37.25951	2.467791	15.10	0.000	32.42066	42.09835

Source: author

The influence of the region is statistically significant only in the case of the Prešov region. In this region, compared to the local governments of the Bratislava Region, the representation of women in the council is 7.9% lower than in a comparatively large local government in the Bratislava Region. It is surprising that the influence of the size of the local government has an opposite direction as assumed and thus that the level of representation of women in councils decreases with the size of the local government. In the case of our model, this happens at a statistically significant level in local governments in the size categories from 0 to 50,000 inhabitants, except for local governments in the size category from 4,000 to 5,000 inhabitants. The R^2 value of the model thus conceived was 6.03%.

The second question we were looking for was whether the structure of local government spending was influenced by women in the form of a female mayor or a higher level of representation in the local council. The results of the regression (Model 2) presented in Table 3 (below) show that the influence of women on the structure of local government expenditures did not prove to be statistically significant in any of the 13 categories examined. Compared to the previous model, the significance value measured by R^2 increased significantly in this case in almost all cases (12 out of 13 cases).

COFOG 0111 Executive and legislative organs

In the case of expenditures on Executive and legislative bodies, we can imagine expenditures on the operation of local government offices and thus the costs of ensuring the existence of the office in general. The results of the regression showed a significant impact of size as well as regional affiliation on the final amount of expenditure. The expected impact of the "female factor" on the redirection of expenditure to areas (policies) other than the operation of the office has not been confirmed.

COFOG 0310 Police services

The police services were chosen because of the higher perception of the threat by women. As in the previous case, the influence of size and space proved to be significant.

COFOG 05 Environmental protection

Expenditures registered in the Environmental Protection category depend, similarly to the previous two groups, primarily on the size of the local government that provides this service and the region where these services are provided.

COFOG 06 Housing and community amenities

Compared to the previous categories, the influence of the region in the category of housing expenditures weakened. From the point of view of the size of the local government, statistical significance manifests itself from the size of 501 inhabitants.

Table 3 – The influence of women on the structure of local government spending (Model 2 regression results)

	COFOG_0111 b/se	COFOG_0310 b/se	COFOG_05 b/se	COFOG_06 b/se	COFOG_07 b/se	COFOG_08 b/se	COFOG_0911 b/se	COFOG_0912 b/se	COFOG_09 b/se	COFOG_1020 b/se	COFOG_1040 b/se	COFOG_1070 b/se	COFOG_10 b/se
F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
M	0.218	-0.035	0.100	-0.131	0.009	0.080	-0.074	-0.018	-0.372	0.004	-0.003	-0.004	-0.017
	(0.58)	(0.03)	(0.19)	(0.24)	(0.02)	(0.24)	(0.17)	(0.16)	(0.55)	(0.13)	(0.01)	(0.02)	(0.31)
size_cat=1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
size_cat=2	0.674	-0.004	0.071	0.305	-0.000	0.211	0.349	0.200	1.020	0.011	0.015	0.046	0.754
	(0.79)	(0.04)	(0.25)	(0.33)	(0.03)	(0.32)	(0.24)	(0.22)	(0.75)	(0.18)	(0.02)	(0.03)	(0.42)
size_cat=3	1.375	-0.004	0.265	0.699*	0.000	0.328	0.829***	0.955***	3.082***	0.080	0.031	0.102***	0.693
	(0.76)	(0.03)	(0.24)	(0.32)	(0.03)	(0.31)	(0.23)	(0.21)	(0.72)	(0.17)	(0.02)	(0.03)	(0.41)
size_cat=4	2.641**	-0.012	0.889***	1.300***	0.026	0.556	1.629***	2.614***	8.445***	0.145	0.058**	0.192***	0.721
	(0.82)	(0.04)	(0.26)	(0.35)	(0.03)	(0.34)	(0.25)	(0.23)	(0.79)	(0.18)	(0.02)	(0.03)	(0.44)
size_cat=5	3.468**	0.044	2.112***	2.043***	0.052	1.259**	2.672***	4.374***	14.447***	0.435	0.117***	0.352***	0.936
	(1.13)	(0.05)	(0.36)	(0.48)	(0.04)	(0.46)	(0.34)	(0.32)	(1.08)	(0.25)	(0.03)	(0.04)	(0.60)
size_cat=6	4.861**	0.206**	2.299***	3.227***	0.097	2.063**	4.227***	6.310***	20.946***	0.755*	0.258***	0.559***	3.029***
	(1.61)	(0.07)	(0.52)	(0.68)	(0.06)	(0.66)	(0.49)	(0.45)	(1.54)	(0.36)	(0.04)	(0.06)	(0.86)
size_cat=7	6.990**	0.581***	4.490***	5.097***	0.080	2.500**	4.524***	6.262***	24.515***	1.250**	0.200***	0.500***	4.563***
	(2.15)	(0.10)	(0.69)	(0.91)	(0.08)	(0.88)	(0.65)	(0.60)	(2.06)	(0.48)	(0.05)	(0.08)	(1.15)
size_cat=8	11.044***	1.363***	5.951***	8.907***	0.625***	5.268***	8.106***	9.246***	41.804***	3.417***	0.283***	0.562***	4.856***
	(1.74)	(0.08)	(0.56)	(0.73)	(0.07)	(0.71)	(0.53)	(0.49)	(1.66)	(0.39)	(0.04)	(0.06)	(0.93)
size_cat=9	21.076***	4.808***	12.296***	13.453***	0.281***	17.040***	19.147***	18.024***	87.010***	8.530***	0.576***	1.455***	11.359***
	(2.29)	(0.11)	(0.74)	(0.96)	(0.09)	(0.94)	(0.69)	(0.64)	(2.18)	(0.51)	(0.05)	(0.08)	(1.22)
size_cat=10	36.331***	9.210***	23.298***	31.794***	0.306***	33.739***	33.335***	32.819***	156.708***	16.260***	1.667***	2.299***	21.150***
	(2.51)	(0.12)	(0.81)	(1.06)	(0.10)	(1.03)	(0.76)	(0.70)	(2.39)	(0.56)	(0.06)	(0.09)	(1.34)
size_cat=11	99.245***	24.382***	55.881***	53.134***	0.293	50.998***	85.864***	69.801***	358.678***	46.494***	4.708***	5.076***	60.873***
	(4.58)	(0.21)	(1.47)	(1.93)	(0.18)	(1.88)	(1.39)	(1.28)	(4.37)	(1.02)	(0.11)	(0.17)	(2.44)
size_cat=12	678.712***	106.624***	370.183***	228.653***	0.038	323.951***	183.632***	109.735***	719.356***	129.027***	1.432***	27.351***	169.018***
	(9.13)	(0.42)	(2.94)	(3.85)	(0.35)	(3.75)	(2.76)	(2.56)	(8.71)	(2.04)	(0.22)	(0.33)	(4.87)
Bratislavský	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Trnavský	-7.706***	-0.207**	-1.702**	-1.135	0.068	-2.324**	0.868	0.818	3.425*	-0.883*	0.058	0.168**	-0.151
	(1.74)	(0.08)	(0.56)	(0.73)	(0.07)	(0.71)	(0.53)	(0.49)	(1.66)	(0.39)	(0.04)	(0.06)	(0.93)
Nitriansky	-7.392***	-0.117	-1.376*	-0.567	0.132*	-2.378***	0.810	1.008*	4.414**	-1.034**	0.104**	0.245***	-0.836
	(1.68)	(0.08)	(0.54)	(0.71)	(0.07)	(0.69)	(0.51)	(0.47)	(1.61)	(0.38)	(0.04)	(0.06)	(0.90)
Trenčiansky	-7.568***	-0.249**	-1.697**	-1.268	0.062	-2.649***	0.936	0.870	4.409**	-1.118**	0.122**	0.206**	-0.556
	(1.73)	(0.08)	(0.56)	(0.73)	(0.07)	(0.71)	(0.52)	(0.48)	(1.65)	(0.39)	(0.04)	(0.06)	(0.92)
Žilinský	-7.870***	-0.203**	-1.785***	-1.495*	0.032	-2.333***	1.181*	1.012*	5.427***	-1.309***	0.116**	0.205***	-1.119
	(1.70)	(0.08)	(0.55)	(0.72)	(0.07)	(0.70)	(0.51)	(0.48)	(1.62)	(0.38)	(0.04)	(0.06)	(0.91)
Banskobystrický	-7.723***	-0.227**	-1.794***	-1.409*	0.052	-2.792***	0.870	1.357**	5.534***	-1.244***	0.148***	0.357***	-0.603
	(1.66)	(0.08)	(0.53)	(0.70)	(0.06)	(0.68)	(0.50)	(0.46)	(1.58)	(0.37)	(0.04)	(0.06)	(0.89)
Prešovský	-7.477***	-0.221**	-1.909***	-1.007	0.075	-2.680***	0.992*	1.699***	6.303***	-1.219***	0.156***	0.437***	-0.891
	(1.64)	(0.08)	(0.53)	(0.69)	(0.06)	(0.67)	(0.50)	(0.46)	(1.56)	(0.37)	(0.04)	(0.06)	(0.87)
Košický	-8.382***	-0.211**	-2.076***	-1.726*	0.050	-3.154***	1.173*	2.140***	6.917***	-1.405***	0.160***	0.411***	-1.219
	(1.67)	(0.08)	(0.54)	(0.70)	(0.06)	(0.68)	(0.50)	(0.47)	(1.59)	(0.37)	(0.04)	(0.06)	(0.89)
zast_100	0.006	0.000	-0.001	0.003	0.000	0.002	-0.001	-0.002	0.000	0.002	0.000	-0.000	-0.004
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)
constant	8.190***	0.230**	1.868***	1.366	-0.076	2.733***	-0.873	-1.423***	-5.534***	1.163***	-0.145***	-0.344***	1.570
	(1.78)	(0.08)	(0.57)	(0.75)	(0.07)	(0.73)	(0.54)	(0.50)	(1.70)	(0.40)	(0.04)	(0.07)	(0.95)
R-sqr	0.694	0.969	0.869	0.662	0.042	0.776	0.796	0.741	0.875	0.722	0.502	0.751	0.436
dfres	2841	2841	2841	2841	2841	2841	2841	2841	2841	2841	2841	2841	2841
BIC	22875.8	5252.7	16380.8	17930.0	4257.9	17772.6	16035.0	15589.7	22605.0	14301.8	1466.8	3952.3	19279.8

* p<0.05, ** p<0.01, *** p<0.001

Source: Author

COFOG 07 Health

Healthcare in our model (model 2) turned out the worst of all monitored expenditures. In almost all examined categories, the size of the local government and the region appear to be statistically significant factors, but in the case of health care expenditures it is not possible to identify any significant formula that would help clarify the behaviour of municipalities in this area.

COOFOG 08 Recreation, culture, and religion

Like most of the monitored categories of expenditure, in the case of expenditure on Recreation, culture and religion, the size of the local government and the region proved to be statistically significant.

COFOG 0911 Pre-primary education, 0912 Primary education and 09 Education

Neither in the case of expenditure on education in general nor in the monitored sub-categories of pre-primary and primary education there is no deviation from the already presented formula - the size of the local government and region is statistically significant, but its importance weakens in the direction from education in general to the pre-primary education.

COFOG 1020 Old age, 1040 Family and children, 1070 Social exclusion and 10 Social protection

Even in the case of social services, we were unable to find a statistically significant effect of female mayor on the size of expenditures. Expenditures on social protection are only beginning to be statistically significant from size category 6, which represents municipalities with more than 3,000 inhabitants. In this case, the influence of the region, as the only one of the monitored categories of expenditures, did not prove to be statistically significant. A more detailed look at the individual expenditures from class 10 social protection shows a different "onset" of the statistical significance of the size of the municipality. The influence of the regions is statistically significant in the remaining categories (1020, 1040 and 1070) except for one case.

4 Discussion and Conclusion

Despite the large sample of municipalities, we could not find evidence that the structure of expenditures changes with a higher proportion of women in the council or female mayor (or that the level of representation of women affects the amount of expenditures). This brings our results closer to the findings of Baltrunaite, Casarico, Profeta & Savio (2019), which also failed to demonstrate the impact of the increase in the proportion of women in the council on the land structure of expenditures.

Unfortunately, due to the design of the research, we cannot confirm or refute whether the content of individual policies has changed.

The significant influence of the size of the local government is thus partly surprising. In combination with the statistically insignificant influence of the parameter for the composition of the council or the attribute of the mayor, it shows that the determining indicator for the structure (amount) of expenditures is the size and spatial attributes of the local government. This adds to the claim (and the conclusion of Baskaran & Zohal (2019)) that increasing women's influence on spending will be through a change in policy rather than the number of services offered.

Although in the case of Slovak local governments we have not been able to prove the influence of women in local councils or female mayors on the structure of their expenditures, we cannot say (due to the research design) that this is due to their (in) activity. It turns out that the influence of the size of local government in the case of Slovakia is currently the most significant factor that affects the structure of expenditures. The fragmented structure thus limits the policy's ability to direct funds to the necessary areas.

A factor that deserves closer attention is the presence (or absence) of specific topics of local politics, which most affect women or other parts of the population disproportionately represented in local councils today.

If the Slovak local governments are to be a place that allows its inhabitants to realize their ideas about the functioning of local relations, it must first have sufficient capacity and flexibility. Without a significant change in the organization of local government and regulations affecting public services (at the local level), it will not be possible to increase their impact on what is happening in their environment.

Further research on gender (women) and local government budget could be focused on the qualitative research already mentioned above – on the impact of women on policy content. Another topic that should be addressed is the participation of women in (local) politics. In this case, we are talking about the success of women in running for local councils or the factors that affect their success (e.g., education, age, profession, size of the local government unit or the socio-economic situation in the region).

Acknowledgements

This paper is supported by the grant APVV-19-0108 Innovations in the budgeting of local governments in Slovakia from the Slovak Agency for Support of Science and Research.

References

[1] BALTRUNAITE, A., A. CASARICO, P. PROFETA and G. SAVIO (2019). Let the voters choose women. *Journal of Public Economics*, 180.

[2] BASKARAN, T. and HESSAMI, Z. (2019) Competitively Elected Women as Policy Makers. CESifo Working Paper Series 8005, CESifo. [online]. [cit.2021-08-06]. Available: https://ideas.repec.org/p/ces/ceswps/_8005.html

[3] CUADRADO-BALLESTEROS, B., GUILLAMÓN, M.D. and RÍOS, A. M. (2021). Does gender matter in budget deviations? An empirical assessment of Spanish local governments. *Public Management Review*. DOI: 10.1080/14719037.2021.1912816

[4] MINISTRY OF FINANCE OF THE SLOVAK REPUBLIC (2021) Výdavky miestnej samosprávy 2019. RISsam.

[5] DRAGE, J. (2001) Women in local government in Asia and the Pacific: a comparative analysis of thirteen countries. UN. Economic and social commission for Asia and the Pacific (UN. ESCAP)

[6] ELOMÄKI, A. and YLÖSTALO, H. (2021). Gender budgeting in the crossroad of gender policy and public financial management: The Finnish case, *Public Money & Management*, vol. 41(7), pp. 516-526, DOI: 10.1080/09540962.2021.1927528

[7] HESSAMI, Z. and LOPES DA FONSECA, M. (2020) Female Political Representation and Substantive Effects on Policies: A Literature Review. IZA DP No. 13125, Bonn, ISSN 2365-9793

[8] JUNG, H. (2021). The Effect of Mayoral Gender on Gendered Budget: Evidence from South Korea. *Political Studies Review*. https://doi.org/10.1177/14789299211021517 [online]. [cit.2021-10-14].

[9] SÄTRE, A. (2014). Women in Local Politics in Russia: Coping with Poverty and Strategies for Development. *Eastern European Countryside*, vol. 20 (1) pp.27-53. https://doi.org/10.2478/eec-2014-0002

[10] STATISTICAL OFFICE OF THE SLOVAK REPUBLIC (2018) Voľby do orgánov samosprávy obcí 2018 [online]. [cit.2018-11-16]. Available: https://volby.statistics.sk/oso/oso2018/sk/download.html

[11] UN (2019) Women in Politics: 2019. UN Women Headquarters [online]. [cit.2021-08-06]. Available: https://www.unwomen.org/en/digital-library/publications/2019/03/women-in-politics-2019-map

Contact information

Mgr. Ing. Tomáš Černěnko, PhD.
University of Economics in Bratislava, Faculty of National Economy, Department of Public Administration and Regional Development
Dolnozemská cesta 1, 852 35 Bratislava, Slovak Republic
E-mail: tomas.cernenko@euba.sk

Assessment and forecasting of human resources potential in Ukraine

Olena Dymchenko, Olha Rudachenko, Valeriya Yesina, Iurii Tararuiev

Abstract: The experience of economically developed countries shows that one of the most important factors of economic growth is the creation of conditions for increasing and implementing human resources. The implementation of this task in the realities of Ukraine is complicated by low motivation and migration of qualified personnel. The key condition for solving these problems is the use of tools for assessing and forecasting the human resources potential of Ukraine to determine promising areas of development in this area. An integral assessment of the human resources potential of Ukraine was carried out based on the use of trend analysis and quantitative forecasting methods. Based on the results of the integrated assessment, a rating is constructed that reflects the personnel potential of Ukraine by types of economic activity of business entities. Applying the results of this paper allows to identify the most promising industries in Ukraine and those that need to increase human resources to ensure their accelerated development.

Keywords: Human resources potential, human resources potential forecasting integrated assessment, trend analysis

JEL classification: C53, J21, O31, R10

1 Introduction

In modern economic conditions, the relevance of problems related to the assessment of the personnel potential of economic entities at different levels of the economy is growing. This is due to the fact that in a broad sense, potential is a complex of opportunities of the economic system, the implementation of which depends on the complex of knowledge, skills and abilities of employees, which is known in the scientific literature as intellectual capital. The key feature of human resources potential is that the capabilities of personnel are likely to be realized in the future, which will ensure the gradual development of business entities.

Since human resources are used to refer to the opportunities of enterprises, industries, regions, or the economy as a whole, these opportunities are usually quantified (which is why potential is often associated with the most effective use of human resources in the strategic perspective). This feature of human resources potential leads to the justification in the scientific literature of scientific recommendations on ways to calculate the value of potential

Thus, on the one hand, the problems of assessing human resources potential are quite relevant, and on the other hand, scientists have not developed yet a single coordinated approach to the methods of such assessment. The problems of assessing and forecasting human resources are particularly acute at the level of the national economy, since ensuring economic growth involves improving the quality of management, but at the same time, there are not enough qualified specialists in Ukraine due to their lack of motivation.

It should also be noted that the obtained indicators of integrated human resources assessment can be used as a tool of public administration, as the evaluation results allow not only to identify fields with low human resources, but also to develop effective measures for staff training, working conditions and employee incentives which is extremely important for enterprises belonging to the public sector of the economy.

In addition, the assessment of human resources makes it possible to identify the most perspective sectors of the economy, which in turn creates a basis for their accelerated development with the

active participation of the state as a key investor. Using of the proposed methodology for assessing human resources provides increased efficiency of resource utilization at the macro level, which has a positive impact on the development of society and the functioning of state institutions. The foregoing, in our opinion, determines the relevance of the topic of this publication.

The relevance of problems related to the formation, assessment and forecasting of human resources is confirmed in the publications of Ukrainian and foreign scientists. At the same time, the term "human resources potential" is used precisely in the papers of Ukrainian researchers, while their foreign colleagues use various analogues of this concept.

For example, Kwee Keong Choong's paper is devoted to the theoretical issues of defining and classifying intellectual capital and summarizing experience in this field and does not contain recommendations for estimating or predicting the value of intellectual capital. But the author also systematizes the definition of related concepts (such as “goodwill” and “intangible assets”) and instead of his own definition of intellectual capital, he provides a list of its elements [1, p. 616]. V. Obedgiu considers Human Resource Management in a historical context, analyzing the evolution of approaches to personnel management since the beginning of the twentieth century. The author notes the growing role of employees in strategic management with the simultaneous strengthening of control in large companies [2]. G. Martin-de Castro and co-authors conducted a large-scale study [3], which is also devoted to the analysis of the evolution of scientists' views on the essence of intellectual capital (the authors analyzed a significant number of publications from 1990 to 2016, so according to the methods used, this paper is considered bibliometric and does not aim to formulate their own scientific positions). Unlike the other authors mentioned by N. Brennan, and B. Connell, consider in [4] the practical problem of evaluating intellectual capital and its reflection in reporting. The advantage of the paper is also the justification of indicators for assessing the cost of intellectual capital.

C. Nielsen and M. Montemari considers in the paper [5] the problems of attracting human resources to the activities of companies specializing in e-business. The authors pay significant attention to identify the sources of added value formation in the process of employee interaction. Yang, L. and Gan, C. based on the use of expert methods show a positive impact of human resources on strategic flexibility and the achievement of cooperative goals in Chinese companies [6]. Considering the papers of domestic scientists devoted to the study of the problems of personnel potential formation, it is worth noting the works of such scientists as: O.V. Arzamasov, I. Yu. Lebedev, V. V. Smachilo, O.V. Skoruk, etc., one should note their theoretical orientation and the lack of recommendations for predicting the personnel potential of the state or other object of research [7–10]. One can see, that foreign authors study intellectual capital or human resources, since they are interested in the existing, and not the potential opportunities of business entities.

Thus, the assessment and forecasting of human resources is an urgent task to ensure the strategic development of Ukraine. At the same time, research does not pay due attention to the problems of assessment and forecasting of human resources. In view of the fact the purpose of this paper should be considered to substantiate the method of assessing and forecasting the human potential of the Ukrainian economy.

2 Methods

The selection of research methods is related to the main stages of its implementation. Therefore, we will characterize the methods used taking into account the sequence of their application.

Selection of indicators that reflect the human resources potential of Ukraine.

Based on the analysis of the available information of Ukraine`s statistics service that relates to the personnel of business entities by type of economic activity, the following indicators were selected to assess the personnel potential of Ukraine (Table 1).

Table 1 – Characteristics of indicators for assessing human potential

Indicators	Unit	Economic sense
Personnel costs of business entities	mln. UAH	Indicators characterizing the ability of business entities to maintain labor resources. These indicators can also be characterized as the ability of business entities to stimulate the activities of personnel.
Average monthly wages of full-time employees	UAH	
The number of employees in business entities	thousands of people	Indicators characterizing staffing of business entities by type of economic activity
Number of vacancies by types of economic activity	thousands of units	
labor productivity	UAH per person	Indicators characterizing the efficiency of labor resources by business entities.

2 Forecasting indicators

The content of potential reflects the promising, unrealized opportunities of enterprises, so it is the long-term assessment of human resources that is of the high importance. Therefore, the use of quantitative forecasting methods, in our case, is totally justified.

Among the most common methods of quantitative forecasting, trend analysis is most suitable for the purposes of this paper, it involves taking into account the dynamics of each indicator by using trend equations (while the sequence number of the actual or forecast period of the data array acts as a variable) [11-12]. Typical trend equations used to calculate prospective values of human resources indicators are presented below (1–4):

$$y = k \times \ln x + b, \quad (1)$$
$$y = k \times x^b, \quad (2)$$
$$y = k \times x^b, \quad (3)$$
$$y = k \times x^b, \quad (4)$$

Where:

- y is the prospective indicator value;
- x is the variable value of the trend equation, represented by the ordinal number of the period;
- k is the coefficient at x;
- b is a quantitative parameter of the trend equation.

The use of trend analysis involves taking into account the degree of approximation of the trend line to the actual changes in a particular indicator, which is achieved through the use of a coefficient of determination (which increases the validity of calculation results). Trend equations are defined for each indicator and type of activity and there are quite a significant number of them, so one gives only those that characterize industry, agriculture, forestry and fishing, as well as construction (Table 2).

Table 2 – Trend equations for certain types of economic activity

Indicator name	Trend equation		
	Agriculture, forestry and fisheries	Industry	Construction
Personnel costs of business entities	$y = 19850e^{0,1986x}$	$y=129242e^{0,151x}$	$y = 2546x + 9083,4$
Average monthly wages of full-time employees	$y = 1909e^{0,2773x}$	$y = 3113,5e^{0,2229x}$	$y = 2601,9x^{0,6232}$
The number of employees in business entities	$y = 726,14e^{-0,033x}$	$y = 2578,1x^{-0,073}$	$y = 297,88e^{-7E-05x}$
Number of vacancies by types of economic activity	$y = 0,28x + 0,96$	$y = 2,56x + 3,94$	$y = 0,34x + 0,72$
Labor productivity	$y = 229566x^{0,5553}$	$y = 438847x + 1E+06$	$y = 103698e^{0,2327x}$

The advantage of using trend analysis in comparison with other methods is also the ability to determine the prospective values of indicators for any period, but in our case, the array of actual data is limited to 2015–2019, and integral assessment and forecasting of human resources is proposed to be carried out as of 2022.

3 Normalization of indicators

The normalization procedure is necessary in order to compare absolute and relative indicators that have different units of measurement and economic content. To normalize indicators, the maximum and minimum values of the dynamics series are traditionally used, which makes it possible to convert absolute indicators to relative ones so that the maximum value of the indicator is 1, and the minimum value is 0. To calculate the normalized values of indicators, one uses the formula (5):

$$x_i = \frac{x_n - x_{min}}{x_{max} - x_{min}}, \quad (5)$$

Where:

- x_i – normalized value of the i-th indicator;
- x_f – actual value of the statistical indicator for the direction of economic activity;
- x_{min}, x_{max} – the minimum and maximum value of the indicator

4. Integral assessment of economic potential.

The results of preliminary calculations allow to calculate the integral indicator of the human resources potential of Ukraine. In this paper, it is proposed to define it as an arithmetic mean without using weighting factors, since: a) the arithmetic mean avoids zero result of calculations (which can occur in case of too low normalized values reflecting human resources); b) the definition of weighting factors for individual indicators is too subjective and requires careful justification, so it is better to abandon. To determine the integral indicator of human resources potential, one uses the formula (6):

$$I_{hp} = \frac{H_1 + H_2 + \cdots + H_m}{\text{m}} \quad (6)$$

Where:

- I_{hp} – integral indicator for assessing human resource potential, unit share;
- H_1, H_2…H_m – normalized indicators used to assess human resources, unit share;
- m – number of indicators.

3. Results and Discussion

As already mentioned, the integrated assessment of human resources involves the analysis and generalization of a significant array of data, so there is a need for abbreviated notation of economic activities (A1… An) and human resources indicators (H1… Hn). The designations for economic activities and indicators are presented below (see Table 3).

Table 3 – Indicators and types of economic activity designations

Types of economic activity	
Name	Designation
Agriculture, forestry and fish industry	A_1
Industry	A_2
Construction	A_3
Wholesale and retail trade; repair of motor vehicles and motorcycles	A_4
Transport, warehousing, postal and courier services	A_5
Temporary accommodation and catering services	A_6
Information and telecommunications	A_7
Financial and insurance activities	A_8
Real estate transactions	A_9
Professional, scientific and technical activities	A_{10}
Administrative and support services activities	A_{11}
Education	A_{12}
Healthcare and social assistance	A_{13}
Arts, sports, entertainment and recreation	A_{14}
Other types of activities and unclassified ones	A_{15}
Personnel costs of business entities	H_1
Average monthly wages of full-time employees	H_2
The number of employees in business entities	H_3
Number of vacancies by types of economic activity	H_4
labor productivity	H_5

Source: Own processing

Furthermore, it is expedient to present the absolute indicators (primary data) and coefficients used for the integrated assessment of human resources of Ukraine. Below is the data for 2019 (Table 4), as this period is the last in the array of factual information (while forecasting indicators used information for a period of five years).

Table 4 - Information for integrated assessment of human resources, 2019

A_n	H_n				
	H_1	H_2	H_3	H_4	H_5
A_1	55621,1	7556,9	626,1	2,5	863,3
A_2	292647,7	9633,3	2317,6	17,5	1425,0
A_3	24826,6	7844,8	312,3	2,4	1031,5
A_4	136151,3	9404,4	2355,6	9,2	1744,8
A_5	108696,6	9859,8	900,6	6,3	617,4
A_6	10517,1	5874,9	269,7	1,7	235,8
A_7	27150,2	14276,1	331,7	0,6	825,4
A_8	39603,5	16161,0	208,7	0,6	1358,5
A_9	14630,1	7328,8	241,8	0,8	600,5
A_{10}	33073,1	12144,0	309,5	1,2	1226,1
A_{11}	21038,9	7227,7	272,0	1,9	366,4
A_{12}	1722,0	7041,4	34,4	3,7	201,0
A_{13}	17547,1	5852,6	271,6	4,6	116,0
A_{14}	5156,8	7611,6	49,4	0,6	265,5
A_{15}	2312,5	8132,4	155,9	0,6	133,3

Source: Own processing

According to the results of calculations, it is worth noting such negative trends as:

1. Fairly low average wages and slow growth of it compared to more developed countries (which is typical for the health sector and due to the unsatisfactory level of wages in public health facilities).

2. A relatively small number of vacancies (which may indicate a slowdown in economic growth in Ukraine due to reduced business activity of economic entities). The lowest number of vacancies is observed in the financial and insurance spheres, sports, art, etc. At the same time, a significant number of vacancies may indicate not only the development of a particular industry, but also unfavorable working conditions.

3. Disproportionate distribution of workers by type of activity and low productivity (among industries with low productivity should be distinguished education and health).

Based on the application of primary information for 2015-2019 and the use of forecast models, which are partially given in table. 2, promising indicators for integrated assessment of human resources were identified (Table 5).

Table 5 - Perspective indicators of integrated assessment of human resources, 2022

A_n	H_n				
	H_1	H_2	H_3	H_4	H_5
A_1	97222,7	17548,7	945,5	3,2	770,4
A_2	432545,1	18521,8	3000,7	24,4	1503,2
A_3	29451,4	9508,2	298	3,4	2238,6
A_4	238520,6	20320,6	2445,4	12,9	2390,2
A_5	194093,4	21347,5	1019,7	8,2	846,9
A_6	18267,6	12681,8	293,1	3,3	598,4
A_7	42232,5	21175,4	339,2	0,7	2083,5
A_8	27061,8	29594,4	458,1	0,6	731,2
A_9	22852,4	14304,2	229,6	1	526,4
A_{10}	49910,2	22720,5	375,6	1,6	1512,2
A_{11}	33960,5	15617,5	369,2	2,5	631,4
A_{12}	3016,4	14798,5	36	7,2	634,8
A_{13}	49623,2	12650,9	394,7	5,3	390,7
A_{14}	6500,1	13688,7	48,7	0,7	194,4
A_{15}	3324,6	16086,5	163,9	0,8	320,2

Source: Own processing

As a result of the application of the procedure of normalization of perspective values of indicators, which generally characterize the human resources of Ukraine by types of economic activity of economic entities, normalized values of indicators are calculated (Table 6).

Table 6 - The results of the normalization of indicators for integrated assessment of human resources

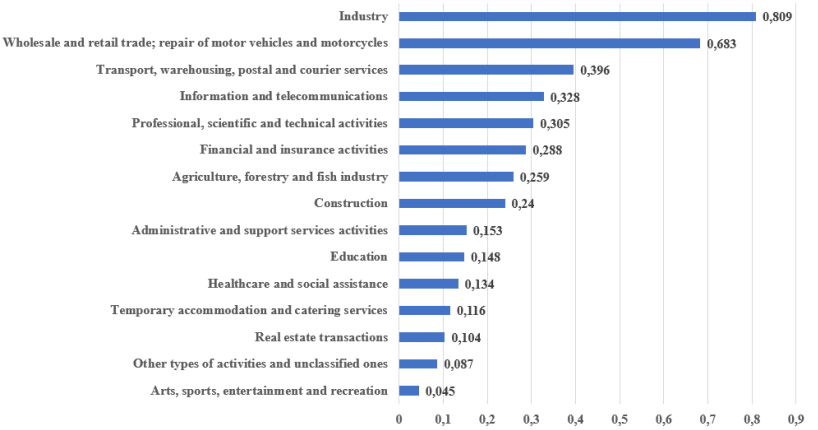
A_n	H_n				
	H_1	H_2	H_3	H_4	H_5
A_1	0,219	0,4	0,307	0,109	0,262
A_2	1	0,449	1	1	0,596
A_3	0,062	0	0,088	0,118	0,931
A_4	0,548	0,538	0,813	0,517	1
A_5	0,445	0,589	0,332	0,319	0,297
A_6	0,036	0,158	0,087	0,113	0,184
A_7	0,091	0,581	0,102	0,004	0,86
A_8	0,056	1	0,142	0	0,244
A_9	0,046	0,239	0,065	0,017	0,151
A_{10}	0,109	0,658	0,115	0,042	0,6
A_{11}	0,072	0,304	0,112	0,08	0,199
A_{12}	0	0,263	0	0,277	0,201
A_{13}	0,109	0,156	0,121	0,197	0,089
A_{14}	0,008	0,208	0,004	0,004	0
A_{15}	0,001	0,328	0,043	0,008	0,057

Source: Own processing

Considering that the maximum indicators of a number of normalized values have a single value, the results of normalization allow to get an idea of the factors that affect the human resources of the state by type of economic activity. For example, industry (A2) is characterized by three

maximum and two average values of normalized indicators, while education (A12) is characterized by two minimum values. To obtain more accurate results, it is necessary to calculate the integrated indicator of human resources using formula (6). It is recommended to use the results of the integrated assessment of human resources to rank the types of economic activity depending on the value of the integrated indicator, as shown below (Figure 1).

Figure 1 - The results of a perspective integrated assessment of human resources in Ukraine, 2022
Source: Own processing



Thus, according to the results of determining the integrated indicator of human resources, it should be noted that the best results are demonstrated by the industry (which is associated with the need to constantly involve qualified professionals to implement complex technological processes). Also noteworthy are the results of the trade sector (where a significant number of employees are involved). The human resources of the transport sector, as well as such industries as: information and telecommunications, professional, scientific and technical activities, financial and insurance, as well as construction and agriculture, can be considered average. These results are explained by the fact that the first three of these economic activities play a supporting role and their development depends on the functioning of the economy as a whole, while construction and agriculture are characterized by significant potential, the implementation of which requires significant investment. Other types of economic activity can be classified as conditional "outsiders" - funding for their development is not given due attention at the state level (although the qualifications of education and health professionals largely depend on the well-being and quality of life of people).

The results of this article can be used in the process of substantiation of state programs to finance the development of the most promising sectors of the national economy, improving working conditions and employee motivation, staff training and others. The most promising areas of research include an integrated assessment of other components of the potential of economic entities and the addition of a list of criteria for assessing human resources, provided that the necessary information is available.

Conclusions

1. For the integrated assessment of the personnel potential of Ukraine, the choice of indicators that generally characterize such potential in terms of types of economic activity of economic entities is substantiated.

2. The main methods of consistent using of which allow to conduct an integrated assessment of human resources are given. Considerable attention is paid to the using of trend analysis to calculate the long-term values of indicators that reflect the human potential of Ukraine.

3. Based on the results of the using of trend models, the normalization of perspective values of indicators characterizing the personnel potential is carried out. By generalizing the normalized values of indicators, an integrated assessment of the integrated indicator of human resources for 2022 was conducted.

4. The results of calculations show that the most promising areas of economic activity for Ukraine are industry and trade, while such socially oriented industries as education and medicine have a low level of human resources and need to improve working conditions and increase public funding to increase staff motivation.

Acknowledgements

This paper was created within the project: Methodological aspects of innovative development of the state. This is the joint project of the Ministry of Education and Science of Ukraine and O. M. Beketov National University of Urban Economy in Kharkiv.

References

[1] KWEE KEONG CHOONG (2008). Intellectual capital: definitions, categorization and reporting models. Journal of Intellectual Capital Vol. 9 No. 4, pp. 609-638.

[2] OBEDGIU, V. (2017). Human resource management, historical perspectives, evolution and professional development. Journal of Management Development, Vol. 36 No. 8, pp. 986-990.

[3] MARTÍN-DE CASTRO, G., DÍEZ-VIAL, I., DELGADO-VERDE, M. (2019). Intellectual capital and the firm: evolution and research trends. Journal of Intellectual Capital, Vol. 20 No. 4, pp. 555-580.

[4] BRENNAN, N., CONNELL, B. (2000). Intellectual capital: current issues and policy implications. Journal of Intellectual Capital, Vol. 1 No. 3, pp. 206-240.

[5] NIELSEN, C., MONTEMARI, M. (2012). The role of human resources in business model performance: the case of network-based companies. Journal of Human Resource Costing & Accounting, Vol. 16 No. 2, pp. 142-164.

[6] YANG, L., GAN, C. (2021). Cooperative goals and dynamic capability: the mediating role of strategic flexibility and the moderating role of human resource flexibility. Journal of Business & Industrial Marketing, Vol. 36 No. 5, pp. 782-795.

[7] Арзамасова, О.(2016). Оцінка кадрового потенціалу держави: методи та підходи. Проблемні питання економіки України та її регіонів. [online]. [cit.2015-06-06]. Available: https://economics.net.ua/files/archive/2016/No3/22.pdf

[8] ЛЄБЄДЄВА, І., ТОМАШЕВСЬКА, В. (2018). Підходи до оцінки персоналу як складової аналізу кадрового потенціалу та технології його розвитку. Інвестиції:

практика та досвід. [online]. [cit.2015-06-06]. Available: http://www.investplan.com.ua/pdf/12_2018/16.pdf

[9] СМАЧИЛО, В. (2019). Система оціночних показників кадрового потенціалу на підприємстві. Ринкова економіка: сучасна теорія і практика управління. [online]. [cit.2015-06-06]. Available: http://rinek.onu.edu.ua/article/view/177072

[10] Скорук, О. (2016). Теоретичні основи формування та використання кадрового потенціалу суб'єктів підприємництва. Науковий вісник Ужгородського національного університету. [online]. [cit.2015-06-06]. Available: http://www.visnyk-econom.uzhnu.uz.ua/archive/7_3_2016ua/26.pdf

[11] DYMCHENKO O., RUDACHENKO O., YESINA V., TARARUIEV IU. (2021). Economic potential of Ukraine: assessment and forecasting. The 3rd Eastern European Conference of Management and Economics (EECME 2021). Sustainable Development in Modern Knowledge Society. Slovenia, May 28, SHS Web of Conferences, Volume 111, 01014 Ljubljana. P. 1-10.

[12] DYMCHENKO O., TARARUIEV YU., YESINA V., RUDACHENKO O. (2020). Methodology for assessing the potential of national economy sectors (on the example of Ukraine). Strategies, models and technologies of economic systems management in the context of international economic integration: scientific monograph / edited by Dr.oec. Prof. Maksym Bezpartochnyi, Dr.oec. Prof. Viktoriia Riashchenko, Dr.paed. Nina Linde, 2nd edition. Riga: Institute of Economics of the Latvian Academy of Sciences, 413 p.

Contact information

prof. Olena Dymchenko, D.Sc.
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Entrepreneurship & Business Administration
17, Marshala Bazhanova St., 61002, Kharkiv, Ukraine
E-mail: dymchenkoov@gmail.com

Olha Rudachenko, PhD.
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Economics
17, Marshala Bazhanova St., 61002, Kharkiv, Ukraine
E-mail: polkin87@ukr.net

Valeriya Yesina, PhD.
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Economics
17, Marshala Bazhanova St., 61002, Kharkiv, Ukraine
E-mail: vayesina@gmail.com

Tararuiev Iurii, PhD.
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Economics
17, Marshala Bazhanova St., 61002, Kharkiv, Ukraine
E-mail: artyur@gmail.com

Rhetoric of users satisfaction with public services new public management

Said Edaich, Roman Śmietański

Abstract: Public management,when decision ma king, easily overlook the value of examining users satisfaction with services provided by public administration. Users satisfaction, a decisive element which should guide administrative action, remains dominated by managerial techniques setting the methods, tools and the impact of public services. This research is an approach that highlights the rhetoric of public satisfaction as an instrument evaluating the effectiveness of public administration in a management model where econometric standards abuse political decisions and user rights.

Keywords: Administration, user rights, public service, satisfaction, management

JEL classification: H10, H83

Introduction

The relationship between public administration and administered is one of the foundations of the legitimacy and continuity of States and of their organizational model. The success of public institutions in managing this tie-in, meeting the needs of users, is considered among the main indicators of regimes democracy level and a perfect tool for economic and social development. Public administration, simultaneously expression of the power and manager of public services, in view of the multiplicity of its functions offers a fertile subject of controversy that stirs politicians, lawyers, economists, individuals and organizations. Beside this formal aspect of analysis approaching the framework of the relationship between the administration and the users, there is also the evaluation of the user, as the main financier of public administrative institutions actions. An assessment established on the basis of the direct link between the challenge of meeting the needs and making life easier for the population and the sums that the state collects in the form of taxes, stamps and sometimes even amounts of money determined in return for the service rendered. Article 16 of the Lisbon Treaty revealed that services of general interest, which act for social and territorial cohesion as well as for a competitive economy, are a major element in making the model of society advocated by Europe a reality. On the one hand, the public administration formally remains a governance tool organizing and managing common life and ensuring its continuity, on the other, it is considered to be an assistance for individuals who cann't meet basic needs to live in dignity. To fulfill these two complex functions, the various institutions of public administration are endowed with exceptional competences and privileges to carry out their missions, satisfying users, within the framework of legitimacy and the general interest concepts. However, experience shows a choppy relationship between the administration and the citizen. Subject to disagreements, this relationsp is experienced by the citizen as a favor rather than a right, it is the administration that directs this relationship, sometimes even through instruments of coercion, like the use of public forces (EL Fakid, 2020).

New Public Management: Legitimacy, legality and appropriateness

New public management, a term introduced into the vocabulary of public administration in the late 1980s, concerning the management and production engineering in public service delivery, and often linked to doctrines of economic rationalism, intending to denote public service reform programs. During the 1990s, New Public Management has become a major academic industry across the World, and supporters of this new organizational process focuses on the quality and efficiency of public service linking corporate management to public one (Hood, 1995).

Nevertheless, public administrative structures still possess characteristics that oppose the dominance of marketing and speculative concepts of public services. Some specialists in administrative law do not manage to fully accept the radical change imposed by this new management technique. In fact the legal status of the public administration and organization, its objectives, its missions (functions) and its environment (domain) obstruct the conversion of the relationship between governance and governed (administered), to customer relationship. The arguments presented in the following chapter clearly show the compactness of jurists and citizens who support this attitude.

1 Legal consideration on new public management

This specificity is reflected in the fact that the managerial autonomy of these structures is subject to the provisions of public law which recognizes for these institutions extraordinary powers and competences, such as the use of public force, not recognized to civil law bodies. However, the same provisions subjected them to political, judicial and even user control to avoid situations of abuse against citizens.

1.1 Objectives

According to the provisions of constitutions and laws around the world, the public administration manages the public service to meet the needs of users. The provision of these services:

- must be free of charge,
- cannot be for profit,
- must be of quality and continiuty,
- without discrimination or exclusion,
- cannot be subject to competition or preferential measures.

The only constraints come first from the provisions of the law which must authorize the service and recognize the organ that has to provide it, secondly, constraints may result from the public budget recognized for this administration and the way it should be spent. These constitutional principles, which supports the unity of the state and the solidarity of citizens, cannot be speculated as to private companies. Considering this attitude, a more than logical question arises, even if it remains at the theoretical level: If governance decisions inflicting such change on citizens (users) can lead to a revision of the citizen-state report ?

Obviously such question has not to prevent rationalizing the instruments and the way of managing the public services avoiding the risk of legality and legitimacy conflicts.

1.2 Tasks (missions)

The public administration acts at the base of the duties and rights determined by the law to avoid doubts and suspects about the opportunity and utility of the administration acts. The public bodies do not sell products but provide services hence the relativity of the question of output. The citizens finance the administration in a solidary and continuous way and claim from this structure a service on the basis of equality and common interest. The state or the representatives of the collectives are civil servents who have to serve users, for this they receive their salary (compensation) and other privileges stated by law (they do not volunteer work). The situation is completely different for companies and corporations that sell products or services according to the market principles (competition, speculation, proces, …). The main goal to achieve, for these institutions, is to make maximum profit with minimum time and investment costs. The concepts of common interest and public service do not come within the interest and reasoning of private corporation and companies.

1.3 The field of action (environment)

Public administration acts delivering services but not in a deregulated market that offers services and products to clients. Public structures activities is directed to masses of citizens who cannot be selected according to criteria deriving from the usefulness, quality and the cost of the product or the service. Unlike for corporations that can choose their partners, suppliers and customers and even specialize in the provision of a service or a product according to the principe of profitability. Furthermore, the rules governing the activities of companies and corporation, generalny, belong to civil law and depend on the will of the parties (contracts) and not on the state policy (common interest). Consequently, the use of marketing concepts must be restricted so as not to damage the concept of the common life in a given society and not to provoke the question of legitimacy both for the administrative organ and of the decider. To dodge the previous embarrassing remarks, the new proposal in public management strived to put together the Weberian managing model and the new methods of public management under principles such as:

- accountability and transparency,
- network governance,
- co-production of public policies (from definition to delivery),
- implementation and superposition of different managerial approaches (Pasquier, 2018).

2 The strategic choices of new management

New public management in its evolutive strategy used concrete and convincing instruments to raise awareness of the social environment. Information and communication technology, space and the attention given to citizens seem to be its main arguments to convince masses of users to the introduced changes. Our approach, presenting these arguments, attemps to highlight the effectiveness of these choices based on the evaluation of the competent institutions.

2.1 User-centric approach

In the user-centric approach in administrative management, the user is supposed to be the principal beneficiary of the administrative action ″ The administration exists by and for the user ″, an orientation, in someway, assimilated to "customer" orientation widely described and analyzed in the the private sector. Governance, in its openness to citizens, involves them in a process of participation and consultation on the decisions that should meet the needs of the community. The conclusions reached by this process should be used in the formulation of policies governing public services. For the success of such approach it is required that interactions between public administration (governance) and users should take place in an environment that primarily promotes the principle of responsibilizing the partners in the action (decision-makers and citizens), then guaranteeing transparency (the access to information for all and equally), and finally integrate the outcomes of this consultative process into the management of public services and more generally into state policy.

Obviously, the users are constantly confronted with the institutional complexity reinforced by successive reforms imposed by the orientation of a system often more global in which the principles of management are evaluated and chosen according to the output. A challenge that condamns the user of the public service to loss the expected support and to face the lack of precise information. Such factors generate confusion among users related to the subject-matter and territorial competencies recognized to the public organs. Therefore arises a certain confusion that may exclude users preventing them benefiting from services and rights granted to them.

2.2 Representative democracy and participatory process

In the framework of representative democracy the participatory process, complex and limited in its scope, offers a resolution based on a real listening to citizens expectations. Apparently this should lead to a reconciliation between administration and users, it also carries the risk of deviation which could lead to an unfair redistribution of responsibility between partners in this action. The participatory process involves parties with different knowledge, skills and abilities. Their dialogue is essential to reduce the dissymmetry between the different choices and visions. The citizens themselves propose and disseminate knowledge that affects society and public services. However, the role of public authorities in this phase must be limited to arbitrating the debate and to be more attentive to the conclusions and resolutions that emerge from the debate (Bauby, 2016).

The participation of the private sector (originally users and citizens), as a new, unconventional approach to public service delivery takes the form of a contract and sometimes takes the form of an institutional partnership. It assumes that citizen participation, as an instrument of cohesion, can generate effective results regarding the management of public services in a democratic and civic Framework. However it should be noted that the introduction of the principle of participatory governance requires the adaptation of the administration, its agents and its practices to the needs of the citizens in order to strengthen the proximity of the administration to the users (Bauby, 2014).

Even so such actions do not go beyond political exhibition that charge on the administration new expenses that could be avoided if the elected politician acted from his office and that he puts at the center of his interests the satisfaction of the needs of the voters who chosed him. The exhibition of the politicians in the deprived districts of the cities testifies to the negligence of the political and administrative action of the precedents elected who allowed the degradation of certain districts or allowed, during their mandate, the creation of devolved districts.

2.3 The co-production of public action

As long as this participation of citizens "users" remains within the framework of proposals which reflect the vision according to which the public administration has to serve the ″user″ that, in return, has to finance the administration action (taxes, ...), this traditional relationship does not pose any challenges to be understood and accepted (Tranchant, 2005). Nonetheless, when the participation of the private " supposed to be also user and citizen " extends to the provision of the service substituting the public administrative in its duties, the participation becomes distinct and subjected to questions of legitimacy, constitutionality and other public policy issues. We clearly note a change in the status of the user who becomes a partner in an action reserved for the public sector, on the time his interests become of a speculative and competitive nature for a profit-making purpose. The participatory process managing a "public service" is markedly different from the traditionally known process where the state assumes the function of meeting the basic needs of citizens. It is hardly convincing that a private person who fights for his interests can satisfy needs determined on the basis of solidarity and or can facilitate the life of the social group. Co-production, as a management process, presents a wide conceptual field, which refers to a several arrangements and possibilities managing public services and that may involve different entities and individuals to perform activities which fall within the competence of public administrative bodies (Howlett, 2017). The evolution of the principle of co-production has led to the use of nonparallel way of interaction based on information and communication technologies. In fact, since the 1990s, new public management has caused public structures to adopt Information and Communication Technology (Pollitt, 2016).

2.4 E-government

The development of e-government as an instrument of public management is essential even in countries with limited resources. The global average total of the E-government (EGDI) development index increased from 0.55 in 2018 to 0.60 in 2020. Financial resources, low level of human capital development and lack of adequate infrastructure and widespread broadband connectivity, are not the only drawbacks to the development of e-government. Disadvantaged countries are confronted with factors such as the absence of a strategic vision of leadership for an effective commitment to the development of digital services. Considering official Data in 2020, Europe detains the higher. E-government development index (EGDI) with (58 %), and a 93 % among countries offering online services to vulnerable populations. It is followed by the Americas (84 %), Asia (80 %), Oceania (65 %) and Africa (55 %), (DESA, 2020). We can elasy understand the logic of a such ranking when we know about the raisons that stay behind it :

- the ubiquity of high-speed Internet and mobile telephony, enabling increased network functionality and capacity;
- the availability of data sets that are too large or complex for traditional analysis applications which require the development of technologies capable of processing and analyzing them (Big Data);
- Cloud computing, increasing the capacity to store and share information;
- developments in artificial intelligence, robots and machine learning;
- additive manufacturing and 3D printing;
- advances in simulation methods and systems integration.
- the introduction of digital currencies (blockchains) (Peña, 2018).

United Nations in the E-Government Survey for 2020 defined the e-participation as "the process of engaging citizens through ICT in policy, decision-making, and service design and delivery in order to make it participatory, inclusive, and deliberative". Citizen participation has been fostered by digital platforms and Internet that have made it possible to involve civil society on a large scale and to involve audiences hitherto far from this type of process, (young people). Globally, we are witnessing a high growth in online consultations and awareness raising programs to encourage civil society to take part in the the debates concerning public management and the improvement of its instruments. Users expectations for digital integration remain unfulfilled, as they consider that the lack of understanding of programs and administrative processes, the interaction and the quality of consultation neutralize the efforts of public services to meet their needs (Weller, 2018).

At the local level, the Survey carried out in 2020 by the United Nations Department of Economy and Social Affairs, evidenced the sustained progress of e-government. For the 100 cities selected for the survey, the level of development of e-government is evaluated at more than 50%; a total of 86 instead of the 40 cities assessed in the 2018 study (DESA, 2020). E-administration, through digital consultation ensured, a new method of citizen participation, platforms contribute positively to the dissemination of knowledge, to the opening up of possibilities at the individual and collective levels, but at the same time they gain an ascendancy over individuals and traditional institutions (Zaza, 2016).

The introduction of information technologies, as a new organizational practice, in public administration, is supposed to improve the skills and the quality of public services simplifying the procedures and the handling of files and cases. This online management offers the possibility of reshaping its internal relations, first between the different offices and then between the administration and the employee as well as its external relations between the administration and the citizen, then the administration and other entities of different nature (economic, ...). According to the Digital Economy and Society Index published in 2020 despite the increase in

Internet users (85% of citizens in 2019), different types of barriers still oppose the expansion of the net in the life of Europeans. 46% of households remained without Internet access in 2019 for reasons such as : Equipment costs (26%), insufficient skills (44%) depending on age, activity and financial situation and the high cost of the internet (24%), (DESI, 2020). However, it is difficult to assess the success of public administration in providing high quality services to citizens using digitalisation in absence of conditions that should allow its functioning adequately to the goals stated by the digital evolution (EC, 2017).

3 Covid 19: examination and implementation instrument for e-administration

The pandemic has introduced sudden and deep changes to many aspects of individuals daily life, businesses and public administrations. In response to this unusual situation, the administration has shouldered extraordinary burdens and tasks to reduce the impact of this crisis. Consequently, digital public services delivery has improved due to restrictions on physical contact with civil servants and public offices. The impact of such challenge still depends on the geographical location of the country and on the region location in the same country (geographical barriers, isolated land,…). Many states and regions remained, at least partially, excluded from interventions and services delivery realized by public bodies. Experts estimate that the impact of this digital managing instrument dipends also on individuals predispositions to accept this new form of relation (vertual) with the administration, and on the preparation of the administration (staff and infrastructure) to fully invest in this new framework delivering services.

In EU countries, the delivery of public services in its classic form (face-to-face) has undergone serious alteration due to the COVID-19 crisis. Many members states have shown a great weakness on preparation, infrastructure and even personnel capable of managing the on-line services. The sectors that have been able to partially adapt to the circumstance are the sectors of public health and education. These two sectors, already concerned by digitization, have been obliged to conduct various new experiments to guarantee a certain level of quality and the continuity of services for users (EC, 2021).

Despite the efforts undertaken by the governance to print digital tools in the relation between administration and citizens, the problem of users dissatisfaction persists in a worrying way. Main subject of digital public management process concerns the accessibility to services, support and communication with users, a system where the user status has been fraudulently replaced by the client status. Consultation and participation are meaningless and do not allow the rational evaluation of public administration action and the political representative. Regrettably digital instruments and programs are no longer convincing, they disarm citizens of their power and their acquired rights against the administration. They are limited to modest objectives that fall within the sphere of public relations so as reception, opening hours, simplified forms, and accessible telephone service (Bouchard, 1996).

4 Conclusion

The reforms initiated by new management and which introduced electronic administration present a redefinition of the relationship between user and administration and a new concept of public services functioning. According to the rehetoric of the supporters of this change, the main objectives are first and foremost, to reduce the operating costs of public services, to simplify access to information for users, but above all to offer services that meet the needs of the community (Défenseur 2017).

Digital administration, new forms of citizen participation, marketing practices and market management rules should not reinforce already existing factors of inequality, nor should they institutionalize exclusion due to social and economic precariousness. Some of the users

worldwide are unable to download or complete an online form or obtain information from the Internet due to applications which still require more practice, operational systems which are in an experimental phase, but above all, the technical lexicon which is misunderstood and interpreted.

Supporters of legitimacy and ligality pay particular attention to the principles that apply to the action of public services and that guarantee equal rights between men and women, freedoms, access to information held by the public administration, the right to appeal against legal acts of a regulatory or individual nature. These principles are those that establish the good governance and the good administration which can be managed in an evolutionary way.

References

[1] EL Fakid I. , EL Moujaddidi N., (2020). Gestion de la relation administration – citoyen : Vers une approche prospective à l'ère de la numérisation et proposition d'un modèle conceptuel, Revue AME Vol 2, No 3 pp, 203.

[2] Hood C., Accounting, (1995). Organizations and Society, Volume 20, Issues 2–3, pp 93-109.

[3] Pasquier M., Villeneuve J., P., (2018). Marketing management and Communications in The public sector, II Ed. Pp 3-15.

[4] Bauby P., Similie M., (2016). Séance 3, Consolider une gouvernance participative de l'action publique et des services publics, CITEGO pp2 - 4.

[5] Bauby P., Similie m., (2014). Les nouvelles pratiques administratives dans un contexte participatif, L'expérience d'Amsterdam West (Pays-Bas), CITEGO .

[6] Tranchant J.P., (2005). Sur le service public comme notion juridique, CITEGO.

[7] Howlett M., Ramesh M., (2017). The achilles heels of collaboration: Overcoming critical capacity deficits in collaborative governance arrangements? Paper presented at the NUS-FPZG UNESCO Chair Workshop on The Governance of Collaboration : Co-Production, Contracting, Commissioning and Certification, Dubrovnik, Croatia.

[8] Pollitt C., (2016). Managerialism redux? Financial Accountability & Management, 32(4), 429–447 .

[9] UN. Department of economic and social affairs, (2020). Digital Government in the Decade of Action for Sustainable Development With addendum on COVID-19 Response E-Government Survey, pp 1 – 37.

[10] Peña-Casas R., Ghailani D., Coster S., (2018). Transition digitale dans l'Union européenne : quels impacts sur la qualité de l'emploi ?, Bilan social de l'Union européenne pp, 125 – 127.

[11] Weller, J., M., (2018). Les figures de l'usager dans les reformes de modernisation des services publics, Informations sociales, 3 n° 198 | pp, 48 – 56.

[12] Zaza O., (2016). L'E-gouvernance pour la participation citoyenne : imaginaires du futur, nouvelles compétences et impacts territoriaux, Pyramides, pp 163 – 190.

[13] European Commision, (2020). Digital Economy and Society Index (*DESI*), pp 17 – 23.

[14] European commission, (2017). A comparative overview of public administration characteristics and performance in EU28, pp 46 - November .

[15] European Commission, (2021). Report on Public Administrations' Digital Response to COVID-19 in the EU.

[16] Bouchard G., (1996). De citoyen à client : plus qu'un changement de vocabulaire. Politique et Sociétés, (29), pp 139–159.

[17] Défenseur des droits, (2017). Enquête sur l'accès aux droits Vol . 2 - Relations des usagers et usagers avec les services publics : le risque du non-recours, pp 13 – 17.

Contact information

Dr. Said Edaich
Opole University of Technology, Faculty of Economics and Management, Department of Regional Policy and Labour Market
ul. Luboszycka 7, 45-036, Opole, Poland
E-mail: s.edaich@po.edu.pl

Dr. Roman Śmietański
Opole University of Technology, Faculty of Economics and Management, Department of Enterprise Management, E-business and Electronic Economy
ul. Luboszycka 7, 45-036, Opole, Poland
E-mail: romanopole@centrum.cz

Spatial accessibility of selected ambulatory social services for the elderly in the Moravian-Silesian Region

Izabela Ertingerová

Abstract: The subject of this research deals with one of the key prerequisites for providing necessary and quality social care to people who, due to old age or unfavorable health, suffer from reduced self-sufficiency and require regular assistance from another natural person. Specifically, it is the spatial accessibility of selected ambulatory social services, which are mostly used by the elderly, i.e. people over 65 years of age. The aim of this paper is to identify and evaluate the gaps in the accessibility of selected ambulatory social services at the level of districts of the Moravian-Silesian Region from 2011 to 2020. The research is supplemented by an analysis of time accessibility of services according to specified time intervals for 2020. The evaluated types of ambulatory social services include day services centres and day care centers. A two-phase analysis was performed, including time series dynamics and ArcGIS network analysis. The results show the inaccessibility of the day service centres in Opava and Bruntál districts, on the contrary, the very good accessibility of this service can be seen in Ostrava-město district. The supply of this service has not changed significantly in the districts since 2011, while in the case of day care centres there is a slight increase in this service in terms of spatial accessibility, which had a positive effect on time accessibility.

Keywords: Ambulatory social services, ArcGIS network analysis, elderly people, Moravian-Silesian region, social care

JEL Classification: I10, J11, J14

1 Introduction

The Czech Republic, which is a member state of the European Union and acts as a signatory to several international human rights treaties, is committed to ensuring that all the rights of its population are respected and protected without distinction. Ensuring the exercise of their rights is all the more important for a group of people – the elderly, especially for the purpose of prevention of an unfavourable situation or social exclusion. In the case of national action plans, the Czech Republic, the relevant public policy in the field of care for the elderly, is currently part of the National Strategy for the Development of Social Services for the period 2016-2025. It is a strategic document prepared by the Ministry of Labor and Social Affairs (2015) and follows up on the National Action Plan Supporting Positive Aging for 2013-2017 and the National Program for Preparation for Aging for 2003-2007 and 2008-2012. For the currently valid period 2016-2025, ten preparations for the aging of society are defined, which includes, among other things, the provision of a wide range of interconnected social services for people with reduced self-sufficiency (the elderly) and the provision of social and health care services considering space and time accessibility. The accessibility of social services is based on the number of social services facilities in individual areas (districts, regions), their capacity (immediate, number of bed) and transport accessibility. According to Guagliardo (2004), the use of services and the overall health of people are affected by the spatial and temporal accessibility of service providers. This statement is also confirmed by Penchansky and Thomas (1981), who defined five barriers that affect the use of social and health services. Specifically, these are availability, accessibility (in the form of distance or time), affordability, acceptability and accommodation.

The social services market includes a relatively large network of services, consisting of stay-in, ambulatory and field social services. At the level of the European Union, the prevailing effort is to provide social services to people aged 65+, especially in ambulatory and field forms (for

example in Norway or France) in order to keep service users in their natural social environment. Ambulatory social services represent a set of activities that help people to solve their unfavourable social situation (Sirovatka, Valkova, 2017; Le Bihan, Martin, 2014). As stated by Mobley et al. (2006), in the case of affordable and quality social care, the risk in the form of the need for all-day care in stay-in social facilities is significantly eliminated, which would result in a possible deterioration of the mental state of seniors. At the same time, Průša (2007) states that social services represent an important pillar in the field of prevention of social exclusion and the occurrence of adverse events, and it is therefore essential to ensure their high level of quality and the necessary accessibility at the level of the entire spatial area.

Self-governing regions play an important role in providing social services, because they are closest to the citizens and are able to respond more effectively to their needs. According to the Act on Social Services No. 108/2006 Coll., as amended, the regions are obliged to create a network of social services, which provides a comprehensive set of available social services, capable of sufficient capacity, appropriate quality and adequate local accessibility to address the unfavorable social situation in level of each region, in accordance with the identified current needs and available resources. Social services are provided by registered providers (public, private), whose goal is to develop their facilities, to provide social services of the highest quality, in accordance with the defined mission and development plan (Zatloukal, 2008).

The aim of this paper is to identify and evaluate the gaps in the accessibility of selected ambulatory social services at the level of districts of the Moravian-Silesian Region from 2011 to 2020. The research is supplemented by an analysis of time accessibility of services according to specified time intervals for 2020. The evaluated types of ambulatory social services include day services centres and day care centers.

Analysis of accessibility is performed using time series dynamics indicators (average absolute increment, average growth coefficient, average relative increment) and ArcGIS network analysis.

1.1 Accessibility of social services

The accessibility of social services is an important attribute in the planning of social services. Thanks to the implementation of community planning and ensuring the availability of social services, an increase in the quality of life of local people in need of social care is achieved, as well as their families and close relatives who are unable to take care of the persons. The key tool for the planning and accessibility of social services is the Medium-Term Plan for the Development of Social Services, the elaboration of which is mandatory at the level of all regions of the Czech Republic. A number of municipalities, or voluntary associations of municipalities, are also preparing their medium-term plans, due to the fact that this tool appears to be the most effective for determining the needs of local residents (Pilát, 2015). The accessibility of social services, or their planning is determined not only by the current needs of the population and the specifics of the area, but also by factors that support or hinder the possible development of social services (especially for the target group of elderly). The authors Lehmann and Havlíková (2015) state that the accessibility of social services and their structure is influenced mainly by economic parameters, the age structure of the population and the unemployment rate. It is therefore recommended to take these factors into account when planning social services. Authors Průša (2015) or Langhamrová, Šimková and Sixta (2018) also refer to the need to monitor economic parameters.

The analysis of the accessibility of social services is a very current professional topic, not only in the Czech Republic. According to Cornea (2017), the sole responsibility for providing social services for the elderly lies with public authorities. The author draws attention to the need to

create such conditions that would lead to manifestations of real and current needs of elderly. Gavurová, Štefko and Bačík (2014) point out that the supply of social services is influenced primarily by the decisions of territorial self-governing bodies rather than just the demographic aging of the population. Due to the aging of the population, the planning of social services should solve the problems associated with it, both in the economic, personnel area and in the quality of the care provided. Gavurová and Šoltés (2016) point out that demographic aging of the population leads to increased demand for social services. The authors' research was focused on the analysis of the supply of social services (structure of services, capacity) in Slovakia, in order to capture their accessibility and interregional differences. The achieved results indicate that the supply of services is significantly affected by the aging of the population, however, it is not able to sufficiently cover all the demand.

Kriisk and Minas (2017) compared the accessibility of social services in urban and rural areas in Estonia. According to the authors, the difference in the accessibility of some social services lies in the difference in the structure of social services and in the target group of service clients. Especially for the most vulnerable groups of people (immobile people, elderly), the accessibility and proximity of social services is key. It is therefore necessary that these factors are also considered in community planning of social services. Port (2004) adds to the statement by finding that an important role is played not only by the accessibility of social services, but also by the ability to commute to the service. Transport connections should also be adapted. According to Dintrans (2018) and Gibson, Braun and Liu (2002), the accessibility of long-term social care services is particularly evident in cities, while in rural areas and poor communities the accessibility of services is significantly lower or non-existent. Cheng, Wang, Rosenberg and Yang (2012) state in their study that sanitary facilities allocated in urban areas are accessible to users within a maximum of 30 minutes, while in suburban areas the time accessibility of facilities ranges from 30 to 120 minutes depending on built road network, transport connections of urban and suburban lines and standard travel speeds.

2 Material and Methods

2.1 Data

The social services network consists of registered providers of social services in various legal forms (legal and natural persons) who have met the basic requirements and conditions defined in the Social Services Act (Title II, from § 78). The analysis of spatial and time accessibility of selected ambulatory social services is focused on the Moravian-Silesian Region, respectively on the area of individual districts of the region (Opava District, Ostrava-město, Karviná, Frýdek-Místek, Nový Jičín and Bruntál). The analysed ambulatory social services are defined as day service centres and day care centers. The subject of the evaluation was those registered ambulatory social services that were intended for the target group of the elderly, i.e. for persons over 65 years of age.

For the needs of the analysis, a database was created, where the main source of data consists of:

- Public Register of Social Service Providers, which was established with effect from the Act on Social Services on 1 January 2007. It is an information system that provides information on the number of social service providers by district, including their legal forms and addresses of social facilities where services are provided. Device addresses are used to obtain GPS coordinates for their map display,
- Annual reports of providers of selected ambulatory social services for the purpose of obtaining data on the capacity of social facilities,
- Basic statistical data of the Czech Statistical Office, from which data on the number of persons aged 65+ by district were drawn,

- Information portal OKWork (OKPráce) and its information system with the Integrated Portal of the Ministry of Labor and Social Affairs of the Czech Republic, which is designed to search for available places in a defined time interval or at a specified distance using public transport. Based on this, it is possible to define the connection between the municipalities of the Czech Republic (from place A to place B) at a direct distance of up to 150 km. The transport connection database is limited to records where there is a commute time (public transport) and the maximum number of transfers is five. The analysis of the transport connection was carried out only at the level of municipalities (initial and destination municipalities and their stations).

2.2 Dynamics of time series

Budíková, Králová, Maroš (2010) and Artl (1999) state that simple measures of time series dynamics are intended to characterize the basic features of time series behavior and to formulate certain criteria for their subsequent modeling. The basic indicators of the rate of dynamics include the average absolute increment, the growth coefficient, the average growth coefficient, the relative increment and the average relative increment. Average absolute increment, which is suitable for monitoring the development of the entire time series. It is used especially for longer time series. The result is an average change in the value of the time series over the entire monitored time period. In mathematical expression, the calculation has the form (1):

$$\bar{d} = \frac{y_n - y_1}{n-1}. \tag{1}$$

Another indicator of the rate of dynamics is the growth rate, which is expressed by the growth coefficient. The growth rate indicates the extent to which the value of the measured characteristics has changed. The result is usually expressed as a percentage, or in decimal numbers. If the growth coefficients of a time series are relatively constant, the characteristics of the exponential trend can be deduced for a given time series. The average growth rate or average growth coefficient is calculated as the geometric average of the individual growth coefficients in mathematical form (2):

$$\bar{k} = \sqrt[n-1]{\frac{y_n}{y_1}}. \tag{2}$$

The resulting value expresses the average change in the time series over the observed time period. Among other things, the growth coefficients can be used as one of the criteria for finding a suitable trend function. Another indicator of the degree of dynamics is the relative increase, resp. the increment coefficient, which indicates the increment of the value of the time series in the period y_n against the period y_{n-1} in the share calculation. The average coefficient is closely related to the growth coefficient, it is equal to its value reduced by 1, see (3):

$$\bar{\delta} = \bar{k} - 1. \tag{3}$$

2.3 Geographic information system

Geographic information system (GIS) is a framework for collecting, storing, managing, processing and visualizing data associated with a particular place in the form of various maps (topographic, geological, cadastral and other maps). The development of GIS dates back to the early 1960s, when experts from various disciplines tried to use computer technology to integrate data from various sources, for joint analysis and to present the results in a visual form. GIS is commonly used in the areas of state administration and self-government, transport, defense,

geology, healthcare, retail or environmental protection and landscape administration (Machalová, 2007).

In GIS, it is possible to work with a diverse database and with various visualization options. A typical representative of the GIS system is the network analysis, which is used to assess transport accessibility. In the case of the evaluation of the time accessibility of social facilities within individual transport, a technical network analysis was used, which is based on algorithms whose theoretical cores are based on graph theory. Based on this, it is possible to search for the best routes, search for the nearest sanitary facilities, model access zones or perform other accessibility analyzes (Tome, Santos, Carvalheira, 2019). The access zones defined in relation to the tent destination include all parts of the roads that are currently publicly accessible. The accessibility of social facilities via public transport was analyzed using a database of transport connections, which is regularly updated and includes currently valid traffic timetables and transfers.

In the context of this article, commuting to social facilities for 7 am on a normal working day was determined. Tuesday was chosen as the normal working day, as working days such as Monday and Friday are often affected by weekend travel. Connections were sought in bus and train timetables; urban public transport was excluded from the accessibility analysis. It is necessary to emphasize that transport connections describe the real accessibility of the facility (the nearest stop at the sanitary facility), but rather the accessibility of the municipalities (train station, bus stops) where the sanitary facility operates. The accessibility of social services is determined by the travel time by public transport, including the time needed to change and wait for the next transport connection. Based on knowledge from the literature and on the part of providers and users of ambulatory social services, time intervals were defined - the accessibility of the service in the municipality, travel to the social facility within 30 minutes and up to 60 minutes.

3 Results

3.1 Accessibility of day services centres

The ambulatory service of the day services centers is provided on weekdays (Monday-Friday), most often from morning to afternoon. In the Moravian-Silesian Region, the service is not intended primarily for the target group 65+, however, elderly are the most frequent users of this service. The service is provided for a fee. The development of the number of registered day services centers at the level of districts of the Moravian-Silesian Region since 2011 is shown in Table 1.

Table 1 Number of registered day service centres according to district competence for the period 2011-2020

Type of service	*District*	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Day services centres	Opava	0	0	0	0	0	0	0	0	0	0
	Ostrava-město	3	3	3	3	4	4	4	4	4	4
	Frýdek-Místek	1	1	1	1	1	1	1	1	1	1
	Karviná	1	1	1	1	1	1	1	1	1	1
	Nový Jičín	1	1	1	1	1	1	1	1	1	1
	Bruntál	0	0	0	0	0	0	0	0	0	0

Source: Register of social service providers (2011-2020), own elaboration

It is evident that the ambulatory social service was available for the target group of elderly in the region only in the districts of Ostrava-město, Frýdek-Místek, Nový Jičín and Karviná. In terms

of legal form, contributory organizations and registered associations predominated, as well as charity and church organizations. In the Nový Jičín district and in one case in the Ostrava-město district, the service was available only to persons under 80 years of age. Through a simple measure of time series dynamics, the basic features of time series behavior were characterized - ie the development of the number of registered social services for elderly in the districts of the region. The dynamics of time series were evaluated from the point of view of both border years, ie 2011 and 2020, in order to capture developments within a 10-year time period. Based on the results, it can be stated that the most significant in the Ostrava-město district was recorded a positive average absolute increase $\bar{d}$ = 0,11 and the related increasing average growth coefficient $\bar{k}$ of 3 %. The average relative increas $\bar{\delta}$, which is closely related to the average growth coefficient, reflects the average growth rate of the monitored district, ie 3 %. Due to the constant number of registered social services in other districts, their development can be described as stagnant ($\bar{d}$ = 0,00; $\bar{k}$ = 1,00; $\bar{\delta}$ = 0,00).

Accessibility was also evaluated in terms of capacity availability of the service. Based on data on the development of the capacity of day services centers and the number of persons aged 65+ by district, the number of places per 1,000 persons aged 65+ was analyzed. Due to the overall low capacity of day services centers, the differences between the individual districts were low, see Table 2. The recalculation was carried out on the assumption that the given service would be used only by elderly, i.e. persons aged 65+.

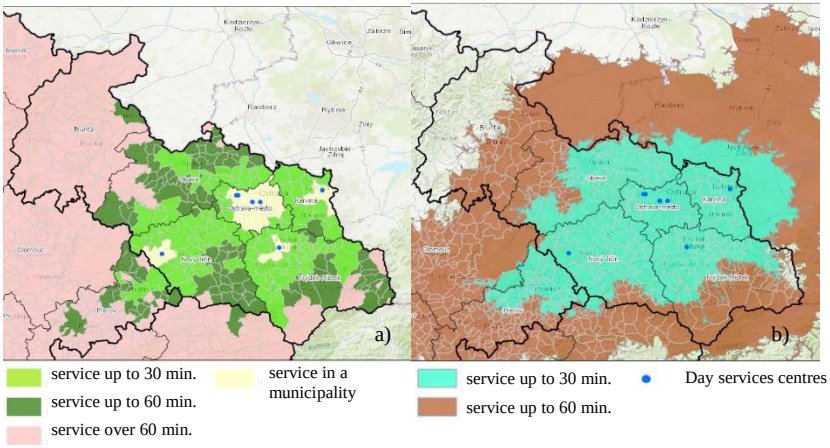
Table 2 Number of places in day services centers per 1,000 persons aged 65+ by district in 2011-2020

District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ostrava-město	0,7	0,7	0,7	0,7	1,1	1,1	1,0	1,0	1,0	1,0
Frýdek-Místek	0,5	0,5	0,5	0,5	0,5	0,5	0,4	0,4	0,4	0,4
Karviná	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Nový Jičín	1,0	1,0	1,0	0,9	0,9	0,9	0,9	0,8	0,8	0,8

Source: Czech Statistical Office (2011-2020), Annual reports of providers of selected ambulatory social services (2011-2020). Own elaboration and calculations

The accessibility of ambulatory social services was also monitored in terms of territorial location and time accessibility, thanks to which it is possible to monitor the activities of social service providers in the city or municipalities in individual districts. The accessibility of the service in terms of time needs to be monitored due to the fact that the users of the services have to commute to the ambulatory service, either by public transport or individual transport. Accessibility was assessed for the year 2020, i.e. for the last monitored period of time, for the needs of capturing the current according to valid timetables, built stops within public transport and according to build roads and highways within capturing the accessibility of the service within individual transport, see Figure 3. From the point of view of public transport, time accessibility was monitored with time intervals within 30 minutes and within 60 minutes and over 60 minutes and in the case of individual transport, accessibility was monitored within 30 minutes and within 60 minutes.

Figure 3 Accessibility of day services centers via the means of public transport (a) and individual transport (b) in year 2020
Source: Own elaboration



The very low accessibility of day services centers results in worsened time accessibility of social facilities, especially within public transport in the Frýdek-Místek and Nový Jičín districts (partly within individual transport). Territorial localities of social facilities in the district of Ostrava-město (as well as the district of Nový Jičín), which are located near the district of Opava, are able to cover a large part of the territory of the district of Opava in terms of time accessibility.

3.2 Accessibility of day care centres

The day care centres are also provided for a fee, on weekdays from morning to afternoon. This is not an ambulatory service provided primarily for people over 65, however, this group is a key target group for the service. The accessibility of the given ambulatory social service was monitored in the Moravian-Silesian Region for the period 2011-2020, according to the number of registered social services, see Table 4.

The social service was provided by one provider in the Opava and Ostrava-město districts, namely by a charity. In the case of the Bruntál district, the service was offered by a charity until 2017, and from 2018 also by a newly registered contributory organization (but only for people under 80). Until 2013, there were three contributory organizations and a registered institute in the Karviná district. In the case of one contributory organization, the service was available to persons under 70 years of age, and in the case of a registered institution, a maximum age limit of 80 years was set. Since 2014, the supply of the service has been expanded by the existing contributory organization, and only for persons under 70 years of age. A registered association has been operating in the Frýdek-Místek district since 2012 (but only for persons under 70 years of age), since 2014 the service has also been offered by a newly registered contributory organization and since 2016 also by church organizations, but only to persons under 80 years of age. In the Nový Jičín district, it was a provider in the legal form of a municipality and, since 2014, an established charity organization.

b)

Table 4 Number of registered day care centres according to district competence for the period 2011-2020

Type of service	*District*	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Day care centres	Opava	1	1	1	1	1	1	1	1	1	1
	Ostrava-město	1	1	1	1	1	1	1	1	1	1
	Frýdek-Místek	0	1	1	2	2	3	3	3	3	3
	Karviná	4	4	4	5	5	5	5	5	5	5
	Nový Jičín	1	1	1	2	2	2	2	2	2	2
	Bruntál	1	1	1	1	1	1	1	2	2	2

Source: Register of social service providers (2011-2020), own elaboration

In order to map the development in the number of registered social services between 2011 and 2020, indicators of time series dynamics were used. In the districts of Opava and Ostrava-město, stagnation of the main results was recorded, which was caused by the invariability of the number of registered social services during the ten years in the given territories ($\bar{d}$ = 0,00; $\bar{k}$ = 1,00; $\bar{\delta}$ = 0,00). The highest average absolute increase was detected in the Frýdek-Místek district ($\bar{d}$ = 0,33). In terms of the resulting values of the average growth rate, it can be stated that among the monitored years, the most significant growth was recorded in the districts of Nový Jičín and Bruntál, within 8%, which is confirmed by the values of the average relative increase ($\bar{\delta}$ = 8 %). In the Karviná district, the growth rate ($\bar{k}$) between 2011 and 2020 was 3 % ($\bar{d}$ = 0,11; $\bar{\delta}$ = 0,03).

Very low capacity of social facilities was recorded in the districts of Frýdek-Místek, Ostrava-město and Opava, see Table 5. In these districts unfavorable accessibility of the service was found, when for 1,000 persons aged 65+ living in the given districts there were 0.1- 0.7 places; since 2018, there have been approximately 1.6 places per 1,000 inhabitants of the Bruntál district. The highest capacity of social facilities in the Karviná district resulted in 2.7-3.1 places per 1,000 persons.

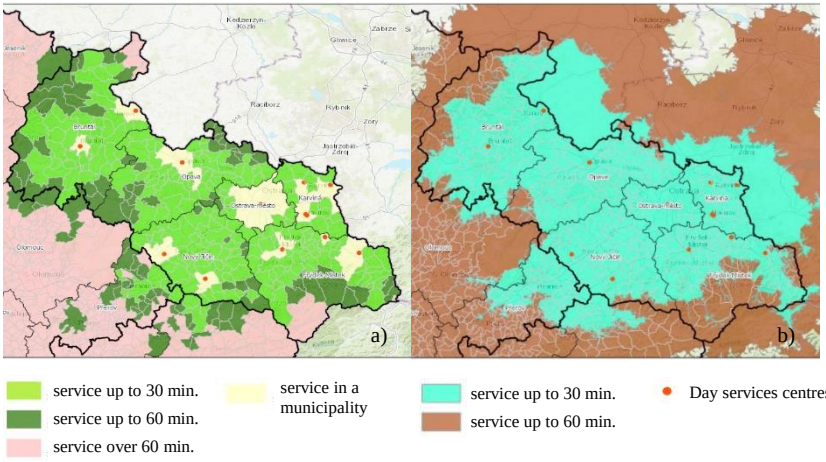
Table 5 Number of places in day care centers per 1,000 persons aged 65+ by district in 2011-2020

District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Opava	0,7	0,7	0,7	0,7	0,6	0,6	0,6	0,6	0,6	0,6
Ostrava-město	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Frýdek-Místek	0,0	0,3	0,3	0,6	0,6	0,7	0,7	0,7	0,7	0,7
Karviná	2,8	2,8	2,7	3,1	3,0	2,9	2,8	2,8	2,7	2,7
Nový Jičín	0,4	0,4	0,4	1,0	0,9	0,9	0,9	0,9	0,8	0,8
Bruntál	1,1	1,0	0,9	0,9	0,9	0,8	0,8	1,6	1,5	1,5

Source: Czech Statistical Office (2011-2020), Annual reports of providers of selected ambulatory social services (2011-2020). Own elaboration and calculations

The territorial location and time accessibility of day care centres from the point of view of public transport and individual transport for 2020 is shown in Figure 6. It can be stated that social facilities are spatially distributed mainly in district cities. In terms of time accessibility from the point of view of public transport, the facilities are available mainly within 30 minutes, especially in the districts of Ostrava-město and Karviná. In other districts, longer accessibility is evident, especially in their peripheral parts. From the point of view of individual transport, the accessibility of ambulatory services can be described as very good, with predominant accessibility within 30 minutes.

Figure 6 Accessibility of day care centers via the means of public transport (a) and individual transport (b) in year 2020
Source: Own elaboration



4 Discussion and conclusion

The Moravian-Silesian Region is one of the regions that, in terms of concept, has long focused on the support and development of social services in its territory. The third Medium-Term Plan for the Development of Social Services for 2015-2020 (MSR, 2016) actively responded to the resources, needs and requirements of local people, which change over time. Ongoing analysis of these needs enabled the region to actively respond and thus ensure an accessible and high-quality network of social services. The region defined several cross-cutting topics for the given period, which concerned the quality of social services, identification of needs and care at the municipal level and deinstitutionalisation of social services in order to prevent the institutionalization of other persons, abolish institutions and provide social services in the natural social environment. The region's priorities also included the target group of seniors, in connection with the demographic aging of the population. The National Action Plan supporting positive aging for the period 2013-2017 also addressed this issue. For this target group, the aim of the region was to ensure the availability of field and ambulatory services in sufficient capacity to prevent the use of residential services.

The research was focused on the analysis of the accessibility of selected ambulatory social services, which are mostly used by people aged 65+ from 2011 to 2020. The supply of services was also evaluated in terms of its time accessibility in individual and public transport. Based on the results, it is clear that the current scope and pace of expanding the number of facilities or capacities of selected ambulatory social services is not yet able to respond effectively to the growing number of people in senior age. The offer of selected ambulatory social services did not increase significantly in the monitored period 2011-2020. It was identified that the spatial accessibility of day care centers is not sufficient in the districts of the region. The absence of this service was detected in the districts of Opava and Bruntál. In the case of other districts, the supply was also very low. The time accessibility of the service from the point of view of the used transport (individual, public) can be marked only in the districts of Ostrava-město and Karviná as very good (travel within 30 minutes). Slightly better results were achieved in the case of day

care centres, the accessibility of which was obvious in all districts of the region. Social facilities are spatially distributed so that it is able to cover most of the district territory, which results in better time accessibility (accessibility within 30 minutes predominates). The supply of selected ambulatory social services was in some cases limited in terms of the age category of clients (services were not accessible to all elderly, but only provided to persons under 70 or up to 80 years of age).

The achieved results are in accordance with the findings of Horecký, Průša (2019), who state that the capacity of ambulatory social facilities is not sufficient in relation to the number of persons aged 65+ (demand side). The network of ambulatory social services is expanding only very slowly at the regional level, and at the same time the social facilities are not spatially distributed evenly so that they are able to cover the entire territory, including remote areas. Holczerová, Dvořáčková (2013) also draw attention to the insufficient supply of ambulatory social services for seniors, which is caused not only by economic factories, but also due to insufficient information on ways to meet the needs of the region and insufficient cooperation between local authorities, social policy makers and social services providers. For ambulatory social services, it is necessary to ensure affordable and quality social care. The services should be accessible in several towns or municipalities in the districts of the Moravian-Silesian Region with accessible transport accessibility (especially within public transport), flexible in time (not limited to standard working hours only), with sufficient capacity and affordable. Although the accessibility of ambulatory social services in the region has been detected in the region for individual transport significantly better than for public transport, Lucas, Stokes, Bastiaanssen, Burkinshaw (2019) state that elderly are more often dependent on public transport, which is not in rural areas. The accessibility of ambulatory facilities is therefore longer than 30 minutes, which has some effect on their health and mental well-being.

Through the GIS system and network analysis, it is possible to evaluate the scope of ambulatory social facilities in the district and effectively use it as a decision support system, not only in terms of planning and development of ambulatory social services, but also for urban planning, transport, energy and resource analysis. According to Ngui, Apparicio (2011), GIS can be seen as a suitable tool for social policy makers to identify the needs of the population, identify gaps in the services market, or oversupply in a particular area. Based on this, it is possible to achieve a balance between equal access to ambulatory social services and the health status of the population across all districts.

Acknowledgements

This paper was created within the project TJ04000315 “Nové výzvy na trhu sociálních služeb pro seniory v Moravskoslezském kraji”. The project was supported by the Technology Agency of the Czech Republic.

References

[1] ARLT, J. (1999). Moderní metody modelování ekonomických časových řad. Praha: Grada Publishing.

[2] BUDÍKOVÁ, M., M. KRÁLOVÁ, MAROŠ, B. (2010). Průvodce základními statistickými metodami. Praha: Grada Publishing.

[3] CORNEA, V. (2017). Institutional and Administrative Answers to the Phenomenon of Demographic Aging: (Re)Configuration of the Social Services Infrastructure. Public Administration and Regional Studies. Vol. 19, No. 1, pp. 71-84.

[4] CZECH STATISTICAL OFFICE. (2011-2020). Složení obyvatelstva podle pohlaví a jednotek věku k 31.12. [cited 2021 July 27]. Available from:

https://vdb.czso.cz/vdbvo2/faces/cs/index.jsf?page=vystup-objekt-parametry&z=T&f=TABULKA&sp=A&pvo=DEMD001&str=v68&c=v3~2__RP2020MP12DP31

[5] DINTRANSE, P. V. (2018). Do long-term care services match population needs? A spatial Analysis of nursing homes. PLOS ONE. Vol. 13, Issue 6.

[6] GAVUROVÁ, B., ŠOLTÉS, M. (2016). Economic aspects of social services development in Slovakia in the context of demographic changes. Scientific Papers of the University of Pardubice, Series D. Vol. 23, Nr. 37, pp. 14-25.

[7] GAVUROVÁ, B., ŠTEFKO, R., BAČÍK, R. (2014). The Analysis of social services´ structure in a specific region and its significance for health and social policy in Slovakia. Polish Journal of Management Studies. Vol. 10, Issue 2, pp. 43-53.

[8] GIBSON, D., BRAUN, P., LIU, Z. (2002). Spatial ekvity in the Distribution of aged care services in Australia. Australasian Journal of Ageing. Vol. 21, Isssue 2, pp. 80-86.

[9] CHENG, Y., WANG, W., ROSENBERG, M. W., YANG, L. (2012). Access to residential care in Beijing, China: Making the decision to relocate to a residential care facility. Ageing and Society. Vol. 32, Issue 8, pp. 1-23.

[10] GUAGLIARDO, M. F. (2004). Spatial accessibility of primary care: concepts, methods and challenges. International Journal of Health Geographics. Vol. 3, Issue 3, pp. 1-13.

[11] HOLCZEROVÁ, V., DVOŘÁČKOVÁ, D. (2013). Volnočasové aktivity pro seniory. Praha: Grada Publishing.

[12] HORECKÝ, J., PRŮŠA, L. (2019). Současná struktura služeb dlouhodobé péče a prognóza potřebnosti sociálních služeb 2019-2050. Tábor: Asociace poskytovatelů sociálních služeb ČR.

[13] KRIISK, K., MINAS, R. (2017). Social rights and spatial access to local social services. The role of structural conditions in access to local social services in Estonia. Social Work and Society. Vol. 15, Issue 1, pp. 1-18.

[14] LANGHAMROVÁ, J., ŠIMKOVÁ, M., SIXTA, J. (2018). Makroekonomické dopady rozšiřování sociálních služeb pro stárnoucí populaci České republiky. Politická ekonomie. Vol. 22, Issue 2, pp. 240-259.

[15] LE BIHAN, B., MARTIN, C. (2014). Reforming Long-Term Care Policy in France: Private-Public Complementarities. Social Policy Administration. International Journal of Policy and Research. Vol. 44, Issue 4, pp. 392-410.

[16] LEHMANN, Š., HAVLÍKOVÁ, J. (2015). Predictors of the Availability and Variety of Social Care Services for Older Adults: Comparison of Central European Countries. Journal of Social Service Research. Vol. 41, Issue 1. pp. 113-132.

[17] LUCAS, K., STOKES, G., BASTIAANSSEN, J., BURKINSHAW, J. (2019). Inqualities in Mobility and Access in the UK Transport System. UK: University of Leeds.

[18] MACHALOVÁ, J. (2007). Prostorově orientované systémy pro podporu manažerského rozhodování. Praha: C. H. Beck.

[19] MINISTRY OF LABOUR AND SOCIAL AFFAIRS. (2015). Národní strategie rozvoje sociálních služeb na období 2016-2025. Praha: MoLaSA.

[20] MOBLEY, L. R., et al. (2006). Spatial Analysis of elderly access to primary care services. International Journal of Health Geographics. Vol. 5, Issue 1, pp. 1-17.

[21] MORAVIAN-SILESIAN REGION. (2016). Střednědobý plán rozvoje sociálních služeb v Moravskoslezském kraji na léta 2015-2020. [cited 2021 July 27]. Available from: https://www.databaze-strategie.cz/cz/msk/strategie/strednedoby-plan-rozvoje-socialnich-sluzeb-v-moravskoslezskem-kraji-na-leta-2015-2020.

[22] NGUI, A. N., APPARICIO, P. (2011). Optimizing the two-step floating catchment area method for measuring spatial accessibility to medical clinics in Montreal. BMC Health Services Research. Vol. 11, Number 166, pp. 1-12.

[23] PENCHANSKY, R., THOMAS, J. W. (1981). The Concept to Access: Definition and Relationship to Consumer Satisfaction. Medical Care. Vol. 19, Issue 2, pp. 127-140.

[24] PILÁT, M. (2015). Komunitní plánování sociálních služeb v současné teorii a praxi. Praha: Portál.

[25] PORT, C. L. (2004). Identifying Changeable Barries to Family Involvement in the Nursing Home for Cognitively Impaired Residents. The Gerontologist. Vol. 44, Issue 6. pp. 770-778.

[26] PRŮŠA L. (2007). Ekonomie sociálních služeb, 2. vydání. Praha: ASPI, a.s.

[27] PRŮŠA L. (2015). Financování služeb sociální péče v ČR – teorie a praxe. Praha: Fórum sociální politiky.

[28] SIROVATKA, T., VALKOVA, J. (2017). Attitudes towards childcare policies, policy feedback and path dependency: Czech Republic contrasted to Norway. International Journal of Social Welfare. Vol. 27, Issue 3, pp. 282-293.

[29] TOME, A., SANTOS, B., CARVALHEIRA, C. (2019). GIS-Based Transport Accessibility Analysis to Community Facilities in Mid-Sized Cities. IOP Conference Series: Materials Science and Engineering. Vol. 471, Issue 6, pp. 1-11.

[30] ZATLOUKAL, L. (2008). Plánování rozvoje sociálních služeb metodou komunitního plánování. Olomouc: Univerzita Palackého v Olomouci.

Contact information

Ing. Izabela Ertingerová, Ph.D.
VSB - Technical University Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: izabela.ertingerova@vsb.cz

Civil Service Systems and Evaluation of Selected Indicators in European Union Countries

Martina Halásková, Renata Halásková

Abstract: The paper deals with civil services, civil servants and their characteristic features in the European dimension. The aim is to define the basic features of civil service and evaluate the systems of civil service in EU countries on the basis of selected indicators. A hierarchical cluster analysis is utilised to assess similarities and differences of indicators of civil service in EU countries. This method allows a more specific look at the similarities and differences between countries, thus identifying groups of countries with similar information. The results lead to a division of the countries into seven clusters divided by internal similarity, including the specificities of the individual indicators of civil service. Germany has a specific position, with the highest expenditures on compensations of employees in general government and with a relatively low number of national administrations. Similarities as well as significant differences have been found between the clusters of EU countries with respect to the observed indicators of civil service. The most marked differences have been seen in the countries in the fourth cluster (Cyprus and Hungary) and the sixth cluster (Italy, the Netherlands, Portugal) in the number of national civil servants in central public administration and proportion of seats held by women in national parliaments. In spite of the differences in the systems of civil services, similar tendencies can be observed, in particular towards increased flexibility, modern recruitment process, efficiency of the services, higher demands for formal qualification, or assessment of civil servants.

Keywords: Civil service, civil servants, EU countries, hierarchical cluster analysis, indicators of civil service

JEL Classification: H83, M50, C38

1 Introduction

According to a host of authors, civil service is a classical institute of the European public administrative law. Its key terms are professionalism, political impartiality, restraint, recruitment and career. EU countries do not have a unified system of civil service. Civil service is moulded by the same or highly similar principles as the European Economic Area and falls under the sovereignty of the individual states, i.e. it falls under their exclusive competence (EUPAN, 2013; Staroňová, 2017; European Union, ESF, 2020). As a rule, "civil service" is interpreted as a national service in a narrow sense, i.e. employees of ministries (part of the government); in other countries also employees of other central administrative authorities with a similar position in the administrative structure of the given country to ministries, except for the fact that such authority is not governed by a government official. EU countries strive to implement systems of civil service with a higher degree of flexibility, transparency, systems leaning upon work of specialists, and accentuating qualification, competence and performance. These demands result mainly from a new system of HR management that aims for a good quality of public services (Demke and Moilanen, 2010, 2012; Kovařová, 2017; Meričková et al., 2017; Meričková and Muthová (2021). Civil service is mainly associated with the legal position of "civil servants" (civilian employees of public administration). Employees in public administration represent part of a wider category of public employees, i.e. employees in the public sector paid from public resources. Such employees can be considered public who have an employment (or a similar) relationship with the state or another public employer (European Commission, 2018). Public employees are employed by either the state, or self-governing or other public institutions.

However, various categories of natural persons are involved in public administration, i.e. professionals and laypeople, civilian employees and members of military corps, politicians, officials and ancillary staff and employees in public services (Kuperus and Rode, 2016; Eurostat Statistics Explained, 2018).

Currently, three basic systems of civil service are being distinguished on the European as well as global scale usually (Staroňová, 2017; Eurostat Statistics Explained, 2018; European Commission, 2018**)**, namely the career system, the position system, and the mixed (hybrid) system. The *career system* only allows hiring employees on entry-level positions, requires special legal requirements for special careers, entails a maximum age, and disregards any work experience from outside the public sector. The employment is associated with a permanent position. Seniority in the job is automatically associated with an increased salary, and promotion is defined in the law. So are remunerations and the pension system. The *position system* is also typically applied in hiring for higher positions. Special skills are required for special positions, and no maximum age is applied. Previous work experience also outside the public sector is recognised. Typically, the salary is specific and/or individual, and no automatic salary increase exists, nor the system of progress and no guarantee of a permanent employment. The pension system is not defined in the law. The *mixed (hybrid) system* is a combination of the two aforementioned systems. This system of civil service includes structural elements when characteristic features and elements of one system are gradually implemented in terms of the second system. Differences in the individual countries, even if the same type of system of civil service is adopted, consist mainly in the variety of categories of employees, in administrative levels or in functional sectors of employments (European Commission, 2018; European Union, ESF, 2020). The aim of the paper is to define the basic features of civil service and evaluate the systems of civil service in EU countries based on the selected indicators. A cluster analysis is applied to render an in-depth analysis of similarities and differences in the indicators of civil service in EU countries.

1.1 Literature review

A number of authors, e.g. Manole (2009); Demmke and Moilanen (2010, 2012); Picka (2012); Marcetic (2015); Kuperus and Rode (2016); Staroňová and Adamicová (2016); Staroňova (2017); Xifre (2020) as well as research studies and analyses, e.g. EUPAN, 2013; European Commission, 2018; Eurostat Statistics Explained, 2018; European Union, ESF, 2020) deal with civil service, its concept, trends, HR management including current HR questions and position, evaluation and remuneration of civil servants in the European dimension. Some authors, e.g. Židonis and Raišiene (2020) examined the application of innovative management tools in institutions of public administration in Central and Eastern Europe. Stare and Klun (2008) evaluated investments in human resources in Slovenia which increase efficiency and effectiveness of the public sector and are among the most important factors for an improved performance. Fukuyama (2014) shows that hiring of civil servants is a result of their ability to perform work rather than their political connections. Dahlström at al. (2012) found that meritocratic recruitment of civil servants, unlike political appointment, curbs corruption.

Xifre (2020) examined civil service career development and modernizing civil servants' careers. Marcetic (2015) compared the position of civil servants and reforms, in particular managing employees and systems of remuneration in Anglo-Saxon, western European and post-socialist European countries. The aim of the reforms are the protection of the professional, non-political, and ethical civil service and the introduction of a greater degree of flexibility, openness, and cost-effectiveness in a personnel system. Also Staroňová (2017) analyses civil service, system of HR management and appraising of civil servants in the individual EU countries. Kuperus and Rode **(**2016) evaluated **t**op public managers in Europe and management and employment in central public administrations. Staroňová and Adamicová (2016) look into turnover data (both scope and depth) among top civil service officials at the six Slovak ministries between 2004 and 2014 and

the connection between electoral cycles and top civil servants replacements. Picka (2012) presents the system of remuneration of civil servants in Czechia that would ensure an adequate supply of public human resources and prevent overpayment of some groups of employees. Some researchers looked into reforms of HR processes, civil service and civil servants in Romania. Androniceanu and Nastase (2009) present both legal as well as managerial aspects of the Romanian civil service in order to identify its main strengths and weaknesses. Suciu et al (2011) focus on presenting the aspects related to the promotion of civil servants in Romanian and Belgian local public administrations. Ciobanu and Ristea (2015) examine whether a connection could be established between performance appraisal and the factors that motivate civil servants to achieve improved results in their professional activity. Other authors deal with civil service also outside the EU. Veledar and Gadzo (2020) carried out a survey among public employees at all levels of public administration in Bosnia and Herzegovina, evaluating the performance of public administration, increased transparency of public budgets and accountability of public employees. Radojicic and Rabrenovic (2018) assess the rules and practices of professional development in civil service, which include civil servants training, performance appraisal and promotion.

2 Material and Methods

An analytical approach has been adopted predominantly in this paper, with the use of literature and other documents. In the empirical part, data pertaining to the selected indicators of civil service in EU countries have been obtained from the Eurostat database (general government expenditure by function (public services); expenditure on compensation of employees and remuneration of civil servants - specific indicators), EIGE database (Public administration - Senior administrators at national level) and the World Bank -Inter-Parliamentary Union (EIGE, 2021; World Bank, 2021). The selected set of countries where civil service is evaluated comprises 27 EU countries. On account of a high correlation of data, only 26 EU countries have been selected in the end for the purposes of evaluating the system of civil service based on the selected indicators using cluster analysis (i.e. EU countries, excluding France). The selected indicators of civil service used for the purposes of cluster analysis are: 1) General government expenditures on public services, % of GDP (GGEPA); 2) National administrations: top two tiers of administrators by function of government, number of persons, headcount (NATAFG);3) Remuneration of national civil servants in central public administration as index (RNCSCPA); 4) Number of national civil servants in central public administration, number of persons (NNCSCPA); 5) Compensation of employees in general government, in million EUR (CEGG); 6) Proportion of seats held by women in national parliaments, in % (PSHWNP), (Eurostat, 2021). The correlation matrix of the utilised variables (indicators of civil service) in EU countries is seen in Table 1a; the correlation matrix of the used indicators in EU countries excluding France is seen in Table 2.

Table 1 – Correlation matrix of original values in 27 EU countries

	GGEPA	NATAFG	RNCSCPA	NNCSCPA	CEGG
NATAFG	-0.021				
RNCSCPA	0.422*	0.012			
NNCSCPA	0.152	0.538**	-0.270		
CEGG	0.154	0.231	-0.282	0.642**	
PSHWNP	0.201	0.012	-0.182	0.357	0.440*

Source: Authors

*Note: * Correlation significant at the 0.05 level (2-tailed); ** Correlation significant at the 0.01 level (2-tailed)*

Table 2 – Correlation matrix of original values – EU countries (excluding France)

	GGEPA	NATAFG	RNCSCPA	NNCSCPA	CEGG
NATAFG	-0.026				
RNCSCPA	-0.427*	0.105			
NNCSCPA	0.242	0.268	-0.242		
CEGG	0.196	-0.125	-0.240	0.310	
PSHWNP	0.206	-0.116	-0.153	0.306	0.399*

Source: Authors

*Note: * Correlation significant at the 0.05 level (2-tailed*

The evaluation of the selected indicators of civil service in the European dimension and of similarities and differences in the respective countries was performed by means of cluster analysis. Cluster analysis is a multi-dimensional statistical method used to classify units into groups (clusters) where units in the same group are more similar than units in the other groups. Cluster analysis stems from the similarity (distance) of objects. In the present example, the hierarchical cluster analysis applies Ward's method, based on dispersion analysis. At different distances, different clusters will form, which can be represented using a dendrogram (Hennig et al., 2015). The similarities and differences of indicators of civil service in EU countries are then presented in a box-plot. The present analysis draws from data from 2019, which was the last year when all the variables were available. Due to the variety of units of the variables used, the original values have been converted to a standardised score (z-score), with the mean of 0 and deviation of 1 (Meloun and Militký, 2001).

3 Results and Discussion

The following section of the paper deals with the evaluation of systems of civil service and civil servants in EU countries, comparing selected indicators of civil service and evaluating similarities and differences in civil service on the basis of selected indicators in the individual countries by use of cluster analysis.

3.1 Systems of civil service and civil servants in European countries

Systems of civil service, in the EU and other European countries alike, have been developing independently and reflect specific needs, cultures and traditions of each member state. The staff, their knowledge, competencies, motivation, values and work ethics but also the way they are selected and managed (the HRM system) are essential for the capacity and effectiveness of public administration (Christensen and Gazley, 2008; Žárska, 2018). This is reflected in numerous reforms of both the overall civil service system but also HRM functions (such as recruitment and promotion, performance appraisal, motivation, compensation, training and development) and capacity building interventions in order to make civil service systems more effective. At the same time civil service systems continue to show substantial differences among the various EU Member States due to different historical traditions, legal and institutional foundations but also reform pressures and overall employment developments (European Commission, 2018).

Apart from the already mentioned systems of civil service (career, mixed, and position system), EU countries can also be divided by traditions of civil service into several groups **(**Demmke and Moilanen, 2010). Distinguished are the Anglo-Saxon tradition of civil service (Ireland, Malta, Cyprus), the continental tradition of civil service (Austria, France, Germany, Belgium, Luxembourg, Netherlands, Slovenia), the Mediterranean tradition of civil service (Greece, Italy, Portugal, Spain), the Scandinavian tradition of civil service (Denmark, Finland, Sweden, Estonia), the Eastern European tradition of civil service (Czechia, Hungary, Slovakia, Poland,

Lithuania, Latvia, Croatia), and the Balkan tradition of civil service (Bulgaria, Romania). The tradition of civil service creates pre-conditions for the system of human resource management in the individual countries.

Management of human resources at the level of central government is organised in various manners. Most countries apply a combination of a government unit responsible for legislature in the areas of public service and HR management policies (e.g. a designated ministry, body of an administrative council, such as a chancellor, ministry of the interior or independent bodies/agencies) and decentralised implementation of these policies. Also, several countries have independent national agencies/institutes for training in public service. A considerable part of employees in civil service must abide by a set of specific rules that differ from the ordinary work relationships in contracts (European Commission, 2018). The EU Staff Regulations is the official document describing the rules, principles and working conditions of the European civil service. These rules are essential to guarantee the European civil service maintains the highest standards (Eurostat, 2021). The representation of systems of civil service in EU countries and the division of countries by the tradition of civil service is seen in Table 3.

Table 3 – Systems of civil service in EU countries and traditions of civil service

Type of Civil service	Country	Country by tradition civil service
Career system	Germany (DE), Austria (AT), Belgium (BE), France (FR), Luxembourg (LU), Cyprus (CY), Spain (ES), Greece (EL), Portugal (PT), Hungary (HU)	*Continental tradition* (DE, AT, BE, FR, LU) *Eastern European tradition* (HU) *Mediterranean tradition* (ES, EL, PT) *Anglo-Saxon tradition* (CY)
Mixed (hybrid) system	Slovenia (SI), Ireland (IE), Malta (MT), Italy (IT), Slovakia (SK), Poland (PT), Latvia (LV), Lithuania (LT), Croatia (HR), Bulgaria (BG), Romania (RO)	*Continental tradition* (SI) *Eastern European tradition* (SK, PL, LV, LT, HR) *Mediterranean tradition* (IT) *Anglo-Saxon tradition* (IE, MT) *Balkan tradition (*BG, RO)
Position system	Sweden (SE), Denmark (DK), Finland (FI), Estonia (EE), Netherlands (NL), Czechia (CZ)	*Continental tradition* **(**NL) *Eastern European tradition* (CZ) *Scandinavian tradition (*SE, DK, FI, EE)

Source: Authors according to Demmke and Moilanen (2010); European Commission (2018)

The main key feature of the management of systems of civil service are employees. Duality exists in most countries between civil servants and non-civil service employees, with different legal systems and a tendency to unify the contents and working conditions of both groups. Their nature is a widespread phenomenon in both the public and private sectors. There are issues regarding the differentiating functions to be carried out by civil servants, non-civil service employees and by those recruited using trust criteria. In general, the following types exist in EU countries: Civil Servants, Non-civil service employees, Interim/Transitory/Temporary Staff and Management **(**Eurostat Statistics Explained, 2018). According to Demmke and Moilanen (2012) "*the number of public employees under labour law contract is increasing and in the majority of EU countries we also observe that the differences between (public law) civil servants and (labour law status) public employees are decreasing. Some analysis but shows that for a large number of EU Member States the differences are less profound than their legal status might imply. Only for Bulgaria, Greece, Croatia and Italy experts observe high differences among these 2 types of*

employment" (European Commission, 2018, p. 23). Differences between public employees and civil servants in EU countries are shown in Table 4.

Table 4 – Differences between public employees and civil servants

High differences	Medium differences	Low differences
BG, EL, HR, IT	BE, CZ, FR, HU, LT, MT, PL, PT, SI	AT, CY, DK, DE, EE, ES, FI, IE, LU, LV, NL, RO, SE, SK

Source: European Commission (2018)

When evaluating the turnover rate and leave rate of employees in civil service (excluding retirements), it can be said that the majority of countries have a relatively high stability of civil servants. Only five countries (BG, HU, RO, SE, SK) demonstrate a high turnover rate of civil service employees, and in EE, DK, LV, SI, and FR a medium turnover rate of civil service can be observed. France shows a low turnover rate of civil servants and a medium turnover of public employees (European Commission, 2018). The shortage of competent employees for a particular functional work position or leaving the state service is caused by a number of factors, such as a lower level of remuneration or a reduction of salaries.

3.2 Evaluation of selected indicators of civil service in EU countries

Statistics on civil servants provides general background information about civil servants. Based on available data from the Eurostat (2021), this study renders a comparison of the numbers of national civil servants in central public administration, remunerations of national civil servants in central public administration and expenditures on compensation of employees in general government in EU countries in 2019 (see Table 5).

Table 5 - Civil servants, remuneration and expenditures on compensation of employees in 2019

Countries	Number of national civil servants in central public administration	Remuneration of national civil servants in central public administration (index)	Compensation of employees (Million euro)		
			General government	Central government	Local government
Belgium	11 389	103.4	58 630.0	10 489.9	18 810.0
Bulgaria	37 010	106.7	6 140.9	3 929.7	2 155.1
Czechia	21 672	100.3	22 424.3	10 899.8	11 316.8
Denmark	11 493	101.0	46 691.8	12 589.2	33 790.9
Germany	18 383	102.8	271 535.0	35 385.0	69 856.0
Estonia	6 459	111.3	3 223.7	1 800.8	1 311.9
Ireland	29 393	101.0	23 073.1	21 140.8	1 932.3
Greece	75 112	100.3	21 902.0	19 031.0	2 494.0
Spain	36 981	102.9	134 463.0	25 076.0	24 822.0
France	263 849	100.5	297 320.0	146 940.0	83 038.0
Croatia	14 907	103.0	6 449.9	3 294.3	3 051.2
Italy	134 374	100,3	172 912.0	102 929.0	67 082.0
Cyprus	8 617	101,5	2 732.7	2 588.0	131.7
Latvia	13 606	103,8	3 311.9	1 797.2	1 499.6
Lithuania	13 933	116.3	4 961.7	2 679.5	2 217.8
Luxembourg	966	103.0	6 321.3	4 515.4	1 040.7
Hungary	15 042	100.7	14 955.5	11 640.1	3 299.4
Malta	27 852	102.7	1 481.2	1 468.0	13.2
Netherlands	121 291	103.5	66 740.0	25 093.0	40 127.0
Austria	16 863	102.5	41 857.5	16 712.4	10 357.9
Poland	22 719	100.8	54 983.9	24 600.9	29 369.2
Portugal	101 104	100.5	22 905,3	18 498.7	4 130.2
Romania	13 191	112.5	25 119.8	17 951.4	6 985.6
Slovenia	19 945	103.9	5 473.9	3 522.6	1 897.0
Slovakia	37 306	115.3	9 609.4	5 798.0	3 627.9
Finland	29 003	103.8	29 930.0	7 219.0	22 060.0
Sweden	66 409	103.8	60 006.4	13 942.6	45 954.0

Source: Authors according to Eurostat (2021)

Table 5 shows that the highest number of national civil servants in central public administration is seen in France, followed by Italy and the Netherlands. Conversely, the lowest number of national civil servants was found in Luxembourg. Lithuania and Slovakia reach the highest remuneration of national civil servants in central public administration (expressed as an index) in the EU. When evaluating the remuneration of employees in the general government sector, it can be said that the remuneration in civil service is based upon professional expertise. It is quite common in EU member states that employee rewards are bound to performance. The highest expenditures on remuneration of employees in general government (in millions of euros) are seen in France and Germany, whereas the lowest expenditures on remuneration of employees in general government are seen in Malta and Cyprus.

The main reason for binding rewards to performance is to increase competitiveness of payments in the public sector with regard to the employment rate in the private sector. A different trend is apparent in EU countries regarding allocated expenditures on remuneration of employees,

resulting from specificities in the management of public administration, development trends and priorities of the respective countries. Pay in the public sector is generally lower than in the private sector, with a significant difference in the case of management and high level employees, and it increases as careers progress (European Commission, 2018; Eurostat Statistics Explained, 2018).

3.3 Similarities and differences of indicators of civil service in EU countries using cluster analysis

This section focuses on the evaluation of selected indicators of civil service in EU countries. Indicators available in the year 2019 have been selected to assess civil service in EU countries by use of cluster analysis. The results show a division of the countries (excluding France) into seven clusters based on internal similarities of indicators of civil service (Table 6 and Figure 1).

Table 6 – Results of cluster analysis by similarities of indicators of civil service in EU countries

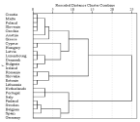
Clusters by country		Indicators of civil service-Transformed values (Z-score)					
Country	Cluster	ZGGEPA	ZNATAFG	ZRNCSCPA	ZNNCSCPA	ZCEGG	ZPSHWNP
Austria	1	0.13790	1.84564	-0.35948	-0.50527	-0.01832	1.10321
Croatia	1	0.07608	0.54755	-0.24978	-0.56034	-0.58915	-0.83445
Czechia	1	-0.66570	1.34162	-0.84217	-0.36987	-0.33162	-0.62831
Greece	1	1.49783	1.53182	-0.84217	1.13478	-0.34004	-0.81383
Malta	1	0.07608	0.76627	-0.31560	-0.19586	-0.66926	-1.41162
Poland	1	-0.78933	0.38588	-0.73247	-0.34039	0.19330	0.01070
Slovenia	1	-0.17118	0.55706	-0.05232	-0.41849	-0.60489	-0.08206
Belgium	2	0.87968	-1.08815	-0.16202	-0.65939	0.25209	1.38149
Finland	2	1.49783	0.26701	-0.07426	-0.16346	-0.21061	1.89683
Spain	2	0.01427	-0.54133	-0.27172	0.06117	1.47466	1.58763
Sweden	2	0.87968	-0.64594	-0.07426	0.88974	0.27428	1.92775
Bulgaria	3	-1.65474	0.12911	0.56201	0.06199	-0.59414	-0.28819
Denmark	3	0.32334	-1.03109	-0.68859	-0.65647	0.05962	-0.28819
Ireland	3	-1.71656	-0.85515	-0.68859	-0.15248	-0.32116	-0.65923
Latvia	3	-1.03659	-1.21177	-0.07426	-0.59697	-0.63975	0.14469
Luxembourg	3	-0.29481	-1.22128	-0.24978	-0.95286	-0.59123	-0.37064
Cyprus	4	1.25057	-1.25932	-0.57889	-0.73744	-0.64908	-1.10242
Hungary	4	1.68327	-0.71726	-0.75441	-0.55654	-0.45203	-1.64867
Estonia	5	-1.22204	-0.49378	1.57127	-0.79820	-0.64117	0.11377
Lithuania	5	-1.22204	-0.90270	2.66828	-0.58777	-0.61315	-0.75199
Romania	5	-0.78933	1.22275	1.83455	-0.60866	-0.28816	-0.69015
Slovakia	5	-0.04755	1.45574	2.44888	0.07032	-0.53822	-0.88598
Italy	6	1.25057	0.21946	-0.84217	2.80335	2.09453	0.73217
Netherlands	6	-0.85115	1.17995	-0.14008	2.43499	0.38283	0.27868
Portugal	6	0.75605	-0.57937	-0.79829	1.86660	-0.32386	1.04137
Germany	7	0.13790	-0.90270	-0.29366	-0.46247	3.68451	0.23745

Source: Authors' calculations according to Eurostat (2021)

Based on the results of the hierarchical cluster analysis (Table 6) and the graphic depiction (Figure 1, see the dendrogram using the Ward method), it can be seen that the *first cluster*, composed of seven countries, is the largest (AT, HR, CZ, EL, MT, PL, SI). This cluster is characterised by a relatively high number of national administrations: top two tiers of administration by function of government. According to the observed indicators, the most similar countries are CZ, SI, PL, MT, and HR. EL is the outlier, with the highest government expenditures on public administration and an extreme value associated with a significantly higher

number of national civil servants in central public administration in comparison to the other countries in the first cluster. The *second cluster* comprises four countries (BE, FI, SE, ES) with high general government expenditures on public administration and services and the highest proportion of seats held by women in national parliaments. The highest similarity is seen between BE, SE and FI. The *third cluster* is composed of five countries (BG, DK, IE, LV, LU) with low general government expenditures on public administration and services seen in most countries, but also a low number of national administrations: top two tiers of administration by function of government. BG is the outlier due to the highest number of national administrations: top two tiers of administration by function of government. Another outlier is LV with the highest proportion of seats held by women in national parliaments, and IE with the lowest proportion of seats held by women in national parliaments. The highest similarity is seen between LT, LU and DK. The *fourth cluster* is composed of two countries (CY and HU), characterised by the highest general government expenditures on public administration and services and the lowest proportion of seats held by women in national parliaments. The *fifth cluster* comprises four countries (EE, LT, RO, SK) with the highest remuneration of national civil servants in central public administration. This similarity is particularly apparent in RO and SK, but also EE and LT. The *sixth cluster* consists of three countries (NL, PT, IT) with the highest number of national civil servants in central public administration. These countries demonstrate a weaker similarity than the most similar countries in the other clusters. By contrast, Germany has a specific position, being the only country in the *seventh cluster*. Germany is the country with the highest expenditures on compensation of employees in general government and with a low number of national administrations: top two tiers of administration by function of government.

Figure 1 - Dendrogram – similarities of EU countries according to indicators of civil service.
Source: Authors

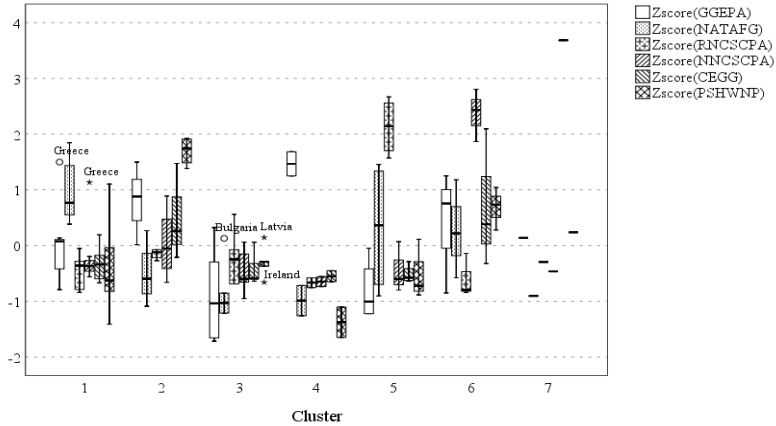


The results of the cluster analysis (see appendix, Figure 2 – Box plot) show the major differences in the observed indicators of civil service in EU countries, in particular in general government expenditures on public administration in the fourth cluster in comparison to the third and fifth clusters. Other significant differences are observed in the proportion of seats held by women in national parliaments in the fourth cluster in comparison to the second cluster.

As regards the criterion national administrations: top two tiers of administrators by function of government, the largest differences were observed in the first cluster against the countries in the third and fourth clusters. Concerning the other indicators of civil service, the significant differences were seen in the following clusters of EU countries:

- Remuneration of national civil servants in central public administration, in particular in countries of the fifth cluster compared to the fourth and sixth clusters.
- Compensation of employees: general government in Germany (seventh cluster) compared to the countries of the first, third, fourth and fifth clusters.
- Number of national civil servants in central public administration in the countries of the sixth cluster compared to the countries of the first and fourth clusters.

Figure 2 - Box plot – similarities and differences of indicators of civil service by clusters of EU countries.
Source: Authors



Note: 1) GGEPA-General government expenditure on public Administration; 2) NATAFG-National administrations: top two tiers of administrators by function of government; 3) RNCSCPA- Remuneration of national civil servants in central public administration; 4) NNCSCPA- Number of national civil servants in central public administration; 5) CEGG-Compensation of employees: general government; 6) PSHWNP- Proportion of seats held by women in national parliaments.

4 Conclusion

Civil service falls under the sovereignty of the individual countries. EU countries do not have a unified system, and public service pertains mainly to the legal position of "civilian employees of public administration". Differences in the systems of civil service consist predominantly in the categories of employees, in administrative levels or in functional sectors of employment. The aim of the paper was to outline the basic features of civil service and evaluate the systems of

civil service in EU countries on the basis of the selected indicators. The analysis has shown the application of a variety of systems of civil service, including the affiliation to traditions of civil service. The outcome of the cluster-analysis-based evaluation of the selected indicators of civil service was a division of EU countries into seven clusters divided by internal similarity. Similarities as well as quite marked differences in the observed indicators of civil service were found between the clusters of the EU countries. A separate cluster, Germany has a specific position in the set, with the highest expenditures on compensation of employees in general government and with a relatively high number of national administrations. The largest differences have been found between the fourth cluster (Cyprus and Hungary) and the sixth cluster (Italy, the Netherlands, Portugal) in the number of national civil servants in central public administration and the proportion of seats held by women in national parliaments. Other significant differences have been found in Germany when compared to the other clusters with respect to expenditures on compensation of employees in general government. In spite of the differences between the systems of civil service, similar trends can be observed, in particular towards a higher flexibility, modernisation of the hiring process, performance, increased requirements for professional qualification or the assessment of civil servants. This paper presents only a basic analysis of civil service in EU countries with the use of selected indicators. Due to the absence of a unified statistical database of civil-service indicators in EU countries, the data were drawn from multiple databases (Eurostat, EIGE, World Bank). The authors strove for choosing available indicators that reflect on the main features and characteristics of civil service. However, civil service offers a vast area of topical questions and possibilities for developing human resources which could be used as a topic for further research.

Acknowledgements

This paper was created within the SGS project SP2021/51 „Complex use of quantitative methods in economic disciplines“ and project VEGA 1/0683/21 “Generation Gap and Provision of Public Services and Administration“.

References

[1] ANDRONICEANU, A., NASTASE, B. (2009). Civil Servants in the Romanian Public Administration from the Legal and Managerial Point of View. *Metalurgia International.* Vol. 14, pp. 207-209.

[2] CIOBANU, A., RISTEA, B. (2015). The Relationship Between Performance Appraisal and Civil Servants' Motivation. *Management Research and Practice.* Vol. 7, pp. 5-19.

[3] DAHLSTRÖM, C., LAPUENTE V., TEORELL, J. (2012). The Merit of Meritocratisation: Politics, Bureaucracy, and the Institutional Deterrents of Corruption. *Political Research Quarterly.* Vol. 65, pp. 656-668.

[4] DEMMKE, C., MOILANEN, T. (2012), The future of public employment in central public administration. Restructuring in time of government transformation and the impact on status development, Study commissioned by the Chancellery of the Prime Minister of the Republic of Poland. Maastricht/Berlin/Helsinki: EIPA.

[5] DEMMKE, C., MOILANEN, T. (2010). *Civil Services in the EU of 27: Reform Outcomes and the Future of the Civil Service.* Frankfurt am Main, Berlin, Bern, Bruxelles, New York, Oxford, Wien: Peter Lang.

[6] EIGE (2021). National administrations: top two tiers of administrators by function of government, [Online]. [cit.2021-07-12]. Available from: https://dgs-p.eige.europa.eu/data/view?code=wmidm_adm_nat__wmid_natadmin.

[7] EUPAN (2013). Irish Presidency Survey on the Structure of the Civil and Public Services of the EU Member States and Accession States. Dublin: Irish Presidency of the Council of the European Union.

[8] EUROPEAN COMMISSION (2018). A comparative overview of public administration characteristics and performance in EU28. Luxembourg: Publications Office of the European Union.

[9] EUROPEAN UNION, ESF (2020). The Comparative Analysis of the Areas of the Civil Service Act in the Selected European Union Countries. Prague: Ministry of the Interior.

[10] EUROSTAT (2021). *Civil servants remuneration-key indicators* [Online]. [cit. 2021-07-12]. Available from: https://ec.europa.eu/eurostat/web/civil-servants-remuneration/specific-indicators/data/database.

[11] EUROSTAT STATISTIC EXPLAINED (2018). *Civil servants in the EU member states.* [Online]. [cit.2021-07-10]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Civil_servants_in_the_EU_member_states

[12] FUKUYAMA, F. (2014). Political Order and Political Decay: From the Industrial Revolution to the Globalisation of Democracy. London: Palgrave Macmillan.

[13] HENNIG, CH., MEILA, M., MURTAGH, F., ROCCI, R. (2015). *Handbook of Cluster Analysis.* London. New York, NY: CRC Press.

[14] CHRISTENSEN, R. K., GAZLEY, B. (2008). Capacity for Public Administration: Analysis of Meaning and Measurement. *Public Administration and Development.* Vol. 28, pp. 265-279.

[15] KOVAŘOVÁ, E. (2017). Cross-Country Comparison of Human Well-Being in the European OECD Member States. In Proceedings of the 2017 *International Scientific Conference on Knowledge for Market Use 2017: People in Economics - Decisions, Behavior and Normative Models*. pp 961-968.

[16] KUPERUS, H., RODE, A. (2016). Top Public Managers in Europe-Management and Employment in Central Public Administrations. EUPAN. [online]. [cit.2021-07-10]. Available: https://www.eupan.eu/wp-content/uploads/2019/02/2016_1_NL_Top_Public_Managers_in_Europe.pdf

[17] MANOLE, C. (2009). Human Resources Development in the Public Sector. *Metalurgia International.* Vol. 14, pp. 241-244.

[18] MARCETIC, G. (2015). Comparative Civil Servants' Systems. *Croatian and Comparative Public Administration.* Vol. 15, pp. 33-68.

[19] MELOUN, M., MILITKÝ, J. (2001). *Kompendium statistického zpracování dat*. Praha: Academia.

[20] MERIČKOVÁ, B. M., NEMEC, J., SVIDROŇOVÁ, M. M., PISCHKO, V. (2017). Analysis of the relationship between the size and structure of public expenditure and socio-economic development. *Ekonomický časopis /Journal of economics*. Vol. 65, pp. 320-333.

[21] MERIČKOVÁ, B.M., MUTHOVÁ, N. J. (2021). Innovative concept of providing local public services based on ICT. *The NISPAcee Journal of Public Administration and Policy*. Vol. 14, pp. 135-168.

[22] PICKA, J. (2012). Defence Resource Management Optimization - Issues of Employee Remuneration of Ministry of Defence of the Czech Republic. In Proceedings of the 2012 *18th International Conference on Knowledge-Based Organization*, KBO 2012. pp. 592-596.

[23] RADOJICIC, Z. V., RABRENOVIC, A. (2018). Alignment of the Serbian Civil Service Legislation With The Eu Accession Requirements. In Proceedings of the 2018 *International Scientific Conference on EU Law in Context - Adjustment to Membership and Challenges of the Enlargement (ECLIC).* pp. 184-200.

[24] STARE, J., KLUN, M. (2008). Improving public administration performance demands investment in human resources. *Zbornik Radova Ekonomskog Fakultet au Rijeci.* Vol. 26, pp. 151-173.

[25] STAROŇOVÁ, K. (2017). Performance Appraisal in the EU Member States and the European Commission. Bratislava: Government Office of Slovakia.

[26] STAROŇOVÁ, K., ADAMICOVÁ, N. (2016). Politicization of Civil Service in Slovakia: Case Study of Selected Ministries in 2004-2014. In Proceedings of the 2016 *20th International Conference on Current Trends in Public Sector Research.* pp. 86-93.

[27] SUCIU, L.E, LAZAR, I., VERES, V. (2011). The Importance of Promotion in the Civil Servants Career Development. In Proceedings of the 2011 *18th International Economic Conference on Crisis After the Crisis - Inquiries from a National European and Global Perspective*. pp. 404-410.

[28] VELEDAR, B., GADZO, A. (2020). The Budget Accounting Model and Performance Measurement: Perceptions of Public Employees in Bosnia and Herzegovina. *Ekonomski Vjesnik.* Vol. 33, pp. 477-488.

[29] WORLD BANK (2021). *Proportion of seats held by women in national parliaments* [Online]. [cit. 2021-07-12]. Available from: https://data.worldbank.org/indicator/SG.GEN.PARL.ZS.

[30] XIFRE, R. (2020). New development: Eloquent silence-civil service career development in the EU financial assistance programmes conditionality. *Public Money & Management.* Vol. 40, pp. 607-610.

[31] ŽÁRSKA, E. (2018). Intermunicipal cooperation as an effective management tool for municipalities. In Proceedings of the 2018 *21st International Colloquium on Regional Sciences.* pp. 398-403.

[32] ŽIDONIS, Ž., RAIŠIENE, G.A. (2020). Making sense of a change management in public administration institutions: Change imitation as employee response to new requirements. *Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration.* Vol. 28, 1149.

Contact information

doc. Ing. Martina Halásková, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: martina.halaskova@vsb.cz

doc. Ing. Renata Halásková, Ph.D.
University of Ostrava, Faculty of Education, Department of Technical and Vocational Education
Fráni Šrámka 3, 709 00 Ostrava, Czech Republic
E-mail: renata.halaskova@osu.cz

Workplace Health and Safety Promotion in Public Administration Organizations

Petra Horváthová, Kateřina Mokrá, Lenka Kauerová

Abstract: For most people, health is at the top of the value scale. Some of the key factors that influence whether people are healthy, which include income, social status, education, literacy and so on, include working conditions. Health and safety promotion in the workplace is not currently enshrined in legislation or tax benefits in the Czech Republic, it is a voluntary activity. However, many Czech employers already recognise its importance and implement activities that improve and protect the health and safety of their employees. The aim of this article is to create a questionnaire that, based on clear questions and criteria (KPIs), will assess the level of workplace health and safety promotion and help to define activities whose implementation will lead to an improvement of the health and safety quality of employees in public administration organizations in the Czech Republic. The review and analysis of the available, mostly foreign literature provided the basis for the development of a questionnaire for the evaluation of the level of health and safety promotion in the workplace of public administration organizations, using the methods of analysis, synthesis, comparison, analogy, deduction and induction. The qualitative research method of focus group was used as a verification method.

Keywords: Health, safety, promotion, questionnaire, public administration

JEL Classification: I12, J8, M12

1 Introduction

The most important resource for the successful functioning of any organization, even those operating in public administration, is its employees, its human resources. It is not financial resources, modern and efficient technology or a well-developed strategy, but people, effective employees play a crucial role in achieving performance and maintaining the stability of any company (Horváthová, 2011). Nowadays, more and more organizations realize benefits of taking care of this most important resource they need to their functioning and consider taking care of the health and safety of their employees as a key process (La Fata et al., 2021). Having a motivated and healthy workforce can certainly be considered as a major competitive advantage (WCHS, 2016). The existence of a culture of workplace health and safety promotion should be one of the core values for the management of any organisation, company or enterprise (Gharib, Martin and Neitzel, 2021). A way to achieve this, is to implement health and safety promotion activities in the workplace, which lead to the promotion and maintenance of the physical and mental health of employees.

Workplace health and safety promotion plays an important role in the management of any organisation as it can protect employers from harm and employees from health risks caused by their occupations (Liu et al., 2021). Creation of a healthy and safety workplace improves the health and safety of employees, which leads to the reduction of short- and long-term sickness absence, to increase of their well-being, to improvement of workplace relationships, atmosphere and working environment, as well as to reduction of work-related illnesses and the number of work-related accidents. All this contributes to improving individual performance of employees, increasing productivity and thus the performance of the whole organization, and increasing the attractiveness of the organization (EASHW, 2016; Lipšová and Šamánek and Vavřinová, 2005).

Workplace health and safety promotion in the Czech Republic is defined as a set of activities and measures aimed not only at preventing illnesses and injuries, but also aimed at improving the

health and safety status of the individual and the whole company (SZÚ, 2018). Through these coordinated and comprehensive activities, the employer complements the mandatory system of preventive health and safety care at work (Lipšová et al., 2016).

Workplace health and safety promotion is not currently enshrined in legislation or tax benefits in the Czech Republic, it is a voluntary activity. However, many Czech employers already recognise its importance and implement these activities or prepare to implement such activities (Lipšová et al., 2016). Moreover, the pandemic of the virus disease covid-19 has clearly shown that health is the highest value of a human life and the value that influences the success of an organization (Kazdová, 2021). The Quality Criteria of Workplace Health Promotion is used as a material for the field of workplace health and safety promotion in the Czech Republic (Lipšová, Šamánek, Vavřinová, 2005).

Based on the previous research done by the authors of the article, it is a known fact that the issue of workplace health and safety is mainly addressed by larger companies in the business sector, while in public administration organizations, specifically local government (municipalities), this issue, beyond various obligations in the field of occupational health and safety given by law, is not given as much attention. The health and safety of workers in the workplace should be based on a health and safety promotion strategy that builds on the overall strategy of the organisation through a human resource management strategy. However, according to the authors of the article and the authors of available research done on this topic, although the representatives of public administration organizations have a positive attitude to strategy and strategic management, there are still some barriers in the development of both the overall strategy and strategies focused on sub-areas of human resource management, such as the promotion of health and safety in the workplace (Kerlinová and Tomášková, 2014). This situation may be the reason why the area of occupational health and safety in local government organisations (municipalities) is not given as much attention.

As already mentioned above, the Quality Criteria for Workplace Health Promotion are only a framework material, which must always be adjusted to the specific conditions of the company and, moreover, do not include a precise assessment of workplace health and safety promotion based on clear questions and criteria. Therefore, on the basis of the above-mentioned facts, the authors decided to focus on a different way of evaluating the level of workplace health and safety promotion in public administration organizations in the Czech Republic, based on specific and clear questions and criteria, e.g. KPIs.

The aim of the article is to create a tool (questionnaire) based on theoretical knowledge in this field, which would be able to evaluate the level of health and safety promotion in public administration workplaces in the Czech Republic on the basis of clear questions and criteria (KPIs) and thus help to define activities whose implementation would lead to improving the quality of health and safety of the employees of these organizations.

According to the authors and available facts, such a tool has not been developed in the Czech Republic yet.

2 Theoretical background

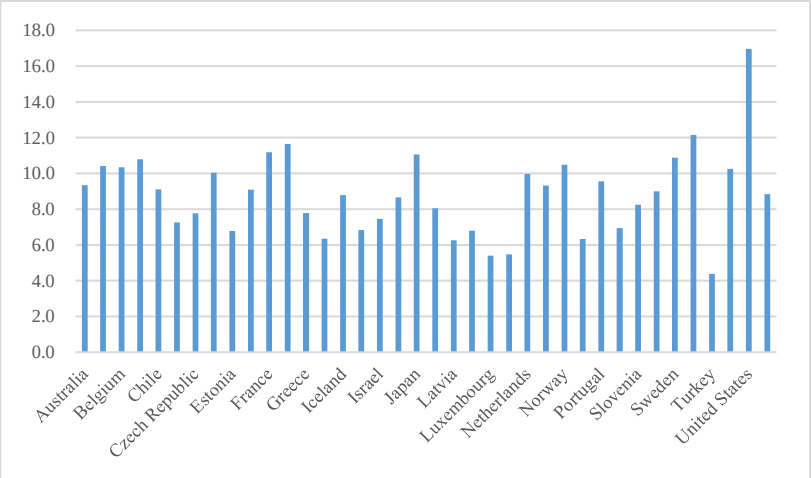
Health is the most important value for most people. There have arisen a number of definitions of health for different purposes. The authors tend to use the World Health Organization (hereafter referred to as WHO) definition of health as full physical, mental and social well-being, where

only the absence of disease or infirmity is not enough.[2] There are many ways to promote health and safety, such as promoting health and safety-enhancing activities or encouraging the reduction of unhealthy and unsafety activities. Among key factors that influence people's health and safety can be ranked income, social status, education, social and physical environment and working conditions (WHO, 2011).

One of the reasons why the health and safety promotion in the workplace is so important is the fact, that approximately two million women and men die each year because of accidents at work and occupational diseases and it can be assumed that 270 million occupational accidents and 160 million occupational diseases occur worldwide each year (WHO, 2010). Work-related illnesses and injuries do not only put a strain on the health and safety system but are also reflected in current health expenditure. In Figure 1, we can see the share of 2019 gross domestic product accounted for health spending in selected countries around the world. In the Czech Republic, health spending accounted for 7.8 % of gross domestic product (GDP) in 2019.

The cost of healthcare in the Czech Republic has been increasing every year, as we can see in Table 1. In 2019, it reached CZK 477.7 billion.

Figure 1 - Current health expenditure (% of GDP) in 2019 Source: OECD Health Statistic (2021, p. 1)



[2]The Preamble of the Constitution of the WHO, approved at the International Health Conference in New York on 19 June-22 July 1946; signed by the representatives of 61 States on 22 July 1946 (Official Records of WHO, No. 2, p. 100), entered into force on 7 April 1948. The definition has not been changed since 1948.

Table 1 – Healthcare costs in the Czech Republic between 2015 and 2019

Year	Overall - in current prices			Basic ratio indicators	
	Total in billion CZK	year-on-year changes		GDP ratio (in %)	Per capita (in CZK)
		in billion CZK	in %		
2015	353,3	2,9	0,8	7,6	33 512
2016	363,4	10,1	2,9	7,6	34 394
2017	388,2	24,8	6,8	7,6	36 660
2018	434,1	45,9	11,8	7,7	40 853
2019	477,7	43,6	10,0	7,8	44 775

Source: ČSÚ (2021c, p. 1)

For all countries, including the Czech Republic, it is very important but also demanding to solve the consequences of diseases such as economic costs and long-term loss of human resources in the organizations (WHO, 2010). Experience has shown that a preventative health and safety culture is beneficial for workers, employers and governments alike. And this is also the reason for searching effective prevention techniques that would help in preventing accidents at work and occupational diseases and in improving the performance of enterprises (ILO, 2005). Ensuring a healthy and safety workplace is therefore a very current topic. The authors of the article identify with the WHO definition of a healthy and safety workplace. „A healthy and safety workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of workers and the sustainability of the workplace by considering the following, based on identified needs: health and safety concerns in the physical work environment; health, safety and well-being concerns in the psychosocial work environment including organization of work and workplace culture; personal health and safety resources in the workplace; and ways of participating in the community to improve the health and safety of workers, their families and other members of the community“ (WHO, 2010, p. 12). Promoting the creation of a healthy and safety workplace, in other words, promoting health and safety in the workplace, is one of the main tasks of employers. So, what is involved in health and safety promotion in the workplace? There are many definitions of health and safety promotion in the workplace (SZÚ, 2018). The authors of the article tend towards the definition agreed by the members of European Network for Workplace Health Promotion (hereafter referred to as ENWHP) in Luxembourg Declaration on Workplace Health Promotion in the European Union: “Workplace health promotion is the combined efforts of employers, employees and society to improve the health and safety and well-being of people at work. This can be achieved through a combination of improving the work organization and the working environment; promoting active participation; encouraging personal development” (WHO, 2010, p. 12).

There have been evolution of objectives of the WHO and International Labour Organization (hereafter referred to as ILO) as well as various trends how to improve health and safety of employees. WHO and ILO started to cooperate in the Joint ILO/WHO Committee on Occupational Health (1950), however, health and safety promotion has been specifically associated with the workplace relatively recently. Globally, workplace health and safety promotion is a priority for the WHO. In recent years, other associations and forms of awards for companies promoting the health and safety of their workforce have emerged, such as the Global Centre for Healthy Workplaces (Lipšová et al., 2016). At the European level, the ENWHP coordinates workplace health and safety promotion activities, and important information and examples of good practice can also be found on the European Agency for Safety and Health at Work website and in information materials (SZÚ, 2018). In the Czech Republic, the National Institute of Public Health (hereafter referred to as NIPH) deals with the area of workplace health and safety promotion. Since 1 January 2006, the NIPH has functioned as the National Contact

Office of the ENWHP and has been involved in the organization of the National Network for Workplace Health Promotion of the Czech Republic. The NIPH serves as a scientific institution that contributes to the prevention and control of diseases in the Czech population through research, monitoring, intervention, and cooperation in the formulation of laws. The NIPH is also involved in European and global projects that aim to improve the health and safety of populations also in other parts of the world (SZÚ, 2021c).

No one would disagree that work, health and safety and organization are related. But how exactly? How work affects the health and safety of workers? Firstly, work affects physical health and safety. Among risks that endanger the physical safety of workers can be ranked for example mechanical risks, electrical hazards, slips and falls from heights, ergonomic risks such as repeated motion and uncomfortable posture, physical risks such as excessive noise or heat or the possibility of work-related motor vehicle accident. If there is suitable health and safety legislation, it usually covers safety hazards (WHO, 2010). Secondly, work affects mental health and well-being. Research in the past years has revealed that various situations in the workplace can be a threat to mental health of workers and there are ranked mainly the psychological and social conditions of the workplace. Risks for the mental safety of workers can be following: workload, work schedule, equipment, organizational culture and function, interpersonal relationships at work or e.g. job content (Leka and Cox, 2008). Thirdly, there are interrelationships between physical and mental health and safety. It is very important to know that these aspects of health and safety are not separate but there is a strong link between them. Mind is affected by damaged physical health and safety and on the contrary, the physical body is affected by damaged mental health and well-being (WHO, 2010). Fourthly, there is the positive impact of work on health.

How worker health affects the organization? Firstly, the enterprise is affected by accidents and acute injuries which have personal effects and economic impacts. A case of an accident or acute injury usually means unquantifiable personal costs and an injured employee also affects emotionally an owner, a manager and co-worker (Andreoni, 1986). Secondly, the physical health of the workers has an impact on the enterprise. The productivity of employees is decreased when they feel unwell. When an ill employee comes to work despite being ill, it can be considered as "presenteeism" which is a phenomenon that includes reduced productivity of a person who is either physically or mentally ill and therefore their productivity is lower. If an employee cannot come to work because of their illness, costs linked with absenteeism occur. These costs are related to recruiting and hiring of a replacement employee, their training or reduced quality or quantity of that replacement employee's work (WHO, 2010). Thirdly, the enterprise is affected by the mental health of workers as well. In current highly competitive environment, employers need engaged, innovative, creative and high-performing employees to keep ahead of the competitors. The trend is to demand that the minds of workers perform at a very high standard (WHO, 2010). Depression, anxiety disorders and burnout belong among three most frequent mental illnesses or disorders and can lead to lower productivity or quality of work and therefore have a strong influence on the enterprise. Poor mental health or job dissatisfaction can affect also the degree of absence or intention to leave work. In addition to the already mentioned impact of poor mental health on the enterprise, there are implications for the society as a whole (Duxbury and Higgins, 2001).

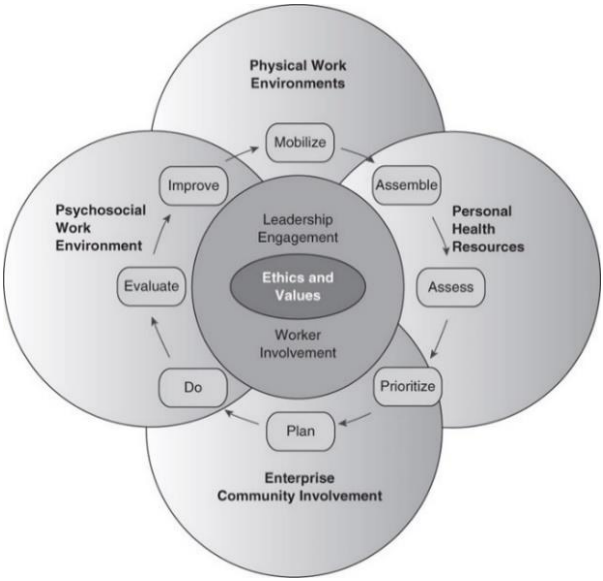
How worker health and the community are interrelated? Employees' health and enterprise success is influenced by the community or society in which the enterprise exists – and vice versa. For example, although an enterprise may provide a healthy and safe workplace to its workers, if workers do not have clean water to drink in the community, they cannot be in good health condition. Or if there are factories in the community that contaminate the air or water with pollutants, workers living in the community will suffer from various diseases (WHO, 2010). The reverse is also true: the health of the community and society will be influenced by the physical

and mental health of employees. For example, facing anger, violence, or abuse at work will not impact employees only in the workplace, but they will also carry negative feelings into their homes and communities. Increased social costs for law enforcement, social services and basic health and safety care may thus result from events in the workplace (Rautiainen, 2009).

In conclusion, it can be summarized that higher productivity and success of an enterprise will be influenced by good health and safety of employees, which subsequently increases the economic prosperity of a country and the individual well-being of employees (WHO, 2010).

There are a lot of approaches, information, frameworks and models on healthy and safety workplaces that can be found in the literature and scientific articles. After studying these sources, the authors of this article chose the globally known Healthy Workplace Model developed by WHO as the basis for meeting the objective of the article. This model is founded on four domains, based on which the employer influences the health and safety of their employees and the organization as a whole. These four areas include the physical work environment, the psychosocial work environment, personal health resources, and enterprise community involvement. It is important to note that these four areas are not separate entities, but in practice they are interrelated and overlap with each other. For this reason, they are presented as four overlapping circles in Figure 2 (WHO, 2010).

Figure 2 – WHO Healthy Workplace Model Source: WHO (2010, p. 3)



Not every organization deals with each of these four domains all the time. It is important to link these four areas to the needs and preferences of individual organizations (WHO, 2010). Examples of problems that can occur in each area and that can affect the physical and mental health of employees are shown in Table 2.

Table 2 – Potential risks in individual areas

Physical Work Environment
chemical (e.g., solvents, pesticides, asbestos, carbon monoxide, silica, tobacco smoke); physical (e.g., noise, radiation, vibration, excessive heat, nano particles); biological (e.g., hepatitis B, malaria, HIV, mould, pandemic threats, food or waterborne pathogens, lack of clean water, toilets and hygiene facilities); ergonomic (e.g., excessive force, awkward posture, repetition, heavy lifting, forced inactivity/static postures); mechanical (e.g., machine hazards related to nip points, cranes); energy (e.g., electrical hazards, falls from heights); driving (e.g. driving in ice storms or rainstorms or in unfamiliar or poorly maintained vehicles)
Psychosocial Work Environment
poor work organization; organizational culture; command & control management; inconsistent application and protection of basic worker rights; shift work issues; lack of support for work-life balance; lack of awareness of any competence in dealing with mental health/illness issues; fear of job loss related to mergers, acquisitions, reorganizations, or the labour market/economy
Personal Health Resources
Physical inactivity may result from work hours, cost of fitness facilities or equipment, lack of flexibility in when and how long breaks can be taken. Poor diet may result from lack of access to healthy snacks or meals at work, lack of time to take breaks for meals, lack of refrigeration to store healthy lunches, lack of knowledge about healthy eating. Smoking may be allowed or enabled by the workplace environment. Alcohol use or abuse may be encouraged, tolerated or enabled by workplace practices. Poor quality or quantity of sleep may result from workplace stress, workloads or shift work. Illnesses may remain undiagnosed or untreated due to lack of accessible and/or affordable primary health care. Lack of knowledge or resources for prevention of sexually transmitted diseases (STDs) may result in high levels of HIV infection or other bloodborne STDs.
Enterprise Community Involvement
poor air quality in the community; polluted water sources in the community; lack of expertise or knowledge about health or safety in the community; lack of access to primary health care for workers and their families; lack of national or regional laws protecting the rights of women or other vulnerable groups; lack of literacy among workers and their families; community disasters such as floods, earthquakes; lack of funds for local non-profit enterprises or causes; high levels of HIV infection in the community; lack of community infrastructure or safety to encourage active transport to and from work and during leisure time

Source: own processing based on WHO (2010, pp. 84-88)

3 Material and Methods

As a starting point, the sector on which the paper is focusing was chosen. The issue of public administration is very important in terms of the fact that it solves the needs of society and works on the basis of organizational structures, processes, roles, relationships, policies and programmes. It creates sustainable economic prosperity, social cohesion and good living conditions for people. It influences social trust and creates the conditions for public values creation (Aart, Zoido-Lobaton and Kaufman, 2013).

The aim of the article is to create a questionnaire that would be able to assess the level of health and safety promotion based on clear questions and criteria (KPIs) and thus to help defining activities that would lead to the improvement of the quality of health and safety of public administration, specifically of employees of local government (municipalities). The authors'

work on the questionnaire is based on the assumption that they identified on the basis of the theoretical knowledge that existence of a healthy and safety workplace has a strong positive impact on avoiding workplace accidents and illnesses and improving organizational performance. Thus, there is a need for public administration organizations, specifically local government (municipalities) to be able to provide a healthy and safety workplace for their employees.

Within the creation of the questionnaire, the authors relied on theoretical assumptions, in particular on the WHO Healthy Workplace Model and Table 1, considering that it is a questionnaire for public administration organizations, specifically local government (municipalities). The authors also relied on the conclusions of the meeting with 38 representatives (mayors and secretaries) of public administration organizations operating in the Moravian-Silesian Region of the Czech Republic. This meeting was organised to better understand the views of mayors and secretaries, who are responsible for health and safety issues in local government workplaces (municipalities).

The formulation of individual questions and KPIs was then verified by the focus group qualitative research method with the participation of 16 representatives of future respondents (about half of them participated in a previous meeting, the other half were approached because of a broader view of the issue and its comprehensibility). It was determined how focus group participants responded to the questions of the questionnaire and selected KPIs, whether the questions were well formulated, whether they understood the questions and KPIs and whether the offered answering options were appropriate. Based on the outputs of the focus group, two questions were slightly reformulated, one was deleted, one was added, and three KPIs were removed. The result of the focus group meeting was the final questionnaire, which was later validated by experts from practice — the experts also commented on the extent to which individual questions and proposed answers and KPIs described individual areas. Out of the total number of 5 questions and two groups of KPIs, only one question did not differ much in the number of experts who considered it essential and those who considered it insignificant and useless. The content validity was also evaluated using the Content Validity Ratio (CVR). CVR = [(E=(N/2))/(N/2)], where N is the total number of experts and E is the number of those who rated the object as essential. The final form of the questionnaire consists of 2 main topics and 7 items. The content validity ratio (CVR) ranged between 0.85 and 1.00 for each topic and from 0.75 to 1.00 for each item. Therefore, the questionnaire is considered valid from a quantitative point of view in terms of content.

4 Results

As the result of the article´s authors´ work and thus fulfilling its objective, a final questionnaire for public administration organizations (see Appendix) has been created.

The questionnaire includes one identification question (headquarters of the organization) and 5 questions and two groups of KPIs concerning the subject of the survey, where respondents choose only one option from predefined answers. Issues covered by the first area relate to leadership and participation in workplace health and safety promotion. The second area concern KPIs of physical health and safety and mental health in the workplace. The questionnaire, which contains the questions and KPIs recommended for assessing workplace health and safety promotion in public administration organizations (see Chapter 4), can be used initially as a tool for initial assessment of how the area of workplace health and safety promotion is addressed and on the basis of which KPIs it is monitored; when used further, corresponding numerical values can be assigned to individual KPIs, the tracking of which over time can then reveal areas for improvement based on the application of certain measures.

Unlike the questionnaire for the business sector, which was previously developed by the authors and whose content accuracy was verified by a survey made among 3895 Czech manufacturing firms in May 2021, the questionnaire for local government organisations (municipalities) does not include the criteria of workplace accidents, occupational diseases and occupational hazards (in the area of physical health and safety) and the criterion of shift work (in the area of mental health). This is a logical consequence of the activities in which business sector organisations and local government organisations (municipalities) are involved. The probability of workplace accidents, occupational diseases or hazardous work is very low in local government organisations (municipalities), therefore, according to the authors and focus group participants, it is not necessary to include these criteria in the questionnaire for local government organisations (municipalities). Similarly, it is not necessary to include the criterion of shift work, as this is not how work is organised in local government organisations (municipalities).

5 Conclusion

This article deals with the area of health and safety promotion in workplaces of public administration organizations, specifically local government (municipalities), in the Czech Republic. The theoretical basis of this study is based on the literature; foreign literature, in particular, from the point of view of research in the Czech Republic, is very rich - Czech literature dealing with this issue is very limited. Therefore, it was drawn mainly from foreign sources.

The aim of the article was to create a questionnaire that would be able to assess the level of health and safety promotion on the basis of clear questions and criteria (KPIs) and thus to help defining the activities whose implementation would lead to the improvement of the quality of health and safety of employees of public administration organizations, specifically local government (municipalities).

The research methodology was based on a positivist-objectivist approach, where knowledge was obtained on the basis of a review and analysis of available, mostly foreign literature in the subject area. On the basis of these findings, a questionnaire for the evaluation of health and safety promotion in the workplaces of public administration organizations was created using the methods of analysis, synthesis, comparison, analogy, deduction and induction. Also, the focus group qualitative research method as the verification method was used.

Conclusions from this study cannot be generalized because the findings are based on a one-sectional sample in one country. These are limiting conditions of this study. The formulation of individual questions and the choice of KPIs included in the questionnaire assessing the area of health and safety promotion in the workplace depends very much on the activity in which the organization, company or enterprise is engaged. Therefore, the authors see the future direction of the research in targeting subjects from other sectors as well.

However, before proceeding to other sectors, the authors will conduct research based on the developed questionnaire to determine whether the questionnaire has been designed correctly in terms of content and how Czech public administration organizations approach the promotion of health and safety in the workplace.

Acknowledgements

The paper was created within the project of the Student Grant Competition at the Faculty of Economic, VSB-Technical University of Ostrava SP2020/33.

References

[1] ANDREONI, D. (1986). The cost of occupational accidents and diseases. Geneva: ILO.

[2] ČESKÝ STATISTICKÝ ÚŘAD (ČSÚ). (2021). Výsledky zdravotnických účtů ČR - 2010–2019. Celkové výdaje na zdravotní péči. [online]. [cit.2021-06-21]. Available from https://www.czso.cz/csu/czso/vysledky-zdravotnickych-uctu-cr-m6hwrlzbbw

[3] ČESKÝ STATISTICKÝ ÚŘAD (ČSÚ). (2020). Statistická ročenka České republiky 2020. [online]. [cit.2021-06-24]. Available from https://www.czso.cz/documents/10180/123503153/32019820.pdf/fc671100-c2b8-4c60-a2d1-44341a7fa3a1?version=1.5

[4] DUXBURY, L, HIGGINS, CH. (2001). Work-life Conflict in Canada in the New Millennium: Report 6: Key Findings and Recommendations from the 2001 National Work-Lfe Conflict Study. [online]. [cit.2021-06-21]. Available from https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/occup-travail/balancing_six-equilibre_six/balancing_six-equilibre_six-eng.pdf

[5] EUROPEAN AGENCY FOR SAFETY AND HEALTH AT WORK (EASHW). (2016). Přínosy podpory zdraví na pracovišti. [online]. [cit.2021-06-19]. Available from https://eguides.osha.europa.eu/all-ages/CZ_cs/p%C5%99%C3%ADnosy-podpory-zdrav%C3%AD-na-pracovi%C5%A1ti

[6] EUROPEAN NETWORK FOR WORKPLACE HEALTH PROMOTION (ENWHP). (2007). Luxembourg Declaration on Workplace Health Promotion in the European Union. [online]. [cit.2021-06-20]. Available from https://www.enwhp.org/resources/toolip/doc/2018/04/24/luxembourg_declaration.pdf

[7] GHARIB, Sarah, Bernard MARTIN a Richard L. NEITZEL. (2021). Pilot assessment of occupational safety and health of workers in an aircraft maintenance facility. Safety Science, Vol. 141. [online]. [cit.2021-08-18]. Available from https://www.sciencedirect.com/science/article/pii/S0925753521001442?via%3Dihub

[8] HORVÁTHOVÁ, P., MIKUŠOVÁ, M., KASHI, K. Comparison of Human Resources Management in Non-Family and Family Businesses: Case Study of the Czech Republic. Sustainability, 12(14), article no. 5493.

[9] INTERNATIONAL LABOUR ORGANIZATION (ILO). (2005). Facts on Safety at Work. [online]. [cit.2021-06-19]. Available from https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_067574.pdf

[10] KRAAY, A., ZOIDO-LOBATON, P., KAUFMAN, D. (2013). Governance Matters. Policy Research Working Papers, article no. 2196. [online]. [cit.2021-06-26]. Available from https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-2196

[11] KAZDOVÁ, A. (2021). Nové kompetence HR. HR Forum, Vol. 2, p. 3.

[12] KERLINOVÁ, Alena a Eva TOMÁŠKOVÁ. Approach to strategy at public administration organizations in the Czech Republic. In Proceedings of the 2014 19th International Scientific Conference Economics and Management 2014, ICEM 2014. pp. 88-92.

[13] [13] LA FATA, Concetta M., Antonio GIALLANZA, Rosa MICALE a Giada LA SCALIA (2021). Ranking of occupational health and safety risks by a multi-criteria perspective: Inclusion of human factors and application of VIKOR. Safety Science,

Vol. 138. [online]. [cit.2021-08-18]. Available from https://www.sciencedirect.com/science/article/pii/S0925753521000795?via%3Dihub#!

[14] LEKA, S., COX, T. (2008). PRIMA-EF Guidance on the European Framework for Psychosocial Risk Management: A Resource for Employers and Worker Representatives. UK: WHO.

[15] LIU, Ran, Xu-Jie ZHU, Yao CHEN a Hu-Chen LIU. (2021). Occupational health and safety risk assessment using an integrated TODIM-PROMETHEE model under linguistic spherical fuzzy environment. International Journal of Intelligent Systems, Early Access: JUL 2021. [online]. [cit.2021-08-18]. Available from https://onlinelibrary.wiley.com/doi/10.1002/int.22570

[16] LIPŠOVÁ, V., ŠAMÁNEK, J., VAVŘINOVÁ, J. (2005). Kritéria kvality podpory zdraví na pracovišti s komentářem. Praha: Státní zdravotní ústav.

[17] LIPŠOVÁ, V., JANOŠOVÁ, K., KOŽENÁ, L., VAVŘÍNOVÁ, J., ŠAMÁNEK, V. (2016). Kritéria kvality podpory zdraví na pracovišti. 2. přeprac. a dopl. vyd. Praha: Státní zdravotní ústav.

[18] ORGANISATION FOR ECONOMICS COOPERATION AND DEVELOPMENT (OECD). (2021). OECD Health Statistics 2020. Frequently Requested Data. [online]. [cit.2021-06-20]. Available from https://www.oecd.org/els/health-systems/health-data.htm

[19] RAUTIANEN, R., LEHTOLA, M. M., DAY, L. M., SCHONSTEIN, E., SUUTARINEN, J., SALMINEN, S., VERBEEK, J. H. (2009). Interventions for preventing injuries in the agricultural industry. UK: Villey.

[20] STÁTNÍ ZDRAVOTNÍ ÚSTAV (SZÚ). (2018). Podpora zdraví na pracovišti. [online]. [cit.2021-06-19]. Available from http://www.szu.cz/tema/pracovni-prostredi/podpora-zdravi-na-pracovisti

[21] STÁTNÍ ZDRAVOTNÍ ÚSTAV (SZÚ). (2021). Historie. [online]. [cit.2021-066-20]. Available from http://www.szu.cz/historie?highlightWords=monitorov%C3%A1n%C3%AD+intervence

[22] WESTFIELD CONTRIBUTORY HEALTH SCHEME (WCHS). (2016). Your guide to evaluating the return on employee health & wellbeing. Report. Sheffield: Westfield Contributory Health Scheme.

[23] WORLD HEALTH ORGANIZATION (WHO). (2011). Social determinants of health and health inequalities. [online]. [cit.2021-06-20]. Available from https://www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html#evidence

[24] WORLD HEALTH ORGANIZATION (WHO). (2010). WHO Healthy Workplace Framework and Model: Background and Supporting Literature and Practice. Geneva: WHO.

Appendix – Questionnaire

A. Leadership and participation in health and safety promotion in the workplace

1. Does your organization have any written version of a health and safety promotion strategy?
   Yes - No
2. Does your organization have a codex with principles which promote health and safety in the workplace?
   Yes - No
3. Does your organization have enough resources (financial, personal, resources of space and further education etc.) for promotion of health and safety in the workplace?
   Yes, we have all of them.
   No, we lack resources of……
4. Are the measures of promotion of health and safety in the workplace integrated into existing structures and procedures?
   Yes - No
5. Are all employees informed about projects of promotion of health and safety?
   Yes - No

B. KPIs of physical health and safety and mental health in the workplace

Fill in the value of undermentioned points of scale to given indicators of physical health and safety and mental health in the workplace.

Scale:	1	2	3	4

1 – we do not follow this indicator
2 – we follow this indicator, but it is not significant for us
3 – we follow this indicator, the significance is average for us
4 – we follow this indicator, it is incredibly significant for us

Physical health and safety in the workplace

Indicator	**Points**
Incapacity for work	
Costs related to recruitment of an employee replacing the incapable employee	
Costs related to training of an employee replacing the incapable employee	
Costs related to ergonomic workplace	
Health condition	
Costs related to physical health of employees (healthcare, programs)	

Mental health in the workplace

Indicator	**Points**
Mental problems*	
Overtime hours	
Conflicts in the workplace	
Work related well-being in the workplace	
Trainings focused on mental health (e.g., stress management training, prevention of burnout syndrome etc.)	
Programs/benefits of healthy lifestyle	
Costs related to mental health of employees	

* mental distress (demoralisation, depressive mood, anxiety, burnout syndrome, stress) or worsening of any present mental problems caused by pressure to perform with low level of

control or possibility of decision making, or disbalance between mental effort spent on work and gained reward (recognition, appreciation, respect etc. or financial reward) or disbalance between work and family life etc.

Contact information

doc. Ing. Petra Horváthová, Ph.D., MBA
VSB - Technical University of Ostrava, Faculty of Economics, Department of Management
Skolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: petra.horvathova@vsb.cz

Ing. Kateřina Mokrá, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Management
Skolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: katerina.mokra@vsb.cz

doc. Ing. Lenka Kauerová, CSc.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Marketing and Business
Skolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: lenka.kauerova@vsb.cz

Comparison of e-Government in the Slovak Republic and the Czech Republic

Martina Chrenová

Abstract: Services provided by the state to its citizens are bureaucratic, often considered obsolete but also ineffective. Modern information technologies have been used in various areas for different years, but the modernization of public administration began later and continues. The aim of implementing e-Government is to provide public administration services to citizens more efficiently, more reliably, faster and cheaper. E-Government was created in 1992 in the USA and its founder was the vice president for the democrats Al Gore. It was not until six years later that e-Government began to be applied in some European countries, such as Estonia, Sweden, Denmark, Poland, the Czech Republic, Slovakia and others. Estonia has become a leader in e-government not only in Europe but also worldwide. Slovakia and the Czech Republic began to introduce elements of e-Government at the same time, so we decided to compare these two countries. We will use the method compare two case studies. We will help with the contrast of contexts, the purpose of which is to point out the specifics of individual cases in the comparison. The content of the case studies is the implementation processes and tools used in the implementation of e-Government. The aim of the paper is to find deficiency in the system of e-Government of the selected countries on the basis of a comparison of two case studies and to suggest possible solutions. One country can learn from another, either on the basis of positive or negative results.

Keywords: Digitization, e-Government, electronization, informatisation, public administration

JEL Classification: O31, O32, O33, O52, O57, Z18

1 Introduction

Public administration provided by the state should help citizens and make it easier for them to communicate with the authorities. However, the services provided by the state to citizens for many years are inefficient because it happened that the citizen had to fill in documents or forms more than once, visit several offices, all for one thing. In today's world, we are all used to paying with a card, mobile phone, watch, solving things via the Internet and the like. Public administration is relatively lagging behind compared to the age of information and communication technology. The first modern elements that were introduced into public administration were e.g. New Public Management, New Public Service, Good Governance. These elements have moved to the current form of E-Government. According to the UN definition, it is the duty of public administration to improve relations between citizens and the public sector by providing cheaper and more efficient services, information and knowledge. It is the best that public administration can offer its citizens. The European Union speaks of e-Government as a way to improve public services, democratic processes and strengthen support for public policies through the use of information and communication technologies combined with organizational change and new skills. In the 21st century, e-Government has become an important tool for change, bringing higher quality to the overall process of providing services to citizens, better results and performance in the public sector. The aim of e-Government is to transform the processes of creating and providing public services to citizens and subsequently transform the whole spectrum of relations between public authorities: G2C - Government to Citizens, G2B - Government to Business, G2G - Government to Government. Proper implementation of e-Government requires the involvement of several levels of government and horizontal cooperation between agencies in order to strengthen the principles of the so-called

well-governed society, including democratization, efficiency, transparency, coherence and public accountability.

E-Government is a new concept that starts with individual states gradually, thanks to its national regulations in order to improve the quality of services provided to citizens. It is one of the phenomena of 21st history in public administration. In this paper, we compare the functioning of e-Government in two European countries, namely Slovakia and the Czech Republic. We dare say that the two countries are similar geographically, historically and politically. Both countries had relatively equal conditions for the introduction of e-Government. Nevertheless, the digitization of public administration is developing differently in these countries. For a comparative study, the two countries are recommended as examples for comparison.

1.1 e-Government

The term e-Government represents the electronic provision of services and is associated with the processes that take place within the public administration and enable it to be carried out using information and communication technologies (Štědroň, 2007). The concept of e-Governance is based on the government's electronic consultation with citizens or other involvement of the public in the decision-making process on public affairs (Špaček, 2012). The main goal of electronization is for the public administration to serve the public with the help of the latest technologies, not only externally towards the citizen or also within the internal system. We divide e-Government services into two categories, namely e-services for the public and e-Government. As part of e-services for the public, we are talking about citizen information services, transaction services and e-Participation. E-Participation refers to services that expect inputs and outputs from natural or legal persons. Such services include for example e-Consultations, e-Authorisation or electronic voting of e-voting. We refer to e-Government services that use information and communication technologies to improve the internal processes of a public administration institution (Špaček, 2012). The transition from traditional administration to administration through information and communication technologies requires preparation by the state and by users. Within the electronic public administration, we can characterize two basic perspectives of e-Government development: an internal perspective based on the state and an external perspective based on the user (Nixon et., 2010). The term informatization refers to any information that is provided through a website on the Internet. Digitization is a process in which material things are digitized into electronic form, with the help of Internet portals and websites. Electronization represents services that are provided electronically, the so-called online services.

The beginnings of e-Government date back to the 1990s. One of the new principles was e-Government. In 1992, Al Gore drafted a document called the National Performance Revue, which was approved a year later, and the United States was the first country to apply e-Government. State administration employees were not enthusiastic about the idea of introducing electronics into public administration, as the state reduced staff costs due to the reorganization of state administration, which, however, meant massive redundancies for them. The USA was followed by the introduction of elements of e-Government of the United Kingdom, Australia, the Netherlands and others. The first European countries to follow were the Netherlands, later Estonia, Austria and the Scandinavian countries. And to this day, we rank these countries among the so-called e-Government leaders.

According to an analysis carried out with more than 28,000 respondents, together in 32 European countries, citizens of countries with a high level of e-Government are satisfied with the new system. The results show that they consider the provision of online services instead of electronic information and the handling of official matters through office visits to be a great advantage (Ma – Zheng, 2017). National governments should pay more attention to the development of

electronic services to meet the needs of citizens, thus saving time and money not only for citizens but also for the state.

1.1.1 Pros and cons of e-Government

The introduction of e-Government elements into the public administration system has many advantages but also disadvantages. The aim of electronic public administration is to provide information, services and knowledge, to save money and time not only for the state but also for citizens, especially when dealing with official matters. The motto of the electronic public administration is: "we should not chase information, but information should circulate all around us". The advantage is easier and faster availability of information for citizens. They do not have to state their data for each time they arrive at the office, as the data will be collected from the completed form at one contact point and recorded in a register of registers, which will be displayed to individual offices due to the interconnectedness of the system. The introduction of elements of e-Government into public administration needs to be carried out through extensive reforms, which, however, is not cheap for the state, so even in Slovakia we can see only small steps towards the electronic system of public administration. However, when e-Government works in practice, the services and information provided will be much cheaper, more efficient and faster for citizens.

The state will save money by electronic services, as it can reduce the number of civil servants, which is a disadvantage for employees and therefore prevents the introduction of electronic elements. Inefficient functioning of public administration can also lead to insufficient ability of cooperation of information and communication technologies, or weak coordination between individual levels of government - central, regional and local (e-Government Unit, 2006). Other negatives include the conservative approach of people to electronics, especially the older generations, who distrust modern technology and think that their personal data can be misused through the internet. For this reason, they refuse to use electronic services and prefer to visit the offices in person, which does not save them time or money. Another problem is the lack of information about the provision of electronic services by the state and the requirements of citizens, the lack of internet in households of older generations, or the weak marketing of e-Government. The role of our elected representatives is to eliminate these shortcomings and to prove to citizens of all generations that the system of electronic public administration is the right step forward for the state as a whole.

The success of e-Government depends on the actors involved in its implementation. As we have already mentioned, the most important actors are service providers - officials and service users - citizens. Officials should receive professional training to learn how to work with the new system and to approach it responsibly and willingly to provide technical assistance to citizens. Citizens should accept, support and make full use of the new system. If these actors do not identify with the system of electronic public administration, it may fail not only at the technical level but also at the professional and user level. Therefore, it is necessary to pay attention to these risks and monitor them throughout the process of creating a new policy.

The use and delivery of e-Services and the establishment of a comprehensive e-Government are determined by objective and subjective factors. The primary objective criterion is the availability of Internet connection. The following table summarizes the pros and cons of the state of affairs of e-Government development, which the authors Vartašová and Červená present in their thesis.

Table 1 - Pros and cons of the state of affairs of e-Government development

Positives	Negatives	Measures to take
offices use the Internet as a tool for providing their citizens with various useful information	the Internet access is still not available within all the area of the country	access to the Internet is being improved, however, needs to be completed
citizens have the ability to communicate with offices through electronic tools, including submitting completed forms electronically	not every municipality fulfils the statutory duties within e-Government performance	the need to unify the possibilities of clients to access the same scope of e-services provided by the offices
the qualitative and quantitative scope of agenda performed electronically has increased	disparities among particular offices the e-services offered causing unequal status of users	need to include the offices in municipalities not offering e-services into the system of e-G
employees of offices prefer the use of ICT to manual/paper alternatives	low level of integration within public administration	need to eliminate duplicity in fulfilment of citizens´ duties
time-saving	need for trained staff	more targeted and quality training needed
budget-saving	need for initial investments/costs	need for technical improvements of the systems/software
e-services are more welcome and advantageous for larger cities	improper functioning of the software experienced	need for elimination of duplication of electronic/paper "work"
	absence of an adequate complex long-term concept of electronization of public administration	need to improve the interconnectivity of various systems and databases of public administration bodies
	lack of financial support for new information services	improve of the awareness of the citizens
	lack of interest of clients also experienced	need to improve the equipment of public administration authorities with modern ICT
	high expenditures for improvement of insufficient technical equipment of many municipalities	eventual outsourcing of e-services/e-agenda

Source: Vartašová - Červená, 2017

2 Material and Methods

In this paper, we compare the development of e-Government by analyzing case studies in two similar countries, namely Slovakia and the Czech Republic. For a comparative study, the two countries are a good example for comparison. Comparative study is one form of qualitative research that examines two or more cases and then compares them with each other on the basis of certain criteria. It uses comparative analysis (Karlas, 2008). We will compare the functioning

of e-Government in the mentioned countries by means of empirical research of context contrast, which will allow us to point out the specifics of both cases by analyzing the examined set of cases. An important criterion is the selection of cases of a comparable nature that we will compare. We chose two countries that are similar in terms of geographical area, political system and historical development. Both countries started working on the implementation of elements of e-Government at the same time, but nevertheless, they currently have different developments in the electronic public administration. The Czech Republic and Slovakia are below the European average in the successful implementation of e-Government. We chose the method of difference so that we could point out the positives but also the negatives of the functioning of the e-Government system of both countries. To achieve this goal, we chose a research question: What progress have the Czech Republic and Slovakia made in the field of e-government? We will focus on two selected services, namely electronic identification and electronic dialing. The aim of the paper is to evaluate the level of e-Government in both countries. Due to the scope of this paper, we will focus on only two selected services, namely electronic identification and electronic elections.

2.1 Comparison of Slovakia and the Czech Republic

The choice of two countries in Slovakia and the Czech Republic, in which we compare the functioning of e-Government, has several reasons. The first reason is a similar geographical distribution. The Czech Republic has an area of 78,866 km2 and a population of approximately 10,650,000 (Infoglobe, 2019). Slovakia has an area of 49,035 km2 and about 5,450,000 inhabitants (Government Office of the Slovak Republic, 2019). The second reason is a similar history. Since their inception in 1918, they have had to face several changes in the political regime or occupation. It was not until the 1990s that both states managed to become independent and declare independence, specifically in 1992 (Škvarna, 2006). Like Czechoslovakia, in 1991-1992 both countries gained membership in the Council of Europe, in 1993 as independent countries and in 2004 they became members of NATO and the European Union. The third reason is a similar political system, the countries are parliamentary republics, but with the difference that Slovakia has a unicameral parliament, to which the citizens elect its representatives, and the Czech Republic has a bicameral parliament, which consists of the Chamber and the Senate. The presidents in both countries have only a representative office and are elected directly by the citizens. The administrations of both countries have needed many changes in the form of reforms since the 1990s. We dare say that the two countries are similar geographically, historically and politically. In 1998-1999, the governments of both countries began to address e-Government issues. Nevertheless, the digitization of public administration is developing differently in these countries. The Czech Republic adopted the e-Government Act in 2008, the Slovak Republic 4 years later. Slovakia started with four services and invested about 1 billion euros in the implementation of the e-Government system, while the Czech Republic started with sixteen services and it cost it about € 650,000, which is 1/3 less. Marketing promotion is an integral part of the introduction of every new element or system, which our Czech neighbors realized, and therefore used two characters Egon and Claudia to promote e-Government. We did not promote e-Government in this way. The only advantage of e-Government in Slovakia was that citizens save too much ½ if they use e-services such as buying stamps. In the Czech Republic, the prices were the same. We have compiled these differences into a simple table 2 for better clarity.

Table 2 - Basic differences in the implementation of e-Government in Slovakia and the Czech Republic

Different properties	**Slovak Republic**	**Czech Republic**
Implementation of legislation	e-G Act in 2013	e-G Act in 2008
Financial expenses	1 000 000€	650 000€
The first introduced e-services	4 e-services	16 e-services
Promotion	Nothing	Plush mascot characters – Egon and Claudia
The advantage of using e-services for citizens	Saved fees for citizens in case of using e-services, e.g. e-stamps are much cheaper	Almost the same prices

Source: own processing using notes from the subject e-Government (2018)

Since 2003, the United Nations Organization (UN) has been evaluating the level of digitization of public administration in individual member states every two years on the basis of the E-Government Development Index (EGDI), which consists of three components (Soukupová, 2020):

1. Online Service Index (OSI) - evaluates e-Government, portals and public administration websites;
2. Telecommunication Infrastructure Index (TII) - evaluates the availability and quality of Internet connection;
3. Human Capital Index (HCI) - evaluates literacy, education and number of years of schooling.

EGDI is supplemented by a second index, namely the E-Participation Index (EPI), which assesses the sharing of information by public administration, the interaction and participation of institutions and citizens. Index value - worst value 0 and best 1. EGDI points out that Slovakia is far below the European average (United Nations, 2018). Since 2003, the Czech Republic has been better than Slovakia in these two evaluation criteria almost every year. Slovakia overtook the Czech Republic only twice, in 2014 and 2018.

Table 3 - comparison of EGDI and EPI indices between the Czech Republic and Slovakia

Index	**E-Government Development Index**				**E-Participation Index**			
State	***Czech Republic***		***Slovak Republic***		***Czech Republic***		***Slovak Republic***	
Year	**index**	**order**	**index**	**order**	**index**	**order**	**index**	**order**
2003	0,54	35	0,53	40	0,24	46	0,17	55
2004	0,62	28	0,56	37	0,21	46	0,15	58
2005	0,64	29	0,59	36	0,21	48	0,17	56
2008	0,67	25	0,59	38	0,20	69	0,07	134
2010	0,61	33	0,56	43	0,13	92	0,07	126
2012	0,65	46	0,63	53	0,26	57	0,13	100
2014	*0,61*	*53*	*0,61*	*51*	*0,25*	*126*	*0,63*	*44*
2016	0,65	50	0,59	68	0,56	81	0,54	83
2018	*0,71*	*54*	*0,72*	*50*	*0,62*	*96*	*0,81*	*50*

Source: Soukupová, 2020

2.1.1 e-Government in the Slovak Republic

Despite the fact that the government started to address e-Government issues after the change of government in 1998, the electronic public administration is still in the development phase. In 1999, the Strategy on Decentralization and Modernization of Public Administration mentioned the need to computerize public administration (Salner - Mašina, 2007). It was only after 15 years that a unified law on e-Government, which is to be followed by the state, was legally anchored in Slovakia. Act no. 305/2013 on the electronic form of the exercise of powers by public authorities has been amended several times. The National Council of the Slovak Republic approved it on 4 September 2013 and it became effective on 1 November 2013. The e-Government Act aimed to establish general legal regulation of the manner of exercising public power in electronic form, including related legal institutes, and thus to enable the implementation of electronic services of public authorities in a uniform manner. The law monitors the establishment of an electronic alternative to the current method of exercising public power and defines new legal institutes that have not been enshrined in our legal system until then. These are electronic mailboxes, identification and authentication of persons, authorization, guaranteed conversion, payment of payments made to a public authority by law or on the basis of law. The law provided for the introduction of a transitional period during which the public authority was not obliged to exercise the exercise of public power electronically if technical reasons did not allow it, as it was necessary to take into account the gradual harmonization and transition to the procedure solely by law. Its purpose is to gradually introduce full electronization at all levels of public administration.

In 2008, the Slovak government approved the Public Administration Informatization Strategy, thanks to which it wanted to meet the goals set by the European Union in the i2010 initiative, which were to be met by the end of 2013. Slovakia had the idea that V4 countries (Ministry of Finance of the Slovak Republic, 2008), which, however, failed. In 2016, the National Concept of Public Administration Informatization was approved, the task of which was to determine the direction of e-Government for five years. The central portal of public administration provides citizens with the main access to information services. We know the portal under the name slovensko.sk.

The development of e-Government was criticized by former President Andrej Kiska (2015) at the ITAPA international congress in 2015. Slovakia had set goals of almost 900 million euros within the Operational Program of Informatization of Society, which were used in a non-transparent manner. The government has also failed to meet basic objectives, such as removing the provision of the same citizens' data in the offices or creating a clear central portal. Kiska outlined three basic principles that must be met for modernization and informatization to work. Political responsibility and the interest of political leaders must be clearly defined, and then clear and measurable results must be achieved, and the last principle is openness, transparency and the involvement of innovative professionals and the private sector. Successful e-Government can be measured by the time and money saved, the number of citizens who use electronic services and the number of bureaucratic tasks.

There are several reasons why the implementation of elements of e-Government in Slovakia is time and money consuming. The economic reasons for digital device can be seen, for example, in backward regions, where the main problem is low employment, lack of funds, which lacks internet connection and therefore not all households in Slovakia can use online services. We can consider inappropriate software that has been available on the market for 8 years as technological problems. It was not until 2006 that the law established uniform software for state administration. The relatively new law on e-Government, which was adopted in 2013, has already undergone several amendments, thanks to which we can see that the system is still not working properly, as changes are constantly taking place. Another problem is the insufficient political responsibility

of central state administration bodies, as the agenda and competencies in the field of e-Government have been transferred to several central bodies from the beginning. Responsibility was transferred from the Statistical Office to the Ministry of Transport, Posts and Telecommunications, then transferred to the Ministry of Education and then again to the Ministry of Transport. In 2007, responsibility passed to the Ministry of Finance in cooperation with the Office of the Government (Salner-Mašina, 2007). In 2016, a new central state administration body was created, which is currently responsible for the electronic public administration - the Office of the Deputy Prime Minister for Investment and Informatization. The Office has strengthened competencies in the area of management, coordination and supervision of Eurofunds and also covers the informatization of society (Office of the Government of the Slovak Republic, 2016). The Office covers the entire agenda and at the same time this office issued a new National Concept of Public Administration Informatization SR51 in 2016, which presented the state and plans until 2020. The main objectives of the concept are:

- Objective 1: Move to quality of life services;
- Objective 2: Shift to services aimed at increasing competitiveness;
- Objective 3: Bring public administration closer to maximum use of data;
- Objective 4: To enable the modernization and rationalization of trusted ICT governance by means;
- Objective 5: Optimize the use of information technology in public administration through a shared services platform;
- Objective 6: Cybersecurity.

The development of e-Government is positively influenced by external pressure exerted on the state by institutions outside state administration bodies, such as civic associations, foundations, non-profit organizations or entrepreneurs.

The introduction of an electronic identity card was adopted by the Council of the European Union in 2000 in order to increase the security of the document and extend its functionality. From July 2008, new identity cards began to be issued in Slovakia, which met the format of the European Union. The card took the form of a polycarbonate card with the face and personal details of the holder. The most important element of the electronic chip, however, has not yet been in this type of card. It was therefore only a new format of the card, which still fulfilled only the function of an identification card. The electronic citizenship card (eID), with which citizens can use electronic services in Slovakia, has been issued since 2 December 2013 at the district directorates of the Police Force. Unlike the previous ID card, it has an electronic chip that enables electronic communication over the Internet and allows citizens to use a guaranteed electronic signature, which is used to prove their identity to public or private institutions (National Agency for Network and Electronic Services, 2013). The electronic chip must be activated. A citizen who receives an identity card must enter his / her chosen security personal code for the first time when logging into the system, thus activating the chip. When applying for a new identity card, the citizen must state that he / she is interested in creating an electronic signature and a certificate will be inserted on the chip, which allows him to create an electronic signature. As we can see, a citizen of the Slovak Republic does not automatically receive all the benefits that an electronic identity card offers him, but his activity is required, which represents only other obstacles for citizens. Nevertheless, the electronic identity card project is widespread in Slovakia because it is issued automatically. Upon receipt of the document, the citizen will receive an information leaflet on which the possibilities of using the document and the principles of safe use are written.

An electronic signature is an advanced signature that is made using a qualified device and is based on a qualified certificate for electronic signatures. It represents an online alternative, t. j. compensation for a paper signature, thanks to which we can file electronically to perform legal acts that require a written form in the paper world (Central Public Administration Portal, 2013).

Among the benefits of the introduction of an electronic ID card, we consider, in addition to expanding the use of electronic signatures, proving the identity of the citizen in electronic communication, expanding the security features of the document, enabling the development of e-Government services or simplifying business. The operation of the card is ensured by the online e-ID function, which is operated by the Ministry of the Interior of the Slovak Republic. It allows you to use your ID card to prove your identity when accessing e-Government services. The citizen needs the appropriate software and smart card reader to use. At present, we can use a reader, an identity card with a chip and an electronic signature to handle several issues through the slovensko.sk portal, such as reporting changes, filing applications, complaints, lawsuits, auctions, public procurement, cadastral services, tax office services, e-health and others. In addition to the possibility of using electronic services, such as vehicle registration or booking an appointment at the traffic inspectorate, citizens using electronic services have the advantage of reducing certain fees. The amount of the fee for the electronic service is reduced compared to personal equipment at the relevant offices by up to 50%, which motivates citizens to start actively using their electronic ID cards in electronic communication as well.

Citizens of the Slovak Republic have been able to vote from abroad since 2006, until the parliamentary elections by post. At a time when legislation enabling voting from abroad was created, further future regulation of elections began to be considered, namely the possibility of voting via the Internet (Skalský, 2010). During Iveta Radičová's government in 2010, the SaS government party pushed for a referendum in which one of the issues concerned e-elections. According to the Statistical Office of the Slovak Republic (2010), 70.46% answered the question "Do you agree that the National Council of the Slovak Republic should establish the possibility to elect members of the National Council of the Slovak Republic and members of the European Parliament via the Internet?" The referendum was invalid due to low citizen participation. This method of voting would represent greater comfort for all, especially for Slovak citizens living abroad. The interest of Slovaks living abroad in the possibility to vote electronically is also confirmed by a petition launched by the civic initiative of Slovaks living abroad in 2014. After the change of government in 2012, it stopped paying attention to e-elections in Slovakia. Politicians consider the security risks and financial costs associated with their introduction to be the negatives of e-elections. Electronic elections were also not paid attention to during the following governments. Likewise, in the Czech Republic there are disputes over whether e-elections meet all legislative elements.

2.1.2 e-Government in the Czech Republic

In the Czech Republic, e-Government was introduced in 1999, when it became possible to submit requests for information via e-mail. The first concept dealing with the electronic state administration was the National Telecommunications Policy and the State Information Policy (Štědroň, 2007), which was in charge of the Office for Public Information Systems. No specific e-Government projects can be found in this concept. In 2003, the Ministry of Informatics was established, which takes over the agenda and creates a new concept called the State Information and Communication Policy with the subtitle e-Czech Republic 2006 (Government of the Czech Republic, 2006). The main points of the concept include the introduction of online services, support for the expansion of electronic communications, education in the field of informatics and expansion of e-Government services, broadband - the introduction of high-speed access throughout the Czech Republic. The Ministry of Informatics was abolished in 2007 and the issue of e-Government passed mainly under the administration of the Ministry of the Interior but also under other Czech ministries.

The Digital Czech Republic concept is a project of the Ministry of Industry and Trade. Its goal is to make the Czech Republic competitive in the international business area in the period 2010 - 2020 with the help of electronic public administration (Digital Economy Section, 2013). The

Strategic Framework for the Development of Public Administration in the Czech Republic for the period 2014 - 2020 is a strategic plan that is in line with the current action plan of the European Union. As part of the strategic plan, the Government Council for the Information Society was established, which is a permanent advisory body to the government for public administration reform and its electronicization. The strategic framework has 4 strategic objectives (Ministry of the Interior, 2016):

- Strategic objective 1: Modernization of public administration;
- Strategic objective 2: Revision and optimization of the performance of public administration in the territory;
- Strategic objective 3: Increase the availability and transparency of public administration through e-G tools;
- Strategic objective 4: Professionalization and development of human resources in public administration.

Each of the goals has its specific goals, which are to help fulfill the main goal. The main activities in meeting the goals include education in the field of information and communication technologies and cyber security, completion of e-government, promotion of the Open Data principle, expansion and consolidation of the data collection, implementation of electronic identification system and electronic support processes (Ministry of the Interior, 2016). In its strategies, the Czech Republic implements the goals set by the European Union, but not all of them. Within the individual strategies, projects and proposals are transferred from one strategic document to another. This may be due to non-compliance with the set targets in a specific period.

On the portal of the Ministry of the Interior of the Czech Republic (2018), they state that since 2012 a new type of ID card has been issued, which may or may not have an electronic chip. Using the chip, citizens can handle matters via the Internet or applications. As in our country in Slovakia, it is possible to sign documents with a guaranteed electronic signature using an e-citizen's card. To work with an e-citizen's card, a citizen needs a reader, which is charged a fee of CZK 200 and an e-OP service application (Ministry of the Interior of the Czech Republic, 2017). Since 2018, an electronic card with a chip has been issued automatically and free of charge (Tománek, 2018). If a citizen wants to use e-services, he must buy a reader and activate e-OP. At present, an electronic identity card with a chip is not issued automatically and its acquisition is associated with an administrative fee, many citizens do not have such a document and therefore do not use electronic public administration services.

The topic of electronic elections has been discussed in the Czech Republic for several years. The introduction of e-elections was already discussed in 2008. The Ministry of the Interior of the Czech Republic stated that the first electronic elections could be those in 2014 (Pospíšil, 2008). The cooperation of the Ministry of the Interior with the Czech Statistical Office on the e-election project began, within which 3 phases were planned. A preparatory phase was to take place in 2009, which was to include the technological and legislative basis for the elections. In 2010, a trial phase was to take place in one of the constituencies during the senate elections. In 2014, e-elections were to be introduced in the Czech Republic. This project was postponed in 2010 for technical and financial reasons (Pospíšil, 2010). The test elections were to take place within two projects in 2015 with the help of voting at universities and in 2016 during the election to the Senate in two constituencies (Brunclík - Novák, 2014). None of these projects has been implemented.

Electronic elections continued to be discussed in the following years. During the parliamentary elections in 2017, citizens living outside the Czech Republic dealt with this topic (Kurbátová, 2018). Czechs living abroad must vote at the Czech embassy in the given state and it is not possible to vote even by correspondence. The biggest problems in implementing e-elections are concerns about manipulating the results, a problem with transparency or the possibility of hacker

attacks. The new type of elections does not even have significant support in any of the political parties, as is the case with us within the SaS political party. Only the Pirate Party commented on the support of e-elections. Another problem is the legislative entrenchment of elections, which, while not prohibiting elections using an electronic device, require the maintenance of directness and secrecy, which raises concerns that they will not be maintained. In addition to technical and legislative threats, e-elections lack promotion and sufficient education of citizens in this area.

3 Results and Discussion

The similarity of the Czech Republic and Slovakia presented us with an advantageous position for comparing these countries. Both countries began to address the topic of electronic public administration in 1999. They paid more attention to the topic of e-Government in meeting the conditions for accession to the European Union. Modernization efforts have been demonstrated in the adoption of strategies and concepts based on European Union legislation. Both countries had the same problem, namely the institutional anchoring of the e-Government agenda, as they shifted this agenda within ministries or the creation of new offices: the Ministry of Informatics in the Czech Republic (2003-2007), and the Office of the Deputy Prime Minister for Investment and Informatization in Slovakia (it was established in 2016). This shift in the agenda has slowed down the whole process. Both countries apply the goals set by the European Union in their current strategies for the electronic public administration. Among the most presented projects of the European Union we can include electronic identification, electronic signature, electronic health care, security and promotion.

The availability of the Internet in households in both countries has been similar since 2007, and in recent years the Internet has become a common part of daily lives of their households. In the case of companies, according to Eurostat, an internet connection is almost a matter of course. The basic condition for motivation, which is to support digitization and wide availability of the Internet for citizens, is therefore fulfilled in both countries. The electronization of public administration belongs to the internal perspective, which is mediated by the state. The objectives of the project and its implementation are always in charge of the relevant ministry on the basis of a strategic document. Only then is the citizen involved in the project. On the issue of perspective, both countries are included in the model, which is based on the state as the main actor in the implementation of e-Government. Both states use public administration portals to inform citizens about public administration.

Electronic healthcare is a problematic area in both countries. In the Czech Republic, they have launched the eZDRAV.cz portal, which brings together informatizations about e-Health and informs about its projects. However, this is not a project of the Ministry of Health of the Czech Republic, which may represent complications in the development of this service. The information portal ezdravotnictvo.sk operates in Slovakia, which is established by the Ministry of Health of the Slovak Republic. E-Health projects fall into other structures within the organization, and this may cause difficulties in their implementation in the future.

In the Czech Republic, the Public Administration Portal was established in 2018, where a natural or legal person can find information about public administration. The website is also available in English, which meets the European Union standard. The portal is divided into categories of citizen, entrepreneur, foreigner and official, within each category the citizen will see a guide to life situations, with which the user then works. Under the possibility of the service is a list of data boxes, forms, registers and the like. Some of the offered forms can be filled in online.

Since 2013, the central portal of Slovak public administration has been slovensko.sk. The portal is available in English and from the user's point of view is divided into sections citizen and entrepreneur. Subsequently, the citizen chooses a specific area from the options offered, e.g.

housing, finance or the citizen and the state. Citizens use e-IDs to log in to the portal. We dare to say that the interest of citizens in this portal has gradually increased. In Slovakia, the use of the information portal is more used than in the Czech Republic. The services on the portals are only available to citizens in a limited form, so we are still forced to use the classic form of public administration. In order for citizens to use e-Government services, they need an electronic identity card with a secure electronic signature and a reader. In terms of the implementation of European legislation, both countries implement the objectives set by the European Union in their strategies, but both countries only in selected areas.

The electronic identification project is one of the main projects of electronic public administration in the whole European Union, including Slovakia and the Czech Republic. When comparing these two countries, we dare to say that the Slovak project is more used and developed than the Czech one. e-IDs are issued automatically and free of charge in Slovakia. Czech citizens may be discouraged by the fee for changing their identity card. We propose that the Czech Republic reduce the fee, which would attract people. Both ID cards are similar: appearance, technology, chip, which can be used with the help of a reader. Projects are set up in both countries by the Ministry of the Interior. The applications are available in both native and English in both countries. Both E-OP and e-ID offer the possibility to store a guaranteed electronic signature on it, which can be used in communication with the state. Both cards protect the PIN and PUK code entered by the user. In addition, the E-ID has a personal security code, which strengthens the security of the card. Both cards serve to strengthen electronic administration in order to save time and money for both the state and citizens. The services that citizens of both countries can use through e-OP and e-ID are in most cases the same, but are considered insufficient within the European Union.

Electronization of the electoral system is still unsuccessful in the Czech Republic and Slovakia. In both countries, this issue is always addressed only in the pre-election period. After the elections, no political party is trying to push for the introduction of e-elections in the territory. In both countries, the same issue is the security issue of e-elections, the financial costs of implementing them and the question of whether this step will increase turnout. In the Czech Republic, a three-phase project of introducing e-elections was presented in 2008, which did not take place. No project has been set up in Slovakia. During Iveta Radičová's government, the issue of e-elections became a referendum. Citizens agreed with e-elections, but the referendum was invalid due to low citizen participation. In both countries, the first e-elections for 2014 were foreseen. States are not ready to introduce e-elections, despite the fact that many citizens would welcome it. However, e-elections are not a key issue for current governments, as they try to use the funds for problem areas. Citizens' digital literacy is also an important element before the introduction of e-elections. Based on the DESI index in the field of Human Capital, both countries are below the European Union average. In the area of Internet use, the Czech Republic lags behind the average and Slovakia, on the other hand, is slightly above the European Union average. Further digital skills are needed in both countries.

An interesting finding was presented by Bardovič and Gašparík (2021) recently. They focused, inter alia, on a use of e-tools within participatory budgeting initiatives under circumstances of the COVID-19 pandemic. Surprisingly, while many local governments use various e-tools in an active way in the Czech Republic, there is a kind of resistance in this field in Slovakia and majority of local governments still prefers conventional tools of communication and public polling. Only several local governments in Slovakia use proper e-tools but this approach allowed them to continue in a regular implementation of participatory budgeting also in times of unexpected serious pandemic restrictions and social distancing. On contrary, there are many Slovak local governments that had to postpone, suspend or even cancel participatory budgeting processes due to their inability to face the mentioned pandemic restrictions and social distancing.

4 Conclusion

The public administration reform concerning the introduction of elements of e-Government represents changes in the system, which require the digitization of services and the adjustment of the entire system to meet the requirements required in the context of modernization. Their essence is to eliminate an inefficient bureaucratic system and bring its essence closer to private sector services. Therefore, the whole system needs to be made more efficient, so that citizens as well as officials are saved time, costs and administrative burdens are reduced, the involvement of citizens in the decision-making process needs to be further developed and greater transparency and control over public administration. Despite the fact that states' efforts to digitize services and eliminate unnecessary bureaucracy were identified as early as the late 1990s, the development of e-Government in the countries of the European Union varies greatly and is uneven. The two European countries selected by us, the Czech Republic and Slovakia, are politically, geographically and historically similar, they joined the European Union at the same time and are committed to fulfilling and developing the e-Government agenda.

We have come to the conclusion that the slovensko.sk portal is very clear and, due to its simple name and relatively long period of operation, even close to citizens. Electronic identification is a key element of e-Government. The issuance of an electronic identification card containing a chip is intended to facilitate communication with the state, for example through an application or portal that can be used by a citizen. In Slovakia, the e-ID is issued automatically and free of charge, which encourages citizens to use it. However, citizens of the Czech Republic must pay extra for the e-OP and will not receive it automatically. We dare to say that the project is more successful in Slovakia.

The aim of this paper was to evaluate and compare the current state of e-Government in selected countries. The results of the research showed that the reform of public administration in the field of e-Government is an important step, but it requires not only broad political support, which will ensure the fulfilment of objectives but also the support of citizens. None of the countries surveyed is ready to introduce e-elections. Both countries lack legislation, technological support and readiness of citizens. In Slovakia, we see the efforts of some political parties to introduce e-elections in their programs. In the Czech Republic, we do not find any effort in the parties' programs to introduce e-elections. Due to the rapid development of information and communication technologies, the electronic public administration is a constantly evolving industry. The complete transformation of public administration in both countries examined requires political and legislative anchoring, sufficient security measures and the education of citizens of all ages in the field of digital literacy. Although local governments can also play an important and positive role in these efforts, the recent pandemic restrictions revealed their different approaches. However, these restrictions and necessity to deal with various issues helped to understand importance of e-tools not only for purpose of communication but, for instance, also for polling (Bardovič – Gašparík, 2021).

References

[1] BARDOVIČ, J. – GAŠPARÍK, J. (2021). Enablers of Participatory Budgeting in Slovakia During the COVID-19 Pandemic. Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration, Vol. 29, Iss. 1, No. 1248.

[2] BRUNCLÍK, M. – NOVÁK, M. (2014). Internetové volby: budoucnost, nebo slepá ulička demokracie?. Praha: Sociologické nakladatelství (SLON). Studijní texty (Sociologické nakladatelství). ISBN 978-807-4191-688.

[3] E-GOVERNMENT UNIT, DG Information Society and Media European Commission. (2006). Breaking Barriers to eGovernment: Overcoming obstacles to improving European public services. [online]. [cit. 15-07-2021]. Available: <http://ec.europa.eu/idabc/servlets/Doc600f.pdf?id=27391>. pp. 149.

[4] INFOGLOBE. (2019). Všeobecné informácie. Česká republika – všeobecné informácie. In: Infoglobe. [online]. [cit. 15-10-2019]. Available: <https://www.infoglobe.sk/ceska-republika-vseobecne-informacie/>.

[5] KARLAS, J. (2008). Komparativní případová studie. In: DRULÁK, P. Jak zkoumat politiku. 1. vyd. Praha: Portál. pp. 62.

[6] KISKA, A. (2015). Minuli sme 900 miliónov a občania sú stále poštármi. In: Prezident.sk [online]. [cit. 19-07-2021]. Available: <https://www.prezident.sk/article/kiska-moderna-verejna-sprava-je-o-sposobe-rozmyslania/>.

[7] KURBÁTOVÁ, E. (2018). Elektronické volby jsou v Česku hudbou budoucnosti. Proti hraje politika i riziko hackerských útoků. In: Info.cz [online]. [cit. 2021-07-21]. Available: <http://www.info.cz/volby/prezidentske-volby-2018/elektronicke-volby-jsou-v-ceskuhudbou-budoucnosti-proti-hraje-politika-i-riziko-hackerskych-utoku-22647.html>.

[8] MA, L. – ZHENG, Y. (2017). National e-government performance and citizen satisfaction: a multilevel analysis across European countries. In: International Review of Administrative Sciences. [online]. [cit. 15-07-2021]. Available: <https://www.researchgate.net/publication/318576818_National_e-government_performance_and_citizen_satisfaction_a_multilevel_analysis_across_European_countries>.

[9] MINISTERSTVO FINANCIÍ SR. (2008). Vládna stratégia informatizácie verejnej správy. In: Finance.gov.sk [online]. [cit. 20-07-2021]. Available: <http://www.finance.gov.sk/Default.aspx?CatId=84&NewsID=210>.

[10] MINISTERSTVO VNITRA ČR. (2017). Obslužná aplikace eOP (middleware). In: Ministerstvo vnitra ČR [online]. [cit. 2021-07-21]. Available: <www.mvcr.cz/clanek/obsluzna-aplikace-eopmiddleware.aspx>.

[11] MINISTERSTVO VNITRA ČR. (2018). Osobní doklady: Občanské průkazy. In: Ministerstvo vnitra ČR [online]. [cit. 2021-07-21]. Available: <http://www.mvcr.cz/clanek/osobni-doklady-642319.aspx>.

[12] MINISTERSTVO VNITRA ČR. (2016). Strategický rámec rozvoje veřejné správy ČR pro období 2014-2020. Praha, 2014. (aktualizácia 2016), pp. 5. [online]. [cit. 21-07-2021]. Available: <http://www.mvcr.cz/clanek/strategicky-ramec-rozvoje.aspx>.

[13] NÁRODNÁ AGENTÚRA PRE SIEŤOVÉ A ELEKTRONICKÉ SLUŽBY. (2013). Občiansky preukaz s čipom - najčastejšie otázky a odpovede. In: Slovensko.sk [online]. [cit. 19-07-2021]. Available: <https://www.slovensko.sk/sk/faq/faq-eid>.

[14] NIXON, P. G. – KOUTRAKOU, V. N. – RAWAL, R. (2010). Understanding e-government in Europe: issues and challenges. New York: Routledge. pp. 67-69.

[15] POSPÍŠIL, A. (2008). Elektronické volby by změnily politickou scénu. In: Mobil.idnes.cz [online]. [cit. 2021-07-21]. Available:

<https://mobil.idnes.cz/elektronicke-volby-byzmenily-politickou-scenu-ft4-/mob_tech.aspx?c=A080421_205854_mob_tech_apo>.

[16] POSPÍŠIL, A. (2010). I příští parlament budeme volit postaru. Elektronické volby odsunula krize. In: Mobil.idnes.cz [online]. [cit. 2021-07-21]. Available: <https://mobil.idnes.cz/i-pristi-parlament-budeme-volit-postaru-elektronicke-volbyodsunula-krize-16x/mob_tech.aspx?c=A100527_110647_mob_tech_apo>.

[17] SALNER, A. – MIŠINA, J. (2007). Stav eGovernmentu na Slovensku, príčiny a riešenia. [online]. [cit. 16-07-2021]. Available: <http://itas.sk/sites/default/files/docs/analyzy/eGov_sk.pdf.>. pp. 27.

[18] SEKCE DIGITÁLNÍ EKONOMIKY. (2013) Digitální Česko v. 2.0: Cesta k digitální ekonomice. In: Ministersto průmyslu a obchodu [online]. [cit. 2021-07-21]. Available: <https://www.mpo.cz/assets/cz/e-komunikace-a-posta/Internet/2013/4/Digi_esko_v.2.0.pdf>.

[19] SOUKUPOVÁ, E. (2020). Česko v digitálních žebříčcích. In: Pirátska strana (Ondřej Profan). [online]. [cit. 18-07-2021]. Available: <https://www.profant.eu/2020/cesko-v-zebriccich.html>.

[20] SKALSKÝ, V. (2010). Všetky voľby aj cez internet? In: Slovacivosvete.sk [online]. [cit. 18-07-2021]. Available: <http://www.slovacivosvete.sk/1358/vsetky-volby-aj-cez-internet.php>.

[21] ŠKVARNA, D. (2006). Lexikón slovenských dejín. Vyd. 3. Bratislava: Slovenské pedagogické nakladateľstvo. pp. 132-196.

[22] ŠPAČEK, D. (2012). eGovernment: cíle, trendy a přístupy k jeho hodnocení. Vyd. 1. V Praze: C.H. Beck, 2012. Beckova edice ekonomie. ISBN 978-80-7400-261-8. pp. 4-12.

[23] ŠTATISTICKÝ ÚRAD SR. (2010) Výsledky hlasovania oprávnených občanov v referende. In: Volby.statistics.sk [online].

[24] ŠTĚDROŇ, B. (2007). Úvod do eGovernmentu v České republice: právní a technický průvodce. Praha: Úřad vlády České republiky. pp. 12-20.

[25] TOMÁNEK, T. (2018). Nové občanky s čipem omezí běhání po úřadech. In: Lidovky.cz [online]. [cit. 2021-07-21]. Available: <https://www.lidovky.cz/nove-obcanky-scipem-omezi-behani-po-uradech-fe4-/noviny.aspx?c=A180101_201702_ln_noviny_sij>.

[26] VARTAŠOVÁ, A. – ČERVENÁ, K. (2017). Implementation of e-Government in the Slovak Republic at the level of local self-government. Conference: ECDG: 17th European Conference on Digital Government At Lisboa, Portugal. [online]. [cit. 17-07-2021]. Available: <https://www.researchgate.net/publication/335882859_Implementation_of_e-Government_in_the_Slovak_Republic_at_the_level_of_local_self-government>.

[27] VLÁDA ČR. (2006). Státní informační a komunikační politika: e- Česko 2006 [online]. [cit. 21-07-2021]. Available: <http://www.culturenet.cz/res/data/002/000269.pdf>.

[28] UNITED NATIONS. (2018). Compare Countries. In: Publicadministration.un.org. [online]. [cit. 18-07-2021]. Available: <https://publicadministration.un.org/egovkb/en-us/Data/Compare-Countries>.

[29] ÚRAD VLÁDY SR. (2016). Informatizáciu spoločnosti má zastrešovať P. Pellegrini v novom úrade. In: Partnerskadohoda.gov.sk [online]. [cit. 18-07-2021]. Available: <http://www.partnerskadohoda.gov.sk/informatizaciu-spolocnosti-ma-zastresovat-p-pellegrini-v-novom-urade/>.

[30] ÚRAD VLÁDY SR. (2016). Základné údaje. In: Úrad vlády Slovenskej republiky. [online]. [cit. 18-07-2021]. Available: <https://www.vlada.gov.sk//slovensko/?day=2019-08-01&art_datum_od=2019-07-08&art_datum_do=2019-07-08>.

[31] ÚSTREDNÝ PORTÁL VEREJNEJ SPRÁVY. (2013). Kvalifikovaný elektronický podpis- najčastejšie otázky a odpovede. In: Slovensko.sk. [online]. [cit. 20-07-2021]. Available: <https://www.slovensko.sk/sk/faq/faq-zep>.

[32] Zákon č. 305/2013 Z. z. – Zákon o elektronickej podobe výkonu pôsobnosti orgánov verejnej moci a o zmene a doplnení niektorých zákonov (zákon o e-Governmente).

Contact information

Mgr. Martina Chrenová
University of St. Cyril and Methodius in Trnava, Faculty of Social Sciences, Depatrment of Public Administration
Bučianska 4/A, 917 01 Trnava, Slovak Republic
E-mail: martinka.chrenova88@gmail.com

EU Cohesion Policy Governance in the Covid-19 Era

Igor Jašurek

Abstract: The paper deals with the evolution of governance in EU cohesion policy. It is marked by the shift from the soft towards the hard modes. The shift is examined through inter-institutional dynamics at EU level during the bargaining and implementation phases among the key institutional actors (Commission, Council, and Parliament). The paper employs a historical institutionalism (HI) perspective to provide rational for the shift in 2013 and the continuation of hard modes post 2020. Explanatory power of HI's key categories, critical junctures and path dependence are instrumental in understanding the evolving EU cohesion policy governance. HI shows that crises, financial and economic and the pandemic COVID-19 are the major drivers behind the shift and continuation/intensification of hard modes. The paper shows that building of EU cohesion policy governance is shaped by the preferences of the key institutional actors which are context dependent varying in bargaining and later in implementation. The principal objective of the paper is to show evolving governance in cohesion policy, as a specific policy making response to the crises. More broadly, the case study takes part in forming our understanding of EU integration processes.

Keywords: Conditionalities, crises, governance, hard modes, thematic focus

JEL Classification: F02, N44, O18, R10

Introduction

EU cohesion policy governance has dramatically shifted within more than a decade. Propelled by the failure of the Lisbon strategy and aftermaths firstly of the financial and economic crisis and then series of crises peaking in the recurrent coronavirus pandemic, hard governance measures have invaded cohesion policy pushing aside soft alternatives. This trend supports the overall Commission's strategy to reconnect cohesion policy with "the broader economic policy framework of the European Union" (Berkowitz et al., 2015:2). On the other hand, cohesion policy's mission has consequently diffused among different instruments, notably the novel Recovery and Resilience Facility (RRF) in response to the COVID-19 pandemic. Thus, cohesion policy's mission remains stretched while its allocation shrunk. Two components of cohesion policy governance, thematic focus including earmarking and conditinalities, ex ante and macroeconomic, are examined throughout the paper to demonstrate the evolution in governance marked by the shift to and then continuation of the hard modes across the three cohesion reforms (2006, 2013 and 2020). The last reform is particularly highlighted marking cohesion policy governance in the covid-19 era. The paper adopts a historical institutionalist (HI) perspective to provide rationale for the shift and continuation/intensification of hard modes. The analysis employs the HI categories, critical junctures and path dependence. Their explanatory power enables to interpret evolving governance in a temporal perspective to address a change and continuation/intensification in governance. The paper studies bargaining and implementation of governance. First, this approach shows that governance is the result of dynamics of inter-institutional relations among the key EU actors (Commission, Council and Parliament) and their preferences. Second, such analysis demonstrates causality of the two phases (bargaining outcomes shape implementation), evident notably in the 2013 reform package.

The paper proceeds as follows. It begins with theorizing governance approaches focusing on the hard vs soft law dichotomy (for the purpose of our paper the term 'law' is taken as equal to the term 'mode' and after the theoretical part only 'mode' is used). This part then continues with presenting open method of coordination (OMC) as the primary soft mode of governance under

the Lisbon agenda. The third part devotes to evolution of governance in cohesion policy demonstrating the shift from the soft modes to hard modes of governance as of 2013. The fourth part depicts continuation and intensification of hard modes in response to the COVID-19 pandemic. Lastly, before concluding, the methodological part interprets a settling of the shift towards hard governance and its intensification by means of HI and its key explanatory categories, path dependency and critical junctures. The paper contributes to ever-growing literature on shaping EU governance in response to COVID-19. At the same time, focusing specifically on cohesion policy, the case study brings momentum to this research area. More broadly, the paper joins literature aiming at increasing our understanding of evolving EU integration.

Governance approaches

Governance approaches typically perceive the EU 'not as a traditional international organization or as a domestic political system, but rather as a new and emerging system of "governance without government"' (Pollack, 2005: 380). At the same time, they are largely normative, showing the right directions and derails in the course of fostering economic and political integration (Peterson and Pierre, 2009: 91). Such a broad interpretation inevitably encompasses a wide range of issues. In our context those most relevant are collective mechanisms or architectures to frame policy making through collective decisions and actions (Majone, 2001), such asgovernance. Our discussion on the governance approaches is narrowed down the split between hard and soft governance.

In terms of 'intensity' of governing mechanisms by which EU policies are controlled and carried out, it is possible to distinguish the two basic modes of governance, hard and soft, labelled also as experimentalist (Sabel and Zeitlin, 2008; Mendez, 2011). Perhaps needless to say, the dichotomy is not so sharp. In reality, we have rather hybrid versions (Trurbek et al., 2005). Still, for the purpose of the paper, it is necessary to make a clear distinction between hard and soft modes of governance. Trubek et al. (2005) explain that hard law stems e. g. from treaties or regulations while soft law 'lack features such as obligation, uniformity, justifiability, sanctions, and/or an enforcement staff'. As the authors further explain, both types pose some practical challenges. Thus hard law suffers e. g. of uniformity of treatment, difficulties to change it or it demands for fixed conditions while reality under uncertainty dictates experimentation and adjustment (Trubek et al., 2005: 4). On the other hand, typical objections against soft law include e. g. its lacking clarity and precision, inability to offset hard provisions or bypassing accountability (Trubek et al., 2005: 2).

Open method of coordination

It goes without question that national and EU policies are governed by legislative rules that is to say by hard modes of governance. Why then would any policy run a potential risk of relying on experimental processes subject to uncertainty and questionable accountability? The next related question is what is the experience in cohesion policy with such experimentalist governance?

Scholarship on experimentalist governance presented underlying features shaping the soft approach. Sabel and Zetlin (2008) pointed at framework goals, measurement of achievements agreed mutually by member states and the Commission. These are largely alike to 'governance architectures' as outlined by Borrás and Radaelli (2011).

From the operational perspective, the most prominent practical example of experimentalist governance to answer both earlier questions bearing the characteristics outlined above in the scholarship is the open method of coordination (OMC). It is closely related to the Lisbon strategy, the EU level midterm development master plan launched in 2000. Its strategic goal for the EU

was ‘’to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion’ (European Council, 2010). OMC was devised as the means of spreading best practice and achieving greater convergence towards the main EU goals. Its main advantages were (European Council, 2010):

- fixing guidelines for the Union combined with specific timetables for achieving the goals which they set in the short, medium and long terms;
- establishing, where appropriate, quantitative and qualitative indicators and benchmarks against the best in the world and tailored to the needs of different Member States and sectors as a means of comparing best practice;
- translating these European guidelines into national and regional policies by setting specific targets and adopting measures, taking into account national and regional differences;
- periodic monitoring, evaluation and peer review organised as mutual learning processes.

In implementation, the OMC as a soft mode of governance however showed ambiguous results with regard to its operational effectiveness (Radulova, 2007) and an arguable reform stimulating potential (de la Porte and Pochet, 2012).

1 Evolving governance in cohesion policy. Shifting towards hard modes

Inevitably, cohesion policy with its substantial allocation, historically representing at least the third of the EU budget, was well equipped to become a primary investment vehicle for meeting objectives of both strategic EU level development masterplans, the Lisbon strategy and its successor, the Europe 2020 strategy. Thus, cohesion policy is a promising testing field for major reform endeavours in EU governance architectures.

1.1 The 2006 Cohesion reform package

Aligning cohesion policy with the Lisbon agenda and its governance vehicle, the OMC, the process called ‘Lisbonisation’ (Mendez, 2011), on one hand marks one of the ‘turning points’ (Manzella and Mendez, 2009) in the evolution of cohesion policy as the 2006 cohesion package represented at that time the major cohesion reform. On the other hand, policy’s wavering performance revealed major shortcomings in its governance as much as failing operationalisation of the Lisbon agenda. Lisbonisation in cohesion policy introduced the three key innovations – selecting the EU level shared objectives implemented by means of national strategies approved by the Commission along with earmarking (requirement on a fixed percentage pre-allocated on selected thematic objectives), and political ownership of implementation exercised through reporting to the Council of Ministers. All of them have reported shortcomings when implemented due to loose coordination. To begin with the thematic focus, that is the EU level shared objectives, the Commission introduced Community Strategic Guideline for Cohesion to safeguard translation of the Lisbon’s strategic objective to the cohesion policy’s mission however without EU-level enforced deadlines and targets (Mendez, 2011:523). What remained was a loose thematic scope lacking formal operational drivers justifying the cohesion mission. Furthermore, interpretation of earmarking stretched already during the bargaining relative to the initial Commission’s proposal showing that in implementation, some of priorities additionally included by member states were inconsistent with the Lisbon agenda (Bachtler and Ferry, 2013: 1267). However, in some policy fields such as research and development, earmarking contributed to a focus on limited number of priorities and thus at least partially restricted scattering of funds (Bachtler and Ferry, 2013: 1267). Nevertheless, shortcomings in the thematic focus and earmarking consequently led to freestyle prioritization of the implementation objectives. This compelled the Commission to admit that the outcome was rather ‘a shopping list of actions’

(Mendez, 2011). Additionally and despite political ownership of implementation exercised through reporting, member states could act discretionary in assessing implementation as the Commission made the use of its indicators only voluntary. Unsurprisingly, literature on cohesion policy unequivocally derives failures to meet policy's objectives from the governance architecture, then embodied in the OMC (Mendez, 2011; Telle, 2017). Admittedly, the OMC showed also promises in promoting territorial cohesion policy on the eve of implementing the 2006 reform (Faludi, 2007). For details on the 2006 reform see also Bachtler et al., 2013; Baun and Marek, 2014; Brunazzo, 2016; Jašurek a Šipikal, 2021.

1.2 The 2013 Cohesion reform package

Failure to meet the objectives from the Lisbon strategy at EU level markedly aligned with ambiguous performance towards the cohesion goals. Hence, a future thematic focus in cohesion policy required a stronger alignment and better articulation of development needs at European level. Such change was promised by the Europe 2020 strategy introducing the five policy areas (employment, education, research and development, climate change and energy and poverty and social inclusion) identified as crucial for stimulating growth in the EU along with measurable quantitative targets (European Commission, 2010:3). This shift in designing the EU strategy set the course also for the subsequent cohesion policy reform.

The reform aimed to address the most critical existing shortcomings in the mission and governance of cohesion policy as depicted in the Barca Report (2009) e. g. insufficient strategic focus notably clear-cut policy objectives along with their strategic planning rationalising their selection and a binding implementation mandate. This led to the top-down articulation of the thematic focus. The five Europe 2020 policy areas were translated into the 11 thematic cohesion policy objectives broken down into the more detailed investment priorities under individual cohesion policy funds. Thematic objectives and investment priorities represented only one complex layer under the thematic focus. The other was earmarking which has also undergone a substantial modification relative to the 2006 package. In the European Regional and Development Fund, the two tier earmarking was introduced. The first tier required a specific allocation percentage to be reserved for the selected thematic objectives**.** The second tier then picked one of those selected thematic objectives for extra allocation. European social fund's earmarking was less complex however, the first tier earmarking was established also here**.** Furthermore, to ensure that the EU architecture would not be diluted into the member states' freestyle selection from shopping lists as in the 2006 reform, the Commission compiled so called 'position paper' for every member state which depicted national implementation priorities through the EU lenses. The document ensured that the 'Europe 2020 spirit' would sustain bilateral bargaining between member states and the Commission on national implementation priorities. At the same time, the document was an orchestration mechanism providing the Commission with significant leverage over bargaining.

The Barca Report called also for improving the control over policy planning and conduct by means of conditionalities. Even though the conditionalities have constituted an inherent part of cohesion policy as of its inception in 1988, the 2013 reform brought new momentum by introducing new conditionalities, ex ante and macroeconomic conditionalities. However admittedly, the latter were not a novelty by definition as they applied to the Cohesion Fund between 2007-20013. For different types of cohesion conditionalities see Bachtler and Mendez, 2020a; Jašurek, 2020; Jašurek a Šipikal, 2021). What distinguished the two from other cohesion conditionalites was that they exceeded cohesion policy reaching broader EU level governance. They were 'a part of wider EU endeavours to rebuild economic governance after 2009 as a response to aftermaths of the financial and economic crisis…built notably on the two pillars' (Jašurek and Šipikal, 2021: 5). The first was growth stimulating by means of the formal EU level recommendations under the European Semester, 'a framework to improve EU economic policy

coordination' (Hallerberg et al., 2012: 2) aimed at listing reform policy priorities aligning national policies with EU level requirements. The second pillar pointed at fixing economic imbalances through the EU level macroeconomic surveillance mechanisms. The mission of the new cohesion policy conditionalities fell under both pillars, ex ante (first pillar) and macroeconomic (second pillar).

Bargaining the 2013 package with regard to future governance arrangements showed to be a particularly demanding exercise. While the thematic focus along with earmarking perhaps surprisingly achieved inter-institutional consensus relatively easy, conditionalities posed a bigger obstacle for striking a compromise. Ex-ante conditionalities were received with positive anticipations also among scholars (McCann, 2015; Bachtler et al., 2017; Huguenot-Noël et al., 2017). On the contrary, macroeconomic conditionalities spurred controversy. Many scholars condemned them instantly (Jouen, 2015; Huguenot-Noël et al., 2017) and others at least recognized their research merit (Coman, 2018; Sacher, 2019). An intriguing effort to offer a more balanced perspective on the role of conditionalities *per se in* cohesion policy provide Bachtler and Mendez (2020a). In case of ex-ante conditionalities, dissolving the Council and Parliament's concerns over introducing this novel governance instrument required concessions towards limiting the Commission's authority over suspensions. However, this was achieved at the expense of e. g. setting in detail ex-ante conditionalities' mission or a better articulated link to the European Semester as we see below. Macroeconomic conditionalities were not agreed until the very late bargaining phase due to the Parliament's severe opposition underpinned by the commissioned study (Begg et al., 2014) and fuelled by fears of negative impacts of their suspension mechanism on EU regions. The Parliament, for the first time as a full-fledged co-legislator alongside the Council, conceded only upon the insertion of rather ambiguous provisions on structured dialogue. This was meant to be a communication platform initiated by the Parliament and obliged the Commissioin to inform the legislators on the course of launched sanctioning process (for more details on bargaining see Mendez at al., 2013; European Court of Auditors, 2017a; Coman, 2018; Jašurek, 2020; Jašurek and Šipikal, 2021).

Implementation of both conditionalities brought ambiguous results. It is assumed that due to intra-institutional disputes, notably inside the Commission and perceived reputational risks associated with imposing punitive means in the atmosphere of rising Eurocepticism peaking in the Brexit, the Commission took rather a passive role enabling arbitrary interpretation of conditionalities' rules. Thus, member states reached for self-suspensions, contradicting the rules on ex-ante conditionalities, just to avoid a harsher impact of the Commission's suspensions while the Parliament's assertiveness and interpretative capacity of the rules enabled to transform the structured dialogue 'from an enforcement assistance tool into a suspension avoidance tool' in case of macroecnomic conditionalities (Jašurek and Šipikal, 2021: 18). Furthermore, due to ambiguous reading of rules and an insufficient and merely a rhetorical link to the European Semester, there was inconsistent member states' self-assessment as well as Commission's assessment of ex-ante conditionalities fulfilment. (for more details on implementation see European Commission. 2016 and 2017c; European Court of Auditors, 2017b; Coman, 2018; Sacher, 2019; Jašurek and Šipikal, 2021).

In nutshell, the presented examples of the thematic focus and novel conditionalities showed increasing prevalence of hard modes of governance as of 2013 introducing complex rules backed by punitive means. Moreover, bargaining showed that soft modes of governance built notably on mobilising non-state actors in policy making processes as a core soft governance feature did not win a support already inside the Commission (to see this argument in greater detail see Mendez, 2013). This was then reflected in the Commission's legislative proposal on the cohesion reform. Indeed, soft modes were not altogether excluded, just not unequivocally underpinned in the legal rules and only left upon the member states' discretion. This was an example of territorial translation of ex-ante conditionalities fulfilment where involvement of territorial policy makers

was just optional. Thus, perhaps the most representative example of soft governance modes after 2013 was the partnership principle, which however lacked urgency to propel dynamics of the post crises EU governance. Implementation however revealed that inconsistent and arbitrary application of rules along with internal (differing views inside the Commission) and external (rising Euroscepticism**)** political pressures contributed to ambiguous implementation results. Therefore, it is fair to conclude that thus far an incomplete lesson from implementing the 2013 reform teaches that EU cohesion policy governance based on hard modes demonstrates promises on delivery. Hence, due to the evidenced shortcomings, it is still in the making (Jašurek and Šipikal, 2021: 19).

2 Impacts of Covid-19 on cohesion policy governance. The 2020 cohesion reform

Before the Covid-19 pandemic hit the EU, it faced several other crises, namely Euro and immigration crises and Brexit as part of a wider rise of Euroscepticism. Their impact was felt on uneasy contemplations over EU development, notably in the Commission's White Paper on the Future of Europe presenting five development scenarios for the EU-27 by 2025 (for more details see European Commission, 2017; Bachtler, Mendez and Wishlade, 2020; Jašurek a Šipikal, 2021). White paper's message for cohesion policy was rather negative questioning the result delivery capacity in regional development under the EU level coordination (European Commission, 2017a: 22). Nevertheless, the Commission's Seventh Cohesion Report (2017b) in that time showed a continuous growth in GDP per capita positively affecting a decrease in regional disparities and unemployment rate in the entire EU while disparities between the capitals and peripheral regions persisted. Importantly, the Seventh Cohesion Report posited that after 2020 the policy's mission would be shaped against the Paris Agreement on climate change and the UN Sustainable Development Goals for 2030 (European Commission, 2017b: XXV) as the new EU level strategic frameworks (rather significantly alike to Europe 2020).

These trends paved the way to continue and enhance hard modes of EU cohesion policy governance. Thematic focus was narrowed from the 11 thematic objectives down to the five condensed now called policy objectives broken down to also more condensed specific objectives (relative to investment priorities in the 2013 reform package) under individual funds. Commission's ad hoc entrepreneurial position paper was replaced by the established format of Commission's annual Country reports directly informing Council's country specific recommendations. Country reports were in 2019 for the first time dedicated to cohesion policy assessment, specifically in the annex D. This enabled the Commission to increase legitimacy of its bargaining position as directly backed by the European Semester. Ex-ante conditionalities were transformed into so-called enabling conditions and reduced in overall number while maintaining their substance relative to the former. This primarily means that their fulfilment is reported not only ex-ante but throughout the implementation and their link to the EU Semester is now clearly articulated. This means that country specific recommendations, as the EU level reform triggering instrument under the EU semester, will be considered for fulfilment of enabling conditions at the beginning of the programming and during the mid-term implementation review. Macroeconomic conditionalities maintain their original substance from the 2013 reform, however with prioritizing commitments for suspensions over payments. Continuation shows that a drive towards a sound economic environment remains a rule-based requirement constituting governance in EU cohesion policy.

Under the scope of this paper, it is fair to say that inter-institutional bargaining over the 2020 reform (Council of the European Union, 2021) mirrored discussions on the 2013 reform. Transformation of ex-ante conditionalities into enabling conditions was supported by all three bargaining institutions. Council inevitably drew its attention on the conditions of postponing reimbursements as the punitive mechanism. It achieved some clarifying amendments simplifying the process. Nevertheless, postponing reimbursements is milder than the suspension instrument

from the 2013 reform. In case of macroeconomic conditionalities, the Parliament commissioned a study, which advocated their deletion (Pucher, Martinos, Pazos-Vidal & Haider 2019: 50). In the end, the Parliament however stuck to the compromise amendments proposed largely by the Council. They related to the specifying deadlines and timeframes such as the Commission's request for programme amendments or its proposal of suspensions to the Council as well as setting the date for a review of the application of macroeconomic conditionalities or other rather technical modifications without changing the substance. Again, substance of the thematic focus was also not challenged during the bargaining. Inter-institutional consensus brought only minor modification on further shaping the mission of the five policy objectives.

After the outbreak of the COVID-19 pandemic, the immediate response to declining EU economies was to loosen the rules for the ongoing 2014-2020 programming period (for more details see Jašurek a Šipikal, 2021). At the same time, amendments in drafting the post 2020 period in the similar direction recognized *force majeure* of unexpected adverse economic events and introduced temporary measures to relax provisions e. g. on interim payments, support of projects already conducted prior funds implementation or member states 'reporting to the Commission. Salience of these amendments was unquestionably recognized by all key EU institutional actors. On the other hand, the upcoming perspective as of 2021 witnessed rather a continuation, notably with regard to thematic focus and conditionalities.

Intensification of the hard modes in response to COVID-19 is most tellingly reflected in introducing new funding instruments, notably the RRF. First of all, unlike the shared management under cohesion policy, the RRF is directly managed by the Commission combining loans and grants thematically focusing on the top EU level priorities (see Table 1), shared also with cohesion policy. RRF is coordinated by the European Semester and, as in cohesion policy, its implementation is subject to macroeconomic conditionalities. Thus, cohesion policy governance principles are exported into the RRF while this instrument is time-limited and constrains also cohesion budget as it shares the thematic focus with cohesion policy (Bachtler and Mendez, 2020b: 250). On the other hand, outside cohesion policy, the RRF is perceived as a promised treatment against the coronavirus pandemic (Ladi and Tsarouhas, 2020; Wolff and Ladi, 2020, Schmidt, 2020). Clearly, the hard modes of governance are intensified as a consequence of the enduring coronavirus pandemic. Evidently, they continue to be the major response to demands for governing cohesion policy at EU level.

A word of caution is at place here with regard to future implementation of cohesion policy and the RRF as it is only in the very early stage. The EU legislative framework on cohesion policy was adopted only later in 2021 and bilateral bargaining between the Commission and member states on future implementation is far from being finalized (with exemption of the RRF where the national plans were already approved by the Commission).

3 Historical institutionalism and reforming the EU cohesion policy governance

The shift from the soft towards hard modes of governance and their continuation and intensification in cohesion policy and beyond (RRF) after 2020 is explained primarily by the crises, namely those economic and financial, Euro and rising Euroscepticism peaking thus far in Brexit. The shift stirred by the crises is now to be interpreted in detail by means of HI. A crisis as a catalyst of reforms, notably in EU governance is well recognized in the literature outside cohesion policy. Most notoriously, the Euro crisis triggered reforms in the Eurozone (Schwarzer, 2012; Dawson, 2015; Schimmelfennig, 2014; Verdun, 2015). Likewise, there is fast growing scholarship linking EU governance building to the recurrent pandemic (Ladi and Tsarouhas, 2020; Wolff and Ladi, 2020, Schmidt, 2020; Wolff et al., 2020). In this respect, HI has a fitting design as it seeks to interpret changes in governance set in temporal perspective. First of all, HI embraces a wide open understanding of 'institutions' as 'formal or informal procedures, routines,

norms and conventions embedded in the organizational structure of the polity' (Hall and Taylor, 1996: 938) opens almost countless options to choose for research. Furthermore, HI is equipped to understand institutions' evolutionary changes by means of explanatory categories of critical junctures and path dependence. They address the two different poles of evolving governance, a change (shift towards hard modes) interpreted by critical junctures and continuation/intensification (settling the shift) constructed by path dependence. Both poles address the same issue, which is the nature of evolving governance and the rationale behind the evolution. Likewise, they signal adaptability to the crises as exogenous shocks. The paper employs HI even though the EU Funds are seen by some (Pollack, 2009) as not a fitting case for their default conditions, notably seven years programming cycle and corresponding revisions. However, most of the EU policies operate in the same cycle as this is the function of the EU budget. Moreover, merely the fact that the policy responses to the crises in our case study align with the policy cycle does not undermine the HI explanatory power as being instrumental for depicting the change and continuity. In fact, cohesion policy shows to be a fitting case study to adopt HI as its responses to crises are consistent in time and show a distinguished pattern of the shift and continuation. There is an evident learning process behind the pattern.

Critical junctures denotes temporary possibilities, also perceived as windows of opportunity (Ladi and Tsarouhas, 2020), for policy-making to come up with innovative change (Wolff and Ladi, 2020: 1034) resulting in enduring effects (Verdun, 2015). Such is the case of crises, namely financial and economic crisis and the COVID-19 pandemic. In our context, these exogenous shocks are behind the shift towards governance hard modes through the introduction of the new conditionalities and the top-down architecture of the thematic focus in the 2013 cohesion reform as well as the RRF in the 2020 reform. Adaptability to exogenous shocks could be measured against the authority and the bureaucratic capacity on the part of the EU to 'free up funds, use flexibility rules to reallocate funds across policies, or set up new funding instruments' (Debre and Dijkstra, 2021). On one hand, the EU managed to employee all of these options. On the other, distribution of funding between cohesion policy and the RRF, while sharing the mission and governance elements (macroeconomic conditionalities) but differ in ownership (the RRF is the Commission's sole responsibility), undermines *inner alia* the role of subnational actors (Bachtler and Mendez, 2020b). Consequently, such duality potentially questions endeavour towards territorial cohesion as the EU Treaty-based objective. Interestingly enough, the shift in governance in cohesion policy as of 2013 is alike with emerging governance under the RRF post 2020. Exporting cohesion policy's hard modes in spite of the reported shortcomings is thus more viable option for building governance under centrally managed RRF than opting for more experimentalist modes. This is even more apparent when employing the path dependence concept

Path dependence signals that 'preceding steps in a particular direction induce further movement in the same direction' (Pierson, 2000: 251). The steps could be also understood as incentives (Pollack, 2009: 127). The concept explains continuation, notably as a consequence of exogenous shocks. In our case it is continuation of the key elements of the 2013 reform, notably the conditionalities and the thematic focus also post 2020, though with some modifications. This is so in spite of the reported shortcomings in the implementation of the 2013 reform, notably the case of the conditionalities and in the face of existential threat of the COVID-19 pandemic (Ladi and Tsarouhas, 2020; Wolff and Ladi, 2020). The outcome of bargaining mirroring the preceding one from 2013 shows that a change in governance is perceived more costly than its continuation and intensification. Furthermore, the continuing governance with the option for exceptional relaxation of the rules represents single loop learning (Ladi and Tsarouhas, 2020). It shows that temporary rules relaxation is more acceptable than softer modes and without diverging from the policy's mission. Importantly, provided the conditionalities' punitive means successfully function as a detergent without being triggered (Epstein and O' Halloran 1999), reputational risks associated with the Commission's authority over punitive means may not be challenged as was

the case of implementing conditionalities after 2013. This cohesion policy's experience is to some extend also behind building governance in the novel RRF as shown in Table 1.

4 Conclusion

Governance in cohesion policy demonstrates the case of the shift from the soft to hard modes as of 2013 and their continuation and intensification post 2020. It is examined through inter-institutional dynamics at EU level during the programing and implementation phases. HI shows that major drive in evolving governance were crises, financial and economic and the pandemic COVID-19. Key institutional players opted for hard modes as way of adaptation to these exogenous shocks, which also required their intensification by means of establishing new funding instruments, notably the RRF. Despite the reported shortcomings in bargaining and implementation of the 2013 reform package, continuation and intensification of the hard modes is perceived as a more viable option than soft alternatives. This cohesion policy's learning experience from building governance on hard modes translated into designing governance under the RRF post 2020. Experience with building governance in cohesion policy shows that is the result of context dependent preferences of the key institutional actors in response to the global crises. Therefore, the results are rather ambiguous. On one hand, the key institutional actors converge their preferences and bargain the shift towards hard modes and its continuation. On the other hand, in implementation, their initial preferences are subject to adjustments. It is suggested that this is the reason of internal (e. g. contentious vies inside the Commission, arbitrary reading of rules on the part of member states and the Parliament) and external political pressures (rising Euroscepticism). It is yet to be seen what results will implementation bring post 2020 and how preferences will evolve in the COVID-19 era.

Table 1 Evolution of governance in cohesion policy

Reform package	Governance mode	Characteristics
2006	OMC (soft mode) - Lisbonisation	Thematic focus - aligning with the Lisbon strategy leading to random identification of priorities, earmarking yet lacking quantifiable targets, weak Commission's coordination in bargaining and implemenation
2013	hard modes	Thematic focus aligning with the Europe 2020 strategy with the quantifiable targets translated top-down into on cohesion policy priorities (11 thematic objectives and multiple investment priorities) backed by Commission's entrepreneurial position papers framing the EU level perspective on national priorities during bargaining, ex ante and macroeconomic conditionlities, vague coordination with the EU Semester
2020	hard modes	Thematic focus on top-down priorities (5 policy objectives representing top EU level priorities) and multiple specific objectives backed by country reports as part of the the EU Semester cycle, better articulated link between cohesion policy and the European Semester
2021 RRF (outside the cohesion budget)	hard modes	Commission's direct management, thematic focus on the top EU level priorities (green transition; digital transformation; smart, sustainable and inclusive growth; social and territorial cohesion; health, and economic, social and institutional resilience, children and youth's education and skills), macroeconomic conditionalities

Source: Authors' own elaboration

Acknowledgement

This contribution was supported by VEGA grant no. 1/0605/19.

References

[1] BACHTLER, J. and FERRY, M. (2013). Conditionalities and the performance of European structural funds: A principal–agent analysis of control mechanisms in European Union Cohesion Policy. Regional Studies. Vol. 8, 1258–1273.

[2] BACHTLER, J., BERKOWITZ, P., HARDY, S. and MURAVSKA, T. (2017). Introduction. Reassessing the performance and direction of EU Cohesion Policy in 2014–20. In BACHTLER, J., BERKOWITZ, P., HARDY, S., & MURAVSKA, T. (Eds.). EU Cohesion Policy. Reassessing performance and direction. New York: Routledge.

[3] BACHTLER, J. and MENDEZ, C. (2020a). Cohesion and the EU Budget: Is Conditionality Undermining Solidarity? In COMAN, R., CRESPY, A. and SCHMIDT, V. (Eds.). Governance and Politics in the Post-Crisis European Union. Cambridge: CUP.

[4] BACHTLER, J. and MENDEZ, C. (2020b). Cohesion Policy: Doing More With Less. In WALLACE, H., POLLACK, M., ROEDERER-RYNNING, C., and YOUNG, A. (Eds.). Policy-Making in the European Union. Oxford: OUP.

[5] BACHTLER, J., MENDEZ, C. amd WISHLADE, F. (2013). EU Cohesion Policy and European Integration. The Dynamics of EU Budget and Regional Policy Reform. Farnham: Ashgate Publishing.

[6] BACHTLER, J., MENDEZ, C. amd WISHLADE, F. (2020). Will Cohesion Policy Recover From COVID? An Initial Assessment, European Regional Policy Research Consortium Paper 20/3. European Policies Research Centre. Glasgow and Delft.

[7] BARCA, F (2009). An Agenda for a Reformed Cohesion Policy. A Place-Based Approach to Meeting European Union Challenges and Expectations. Independent Report prepared at the request of Danuta Hübner, Commissioner for Regional Policy, Brussels.

[8] BAUN, M. and MAREK, D. (2014). Cohesion Policy in the European Union. New York: Palgrave Macmillan.

[9] BEGG, I., MACCHIARELLI, C., BACHTLER, J., MENDEZ, C. amd WISHLADE, F. (2014). European Economic Governance and EU Cohesion Policy: Report to the European Parliament. Brussels: European Union.

[10] BERKOWITZ, P., BRESKA, E. V., PIENKOWSKI, J. and RUBIANES, A. C. (2015). The Impact of the Economic and Financial Crisis on the Reform of Cohesion Policy 2008-2013, Regional Working Paper 03/2015, Directorate-General for Regional and Urban Policy. Brussel.

[11] BORRÁS, S. and RADAELLI, C. (2011). The Politics of Governance Architectures: Creation, Change and Effects of the EU Lisbon Strategy. Journal of European Public Policy. Vol. 4, pp. 463-484.

[12] BRUNAZZO, M. (2016). The history and evolution of Cohesion policy. In POLVEVARI, L. and PIATTONI, S. Handbook on Cohesion Policy in the EU. Cheltenham, Northampton: Edward Elgar Publishing.

[13] COMAN, R. (2018). How Have EU 'Fire-Fighters' Sought to Douse the Flames of the Eurozone's Fast- and Slow-Burning Crises? The 2013 Structural Funds Reform. The British Journal of Politics and International Relations. Vol 20, pp. 540–554.

[14] COUNCIL OF THE EUROPEAN UNION (2021). Common Provisions Regulation - Debrief by the Presidency of the trilogue on 11 February 2021. Working paper. WK 1694/2021 INIT, Brussels.

[15] DAWSON, M. (2015). The Legal and Political Accountability Structure of 'Post-Crisis' EU Economic Governance. Journal of Common Market Studies. Vol. 53, pp. 976–993.

[16] de la Porte, C. and POCHET, P. (2012). Why and how (still) study the Open Method of Co-ordination (OMC)? Journal of European Social Policy. Vol. 3, 336-349.

[17] DEBRE, M. J. and DIJKSTRA, H. (2021). COVID-19 and Policy Responses by International Organizations: Crisis of Liberal International Order or Window of Opportunity? Global Policy. pp. 1-12.

[18] EPSTEIN, D. and O'HALLORAN, S. (1994). Administrative procedures, information, and agency discretion. American Journal of Political Science. Vol. 3, pp. 697-722.

[19] EUROPEAN COMMISSION (2010). Europe 2020 A Strategy for Smart, Sustainable and Inclusive Growth. Brussels.

[20] EUROPEAN COMMISSION (2016). The Implementation of the Provisions in Relation to the Ex-ante Conditionalities During the Programming Phase of the European Structural and Investment (ESI) Funds. Final report, Directorate-General Regional and Urban Policy, Brussels.

[21] EUROPEAN COMMISSION (2017a). White Paper on the Future of Europe. Reflections and scenarios for the EU27 by 2025. Brussels.

[22] EUROPEAN COMMISSION (2017b). My Region, My Europe, Our Future. Seventh Report on Economic, Social and Territorial Cohesion. Luxembourg: Publications Office of the European Union.

[23] EUROPEAN COMMISSION (2017c). Commission Staff Working Document. The Value Added of Ex Ante Conditionalities in the European Structural and Investment Funds. SWD(2017) 127 final, 31 March, Brussels.

[24] EUROPEAN COUNCIL (2010). Presidency Conclusions. 23-24 March, Lisbon.

[25] EUROPEAN COURT OF AUDITORS. (2017a). The Commission's negotiation of 2014–2020 Partnership Agreements and Programmes in Cohesion: Spending More Targeted on Europe 2020 Priorities, but Increasingly Complex Arrangements to Measure Performance. Special Report no. 2, Brussels.

[26] EUROPEAN COURT OF AUDITORS. (2017b). Ex Ante Conditionalities and Performance Reserve in Cohesion: Innovative but not Yet Effective Instruments. Special Report no. 15, Brussels.

[27] FALUDI, A. (2007). From European Spatial Development to Territorial Cohesion Policy. Regional Studies. Vol. 6, pp. 667/678.

[28] HALL, P. A. and TAYLOR, R. C. R. (1996) Political Science and the Three New Institutionalisms. Political Studies. Vol. 5, pp. 936-957

[29] HALLERBERG, M., MARZINOTTO, B. and WOLFF, G. B. (2012). On the Effectiveness and Legitimacy of EU Economic Policies. Bruegel Policy Brief. Brussels.

[30] HUGUENOT-NOëL, R., HUNTER, A., & ZULEEG, F. (2017). Can the EU structural funds reconcile growth, solidarity and stability objectives? A study on the role of conditionalities in spurring structural reforms and reducing macroeconomic imbalances: European Policy Centre, Issue Paper No. 83, October, Brussels.

[31] JAŠUREK, I. (2020). The Place-based Approach and the 2013 EU Cohesion Reform. Mission Impossible. In Proceedings of the 2020 23th Edamba International Scientific Conference for Doctoral Students and Post-Doctoral Scholars From better economics to better economy. University of Economics in Bratislava. pp. 312-334

[32] JAŠUREK, I. and ŠIPIKAL, M. (2021) Examining conditionalities in Cohesion Policy: an application of the principal–agent framework. Territory, Politics, Governance. pp. 2-24

[33] JAŠUREK, I. a ŠIPIKAL, M. (2021). Politika súdržnosti Európskej. Bratislava: Ekonóm

[34] LADI, S. and TSAROUHAS, D. (2020). EU Economic Governance and Covid-19: Policy Learning and Windows of Opportunity. Journal of European Integration. Vol. 8, pp. 1041-1056.

[35] MCCANN, P. (2015). The Regional and Urban Policy of the European Union cohesion, results-orientation and smart specialisation. Cheltenham: Edward Elgar Publishing.

[36] MAJONE, G. (2001). Two Logics of Delegation: Agency and Fiduciary Relations in EU Governance. European Union Politics. 1, pp. 103-121.

[37] MANZELLA, G. P and MENDEZ, C. (2009). The Turning Points of EU Cohesion Policy. Working Paper Report to Barca Report. European Policies Research Centre. Brussels.

[38] MENDEZ, C. (2011). The Lisbonization of EU Cohesion Policy: A Successful Case of Experimentalist Governance? European Planning Studies. Vol. 3, pp. 519-537.

[39] MENDEZ, C. (2013). The Post-2013 Reform of EU Cohesion Policy and the Place-Based Narrative. Journal of European Public Policy. Vol. 5, pp. 639-659.

[40] MENDEZ, C., WISHLADE, F. and BACHTLER, J. (2013). Negotiation Boxes and Blocks. Crafting a Deal on t EU Budget and Cohesion Policy. European Policy Research Paper No. 82. Glasgow: European Policies Research Centre.

[41] PETERSON, B. G. and PIERRE, J. (2009). Governance Approaches. In WIENER, A. and DIEZ, T. European Integration Theory. Oxford: OUP.

[42] PIERSON, P. (2000). Increasing Returns, Path Dependence and the Study of Politics. American Political Science Review. Vol. 94, pp. 251-267.

[43] POLLACK, M. A. (2005). Theorizing the European Union: International Organization, Domestic Polity, or Experiment in New Governance? Annual Review of Political Science. Vol. 8, pp. 357-398.

[44] POLLACK, M. A. (2009). The New Institutionalisms and European Integration. In WIENER, A. and DIEZ, T. European Integration Theory. Oxford: OUP.

[45] PUCHER, J., MARTINOS, H., PAZOS VIDAL, S., and HAIDER, J. 2019, Research for REGI Committee – Cohesion Policy: European Parliament Role Since the Treaty of Lisbon, European Parliament. Policy Department for Structural and Cohesion Policies. Brussels.

[46] RADULOVA, E. (2007). Variations on Soft EU Governance: The Open Method(s) of Coordination. In De BIÈVRE, D. and NEUHOLD, C. (eds.). Dynamics and Obstacles of European Governance. Cheltenham, Northampton: Edward Elgar Publishing.

[47] SABEL, C. F and ZEITLIN, J. (2008). Learning from Difference: The New Architecture of Experimentalist Governance in the EU. European Law Journal. Vol. 14, pp. 271–327.

[48] SACHER, M. (2019). Macroeconomic Conditionalities: Using the Controversial Link between EU Cohesion Policy and Economic Governance. Journal of Contemporary European Research. Vol. 15, pp. 179–193.

[49] SCHIMMELFENNIG, F. (2014). European Integration in the Euro Crisis: The Limits of Postfunctionalism. Journal of European Integration. pp. 1-17.

[50] SCHMIDT, V. A. (2020). Theorizing Institutional Change and Governance in European Responses to the Covid-19 Pandemic. Journal of European Integration. Vol. 8, pp. 1177-1193.

[51] SCHWARZER, D. (2012). The Euro Area Crises, Shifting Power Relations and Institutional Change in the European Union. Global Policy Volume, pp. 28-41.

[52] TELLE, S. (2017). EU Governance and EU Cohesion Policy: Reflexive Adaptation or Inconsistent Coordination? Transactions of the Association of European Schools of Planning. Vol 1, pp. 45-64.

[53] TRUBEK, D. M., COTTRELL, P. and NANCE, M. (2005). Soft law, Hard Law and European Integration: Toward a Theory of Hybridity. Legal Studies Research Paper, no. 1002. University of Wisconsin.

[54] VERDUN, A. (2015). A Historical Institutionalist Explanation of the EU's Responses to the Euro Area Financial Crisis, Journal of European Public Policy, Vol. 2, pp. 219-237.

[55] WOLFF, S. and LADI, S. (2020). European Union Responses to the Covid-19 Pandemic: Adaptability in Times of Permanent Emergency. Journal of European Integration. Vol. 42, pp. 1025-1040.

[56] WOLFF, S., RIPOLL SERVENT, A. and PIQUET, A. (2020). Framing immobility: Schengen governance in times of pandemics. Journal of European Integration. Vol. 42, pp. 1127-1144.

Contact information

Mgr. Igor Jašurek, MA.
University of Economics in Bratislava, Faculty of National Economy, Department of Public Administration and Regional Development
Dolnozemská cesta 1, 852 35 Bratislava, Slovak Republic
E-mail: igor.jasurek@euba.sk

The Position of Public Administration in the Manifestos of Czech Parliamentary Political Parties: 2017 Elections to the House of Deputies of the Parliament of the Czech Republic

Jiří Kohoutek

Abstract: The research sought to show the position of public administration in the election manifestos of Czech parliamentary political parties that were successful in getting their seats in the Chamber of Deputies of Czech Parliament. There were three sub-questions asked and answered using the method of textual content analysis: a) how did the parties view public administration of the Czech Republic before the elections (status quo), b) what changes and policies they proposed in their manifestos, and c) what measures they wanted to put into practice to achieve such changes. Generally, the parties did not conceptualize public administration, their main focus was on digital administration and eGovernment and they did not offer detailed implementation measures.

Keywords: Elections, manifestos, public administration

JEL Classification: D70, H11, H83

1 Introduction

There is probably little doubt that elections are one of the cornerstones of contemporary democratic government, providing citizens with the opportunity to actively participate in the political life of society and in the decision-making processes of their polity. Political party manifestos, or election programmes, are generally believed to play an important role in the election process. As the competition in elections is usually programmatic, the general idea is that parties (among other things) compete on manifestos and the winner or winners promise to implement the policies put forward in their programmes. This applies both to majoritarian as well as proportional electoral systems.

As Eder, Jenny and Müller (2017) sum up, three basic functions of political manifestos can be distinguished. Manifestos provide information on party positions, help streamline each individual party's campaign as a form of a party-voter contract, and serve as a printed campaign material. However, as Kavanagh (1981) noted, there are also drawbacks, such as the frequent lack of party/governmental capacity to meet the expectations or the influence of bureaucracy on the political process. As a result, it is often difficult to predict if, how, and to what extent party manifestos will be reflected in future government policies (Thomson, 2020).

Nevertheless, the importance of manifestos is seen as quite important, especially in the field of political science, leading to a plethora of available data and stemming a methodological debate in the field (Laver, 2003; Budge *et al.*, 2012; Gemenis, 2013; McDonald and Budge, 2014; Eder, Jenny and Müller, 2017).

The role of public administration, lies in providing public services, such as municipal, health care, school, transport services etc. as well some "classical" administration activities, e. g. issuing licences, permits, documents, certificates, providing information etc. It also advises politicians, supports the formulation and execution or implementation of policies. Though it is often seen as "carrying out the business of government", it is much more than that – it is the execution of the law, where efficiency, economy and effectiveness must be sought, while being accountable, open to the public, procedurally fair. It is the area of promoting justice nad providing protection as well as equal opportunity to the citizens – all of that within the framework of contemporary

democratic government, and, as we have recently seen, with the need to face unexpected and turbulent situatiations, such as the outbreak of the COVID-19 virus (Bovens, 2010; Bertot, Jaeger and Grimes, 2012; Christensen and Perry, 2015; Ansell and Trondal, 2018; Androniceanu, 2021; Ansell, Sørensen and Torfing, 2021).

The public administration focus of contemporary political science has been mostly on the pre-eminently important topic of political control over the bureaucracy stemming from the idea that public administration, if not held in check by politics, will lose its anticipated democratic nature and evolve into a non-democratic, arbitrary, if not malevolent entity. Speaking of democracy, political science recognizes the paradox of public service in democracy: democracy itself is in need of strong, competent, effective, efficient, responsive and responsible public administration, or public service, while at the same time such need stands in sharp contrast to the general idea of the government of the people. Political control of the public service as well as giving the bureaucracy a vision and a mission thus should become a necessary part of party positions declared in their electoral manifestos. On the other hand, it is essential not only for the public administration officials (or bureaucrats) but also for the citizens and general public to know, what possible future scenarios may appear after any following elections, especially in the countries, where the independence and professionalization of public administration have been compromised by an undemocratic regime and only recently restored, such as the Czech Republic. Also, with the rise of populistm and populists, we have seen them capture, dismantle, sabotage and/or reform public service aiming at structures, resources, personnel, norms, and accountability relationships and having impact on both policymaking and democracy (Meier, Jr and O'Toole, 2006; Hamilton, 2015; Baldini, 2017; Goodsell, 2019; Bauer and Becker, 2020). According to Spicer (2010), such practice of politics might even be necessary to the moral conduct of government and public administration, as it may protect the value pluralism as an integral part of our moral experience as human beings.

The aim of this paper is to analyse the manifestos of political parties that were successful in the 2017 elections to the Chamber of Deputies – the lower House of the Parliament of the Czech Republic. The general research question on the position of public administration in the manifestos of parliamentary political parties can be subdivided into three sub-questions: a) how did the parties view public administration of the Czech Republic before the elections (status quo), b) what changes and policies they proposed in their manifestos, and c) what measures they wanted to put into practice to achieve such changes.

2 Material and Methods

The position of public administration is based on ex-post content analysis of political manifestos of parliamentary political parties – i. e. such parties that succeeded in getting their seats in the Chamber of Deputies of Czech Parliament in 2017. In the abovementioned elections, 31 political parties competed for the total number of 200 seats, however, only 9 were successful and got their seats in the lower chamber of Czech Parliament.

Table 1 – Electoral results – Chamber of Deputies, Parliament of the Czech Republic

Party		Votes		Seats
number	name	total	in %	total
1	Obcanska demokraticka strana	572 948	11,32	25
2	Rad naroda - Vlastenecka unie	8 735	0,17	-
3	CESTA ODPOVEDNE SPOLECNOSTI	3 758	0,07	-
4	Ceska str.socialne demokrat.	368 347	7,27	15
5	Volte Pr.Blok www.cibulka.net	491	0,00	-
6	Radostne Cesko	3 852	0,07	-
7	STAROSTOVE A NEZAVISLI	262 157	5,18	6
8	Komunisticka str.Cech a Moravy	393 100	7,76	15
9	Strana zelenych	74 335	1,46	-
10	ROZUMNI-stop migraci,diktat.EU	36 528	0,72	-
11	Spolec.proti vyst.v Prok.udoli	438	0,00	-
12	Strana svobodnych obcanu	79 229	1,56	-
13	Blok proti islam.-Obran.domova	5 077	0,10	-
14	Obcanska demokraticka aliance	8 030	0,15	-
15	Ceska piratska strana	546 393	10,79	22
16	OBCANE 2011-SPRAVEDL. PRO LIDI	359	0,00	-
17	Unie H.A.V.E.L.	436	0,00	-
18	Ceska narodni fronta	117	0,00	-
19	Referendum o Evropske unii	4 276	0,08	-
20	TOP 09	268 811	5,31	7
21	ANO 2011	1 500 113	29,64	78
22	Dobra volba 2016	3 722	0,07	-
23	SPR-Republ.str.Csl. M.Sladka	9 857	0,19	-
24	Krest.demokr.unie-Cs.str.lid.	293 643	5,80	10
25	Ceska strana narodne socialni	1 573	0,03	-
26	REALISTE	35 995	0,71	-
27	SPORTOVCI	10 593	0,20	-
28	Delnic.str.socialni spravedl.	10 402	0,20	-
29	Svob.a pr.dem.-T.Okamura (SPD)	538 574	10,64	22
30	Strana Prav Obcanu	18 556	0,36	-
31	Narod Sobe	300	0,00	-

Source: Czech Statistical Office, http://www.volby.cz

To achieve that, manifestos (sometimes with other significant documents) of the individual successful parties were analysed to see, whether public administration is mentioned at all – the keywords searched for in the manifestos are “public”, “administration”, “bureaucracy” and “agenda”, and if yes, how it was conceptualized, what policies were proposed and how they were to be implemented.

3 Results

3.1 Freedom and Direct Democracy (Svoboda a přímá demokracie - SPD)

SPD is a hard Euro-sceptic party, named after “Europe of Freedom and Direct Democracy” and linked with National Front of Marine LePen. Its general rhetoric and program are anti-immigration, “patriotic /nationalist” and pro-direct democracy. The party is led by Tomio

Okamura. In the election of 2017, the party received 10.64 percent of the popular vote resulting in 22 seats in the Chamber of Deputies.

In their 2017 manifesto, SPD (2017) conceptualized public administration as "arrogant" in connection with tax redistribution. Other than that, no conceptualization was to be found. In terms of policy proposals, SPD declared that they wanted to propose reforms and changes in public administration with the emphasis on the state being "functional, economic and democratic, granting citizens their rights and asking them to fulfill their duties". This allows to deduce the same qualities of public administration. Nevertheless, there were no specific measures offered to implement any changes.

3.2 ANO 2011

ANO 2011 started as an anti-corruption political movement and turned out to be a populist, centrist party, with center-to-left oriented policies. It is led by the 2nd richest person in the Czech Republic, the multi-millionaire entrepreneur Andrej Babiš, an alleged former communist secret state police agent, who was a Minister of Finance at the time of the elections and currently is the Prime Minister of the Czech Republic. The party was the winner of the 2017 elections. It received 29.64 per cent of the popular vote and 78 seats in the Chamber of Deputies.

ANO 2011 (2017) did not conceptualize public administration directly in any way, stating however, that they want the state to be effective and economical. From that we can deduce that public administration should have the same qualities, together with seeing administration as a service. Anti-corruption rhetoric was kept. Measures proposed by the party included simplifying administration, creation and development of eGovernment services in connection to a personal ID card, using Czech Post to provide access to several agendas of the government/state, a virtual phone operator for the public administration, joint purchasing/procurement, eGovernment cloud in IT etc.

3.3 Czech Pirate Party (Česká pirátská strana)

Czech Pirate Party is a centrist or center-to-left positioned party (though they refuse the general left-to-right spectrum), putting emphasis on liberal, ecological and information technology connected topics. The party leader is Ivan Bartoš, known for his unorthodox look. In the election of 2017, the party received 10.79 per cent of the popular vote and 22 seats in the Chamber of Deputies.

Czech Pirates (Pirátská strana, 2017) did not conceptualize public administration in its contemporary status quo. Instead, they offered a simple vision of an open government responsible to its citizens for the quality of public services provided. Government transparency should lead to less corruption. Proposed measures included de-politization of public administration via a novel law on state service, transparent and public selection procedures for all public posts, reduction of duplicities in agendas, processes simplification, increased quality of services, introduction of process audits and quality standards with regular evaluation. Remuneration of public servants should be adapted to the private sector and it should be able to attract top professionals.

3.4 Civic Democratic Party (Občanská demokratická strana – ODS)

ODS is a conservative-liberal party: while conservative with the social issues, it is liberal in terms of the economy. It is also moderately Eurosceptic, not very keen on accepting the Euro as the common EU currency for the Czech Republic. The party is quite heterogenous with a national-conservative faction, a national-liberal faction and a Christian-conservative faction. The party is

led by professor Petr Fiala, a former rector of the second largest university in the country, the Masaryk University, In the 2017 elections, the party was able to get 11.32 per cent of the popular vote resulting in 25 seats in the Chamber of Deputies.

Civic democrats (ODS s podporou Soukromníků, 2017), like the Pirates, did not conceptualize public administration but offered a vision of a friendly public administration together with digital society. Digital technology should lead to simplification and reduction of agendas. Public administration should be "user friendly", comprehensible, and should offer both digital services and the possibility to do anything also without them, i. e. off-line. Civic democrats proposed communication with public administration similar to an e-shop or an on-line banking application, including paying fees by card, that should make life of citizens easier. The proposed measures, however, seemed somehow like "cherry picking", showing individual assets for the citizens, but without a complex general idea.

3.5 Czech Social Democratic Party (Česká strana sociálně demokratická – ČSSD)

As its name suggest, ČSSD is a traditional social-democratic party. In fact, with its roots going back to 1878, it is the oldest political party in the Czech Republic. The party supports mixed economy, welfare state and progressive taxation. It is also in favor of European integration processes. After the resignation of Bohuslav Sobotka from the position of the chair of ČSSD, the party was led by a "triumvirate" of B. Sobotka who kept only the position of the Prime Minister, Milan Chovanec as the statutory chair of the party and Lubomír Zaorálek, the Minister of Foreign Affairs, as the electoral leader. However, due to not very successful results – the party received only 7.27 per cent of the popular vote and 15 seats in the Chamber of Deputies – Jan Hamáček became the new chair of the party.

Czech social democrats were very concise concerning public administration in their manifesto (ČSSD, 2017): No general conceptualization was present. As for proposed changes, the party offered digitalization of public administration within the concept of network neutrality, free software and open data, that should go hand in hand with decreasing bureaucracy and paperwork. No specific measures for implementation, however, were present.

3.6 TOP 09

With the abbreviation in the name of the party emphasizing tradition, responsibility and prosperity (in Czech language "tradice, odpovědnost, prosperita"), TOP 09 is an Euro-optimist, conservative-liberal party, quite similar to ODS, with a stronger conservative and catholic element, though it is also supported by so called "city-liberals". The party is led by Marketa Pekarová Adamová nowadays, while at the time of the elections it was led by Miroslav Kalousek, one of the "founding fathers" of the party in 2009. In the 2017 elections, the party barely passed the necessary 5 per cent threshold needed for the Chamber of Deputies with 5.31 per cent of the vote and 7 seats in the house.

TOP 09 (2017) offered a single conceptualization of public administration: when talking about the slow rate of transport infrastructure construction, infectivity of public administration was put forward as one of the reasons. As for the proposed measures, the party offered improvement of eGovernment services, especially in the area of user experience. Public administration should be effective and available to the citizens. If an unlawful fine were imposed, the state would have to pay also a fine to the affected citizen. Nonetheless, no specific measures for implementation to reach the goals was offered.

3.7 Christian Democratic Union – Czechoslovak People's Party (Křesťansko-demokratická unie – Československá strana lidová - KDU-ČSL)

KDU-ČSL is a Christian-democratic (catholic) and conservative party, usually holding centrist views and supporting center-to-right policies. Led by Pavel Bělobrádek at the time of the 2017 elections, the party is led by Marián Jurečka at this time. Like TOP 09, KDU-ČSL also barely passed the threshold needed to get seats in the Chamber of Deputies, as it got only 5.8 per cent of the popular vote and 10 seats.

In its manifesto, KDU-ČSL (2017) offered no conceptualization of public administration. For the future, the party offered no increase of public administration officials, no increase in operations budgets for public administration, on the other hand it wanted public administration to offer flexible and part-time jobs. Other policy plans included prevention of centralization of administration, and, of course, digitalization. The party proposed the end of the principle of "territoriality" of administration – citizens should be able to solve their problems on any individual public administration office. These plans, however, had no specific implementation measures included.

3.8 Mayors and Independents (Starostové a nezávislí - STAN)

With its roots in municipal and regional politics, STAN is more difficult to position in the system. Generally, the party is Eurooptimist, liberal and pro-environmental, resulting in its cooperation with the Pirate party in 2021. In 2017, the party was led by Jan Farský, former mayor of the town Semily, while the leader today is Vít Rakušan, mayor od the town Kolín. In the 2017 elections, the party received 5.18 per cent of the popular vote and 6 seats in the Chamber of Deputies of Czech Parliament.

The party of mayors and independents (2017) noted, that the reform of public administration system in the Czech Republic has not been finished with only two stages finished - the restoration of basic territorial self-government units – municipalities, and the establishment of higher territorial self-government units – regions; the third stage was to be added – decentralization of the competences of central state administration bodies (especially ministries) and their related reform (streamlining), that has not yet happened. On the other hand, there are proposals to gradually remove administrative agendas from local self-government units (e.g. building and construction authorities). State ministries are already announcing major changes in the competences of authorities together with efforts to build new administrative offices that will belong directly to the organisational structure of individual ministries, thus significantly strengthening the centralisation of state power. A new element is the effort to establish new separate "super-offices" alongside the current ministries. STAN strongly disagrees and offers to move decision making (back) as close to the citizens as possible, together with digitalization of public administration, its transparency and openness. The implementation steps should include total revision of public agendas and as a follow-up a reform of public administration, together with a decrease of public administration officials, remote (online) access to the services of public administration, eGovernment and electronic (on-line) elections, de-bureaucratization of public administration with a decrease in paperwork. Public administration should be open, transparent (e. g. in the area of publicization of contracts), while the people working in public administration should be held responsible. In the long-term period, public administration should become very stable, with no big changes.

3.9 Communist Party of Bohemia and Moravia (Komunistická strana Čech a Moravy - KSČM)

KSČM, a successor of the infamous Communist Party of Czechoslovakia (KSČ), is a nearly orthodox communist party, even though with a more "liberal" wing within the party. Unlike other communist parties of the former Soviet bloc, Czech communists did not change it party name or orientation towards the social-democratic or labor varieties of the left and remained mostly unchanged. The party is led by Vojtěch Filip. In the 2017 elections the party received 7.76 per cent of the popular vote and 15 seats in the Chamber of Deputies.

Czech communist party (KSČM, 2017) did not offer any conceptualization of public administration. In their policy positions, they proposed digitalization of public administration as well development of infrastructure to allow citizens use public transport to get to the services of public administration. They also wanted to lower the service fees for using the services of public administration. They, however, did not offer any specific measures to reach such goals.

4 Conclusion

While theory and practice mostly agree that the best way is to start with conceptualization and analysis, and then offer a solution, Czech political parties did not generally conceptualize public administration before the 2017 elections to the Chamber of Deputies. The only exception – the party of mayors and independents (STAN) – offered some form of conceptualization based on the unfinished reform of Czech public administration. Other parties, if at all, offered only a schematization or fragmentation (such as the concept of "arrogance" or inefectivity of public administration). On the other hand, we could imply some of the concepts, as well as problems of public administration, from the proposed changes – if there was no need to change it, parties would not propose changes.

The policy goals generally offered development of eGovernment or digitalization of Czech public administration, which would lead to sharing data between parts of administration (a problem long-known, though already at least partially solved by the institute of public registries). Another emphasis was seen on the simplification of administration and on "leaner" state, i. e. decrease of the number of public administration officials, or people working for the government.

Table 2 – Manifesto analysis

Party	Conceptualization of PA	Proposals/ Measures / Vision (what to change)	Implementation steps (how to change)
SPD	arrogant	• functional, economic and democratic • granting citizens their rights and asking them to fulfill their duties	N/A
ANO 2011	N/A	• effective and economical • anti-corruption rhetoric	• simplifying administration • eGovernment implementation
Pirate Party	N/A	• open government • responsible to citizens	• de-politization • legislative changes
ODS	N/A	• friendly public administration, user-friendly • digitalization	N/A
ČSSD	N/A	• Digitalization, open data • decrease of paperwork	N/A
TOP 09	ineffective	• digitalization • effective • available to the citizens	N/A
KDU-ČSL	N/A	• prevent centralization • no change in personnel and budget • digitalization • end of territoriality	N/A
STAN	growing or impending centralization	• getting PA close to the citizens • digitalization • open and transparent PA	• agenda revision • online service • stabilization
KSČM	N/A	• digitalization • development of infrastructure • lower fees for services	N/A

Source: own analysis

The parties, however, did not offer implementation steps, with the exception of the mayors and independents (STAN), thought even this party was not offering much detail. Such results seem to be in accord with the previous literature on the topic. Being not very specific about their goals, especially with a large number of people working in the public sector, may be congruent with

the so called broad-appeal strategy aiming to maximize the electoral votes (Somer-Topcu, 2015; Bergman and Flatt, 2021; Martin *et al.*, 2021). Another explanation put forward recently may be that parties try to blur their positions to reach the same electoral effect (Rovny, 2012; Koedam, 2021; Nasr, 2021).

As for future parts of the research, focus could be put on the changes of structures of manifestos in general, as well as on other forms of campaign materials (such as books written by politicians showing their ideas for the future or reflecting past).

References

[1] Androniceanu, A. (2021) 'Transparency in public administration as a challenge for a good democratic governance', *ADMINISTRATIE SI MANAGEMENT PUBLIC*, (36), pp. 149–164. doi: 10.24818/amp/2021.36-09.

[2] ANO 2011 (2017) 'Teď nebo nikdy. Ten jediný volební program, který potřebujete. Program hnutí Ano pro volby do Poslanecké sněmovny 2017. [It's Now or Never. The Only Manifesto You Need. 2017 Ano Movement Electoral Manifesto for the 2017 Chamber of Deputies Election.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82430_2017.pdf.

[3] Ansell, C., Sørensen, E. and Torfing, J. (2021) 'The COVID-19 pandemic as a game changer for public administration and leadership? The need for robust governance responses to turbulent problems', *Public Management Review*, 23(7), pp. 949–960. doi: 10.1080/14719037.2020.1820272.

[4] Ansell, C. and Trondal, J. (2018) 'Governing Turbulence: An Organizational-Institutional Agenda', *Perspectives on Public Management and Governance*, 1(1), pp. 43–57. doi: 10.1093/ppmgov/gvx013.

[5] Baldini, G. (2017) 'Populism in Europe: Everywhere and Nowhere?', *European Political Science*, 16(2), pp. 258–262. doi: 10.1057/eps.2016.9.

[6] Bauer, M. W. and Becker, S. (2020) 'Democratic Backsliding, Populism, and Public Administration', *Perspectives on Public Management and Governance*, 3(1), pp. 19–31. doi: 10.1093/ppmgov/gvz026.

[7] Bergman, M. E. and Flatt, H. (2021) 'Broad-appeal agendas: Issue diversity and the centre-right's electoral success', *Electoral Studies*, 70, p. 102272. doi: 10.1016/j.electstud.2020.102272.

[8] Bertot, J. C., Jaeger, P. T. and Grimes, J. M. (2012) 'Promoting transparency and accountability through ICTs, social media, and collaborative e-government', *Transforming Government: People, Process and Policy*. doi: 10.1108/17506161211214831.

[9] Bovens, M. (2010) 'Two Concepts of Accountability: Accountability as a Virtue and as a Mechanism', *West European Politics*, 33(5), pp. 946–967. doi: 10.1080/01402382.2010.486119.

[10] Budge, I. *et al.* (2012) *Organizing Democratic Choice. Party Representation Over Time*. Oxford University press. Available at: https://research.vu.nl/en/publications/organizing-democratic-choice-party-representation-over-time (Accessed: 9 August 2021).

[11] Christensen, R. K. and Perry, J. L. (2015) *Handbook of Public Administration*. Available at: https://books.google.com/books/about/Handbook_of_Public_Administration.html?hl=cs&id=s1IqBgAAQBAJ (Accessed: 30 August 2021).

[12] ČSSD (2017) 'Dobrá země pro život. Volební program ČSSD pro volby 2017. [A Good Country for Living. ČSSD 2017 Electoral Manifesto.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82320_2017.pdf.

[13] Eder, N., Jenny, M. and Müller, W. C. (2017) 'Manifesto functions: How party candidates view and use their party's central policy document', *Electoral Studies*, 45, pp. 75–87. doi: 10.1016/j.electstud.2016.11.011.

[14] Gemenis, K. (2013) 'What to Do (and Not to Do) with the Comparative Manifestos Project Data', *Political Studies*, 61, pp. 3–23. doi: 10.1111/1467-9248.12015.

[15] Goodsell, C. T. (2019) 'The Anti-Public Administration Presidency: The Damage Trump Has Wrought', *The American Review of Public Administration*, 49(8), pp. 871–883. doi: 10.1177/0275074019862876.

[16] Hamilton, M. R. (2015) 'Democracy and Public Service', in *Democracy and Public Service*. Routledge, pp. 15–32. doi: 10.4324/9781315705224-6.

[17] Kavanagh, D. (1981) 'THE POLITICS OF MANIFESTOS', *Parliamentary Affairs*, XXXIV(1), pp. 7–27. doi: 10.1093/oxfordjournals.pa.a054190.

[18] KDU-ČSL (2017) 'Zodpovědně pro společný domov. Řešení pro tři generace a jednu společnou budoucnost České republiky. Volební program KDU-ČSL pro sněmovní volby v roce 2017. [Responsibly for a Common Home. A Solution for Three Generations and One Common Future of the Czech Republic. 2017 KDU-ČSL Electoral Manifesto for the 2017 Chamber of Deputies Election.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82523_2017.pdf.

[19] Koedam, J. (2021) 'Avoidance, ambiguity, alternation: Position blurring strategies in multidimensional party competition', *European Union Politics*, p. 146511652110274. doi: 10.1177/14651165211027472.

[20] KSČM (2017) 'Jsme váš hlas. Mír ve světě, spravedlnost a bezpečí doma. Volební program KSČM pro volby do Poslanecké sněmovny Parlamentu České republiky 2017. [We Are Your Voice. Peace in the World, Justice and Security at Home. 2017 KSČM Electoral Manifesto for the 2017 Chamber of Deputies of the Czech Republic Parliament Election.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82220_2017.pdf.

[21] Laver, M. (2003) *Estimating the Policy Position of Political Actors*. 1st edn. Routledge. doi: 10.4324/9780203451656.

[22] Martin, D. *et al.* (2021) 'Projection Effects and the Role of Political Ambiguity', *International Journal of Public Opinion Research*, 33(2), pp. 354–376. doi: 10.1093/ijpor/edaa028.

[23] McDonald, M. D. and Budge, I. (2014) 'Getting it (approximately) right (and center and left!): Reliability and uncertainty estimates for the comparative manifesto data', *Electoral Studies*, 35, pp. 67–77. doi: 10.1016/j.electstud.2014.04.017.

[24] Meier, K. J., Jr, L. J. O. and O'Toole, L. J. (2006) *Bureaucracy in a Democratic State: A Governance Perspective*. JHU Press.

[25] Nasr, M. (2021) 'The motivated electorate: Voter uncertainty, motivated reasoning, and ideological congruence to parties', *Electoral Studies*, 72, p. 102344. doi: 10.1016/j.electstud.2021.102344.

[26] ODS s podporou Soukromníků (2017) 'Silný program pro silné Česko: 190 kroků pro lepší život. [A Strong Programme for a Strong Czechia: 190 Steps for a Better Life.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82413_2017.pdf.

[27] Pirátská strana (2017) 'Černé na bílém. Volební program pro volby 2017 do Poslanecké sněmovny. [Black on White. Electoral Manifesto for the 2017 Chamber of Deputies Election.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82953_2017.pdf.

[28] Rovny, J. (2012) 'Who emphasizes and who blurs? Party strategies in multidimensional competition', *European Union Politics*, 13(2), pp. 269–292. doi: 10.1177/1465116511435822.

[29] Somer-Topcu, Z. (2015) 'Everything to Everyone: The Electoral Consequences of the Broad-Appeal Strategy in Europe', *American Journal of Political Science*, 59(4), pp. 841–854. doi: 10.1111/ajps.12165.

[30] SPD (ed.) (2017) 'Volební program 2017: Demokracii a svobodu – už nikdy o nás bez nás. [2017 Manifesto: Democracy and Freedom – Never More About Us Without Us].' Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82721_2017.pdf.

[31] Spicer, M. W. (2010) *In Defense of Politics in Public Administration: A Value Pluralist Perspective*. 1st edn. Available at: https://books.google.com/books/about/In_Defense_of_Politics_in_Public_Adminis.html?hl=cs&id=0h9kt0BjgU0C (Accessed: 30 August 2021).

[32] Starostové a nezávislí (2017) 'Program STAN 2017: Chceme vrátit stát zodpovědným občanům. [2017 STAN Manifesto: We Want to Return the Country to Responsible Citizens.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82610_2017.pdf.

[33] Thomson, R. (2020) Parties' Election Manifestos and Public Policies, The Oxford Handbook of Political Representation in Liberal Democracies. doi: 10.1093/oxfordhb/9780198825081.013.17.

[34] TOP 09 (2017) 'Volební program. [Electoral Manifesto.]'. Available at: https://manifesto-project.wzb.eu//down/originals/2018-2/82530_2017.pdf.

Contact information

Mgr. et Mgr. Jiří Kohoutek, Ph.D.
College of International and Public Relations Prague, Department of Politics and Social Sciences
U Santošky 17, 150 00 Praha 5, Czech Republic
E-mail: kohoutek@vsmvv.cz

Evaluation of Key Performance Parameters of Transport Companies in the Czech Republic

Natálie Konečná, David Lenert

Abstract: Everyone knows transport and not many people can imagine life without it nowadays. It has its importance in economics, culture, politics and security. The issue of transport security and the related transport service is relevant in view of the growing trend in the number of private cars, where the increasing number of cars in families is putting pressure on public transport. The aim of this article is to evaluate the functioning of transport companies in selected cities of the Czech Republic on the basis of selected performance and operational criteria. In this case, the number of passengers carried in relation to the density of the transport network is chosen as the operational criterion. The assessment is based on data from nineteen, respectively twenty transport companies operating on the territory of the Czech Republic, which are also active members of the Association of Transport Companies of the Czech Republic (Sdružení dopravních podniků České republiky). The number of passengers carried by individual transport companies in the public transport network was monitored over a nine-year period. It was found on the basis of the analysis that the largest number of passengers per capita is attributed to the Prague transport company, while the transport companies from Chomutov and Jirkov show the lowest number. Within the analysis of the operational criterion - density of the transport network - the cities are relatively balanced. The highest density of the transport network is shown by the city of Teplice, where buses and trolleybuses serve the city, while the lowest density is shown by the city of Děčín. The paper deals with the hypothesis whether at least 50% of the employees of individual transport companies are drivers of transport companies.

Keywords: Urban public transport, number of passengers carried, density of transport network, transport companies

JEL Classification: C21, C67, R48

1 Introduction

Transport and transport infrastructure

Many authors in their articles deal with the public transport system, its efficiency and quality. Among the foreign authors, for example, a group of authors consisting of Stiglic Mitja, Agatz Niels, Savelsbergh Martin and Mirko Gradisar deal with the issue of transport integration which would increase the efficiency of public transport, with studies showing that bicycle sharing combined with public transport can achieve higher usage of public transport. Ivan Igor in his article also considers integration, but from the perspective of urban and suburban transport. Pawlasová Pavlína, on the other hand, discusses the factors that influence satisfaction with public transport. Passenger satisfaction with public transport is also addressed by Olivková Ivana in her article.

Transport has been, is and always will be the driving force of development in the life of all nations. Nowadays, people cannot imagine life without transportation, using various means of transport and sufficient transport infrastructure. Transport is an activity that everyone is familiar with. The oldest form of transport is walking. Even today, for people in less developed countries, walking long distances is usually the only possible way of transport. People there still carry heavy loads, e.g. as mountain Sherpas. In developed countries, walking as a way of moving from place

to place is used rather for shorter distances. Walking for longer distances in more developed countries is mainly a way to spend leisure time e.g. hiking.

Rektořík (2012) states that transport is an activity providing intentional movement of people and things. It has its strategic importance in the economic, political, cultural and also security sector. In order to move people or things, there must be sufficient transport infrastructure that is suitable for the movement of vehicles (Eisler, Kunst and Orava, 2011).

Eisler, Kunst and Orava (2011) classify transport as a sector of the national economy that forms the overall infrastructure of the economy. Ochrana (2007) believes that there is no straightforward definition of the term public service. Public service can be described as a concept that has economic, social and legal content. In economic terms, a public service is an economic or public estate. For this reason, a public service can be a pure public estate or a mixed public estate. From the perspective of the theory of estates, according to Rektořík (2012), a pure market estate has become a mixed estate over time. The form of state intervention varies from one transport sector to another.

The aim of this article is to evaluate the functionality of transport companies on the basis of operational and performance criteria, supported by a hypothesis: „*the total number of employees is made up of at least by 50% drivers of vehicles".*

Urban public transport

The term urban public transport has been used by the public, both professional and lay, for many years. Although there is no doubt about the frequent occurrence of this term, the legislation regulating the provision of public transport does not know this term (Association of Transport Companies of the Czech Republic, online). According to Section 2(7) of Act No. 111/1994 Coll., concerning road transport, as amended, urban public transport, or bus transport, is a subset of public line transport: *"Line passenger transport is the regular provision of transport services on a specified route, during which passengers alight and board at predetermined stops. Line passenger transport may be operated in the form of a public line service or in the form of a special line service, either national or international. By this is meant (a) public line transport, where transport services are offered under pre-announced conditions and are provided to meet transport needs; where the transport is provided for the needs of the city and its suburban areas, it is referred to as urban bus transport..."*

The Association of Transport Companies of the Czech Republic (online) further states that the legislation regulating rail transport does not work with this concept at all. That is why Ing. Macháček from the Association of Transport Companies sees the problem in the absence of a unified law on urban public transport. In this context, public transport does not even have its own department at the Ministry of Transport of the Czech Republic and issues related to public transport fall under various departments.

Urban public transport in the Czech Republic is provided by rail, road and water transport. Each kind of transport has its own specific means of transport. If we focus only on urban public transport, buses are typical for road transport. For rail transport, the choice of means of transport is slightly more varied. Rail transport includes metro, trains, trolleybuses, trams and also funiculars. In the Czech Republic there are also types of funiculars that belong to public transport. Examples include the city of Praha, where there is a funicular to Petřín and a funicular in the Prague Zoo, which belongs to the transport company of the Capital City, as well as Karlovy Vary and Ústí nad Labem. The characteristic feature of both Prague funiculars is being a tourist attraction. Although the Prague transport comapny is the single operator of the funicular to Petřín and the Prague Zoo funicular, it is not a typical means of public transport. The funicular to Petřín is connected to tram transport with the final stop at Petřín near the popular observation tower.

For this reason in particular, the funicular is a popular tourist attraction with year-round operating hours. The funicular in the Prague Zoo is also intended for its visitors, who can use it between the end of March and the end of October (Prague City Portal, online). The Diana funicular in Karlovy Vary is no exception; like in the capital, it is a popular tourist destination. This funicular has been in service for more than 100 years and currently belongs to the Karlovy Vary transport campany. Its route starts next to the Grandhotel Pupp and ends at the Diana Lookout Tower (Diana Karlovy Vary, online). The youngest funicular in the public transport system is the funicular to Větruše in Ústí nad Labem, which started its service in 2010. It connects the Forum shopping centre and the Větruše Chateau (Transport Company of Ústí nad Labem, online).

The urban public transport system in the Czech Republic also includes water transport. Such specific public transport is operated on the Brno dam and on the Vltava river. The boating season on the Brno "Prygl" runs from April to October. The history of boat traffic on the Brno dam dates back to 1946. The route of the boat traffic runs from Bystrc to Veverská Bítýška. It operates mainly as a cruise transport and is divided into 10 stops and takes 70 minutes in one direction (Prygl, online). The public transport system in Prague also includes ferries on the Vltava River, which are a popular way of transport between the river banks, especially where bridges are not available. For tourists in particular, they represent an interesting way of getting to know the capital from a different perspective (Prague City Portal, online).

2 Material and Methods

The requirement of the public transport service customer is to provide transport within the city. The individual transport companies can be characterised from several aspects, which can be divided into operational and performance criteria. Operational criteria can be considered as those related to the technical functioning of the transport companies, i.e. number of lines, number of vehicles, length of lines and number of employees. These criteria can then be used to assess individual transport companies. This article focuses on the evaluation based on the length of lines or the density of the transport network. Table 1 shows the average number of inhabitants of the area served and the size of that area.

Performance criteria can be characterised as criteria by which companies assess their mission, i.e. whether their core business of land management is sufficient. Performance criteria reflect, in essence, the requirements of customers. By this criterion it is possible to evaluate the performance of the transport or the transport operator in a given city. Performance criteria include, for example, the number of passengers carried, transport performance in seat kilometres and vehicle kilometres. Richtář, Křivda and Olivková (2006) state that in order to evaluate performance, criteria such as transport and carriage outputs and number of passengers carried are collected.

Model and Data

Table 1 - Transport companies

Rank	Transport company	Region	Area (km²)	Population
1.	Dopravní podnik hl. města Prahy a.s.	Capital city Praha	496	1 253 245
2.	Dopravní podnik města Brna a.s.	Jihomoravský	230	378 159
3.	Dopravní podnik Ostrava a.s.	Moravskoslezský	214	296 165
4.	Plzeňské městské dopravní podniky a.s.	Plzeňský	138	168 556
5.	Dopravní podnik měst Liberce a Jablonce nad Nisou a.s.	Liberecký	137	147 933
6.	Dopravní podnik města Olomouce a.s.	Olomoucký	103	99 765
7.	Dopravní podnik města Ústí nad Labem a.s.	Ústecký	94	93 717
8.	Dopravní společnost Zlín – Otrokovice s.r.o.	Zlínský	122	93 671
9.	Dopravní podnik města České Budějovice a.s.	Jihočeský	56	93 464
10.	Dopravní podnik města Hradce Králové a.s.	Královehradecký	105	93 123
11.	Dopravní podnik měst Mostu a Litvínova a.s.	Ústecký	127	92 236
12.	Dopravní podnik města Pardubice a.s.	Pardubický	78	89 637
13.	Dopravní podnik měst Chomutova a Jirkova a.s.	Ústecký	46	69 195
14.	Městský dopravní podnik Opava a.s.	Moravskoslezský	91	57 969
15.	Dopravní podnik města Jihlavy a.s.	Vysočina	78	50 596
16.	ARRIVA TEPLICE s.r.o.	Ústecký	24	50 134
17.	Dopravní podnik města Děčína a.s.	Ústecký	118	50 059
18.	Dopravní podnik Karlovy Vary a.s.	Karlovarský	59	49 952
19.	Městská doprava Mariánské Lázně s.r.o.	Karlovarský	52	13 331

Source: Created by authors

Performance criteria

To determine the total number of passengers, individual carriers use the guidelines of the Ministry of Transport of the Czech Republic. The number of passengers carried is determined according to the following relationship:

- 1 ticket issued = 1 passenger carried

This relationship does not take any consideration on the type of fare or the price of the fare. The total number of passengers using time tickets is determined by the number of vouchers sold in the reference period according to the following formula (1):

$$J = \sum (K \cdot L) \quad (1)$$

J – number of passengers carried on prepaid season tickets,

∑– the total number of passengers carried for each type of voucher,

K – number of vouchers of each type sold,

L – standard of passengers carried per individual voucher.

For an objective assessment and probably also one of the most important performance criteria is the transport performance, or the number of passengers carried. It is therefore advisable to calculate the number of passengers carried per inhabitants of a given city. This conversion can be expressed according to the following formula (2):

$$x = \frac{\text{average number of passengers carried}}{\text{average number of inhabitants}} \quad (2)$$

The result of this ratio is the average number of public transport passengers per capita. The average number of passengers carried over the period under review is expressed in Table 2.

Table 2 - Average number of passengers carried in the period 2010-2019 (in thousands)

Rank	Transport company	Passengers carried
1.	Dopravní podnik hl. města Prahy a.s.	1 431 859
2.	Dopravní podnik města Brna a.s.	355 399
3.	Dopravní podnik Ostrava a.s.	94 699
4.	Plzeňské městské dopravní podniky a.s.	106 365
5.	Dopravní podnik měst Liberce a Jablonce nad Nisou a.s.	38 804
6.	Dopravní podnik města Olomouce a.s.	55 051
7.	Dopravní podnik města Ústí nad Labem a.s.	43 650
8.	Dopravní společnost Zlín – Otrokovice s.r.o.	32 710
9.	Dopravní podnik města České Budějovice a.s.	42 493
10.	Dopravní podnik města Hradce Králové a.s.	35 828
11.	Dopravní podnik měst Mostu a Litvínova a.s.	24 233
12.	Dopravní podnik města Pardubice a.s.	27 836
13.	Dopravní podnik měst Chomutova a Jirkova a.s.	6 340
14.	Městský dopravní podnik Opava a.s.	10 141
15.	Dopravní podnik města Jihlavy a.s.	14 218
16.	ARRIVA TEPLICE s.r.o.	11 206
17.	Dopravní podnik města Děčína a.s.	7 445
18.	Dopravní podnik Karlovy Vary a.s.	13 346
19.	Městská doprava Mariánské Lázně s.r.o.	3 409

Source: Created by authors

3 Results and Discussion

It goes without saying that each company operates on the basis of its employees. This is not the case with transport companies either. Next Tab. 3 shows the average number of employees and drivers for the observed period. It also shows the percentage of drivers on the total number of employees in a given transport company. It is not surprising that the largest number of people is employed by Prague transit company, The number of drivers is also three times larger than the second largest number in Brno. In this characteristic, without a doubt, the largest employer is Prague transit company, which has over ten thousand employees. Brno and Ostrava can also be assigned to the larger ones, where the total number of employees is still in thousands. In contrast, other companies report the number of employees in hundreds, or Mariánské Lázně only in tens of employees.

Table 3 - Share of drivers on the total number of employees

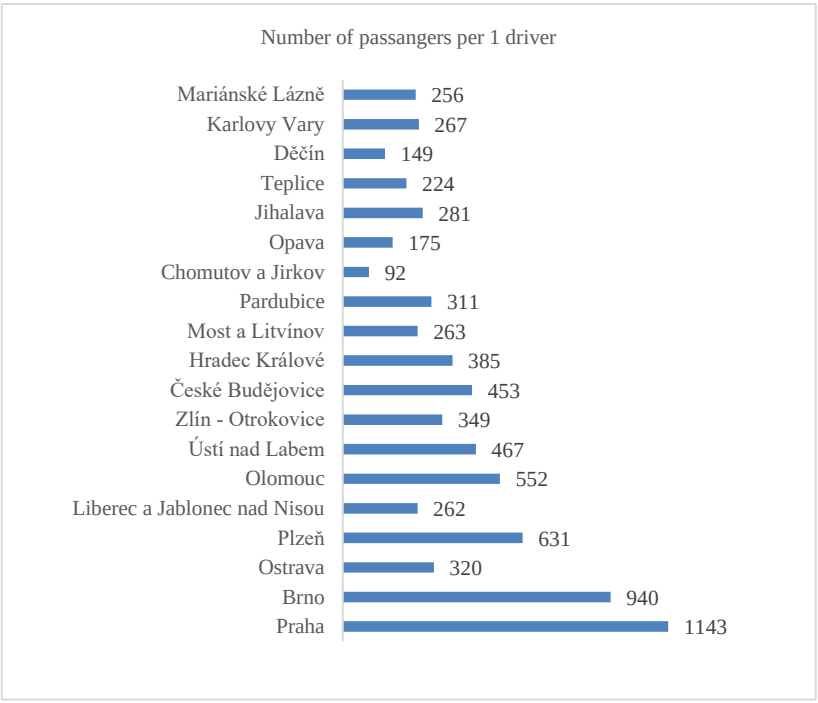
Rank	Transport company	Employees	Drivers	Share in %
1.	Dopravní podnik hl. města Prahy a.s.	10 719	4 189	39.08%
2.	Dopravní podnik města Brna a.s.	2 706	1 384	51.17%
3.	Dopravní podnik Ostrava a.s.	2 005	1 005	50.11%
4.	Plzeňské městské dopravní podniky a.s.	904	561	62.09%
5.	Dopravní podnik měst Liberce a Jablonce nad Nisou a.s.	409	195	47.59%
6.	Dopravní podnik města Olomouce a.s.	433	247	57.06%
7.	Dopravní podnik města Ústí nad Labem a.s.	482	248	51.44%
8.	Dopravní společnost Zlín – Otrokovice s.r.o.	335	186	55.58%
9.	Dopravní podnik města České Budějovice a.s.	398	192	48.37%
10.	Dopravní podnik města Hradce Králové a.s.	398	213	53.35%
11.	Dopravní podnik měst Mostu a Litvínova a.s.	454	209	46.10%
12.	Dopravní podnik města Pardubice a.s.	407	191	46.89%
13.	Dopravní podnik měst Chomutova a Jirkova a.s.	222	151	67.78%
14.	Městský dopravní podnik Opava a.s.	183	116	63.69%
15.	Dopravní podnik města Jihlavy a.s.	171	97	56.63%
16.	ARRIVA TEPLICE s.r.o.	260	172	66.14%
17.	Dopravní podnik města Děčína a.s.	188	117	62.30%
18.	Dopravní podnik Karlovy Vary a.s.	258	125	48.31%
19.	Městská doprava Mariánské Lázně s.r.o.	31	19	59.91%

Source: Created by authors

The number of employees and drivers also has an impact on other indicators. For example, each employee requires to be paid for the work done, which is a wage cost for the company and thus this burdens the financial situation of the company. Conversely, drivers by performing their profession, provide the company with revenues that the company derives from passengers transport.

In this monitored period (2010 - 2019), one driver annually transports the most of passengers in Prague and also in Brno. Mariánské Lázně, which otherwise moves in the indicators at the imaginary opposite end of the evaluation, will also break the limit of two hundred thousand of passengers transported annually by one driver. In terms of indicators in passenger transport, the Ostrava transport company is also not doing well. According to this indicator, 94 thousand of passengers is transported by one driver.

Figure 3 Number of passangers per 1 driver



Source: Created by authors

According to the number of passengers transported by one driver, it looks the worst at the Transport Company of Chomutov and Jirkov. Although the company provides public transportation in the territory of two cities, in this comparison with the others, it turned out to be the worst.

4 Conclusion

Urban public transport is an integral part of larger cities, not only in the Czech Republic. The smallest city, in terms of population, in which the public transport system is operated is Mariánské Lázně. Public transport is provided by buses, trolleybuses and trams. In addition to these typical means of transport, the Prague metro is an integral part of public transport, and in addition to these means of transport, funiculars and boats are also used. In 2018, the transport company of the city of Mladá Boleslav was established, but it was not included in this evaluation due to its short service.

In order for a company to function, it also needs an employees, without whom it would not be able to fulfil its mission to provide public transport. Everyone will probably think that the most of employees belong to the Prague transit company. Indeed the total number of employees is undoubtedly the highest amongst of all transport companies, within the parameter of recalculated number of drivers it is also the highest value, on the contrary, in the ratio of the Prague transit company, the smallest number share of drivers may be - 39,08%. The largest share of drivers

falls on the transport company from Teplice. In absolute terms, Mariánské Lázně transport company, has the least number of employees, this is related to the lenght and number of lines and the number of inhabitants as well. In the case of Brno and Ostrava, the ratio of drivers to employees is at the level of 50%.

The aim of the paper was to asses whether „the total number of employees is made up of at least by 50% drivers of vehicles“. This hypothesis cannot be confirmed as the largest number of employees is reported by Prague transit company, however the share of drivers is 39.08%. Transport companies from Liberec and Jablonec and Nisou, České Budějovice, Most, Litvínov, Pardubice and Karlovy Vary are also below the 50% of drivers treshold.

References

[1] BREALEY, R. A., S. C. MYERS a F. ALLEN. *Principles of corporate finance*. 11th ed. New York: McGraw-Hill Education, 2014. ISBN 978-0-07-803476-0.

[2] EISLER, J., J. KUNST a F. ORAVA. *Ekonomika dopravního systému*. Praha: Oeconomica, 2011. 286 s. ISBN 978-80-245-1759-9.

[3] OCHRANA, František. *Efektivnost zabezpečování vybraných veřejných služeb na úrovni obcí*. Praha: Oeconomica, 2007. ISBN 978-80-245-1259-4.

[4] OCHRANA, František. Veřejné služby - jejich poskytování, zadávání a hodnocení: teorie a metodika poptávkového způsobu poskytování a zadávání veřejných služeb na úrovni municipalit. Praha: Ekopress, 2007. ISBN 978-80-86929-31-6.

[5] REKTOŘÍK, Jaroslav a Jaroslav HLAVÁČ et al. *Ekonomika a řízení odvětví technické infrastruktury.* 2.vyd. Praha: Ekopress s.r.o., 2012. 209 s. ISBN 978-80-86929-79-8.

[6] IVAN, Igor. Interchange nodes between suburban and urban public transport: A case study of the Czech Republic. *Acta geographica Slovenica* [online]. 2016, 56(2), - [cit. 2021-05-09]. DOI: 10.3986/AGS.754. ISSN 1581-8314. Dostupné z: http://ojs.zrc-sazu.si/ags/article/view/754

[7] KLEPRLÍK, Jaroslav. *Základní pilíře integrovaného dopravního systému* [online]. 2009, [cit. 2021-05-05]. Dostupné z: http://pernerscontacts.upce.cz/13_2009/kleprlik.pdf

[8] PAWLASOVA, Pavlina. The Factors Influencing Satisfaction with Public City Transport: A Structural Equation Modelling Approach. *Journal of Competitiveness* [online]. 2015, **7**(4), 18-32 [cit. 2021-05-12]. DOI: 10.7441/joc.2015.04.02. ISSN 1804171x. Dostupné z: http://www.cjournal.cz/index.php?hid=clanek&cid=203 94

[9] OLIVKOVÁ, Ivana. Evaluation of Quality Public Transport Criteria in Terms of Passenger Satisfaction. *Transport and Telecommunication Journal* [online]. 2016, 17(1), - [cit. 2021-05-05]. DOI: 10.1515/ttj-2016-0003. ISSN 1407-6179. Dostupné z: https://www.degruyter.com/view/j/ttj.2016.17.issue-1/ttj-2016-0003/ttj-2016-0003.xml

[10] STIGLIC, M., N. AGATZ, M. SAVELSBERGH a M. GRADISAR. Enhancing urban mobility: Integrating ride-sharing and public transit. *Computers & Operations Research* [online]. 2018, 90, 12-21 [cit. 2017-05-30]. DOI: 10.1016/j.cor.2017.08.016. ISSN 03050548. Dostupné z: http://linkinghub.elsevier.com/retrieve/pii/S0305054817302228

[11] Zákon č. 111 ze dne 26. dubna 1994 o silniční dopravě. In: Sbírka zákonů České republiky. 1994, částka 37, s. 1154-1161. Dostupné také z: http://aplikace.mvcr.cz/sbirka-zakonu/SearchResult.aspx?q=111/1994&typeLaw=zakon&what=Cislo_zakona_smlouvy.

[12] SDRUŽENÍ DOPRAVNÍCH PODNIKŮ ČR. *Výroční zprávy.* [online]. [cit. 2021-06-29]. Dostupné z: http://www.sdp-cr.cz/o-nas/vyrocni-zpravy/

Contact information

Ing. Natálie Konečná
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: natalie.konecna@vsb.cz

Ing. David Lenert, Ph.D., MBA
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: david.lenert@vsb.cz

Healthcare Payment-for-Performance in the Czech Republic from Behavioral Economics and Nudge Theory Perspectives

Radek Kovács

Abstract: The objective of this paper is to analyze positive and negative outcomes of financial incentives within Payment for Performance (P4P) in health care in the Czech Republic from both international and cross-sectorial comparative perspective. P4P policymaking processes will be reviewed employing behavioral economics and nudge theory instruments as well as public policy theories focused on stakeholders and historical institutionalism. On one hand there is a public and political consensus for supporting healthy lifestyle but on the other there are barriers stemming from the belief in why doctors should be rewarded for something that is their job and duty. The paper aims to fill in this gap. P4P as a method of reimbursement in healthcare may encourage other healthcare providers to raise healthcare quality, quality of life of patients and bring savings, for instance in obesity. Given that diabetes belongs to the so-called diseases of civilization and its development can be positively influenced by a suitable lifestyle and the improvement of living conditions, it seems possible not only to reduce the number of new patients but also achieve the remission of the disease and relieve public budgets. P4P with the use of behavioral economics interventions seems to be one of the possible policy options to mitigate the problem as it is based on fair and ethical care for patients, supporting the patient-doctor relations, voluntary participation, using accurate and relevant data and providing fair bonuses for positive outcomes. Hence, the aim of the discussion will be to apply a theoretical lens of behavioral economics and the nudge theory in the analyses of P4P. The paper was based on desk research which included processing secondary data, performing comparative analysis (with the practice in the UK, the USA and Germany) and the analysis of related documents. Results show that Payment for Performance programs are associated with high administration and commission costs. On the other hand, the programs enhanced the patient's health and satisfaction with care in the western countries (Germany, the US, the UK) and may serve as an inspiration for a similar investigation especially in the countries of Central and Eastern Europe.

Keywords: Diabetes, health nudges, payments for performance

JEL Classification: I12, I18

1 Introduction

Financial incentives of payment for performance (P4P) as a relatively new payment system that rewards healthcare providers for maximizing the impact of preventive care might help increase quality of patients' care and curb rising healthcare costs in the Czech Republic. In 2021, the provision of all health services will make up 346 billion crowns, which is almost 26 billion crowns more than in 2020. (46) The Czech Republic spends much less on health care than the EU average, but the patients' participation in reimbursement is under 20 percent, which is one of the lowest shares in the EU. (Kalnická 2019) Among the EU member states, France, Germany and Sweden had the highest healthcare expenditures relative to GDP in 2017 (between 11.0% and 11.3%), while the Czech Republic less than 8%. (Kalnická 2019) P4P is not as widespread in Czechia as it is in the US and western European countries. It operates as a reward in increasing capitation payments for general practitioners, increasing the value of the point-system in the laboratory sector and as particular incentive programs introduced by Czech health insurance companies (Svobodová, 2016). The aim of the paper is to outline positive and negative outcomes of financial incentives within P4P in health care in the Czech Republic from both international and cross-sectorial comparative perspective and focus on P4P from perspective of

behavioral theory of economics and nudge theory in tacking obesity in conjunction with type 2 diabetes mellitus (DM2) as well as compare their power and validity with other public policy theories.

Obesity poses both a serious medical and public health challenge. It can lead to several serious and potentially life-threatening conditions such as type 2 diabetes (DM2), high blood pressure, coronary heart disease, breast or bowel cancer, stroke. Obesity can also affect the quality of life and result in social and psychological problems, such as social exclusion, isolation, depression, and low self-esteem. The rate of adult obesity in the Czech Republic is one of the highest in the EU and has increased by more than 30% in the last 15 years. Approximately 20% of adults are obese, above the EU average (15%). (41) Around 61% of adults do at least light physical activity each week, which is less than the EU average (72%). The rate of overweight and obesity with children is increasing. Approximately 17.5% of 15-year-old persons are overweight or obese. (39) In terms of diabetes mellitus**,** it is an incurable lifelong metabolic disease. It has afflicted mankind of all social classes for over three thousand years. Depending on the type of diabetes, it shortens the life expectancy by 30 – 50 %. (Rybka, 2007). In the Czech Republic, over 800 thousand people suffer from diabetes, of which 97% have diabetes mellitus of type II (DM2). DM2 affects significantly more often overweight and obese people, those whose lifestyle follows irregular and unhealthy diets. The risk of developing DM2 is more than 50% for the offspring of one parent with DM2 and almost 100% for the offspring of two parents with DM2. (Svačina, 2010). Diabetes entails, among others, heart, and vascular diseases. Every year, 60,000 Czech people become newly diagnosed with diabetes, and 22,000 patients die of incurred complication. (11). The prevalence of patients with DM2 shows an increasing tendency from 804,987 patients (78 per 1,000 persons) in 2007 to 936,124 (88 per 1,000 persons) in 2017. (42). By 2030, there might be up to 1.3 million diabetics in the Czech Republic. (13) The cost of treatment for diabetes takes up to 15% of the amount paid on public health insurance per year, i.e., over 50 billion crowns. (11) Given that diabetes belongs to the so-called diseases of civilization and its development can be positively influenced by a suitable lifestyle and the improvement of living conditions, it seems possible not only to reduce the number of new patients but also achieve the remission of the disease and relieve public budgets. Nudging (both physicians and patients in this case) has been proposed as an effective way to change behavior in the desired way and improve outcomes at lower cost than traditional tools. (Thaler, Sunstein 2009). Therefore, P4P employing the theoretical-conceptual framework of behavioral theory of economics and health nudges may enhance its effectiveness. This research is based on the theoretical foundations of behavioral theory of economics and nudge theory stemming from the assumption that the use of health nudges targeted at both physicians and patients (citizens) should ultimately lead to savings in public health budgets. The aim of this paper is to fill the existing gap in empirical research of behavioral economics and its nudge theory in the Czech Republic in the area of P4P. This will open new opportunities for public health policies to "nudge" the individuals towards a socially and personally desirable change in their behavior. The paper is an original view of the problem of pay-for-performance in view of behavioral theory of economics and nudge theory. It is a problem that has not yet been sufficiently solved.

Research questions were defined as follows:

RQ1: What is the economic benefit of Payment for Performance (P4P) in the Czech Republic from international and cross-sectional perspective?

RQ2: What are the effects of Payment for Performance (P4P) on the quality of care in the Czech Republic?

RQ3: How can the behavioral economics principals and its health nudges enhance Payment for Performance (P4P) in the Czech Republic?

2 Material and Methods

2.1 Theoretical and conceptual framework

Since the foundation of the Czech Republic (1993), reimbursement mechanisms of healthcare have gone through both retrospective and prospective forms of payment. Retrospective payment based on the idea of "what is cured is also paid" was in use until 1997. It often led to overtreatment because each additional performance brought a profit. Owing to its financial unsustainability the aim is to transform this into the system of reimbursement according to diagnosis related groups (DRG). In it, the market risk is transferred to the providers, because a contract is agreed with the payer only up to a certain amount. Beyond this, care is paid at a lower rate or is not paid at all. In 2008 efforts have been made to develop a case-by-case system which depends on the average value of the treatment of the given disease, regardless of the number of performed procedures in connection with one case. It should therefore create a natural motivation to treat patients effectively. (Krejsta, 2017). However, payments to hospitals for services are currently still non-transparent, vary from provider to provider and are biased. The Czech Republic, as one of the last countries in Europe, has not yet fully implemented the DRG system. The optimization and streamlining of the system of reimbursement of hospital care (DRG Restart) has been in process since 2016. The subject of the project is the creation and implementation of a management information system for inpatient care, the introduction of which will increase the efficiency of state administration. In terms of management, controlling and optimization of the distribution of financial flows in health care. (46). To achieve the goal, quality health and economic data of real informative value reflecting the real price while maintaining the best available quality of care are essential.

Primary care as the basis of functioning health care in developed countries is another challenge the Czech Republic needs to resolve. Owing to the low competencies of primary care physicians, the insufficient range of services provided and non-use of their coordination and organizational role, the potential of primary care in the Czech Republic is not well employed compared to developed EU countries. This results in unnecessary costs of tens of billions of crowns per year and discomfort for the patient. (50) Since 2019, the reform of primary care (its gradual transformation and strengthening so that it is able to provide care the widest possible, and at the same time quality care easily accessible to the patient) and the program of gradual electronic health care have been underway.

E-Prescription has been in place since 2019, e-Sick Note as of 2020, e-application and electronic transmission of medical reports and exchange of information between health care providers as of 2021. Proposals for preventive interventions of general practitioners and support for gatekeeping will be subsequently developed. (50) To enhance the probability of cost-benefit success of the Payment for Performance incentives and the impact on quality of care, behavioral theory of economics and its nudge theory offer insight into human irrationality in decision-making and suggest positive empowerment as a way to influence the behavior in the desired direction. The prospect theory of Kahneman and Tversky (1999) experimentally refuted the hypotheses of the rational choice models of expected utility in decision-making under conditions of uncertainty and in choosing between the present and the future. The theory confirmed that the perceived loss is more significant than the equivalent gain and that a certain gain is preferred to a more likely gain. Our willingness to take risks depends on the context and is therefore influenced by the way the options are formulated. Giving up something has a greater, "more painful" emotional intensity than the pleasure of receiving things. The phenomenon of over-choice is an example of people's limited rationality. Due to the excess of choice, we are paralyzed in the ability to make decisions, in all areas of life, including health.

The phenomenon leads to misfortune (Schwartz, 2004), fatigue from decision-making, taking over the initial option, but also to postponement of choice, including decisions not to buy a product or not to use a service. Chernev et al. (2015) identified four key factors (sample complexity, decision task difficulty, preference uncertainty, and decision goal) that reliably and significantly mitigate the impact of over-choice. The excess of choice can be mitigated by simplifying selection attributes or the number of options available. Ariely (2008) showed the effect of an asymmetrically dominant choice, known as the decoy effect. The inclusion of an inferior option changes the decision-making process towards an optimal solution. Thus, the choice is often made based on what the options provide rather than if based on absolute preferences. The effect of the decoy as a health nudge is manifested when the preference of one option over the other changes because of the addition of a third (similar but less attractive) drug or vaccine option. Using this effect, Maltz & Sarid (2020) increased the rate of influenza vaccination. People could choose to be vaccinated either at the beginning of winter, which epidemiologists recommend, or at the end of winter. At the same time, it was stipulated that vaccination at the beginning of winter would be free, unlike at the end of winter. This approach (providing a financial advantage for pre-season vaccination) encouraged participants to be vaccinated in early winter, which is optimal. Nudges may include ways in which people can be prepared before thinking and deciding, for example, simplification of information and choices, framing and priming of messages or default choice architecture. (Reisch, Sunstein and Gwozdz 2016).

2.2 Data and methods

With regard to the research subject, research goal and research questions, an appropriate research design was chosen. A mix of non-normative and normative methodology was used (Ochrana, 2012) and appropriate research methods were chosen (Ochrana, 2019). The main research methods cover desk research, content analysis of documents, secondary data analysis and comparison. From a methodological point of view, the following steps were followed: In the first step, desk research was performed. The output of this step was the identification of a "white research space" (research subject) and an analysis of the scientific discourse on the issue of Healthcare Payment-for-Performance in the Czech Republic. It has been confirmed that this problem has not yet been addressed in terms of Behavioral Economics and Nudge Theory Perspectives. In the second step, therefore, research efforts were focused on this direction. A theoretical and conceptual framework for research has been developed (see point 2.1.). In the third step, an empirical analysis of data extracted from the VZP database was performed. In the final step, the method of comparison (based on best practice in the UK, the USA and Germany) was used and the method of synthesis and generalization was used to formulate recommendations and conclusions.

3 Results and Discussion

The following section of the paper contains the search for answers to the above established research questions.

RQ1: What is the economic benefit of Payment for Performance (P4P) in the Czech Republic from international and cross-sectional perspective?

In 2009, the incentive P4P program called the AKORD care quality program was introduced by the General Health Insurance Company (VZP ČR). This program has been conceived to bring time savings for patients, exchange information between physicians on the patients' health (to avoid overtreatment or re-examinations). (Svobodová, 2016 according to 48). At present, if the criterion of providing preventive examinations in the previous two years or electronic communication with both VZP ČR and patients, the doctor receives an increase in the

capitalization rate of CZK 2-3 (EUR 0,08-0,12) depending on the distribution and length of surgery hours. Furthermore, if the indicators of good practice (such as the provision of care for patients with chronic diabetes mellitus, the provision of colorectal cancer screening, influenza vaccination, adherence to the methodology of regular vaccination, or rational prescription) are met, the general practitioner may receive an additional motivational bonus. (48).

By the end of 2009 (when the official inventory of the AKORD program was made), a total of 424 general practitioners, i.e., 27% of all, and 92 general practitioners for children and adolescents, i.e., 13% of all, had joined the program. In terms of costs, there was no difference between the behavior of physicians in AKORD and beyond, but as part of the financial incentive, the insurance company paid a total of CZK 57 million (EUR 2,2 million) to doctors involved in AKORD. (Svobodová, 2016 according to 48). From international perspective, *the cost of these programs in the USA, the UK and Germany in 2015 was more than hundreds of millions of dollars ($ 65 million in the Hospital Quality Incentive Demonstration Project, HQID) or euros (€ 920 million for the German Disease Management Program, DMP) per year, and there are no exceptions, which have annual program costs as well as a billion dollars (Practice Incentive Program, PIP).* If there was any improvement or saving, it was only a slight improvement and no savings of more than 15% were achieved. (Svobodová, 2016 according to Carroll 2014, Jha et al. 2009, Cashin et al. 2014, Baker 2003). Also, Lidenauer at al. (2007) found out that the improvement of the monitored parameters when comparing US hospitals involved in the Medicare system and hospitals, which only publicly published data, was only modest, ranging from 2.6% to 4.1% over a two-year period. With diabetic care, however, the Medicare P4P program (USA) showed that *the life expectancy at birth in diabetic patients has increased. Recently, some programs have yielded much better results. German DMP program reduced the incidence of some complications and reduced the overall cost of caring for diabetics by 13%. Germany and other countries also perform well on coronary artery and chronic obstructive pulmonary disease programs.* (Svobodová, 2016 according to Cashin et al. 2014, Borowitz 2013, 63, Casalino et al. 2007). The incidence of complications associated with diabetes has lowered, including the mortality. Patients' satisfaction with treatment has significantly increased. As a result of the streamlining of outpatient care, the length of hospitalization was reduced and thus the cost of inpatient care decreased by 25%. (Svobodová, 2016 according to 19, Cashin et al. 2014, Borowitz 2013, Casalino et al. 2007).

As mentioned above, P4P programs (including those in the Czech Republic) bear great financial burden with no significant savings. In the area of hospitalizations, it is still not achievable to reduce the length of hospitalization and the number of hospitalized to such a level that the reduction in costs for these measures would be reflected. (Svobodová, 2016). The costs include both the reward for the provider based on the P4P criteria and the administrative support. Another of the limitations may be (paradoxically) the good quality of healthcare that the Czech Republic offers to its citizens. Most of the objectives and goals of the P4P program are generally provided by physicians part of standard services. (Svobodová, 2016). On one hand there is a public and political consensus for supporting prevention but on the other there are barriers stemming from the belief in why doctors should be rewarded for something that is their job and duty. This stems from historical intuitionalism. Czech public healthcare incomes are also highly sensitive to changes in employment and aging. Besides, for more than 60% of Czechs, insurance fees are paid from the state budget. Higher unemployment, for example, during the COVID-19 economic crisis, as well as the aging of the population, will result in a higher number of state insured persons and a higher burden of general tax revenues (40). To keep the healthcare system stable, Krejsta (2017) suggests embedding P4P principles and allowance for raised patient participation in healthcare reimbursement instead of deepening regulation, redistribution, and non-systemic replenishment of state budget funds. The current payment system neglects the role that preventive care can play in improving health and reducing healthcare costs: "*Czech providers nowadays receive more money to treat diabetic patients who suffer from kidney failure than*

prevent kidney failure through better check-up of blood glucose levels." The greatest challenge in broader implementing Payment for Performance is getting the key stakeholders to agree on quality standards. (Krejsta, 2017). Quality standards are objective measures used to determine whether providers offer high quality care. "*One possible quality standard would be, for example, for physicians to test A1C levels in patients with diabetes four times a year. Within the P4P system, physicians who meet this standard would be remunerated accordingly."* (Krejsta, 2017).

RQ2: What are the effects of Payment for Performance (P4P) on the quality of care in the Czech Republic?

According to Rosenthal et al. (2004), Payment for Performance (P4P) can be characterized by five basic factors that affect success of the program. (1) the strength of the supporter, such as health insurance companies (market share), (2) increasing turnover (incremental revenue), (3) quality assessment, which includes the structure (staff, buildings and materials), process (completion of specific procedures or administration of the drugs) and the outcome of care (including the patient's health and satisfaction with care), (4) the presence of a competitive model in which providers compete with each other and (5) the criterion of whether excellent results or even improvements are rewarded. Considering these, P4P in the Czech Republic does not comply with most of criteria. Health insurance companies do not have programs to differentiate (except for very marginal ones such as prevention funds), healthcare providers do not have to compete, the quality is not sufficiently measured. In practice it usually takes 3-6 years for the program to get implemented, and after these years the savings amount up to only 20-25%. After 80% of providers join the program, there is an improvement in the quality of care provided by an average of 65% with a great positive response from patients in the frequency of check-ups and the doctor's interest in their health. (Svobodová, 2016, 48)

RQ3: How can the behavioral economics principals and its health nudges enhance Payment for Performance (P4P) in the Czech Republic?

Employing behavioral economics and health nudge principles to the planning and arrangement of financial incentives might enhance the probability of success and optimizes the impact. Health nudges promote healthier choices of citizens (Kahneman, Tversky1999, Gustafson & Zeballos 2020, Santos 2020) and reduce the health care costs. Yet, the use of a behavioral approach in the Czech Republic is insufficient, unlike more developed Western countries. At the government level, only a few projects have taken place so far, perhaps the most well-known of which has addressed the question of how to better formulate letters inviting people to a preventive examination of cancer. Health nudges generally enjoy high political viability in the Czech Republic unlike the instruments recommended by WHO (49), i.e., several options to raise funds for health such as giving higher priority to health in budget allocations, collecting taxes more efficiently, higher insurance contributions, raising additional funds through taxes on harmful products such as tobacco and alcohol. In contrast to traditional public policy tools, nudges have been proposed as an effective way to change behavior and improve outcomes at lower cost. (Thaler & Sunstein, 2009). Lubarsky et al. (2019, according to 4, 10, 12, 14, 17, 25, 37, 40, 47) noticed that the early results of pay-for-performance have not been promising. *The reasons underlie in faulty assumptions of the incentive system based on "if/then" incentive systems (if you do this, then you will get that) and variation in motivation to do what the organization wants*. Applying behavioral economics principles to the construction of financial incentives enhances the probability of success and optimizes the impact. To maximize effectiveness and minimize unintended consequences, Lubarsky et al. (2019) suggest introducing a variable part of the reward to all physicians exceeding a desired threshold. Loss aversion shows that penalties are more powerful compared to an opportunity for gain, but they should be used sparingly if at all. "*Paying only the top performers ("tournament incentives") incites negative noncooperative*

behaviors. Designers of an incentive plan should consider the psychologic impact. Penalties are morale busters." Lubarsky et al. (2019).

In terms of cognitive scarcity, the number of metrics being incentivized by Payment for Performance financial incentives should be limited (three to five): *"The presence of too many options leads to a lack of action known as choice overload. For example, if one has to choose among numerous metrics in a pay-for-performance plan, some may choose not to participate, whereas they might have chosen to participate with fewer choices"* (Ibid). The effectiveness of P4P depends on the participation of physicians and the patients' cooperation in treatment adherence. Reisch, Sustein and Gwozdz (2016) suggest nudging citizens by means of health (food) interventions as follows: (1) Educational campaigns (to combat obesity and overeating); (2) Information nudges (e.g., calorie labels, high salt level warnings, nutritional traffic lights); (3) Defaults (sweet-free cashier zones; placement of healthy goods); (4) Meat-free days in public cafeterias; 5) Advertising and commercials discouraging overeating.

Nevertheless, it is worth noting limitations of nudge-based interventions. The duration of their effectiveness is one of them. Effects disappear when the nudge is removed and there is evidence for reduced effectiveness of nudges in repeat instances (Ozturk et al. 2020). Arno and Thomas (2016) argue that nudge strategies successfully raise healthy food choices by 15.3% on average. Yet, they also point to the possibility that only positive results are published and insignificant findings remain uncovered. Hausman and Welch (2010) argue that libertarian paternalistic nudges are in many cases not paternalistic at all. They largely pose rational persuasion, systematically exploit non-rational factors which influence human decision-making and thus threaten liberty (regardless the fact that some nudges are justified). In reflection, Oliver (2011) suggests that nudging should be considered as a nuanced approach involving no compulsion. *"People are free to get engaged in the change if they wish to do so but are not required to alter their behavior if they do not. Some policies prove effective yet may be judged politically or ethically unacceptable."* (Oliver, 2011)

4 Conclusion

As the results show, Payment for Performance programs generate high administration and commission costs with not very significant savings (if any). On the contrary, the programs enhanced the patient's health and satisfaction with care in the western countries (Germany, the US, the UK). Since no big data research of the influence on the quality of care with patients within P4P in the Czech Republic has been conducted yet, this will require a more detailed theoretical research and a practical solution. Behavioral economists point to cognitive biases causing human irrationality in choice architecture. This experience has been successfully applied in libertarian paternalism, based on the assumption that the appropriate setting of decision-making options (nudging) can circumvent the shortcomings of mainstream economic theories without restricting the freedom of decision-making. Both physicians and patients (citizens) can be effectively nudged. Considering the Czech Republic, there is a wide scope particularly in the combat against diseases of civilization affecting over 8% of population. Thus, detailed knowledge of the problem of healthy nudging opens up new windows of opportunities for the Czech public policy to "nudge" its citizens towards a socially and personally desirable change in their behavior.

Finally, it may be generally concluded that the results of the analysis of secondary data and the involvement of behavioral economics and its nudge theory in its solution have brought some new pieces of knowledge which may contribute towards a deeper understanding of P4P health policy issues, may serve as an inspiration for a similar investigation especially in the countries of Central and Eastern Europe and could be possibly used for the purposes of a comparative analysis.

Acknowledgements

This study was developed as an output from the Specific Higher Education Research (SVV) project (supported by the grant SVV 260 596).

References

[1] ARIELY, D. (2008). Predictably Irrational. New York: Harper Collins.

[2] ARNO, A., & THOMAS, S. (2016). The efficacy of nudge theory strategies in influencing adult dietary behaviour: A systematic review and meta-analysis. BMC Public Health.

[3] BAKER, G. (2003). Pay for Performance Incentive Programs in Healthcare: Market Dynamics and Business Process. California: Executive Briefing.

[4] BONFRER, I., FIGUEROA, J.F., ZHENG, J., ORAV, E.J., JHA, A.K. (2018) Impact of financial incentives on early and late adopters among US hospitals: Observational study. BMJ; 360:j5622

[5] BOROWITZ, M. (2013). Pay for Performance: Implications for health systems efficiency and Accountability. Prague: Organisation for Economic Co-operation and Development.

[6] CARROLL, A. E. (2014). The Problem With 'Pay for Performance' in Medicine. Available at: http://www.nytimes.com/2014/07/29/upshot/theproblem-with-pay-for-performance-in-medicine.html?abt=0002&abg=1

[7] CASALINO, L. P., A. ELSTER, A. EISENBERG, E. LEWIS, J. MONTGOMERY, D. RAMOS. (2007). Will Pay-For-Performance and Quality Reporting Affect Health Care Disparities? year 26, No 3., ISSN 0278-2715. doi:10.1377/hlthaff.26.3.w405

[8] CASHIN, C., Y-Ling CH.I, SMITH, P., BOROWITZ, M., THOMPSON, S. (2014). Paying for performance in healthcare: Implications for health system performance and accountability. S.l.: Open University Press, 2014. ISBN 978-033-5264-384.

[9] CHERNEV, A., BÖCKENHOLT, U., GOODMAN, J. (2015). Choice overload: A conceptual review and meta-analysis. Journal of Consumer Psychology, 25(2), 333–358.

[10] CONRAD, D.A. (2015). The theory of value-based payment incentives and their application to health care. Health Serv Res; 50(suppl 2):2057–89

[11] Diabetes mellitus – vybrané statistiky, selected statistics. Available at http://www.topclassmedical.cz/diabetes-mellitus-vybrane- statistiky

[12] DORAN, T., MAURER, K.A., RYAN A.M. (2017) Impact of provider incentives on quality and value of health care. Annu Rev Public Health 2017; 38:449–65

[13] EUROZPRÁVY (2020): Kolik bude za deset let v ČR diabetiků? Asociace prozradila víc. How many diabetics will there be in the Czech Republic in ten years? The association revealed more. Available at: https://eurozpravy.cz/domaci/zivot/kolik-bude-za-deset-let-v-cr-diabetiku-asociace-prozradila-vic.fe05294c/

[14] GUPTA, A., ALLEN, L.A, BHATT, D.L., COX, M., DEVORE, A.D, HEIDENREICH, P.A., HERNANDEZ, A.F., PETERSON, E.D., MATSOUAKA, R.A., YANCY, C.W., FONAROW, G.C. (2018). Association of the Hospital

Readmissions Reduction Program implementation with readmission and mortality outcomes in heart failure. JAMA Cardiol; 3:4453

[15] GUSTAFSON C. R., ZEBALLOS, E. (2020). The effect of presenting relative calorie information on calories ordered, Appetite, ISSN 0195-6663, https://doi.org/10.1016/j.appet.2020.104727.

[16] HAUSMAN, D.M. & WELCH, B. (2010). Debate: To Nudge or Not to Nudge Philosophy, University of Wisconsin, Madison The Journal of Political Philosophy: Volume 18

[17] HIMMELSTEIN, D.U., ARIELY, D, WOOLHANDLER, S (2014). Pay-for-performance: Toxic to quality? Insights from behavioral economics. Int J Health Serv 2014; 44:203–14

[18] HNILICOVÁ, S. (2008). Plán zefektivnění zdravotní péče ve Spojených státech. A plan to streamline health care in the United States. Medical Tribune 4/2008. Available at: https://www.tribune.cz/clanek/11480-plan-zefektivneni-zdravotni-pece-ve-spojenych-statech

[19] International Diabetes Federation 2021 Available z: http://www.idf.org

[20] JHA, A. K., JOYNT, K. E. , ORAV, E. J., EPSTEIN, A.M. (2009). The Long-Term Effect of Premier Pay for Performance on Patient Outcomes: Comparison of Unintended Consequences. The Annals of Family Medicine. 2009, 7(2), s. 121-127. DOI: 10.1097/01.ogx.0000418567.29397.e2. ISSN 1544-1709. Available at:http://content.wkhealth.com/linkback/openurl?sid=WKPTLP:landingpage

[21] KAHNEMAN, D., and TVERSKY, A. (1999). Evaluation by moments: Past and future. In D. Kahneman and A. Tversky (Eds.), Choices, values and frames (pp. 2-23). New York: Cambridge University Press.

[22] KALNICKÁ, V. (2019). Výdaje na zdravotní péči jsou v porovnání s EU nízké. Statistika & my. https://www.statistikaamy.cz/2019/06/20/vydaje-na-zdravotni-peci-jsou-v-porovnani-s-eu-nizke

[23] KREJSTA, M. (2017). Je změna současného paradiagmatu českého zdravotnictví neodkladná? (Is the change of the currant paradigma of the Czech healthcare urgent?) . Zdravotní medicína. https://www.caff.eu/blog/2017/11/13/zdravotnictvi-medicina/

[24] KUEHNHANSS, C. (2018) The challenges of behavioral insights for effective policy design. https://doi.org/10.1080/14494035.2018.1511188

[25] LESTER, H., SCHMITTDIEL, J., SELBY, J., FIREMAN, B., CAMPBELL, S., LEE, J., WHIPPY, A., MADVIG, P. (2010). The impact of removing financial incentives from clinical quality indicators: Longitudinal analysis of four Kaiser Permanente indicators. BMJ 2010; 340:c1898

[26] LIDENAUER, P.K., et al . (2007). Public Reporting and Pay for Performance in Hospital Quality Improvement. N Engl J Med 356 (3): 486-496.

[27] LUBARSKY, D. A., FRENCH, M. T., GITLOW, H. S., ROSEN, L. F., ULLMANN, S. G. (2019). Why Money Alone Can't (Always) "Nudge" Physicians: The Role of Behavioral Economics in the Design of Physician Incentives. *Anesthesiology*; 130:154–170 doi: https://doi.org/10.1097/ALN.0000000000002373

[28] MALTZ, A. & SARID, A. (2020). Attractive Flu Shot: A Behavioral Approach to Increasing Influenza Vaccination Uptake Rates. https://doi.org/10.1177/0272989X20944190

[29] MCDONALD, R., M. ROLAND. (2015). Pay for performance in primary care in England and California: comparison of unintended consequences. Annals of family medicine. year 7, No 2, 121–7. ISSN 1544-1717. doi:10.1370/afm.946

[30] OECD Economic Surveys Czech Republic July 2018: http://www.oecd.org/economy/surveys/Czech-Republic-2018-OECD-economic-survey-overview.pdf.

[31] OCHRANA, F. (2012). Methodology of Science. An Introduction. Ptraha: Karolinum.

[32] OCHRANA, F. (2019). Metodologie, metody a metodika vědeckého výzkumu. Praha: Karolinum.

[33] OLIVER, A. (2013). From Nudging to Budging: Using Behavioural Economics to Inform Public Sector Policy. https://doi.org/10.1017/S0047279413000299.

[34] OZTURK, Orgul D., FRONGILLO, Edward A., BLAKE Christine E., MCINNES, Melayne M., TURNER-MCGRIEVY, G. (2020). Before the lunch line: Effectiveness of behavioral economic interventions for pre-commitment on elementary school children's food choices, Journal of Economic Behavior and Organization, Volume 176, 2020, Pages 597-618, ISSN 0167-2681, https://doi.org/10.1016/j.jebo.2020.03.027.

[35] REISCH L., SUNSTEIN, C., GWOZDZ W. (2016) Beyond carrots and sticks: Europeans support health nudges, article in Food policy

[36] Rosenthal, M.B., Fernandopulle, R., Song, H.R., Landon, B. (2004). Paying for quality: providers' incentives for quality improvement. Health aff. Millwood. 2004; 23: 127-141

[37] Ryan, A.M., Blustein, J., Casalino, L.P. (2012). Medicare's flagship test of pay-for-performance did not spur more rapid quality improvement among low-performing hospitals. Health Aff (Millwood) 2012; 31:797–805

[38] RYBKA, J. (2007). Diabetes mellitus – komplikace a přidružená onemocnění: diagnostické a léčebné postupy. (Diabetes mellitus - complications and associated diseases: diagnostic and therapeutic procedures) Praha: Grada.

[39] SANTOS, O., ALARCÃO, V, SANTOS, Feteira R., FERNANDES, J., VIRGOLINO, A., SENA, C. PACHECO Carlota V., JOÃO Maria G., NOGUEIRA, P., GRAÇA P., COSTA, A (2020). Impact of different front-of-pack nutrition labels on online food choices. Appetite. Volume 154. 104795, ISSN 0195-6663, https://doi.org/10.1016/j.appet.2020.104795.

[40] Scott, A., Sivey, P., Ait Ouarkim, D., Willenberg, L., Naccarella, L., Furler, J., Young, D. (2011). The effect of financial incentives on the quality of healthcare provided by primary care physicians. Cochrane Database Syst Rev; 9:CD008451

[41] State of Health in the EU. Česko. Zdravotní profil země 2019 available at https://ec.europa.eu/health/sites/health/files/state/docs/2019_chp_cs_czech.pdf

[42] Statistika vybraných ekonomických témat. (2020). Statistics of selected economic topics. Ústav zdravotnických informací a statistiky ČR. (Institute of Health Information and Statistics of the Czech Republic). Available at: https://www.uzis.cz/index.php?pg=vystupy--statistika-vybranych-ekonomickych-temat-- ekonomicke-vysledky

[43] SVAČINA, Š. Diabetologie. Prague: Triton, 2010. ISBN 978-80-7387-348

[44] SVOBODOVÁ, I. (2016). Metoda Pay-for-performance jako úhrada za zdravotní péči a možnost jejího využití v ČR (diplomová práce), Pay-for-performance method as payment for health care and the possibility of its use in the Czech Republic (diploma thesis). Kladno.

[45] THALER, R., SUNSTEIN, C. 2009 Improving Decisions About Health, Wealth and Happiness. Yale University Press. ISBN 978-0-14-311526-7

[46] The Institute of Health Information and Statistics of the Czech Republic, Overview of national health registers. Available at https://www.uzis.cz/index-en.php?pg=nhis--national-health-registers

[47] Town, R., Wholey, D.R., Kralewski, J., Dowd, B. (2004). Assessing the influence of incentives on physicians and medical groups. Med Care Res Rev; 61(3 suppl):80S–118S

[48] Všeobecná zdravotní pojišťovna. AKORD - program kvality péče. GENERAL HEALTH INSURANCE COMPANY. AKORD - quality of care program. (2021). Prague, Available at: https://www.vzp.cz/poskytovatele/akord-program-kvality-pece

[49] WHO (2015). Health financing for universal coverage. Article available at https://www.who.int/health_financing/strategy/revenue_collecton/en

[50] ZDRAVÍ 2030. Strategický rámec rozvoje péče o zdraví v České republice do roku 2030. HEALTH 2030. Strategic framework for the development of health care in the Czech Republic until 2030. MZČR.

Contact information

Ing. Radek Kovács
Charles University, Faculty of Social Sciences, Department of Public and Social Policy
Smetanovo nábřeží 6, 110 00 Prague 1, Czech Republic
E-mail: radek.kovacs@fsv.cuni.cz

Financial Allocations to Bilateral Projects of the Czech Development Cooperation Realized by Non-governmental Non-profit Organizations

Eva Kovářová

Abstract: Czechia as a member of the Development Assistance Committee belongs to donor countries of Official Development Assistance (ODA). Czech development cooperation includes bilateral as well as multilateral ODA flows and the bilateral flows are realized directly between Czechia and ODA recipient countries. Bilateral projects of the Czech development cooperation are realized by implementors from private as well as public sector, particularly under the responsibility of the Czech Development Agency. Nowadays, non-governmental organizations represent key actors in ODA provision and distribution and serve thus as contractors for the governmental programmes and projects of development cooperation. Generally, they play many roles within the development policies of donor countries or they act on their own. Their activities are considered beneficial especially in provision of services related to the basic human needs and well-being of poor people in ODA recipient countries. The aim of the paper is to assess financial allocations to bilateral projects of Czech development cooperation implemented by Czech non-governmental non-profit organizations in the priority partner countries during the period of years 2011-2020. Assessment is done according to the territorial and thematic targeting of financial allocations realised into these projects and with respect to the total volumes of finances allocated to bilateral projects of the Czech development cooperation. Results presented in the paper show that Czech non-governmental non-profit organizations were engaged in ODA recipient countries in balanced way when the financial allocations to Least Developed Countries and other recipients are compared and they implemented project with close link to basic human needs and thus human well-being and development.

Keywords: Bilateral projects, development cooperation, Czechia, Czech Development Agency, non-governmental non-profit organizations

JEL Classification: F35, H81, L31, L38

1 Introduction

Czechia has been a member of the Development Assistance Committee of the Organisation of the Economic Co-operation and Development (OECD-DAC) since the year 2013, and belongs thus among donors of the Official Development Assistance (ODA). ODA is defined by the OECD-DAC as the flows to partner countries, listed on the DAC list of ODA recipients, and to multilateral development institutions. These flows have to be provided by official agencies, including state and local governments, or by their executive agencies, when flows have to be concessional and administered with the aim to promote economic development and welfare in recipient countries. Development assistance is provided bilaterally, from donor to recipient, or channelled through a multilateral development agencies and institutions. Since the year 1969, ODA has been considered the "gold standard" of foreign aid and it has been one of the main sources of financing for development in ODA recipient countries (OECD, 2021a). Standardly, two basic forms of ODA are recognized – grants and loans. ODA is allocated by donor countries according to their territorial and sectoral priorities and programmes.

International development assistance is considered a critical component of the global public policy (Dupuy and Prakash, 2017), and ODA is seen as a "*public good supplied by (governments of) donor countries*" (Fuchs et al., 2014, p. 173) or "*an essential public policy for meeting the Sustainable Development Goals*" (Focus2030, 2021). Civil society organizations (CSOs), respectively non-governmental non-profit organizations (NGOs) represent one of the channels

used by donor countries for the realization of their governmental ODA programmes in their partner countries. However, role of CSOs in the international development aid industry is broader as they can operate also as ODA donors or recipients as well (Appe, 2018), or they serve as advocates of development policies. All OECD-DAC members cooperate in their development policies with CSOs and distribute their ODA to and through CSOs. Each donor country can choose extent in which CSOs will participate in their development policies and distribution of their ODA flows. Forms of cooperation with CSOs are specified at the national level, with the use of national legislation and strategic documents defining development policies of ODA donor countries.

Czechia introduced its policy of foreign development cooperation in the mid-1990s. Nowadays, the Czech development cooperation creates an integral part of Czech foreign policy. Czechia realizes development cooperation with the aim to promote eradication of poverty in the context of sustainable development in partner countries. The Act on Development Cooperation and Humanitarian Aid has been effective since the year 2010, but priorities of the Czech development cooperation are specified with Development Cooperation Strategies adopted for certain periods of time and supplemented with the annual Plans of Development Cooperation. Czech development cooperation includes bilateral as well as multilateral forms of cooperation, when the former one can be provided in the following forms: technical cooperation, cooperation in the fields of economic and social infrastructure, financial cooperation and debt relief, assistance for refugees in Czechia, governmental scholarships, development guidance, development cooperation training and awareness, development research, or building of the capacities of non-governmental organizations active in development cooperation (Ministry of Foreign Affairs, 2021).

Civil society organizations are traditional partners for state and other public authorities of the Czech development cooperation and they serve as implementers of Czech bilateral development projects, as well as they promote public awareness and build public advocacy for the development cooperation. Analysis presented in the paper has to be considered a part of the broader research focused on fundamental patterns of Czech development cooperation which is evaluated in comparison with other Central European Countries. Here, attention is given only to Czech bilateral development projects implemented by Czech non-governmental non-profit in priority partner countries. Therefore, *the aim of the paper is to assess financial allocations to bilateral development projects implemented by Czech non-governmental non-profit organizations in priority partner countries during the period of years 2011-2020.* Assessment deals with the financial allocations to bilateral projects realized under the responsibility of the Czech Development Agency. Data are taken from the annual reports of the Agency and are analysed with the use of standard methods of descriptive statistics.

2 Theoretical background

Civil society is generally understood as the third sector of the economy, existing alongside the government and business sector, and civil society organizations (CSOs) are characterized as private, non-profit, self-governing, voluntarily constituted and supported organizations (Ott and Valero, 2018). With respect to the EU terminology, CSOs *are* "*independent actors, organised on a not-for-profit and voluntary basis, and active in different fields, such as poverty reduction, emergency aid, human rights, environment etc.*" (European Commission, 2020). The OECD-DAC regards a non-governmental organization as "*any non-profit entity in which people organise themselves on a local, national or international level to pursue shared objectives and ideals, without significant government-controlled participation or representation*" (OECD, 2020, p. 28). Although terms civil society organizations and non-governmental organizations are generally used as synonyms, they have to be differentiated in the academic research as non-

governmental organizations (NGOs) represent only one part of a wide group of civil society organizations. Besides NGOs, term CSOs also covers trade unions, faith-based organisations, foundations, research institutions, cooperatives, professional and business associations, or not-for-profit media (Sanz Corella et al., 2020). The CSOs, respectively NGOs, operating in the field of development cooperation are usually understood as organizations constituted and organized in their home countries to work across national borders (Brown et al., 2000), or to operate outside their home countries (Ott and Valero, 2018), and focusing on activities concerning socio-economic development in developing countries.

2.1 Non-governmental non-profit organizations as key actors of development cooperation

The non-governmental organizations became important actors of the development aid industry in the 1990s through their partnerships with bilateral, multilateral and private donors (Appe, 2018). However, their participation in governmental development policies has been internationally recognized since the late 1970s. The role and international influence of NGOs as well as their numbers were increased particularly in the 2000s, inter alia as a consequence of the emphasis placed on the principles of good governance, partnership, ownership, transparency and accountability, as well as a consequence of their people-centred, rights-based, and grassroots-driven approaches to the solution of long-lasting development problems (Banks and Hulme, 2012; Lewis, 2001). NGOs' participation in ODA provision and distribution has been strengthened in recent years with the adoption of the 2030 Agenda for Sustainable Development and related international documents. Their involvement in development cooperation give assurance to a promise that nobody will be left behind, which is a key promise declared in the Preamble of the 2030 Agenda for Sustainable Development (United Nations, 2015).

Within the development aid industry, the most important roles of NGOs are seen in delivery of services in many fields, from livelihood interventions, health and education services, to more specific areas such as promotion and building of democracy, human rights or resolutions of conflicts (Lewis and Kanji, 2009; Appe, 2018). However, NGOs are also organized as actors of public advocacy and public campaigns for change (Lewis and Kanji, 2009), and they can contribute to a public support for the official development policies in donor countries (Smillie, 1999). Generally, two distinct roles for NGOs are highlighted – provision of services and advocacy for the poor (Banks and Hulme, 2012). Therefore, NGOs are seen by the international community as entities having the ability to reach the most marginalized people living in poverty or facing inequality because they often deliver services to people in need and they can be innovative in this field (Lewis and Kanji, 2009). However, the perceived advantages of NGOs in reaching the poor are increasingly disputed with the application of principal-agent model (Dreher et al., 2010), when it is argued that NGOs are not engaged where they are needed the most (Nunnenkamp and Öhler, 2010). Participation of NGOs in ODA provision is discussed particularly in relation to their legitimacy, transparency and accountability (Tortajada, 2016; Brown et al, 2020), or in relation to their possible contribution to ODA fragmentation and proliferation (Appe, 2018). However, the OECD-DAC members "*more frequently cite the advantages rather than disadvantages of working with CSOs*" (OECD, 2020, p. 11).

2.2 Participation of non-governmental non-profit organizations in the Czech development cooperation

Czechia introduced its official foreign development cooperation in the mid-1990s. However, the first Concept of Development Aid was adopted for the period 2002–2007. "*Reduction of poverty through the economic and social development*" was stated as its main objective (Ministry of Foreign Affairs, 2001, p. 3). In 2007, the OECD-DAC Special Peer Review of Czech development cooperation was launched. This Review led to the transformation of Czech system

of development cooperation. The transformation was finished in 2010 with the adoption of the Act on Development Cooperation and Humanitarian Aid. The Act defines development cooperation as "*the set of activities financed from the national state budget and contributing to the eradication of poverty in the context of sustainable development, to economic and social development, to environmental protection, and to the promotion of democracy, human rights and good governance in developing countries*" (Czechia, Act Nr. 151, 2010). New territorial and thematic priorities of Czech development cooperation were introduced with the Development Cooperation Strategy for the period of years 2010–2017. Both documents introduced new, more efficient system of development cooperation. The main objective of development cooperation was modified slightly in the Strategy, and was defined as the eradication of poverty, promotion of security and prosperity through the effective partnership (Ministry of Foreign Affairs, 2010).

The main responsibility and powers in the Czech development cooperation are assigned by the Act to the Ministry of Foreign Affairs and to the Czech Development Agency, which is a government administrative unit with specified responsibilities. The Agency is, inter alia, responsible for "*identification, formulation and monitoring of bilateral projects of development cooperation between Czechia and partner countries*" (Czech Development Agency, 2021). Subjects from public and private (profit as well as nonprofit) sectors can serve as projects' implementers through the tenders or grants and run projects of bilateral development cooperation in partner countries. Projects are realized according to the priorities of the Czech development cooperation defined by the Ministry and the Agency. The NGOs participate in Czech development cooperation and their involvement in ODA delivery has been strengthen in recent years. Thus, NGOs operate as implementors of the official governmental programmes and projects financed from national state budget, or they realize projects financed by various multilateral development institutions or they realize their own development activities. Despite this fact, in 2016, the OECD-DAC called Czechia to "*adopt a vision and policy for its partnership with civil society*" and to develop a "*mix of funding mechanisms to meet the vision*" (OECD, 2020, p. 29).

In 2016, Czechia received the second Peer Review prepared by OECD-DAC. The Review recommended Czech officials, inter alia, to increase the quality and impact of ODA. One year later, the new Development Cooperation Strategy was launched for the period of years 2018–2030. This Strategy reflects the 2030 Agenda for Sustainable Development and introduced the new core objective of the Czech development cooperation, which was defined as to "*contribute – using its capacities and experience and in line with international commitments to building a stable, secure, inclusive, prosperous and sustainable world and to strengthen its position within it*" (Ministry of Foreign Affairs, 2017, p. 8). The main territorial priority is given to the Eastern European countries, as well as to some African and Asian countries. The main thematic priorities are defined with respect to the 2030 Agenda for Sustainable Development, and include good democratic governance, sustainable management of natural resources, economic transformation and growth, agriculture, rural development or inclusive social development.

3 Research objective, data and methods

An analysis, which results are presented below, investigates financial allocations to bilateral development projects implemented by Czech non-governmental non-profit organizations under the responsibility of Czech Development Agency. *The aim is to assess financial allocations to bilateral development projects implemented by Czech non-governmental non-profit organizations in priority partner countries during the period of years 2011-2020.* Assessment is done according to the territorial and thematic targeting of financial allocations realised into these projects and with respect to the total volumes of finances allocated to bilateral projects of the Czech development cooperation.

Assessment deals with the financial allocations to bilateral projects implemented in priority partner countries. However, Czechia also delivers ODA to other specified recipient countries, as for example to Ukraine or Afghanistan, as well as Czechia uses other forms of development cooperation to support socio-economic development in partner countries, as for example tripartite projects or scholarships.

The Czech Development Agency realized bilateral projects in partnership with other public or private subjects that is based on public proposals for grants and tenders announced by the Agency. Every proposal specifies the territorial and sectoral targeting of projects and the eligible projects' contractors or implementors from public or private (profit and non-profit) sector. Here, an attention is given only to bilateral projects implemented by Czech non-governmental (further referred shortly as Czech NGOs), which are defined as non-governmental organizations having the status and legal form of non-profit organization and being established by Czech legal entities.

Methods of descriptive statistics are used to examine the volume and structure of financial allocations to bilateral projects. The structure is examined according to the territorial and sectoral targeting of implemented bilateral projects. As it was explained above, NGOs are generally understood as actors of development cooperation having the ability to meet the most vulnerable and marginalized people or poor people in developing countries. Their benefits are seen in development activities related to eradication of poverty and improvement of human well-being (development) in developing countries. Therefore, two research hypotheses are formulated to support the aim of the paper:

- RH1: As four Czech priority partner countries are recognized as the Least Developed countries (LDCs) – Afghanistan, Ethiopia, Cambodia, Zambia – it is expected that the highest volumes of financial allocations to bilateral projects of Czech NGOs will be identified for these four countries.
- RH2: As the priority themes of health care, education and social services have the close link to eradication of poverty and improvement of human well-being, it is expected that the highest volumes of financial allocations to bilateral projects of Czech NGOs will be identified for these themes of Czech development cooperation.

Data on financial allocations were taken from annual reports of Czech Development Agency, when the reports were downloaded in the spring 2020 and June 2021. The reports have presented details necessary for the analysis since the year 2011. Reports assign every financial allocation to a thematic (sectoral) priority, to a partner country and to an implementor of a project as well. However, titles of the projects, their time schedules and forms of financing are not specified there. Therefore, financial allocations are considered and assessed in the analysis separately on annual basis.

During the period of years 2011–2020, territorial and sectoral priorities of the Czech development policy were defined with two Development Cooperation Strategies, which affected targeting of bilateral projects financed by the Czech Development Agency and implemented by Czech NGOs (see Table 1).

Table 1 – Priorities of Czech development cooperation

Territorial priorities of Czech development cooperation (priority partner countries)	
Years 2011–2017	Afghanistan, Bosnia and Hercegovina, Cambodia, Ethiopia, Georgia, Kosovo, Moldova, Mongolia, Palestine, Serbia
Years 2018–2020	Bosnia and Hercegovina, Cambodia, Ethiopia, Georgia, Moldova, Zambia *Note: Projects in Mongolia, Kosovo and Serbia had to be completed by the year 2020, depending on their time schedules, therefore some disbursements allocated to these countries were possible for years 2018 and 2019.*
Thematic (sectoral) priorities of Czech development cooperation	
Years 2011–2018	Agriculture, forestry, fishing; Disaster prevention and preparedness; Education; Energy, production and distribution; Environmental protection; Health care; Humanitarian and food aid; Industry, mineral mining, construction; Other social infrastructure and services; Population policies, Reproductive health care Public/State administration and civil society; Trade and other services Water supplies and sanitation
Years 2019–2020	Agriculture; Education; Energy; Health; Multi-sector priorities; Social sector; State administration and civil society; Water

Source: Annual reports of the Czech Development Agency (2011–2020), own data processing

4 Results

Czechia as an ODA donor country should spend on all forms of ODA at least 0,70% of its GNI (the United Nations target declared in the year 1970), respectively at least 0,33% by the year 2030 (the European Union target defined for the countries accessing the EU after the year 2003). However, Czechia did not meet these targets during the period of years 2011–2020. Between years 2011 and 2017, when ODA was calculated by the OECD-DAC with the use of ODA flow basis method, Czech ODA/GNI ratio (expressed in percent) reached the mean value of 0,126%. Since the year 2018, a new method for the monitoring of ODA flows has been applied (ODA grant equivalent), but improved methodology did not change the final value of Czech ODA/GNI ratio. It oscillated around 0,130% between years 2018 and 2020 (see Table 1). The Czech ODA/GNI ratio remained during the whole examined period below the national target, defined at the level of 0,17%, as well, although Czechia aimed to reach this target by the end of the year 2020.

Table 2 – Czech ODA as a percentage of GNI

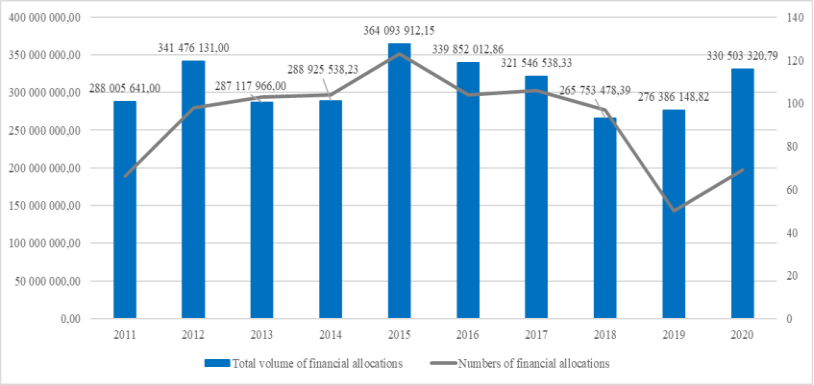
2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
0,125	0,121	0,114	0,112	0,118	0,142	0,150	0,132	0,131	0,130

Source: OECD, Net ODA (2021b), own data processing

During the period of years 2011–2020, total volumes of financial allocations, which Czechia spent on bilateral development projects implemented under the responsibility of the Czech Development Agency in priority partner countries, reached the value of 3 103,7 mil. CZK. Projects were implemented by the entities represented either private or public sector, but the majority of implementors belonged to the private business sector. Although Czechia did not meet the international and its national commitments concerning the volume of ODA, bilateral projects did not contribute to the increase of overall ODA significantly as their financial volumes even declined in recent years. The highest volume of financial allocations was released into the

bilateral projects in the year 2015. Next year, the volume started to decline and reached the lowest value in the year 2018. However, between years 2019 and 2020, financial allocations to bilateral projects were increased by more than 50 million CZK and reached the value of 330,5 mil. CZK in the last year (see Figure 1).

Figure 1 – Total volumes of financial allocations on bilateral projects implemented under the responsibility of the Czech Development Agency (in CZK)
Source: Annual reports of the Czech Development Agency (2011–2020), own data processing



On average, 38,21% of financial allocations were reported for the projects implemented by Czech NGOs during the period of years 2011–2020. The highest share was reached in the year 2018, when 47,72% of all financial allocations were spent on the NGOs' projects. However, no significant trend indicating declining or increasing participation of Czech NGOs in the implementation of bilateral development project is observed (see Table 3 and details in Appendix 1).

Table 3 – Financial allocations to bilateral development projects of Czech NGOs realized in priority partner countries (in % of the total volume of financial allocations)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Percentage share of Czech NGO in total volumes of financial allocations	29,75	31,51	42,71	37,06	35,83	38,13	39,24	47,72	34,77	45,42

Source: Annual reports of the Czech Development Agency (2011–2020), own data processing

Between years 2010 and 2017, three LDCs were recognized as priority partner countries for the Czech development cooperation (Afghanistan, Cambodia, Ethiopia). Since the year 2018, Afghanistan was excluded from the list of priority partner countries and another LDC was included there (Zambia). During the years 2011–2020, nearly 1/3 of financial allocations were assigned to projects implemented by Czech NGOs in Ethiopia, which is a traditional partner country for the Czech development cooperation and a country with really low level of human development and high level of poverty. According to the World Bank, 30% of Ethiopian population have lived in extreme income poverty, defined with the 1,9 USD poverty line, in

recent years (World Bank, 2021). Czech NGOs implemented projects in other LDCs as well (see Table 4), and 54% of financial allocations to NGOs' projects were spent in LDCs during the period of years 2011–2020. The last Development Cooperation Strategy, adopted for the period of years 2018–2030, speaks about balanced cooperation of Czechia with LDCs and other priority partner countries. Results presented in Table 4 show that the balance was already reached during the period of years 2011–2020 when the bilateral projects implemented by Czech NGOs are considered. This finding rejects the *RH1*, because it cannot be confirmed that Czech NGOs are mainly engaged in the development cooperation realized with LDCs. Other countries, where Czech NGOs were active, are Moldova or Georgia, which are traditional priority partner countries belonging to the region of Eastern European countries.

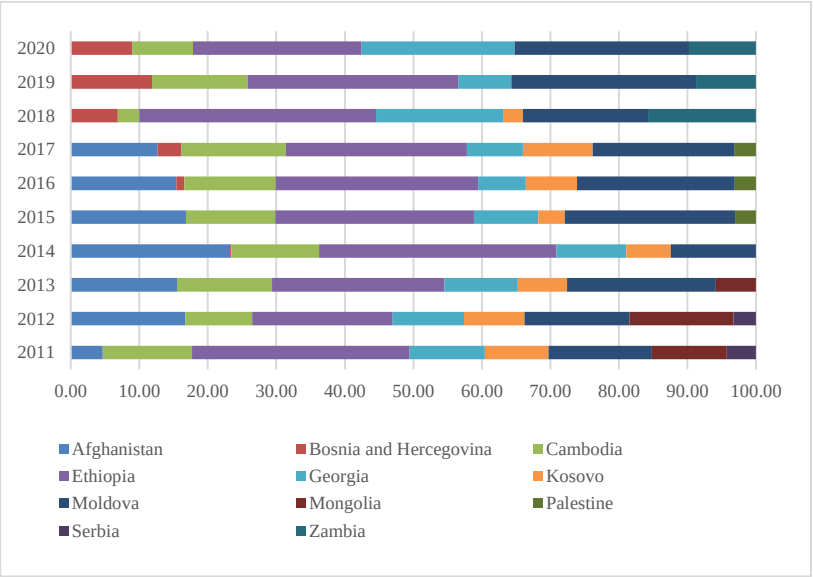
Table 4 – Financial allocations to bilateral development projects of Czech NGOs: overview of territorial targeting

Country	Financial allocations in CZK	Percentage of all financial allocations
Afghanistan	123 830 840,00	10,47
Bosnia and Hercegovina	39 580 604,96	3,35
Cambodia	136 513 495,00	11,55
Ethiopia	337 117 276,00	28,51
Georgia	140 783 014,80	11,91
Kosovo	64 304 098,00	5,44
Moldova	244 974 035,41	20,72
Mongolia	32 883 104,00	2,78
Palestine	12 000 000,00	1,02
Serbia	7 201 500,00	0,61
Zambia	43 064 880,00	3,64
Total volume of financial allocations	1 182 252 848,00	100,00

Source: Annual reports of the Czech Development Agency (2011–2020), own data processing

The highest priority assigned to the cooperation with Ethiopia and Moldova is also visible when the financial allocations are examined on annual basis (see Figure 2). However, Czech NGOs has become active in Bosna and Hercegovina in recent years too, when the results presented in Figure 2 reveal increase of financial allocations spent by Czech NGOs in this country in the years 2018, 2019 and 2020. Details concerning the territorial targeting of the projects of Czech NGOs are presented in Appendix 2.

Figure 2 – Financial allocations to bilateral development projects of Czech NGOs: territorial targeting (in % of all financial allocations)
Source: Annual reports of the Czech Development Agency (2011–2020), own data processing



During the period of years 2011–2018, 14 thematic priorities of Czech development cooperation were recognized, and Czech NGOs implemented projects focused on ten thematic priorities. The brief overview dealing with the sum of financial allocations (see Table 5) shows that the highest volumes of financial allocations were spent on projects implemented by Czech NGOs in the fields of other social infrastructure and services, followed by agriculture and forestry, education and health care. Development cooperation in the fields of education and health care can have the direct impact on the improvement of human well-being of the poor people in priority partner countries, resp. on the human development of their populations, as the human development is defined through the achievements in life expectancy, school attendance and gross national income.

Table 5 – Financial allocations to bilateral development of the Czech NGOs: overview of thematic targeting

Theme	Financial allocations in CZK	Percentage of all financial allocations
Agriculture and forestry	202 915 225,80	21,68
Education	192 553 590,00	20,57
Energy	38 978 600,00	4,16
Environmental protection	1 200 000,00	0,13
Health care	144 761 570,00	15,47
Humanitarian food aid	2 000 000,00	0,21
Other social infrastructure and services	245 140 991,00	26,19
State administration and civil society	34 194 398,00	3,65
Trade and services	12 225 000,00	1,31
Water and sanitation	62 074 527,00	6,63
Total volume of financial allocations	936 043 901,80	100,00

Source: Annual reports of the Czech Development Agency (2011–2018), own data processing

Since the year 2019, the number of thematic priorities has been reduced to nine and more general titles are assigned to them. These changes are related to the introduction of the last Development Cooperation Strategy adopted for the period of years 2018–2030 with defined direct link to the 2030 Agenda for Sustainable Development, and thus to the fulfilment of the Sustainable Development Goals. Between years 2019 and 2020, Czech NGOs implemented projects focused on six priority themes (see Table 6), and their participation was mainly targeted to the cooperation in a social sector, agriculture and forestry, education or state administration.

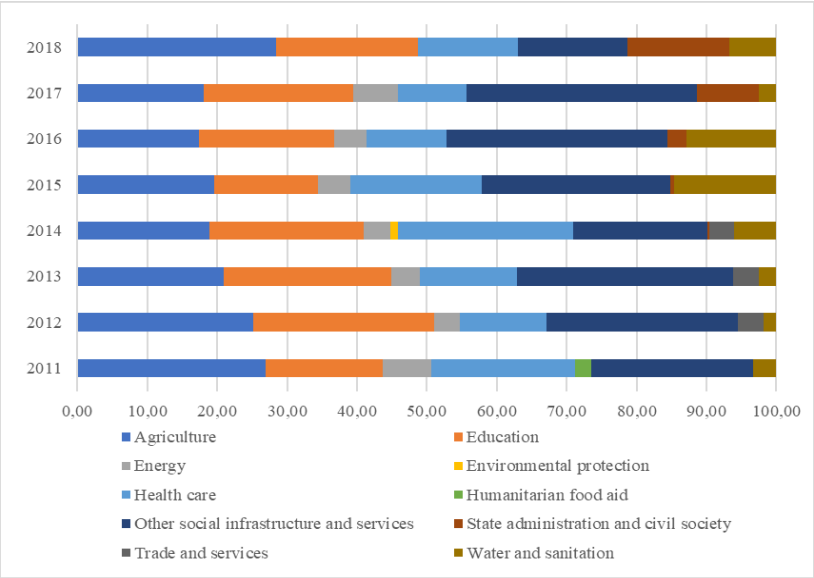
Table 6 – Financial allocations to bilateral development of the Czech NGOs: overview of thematic targeting

Theme (sector)	Financial allocations in CZK	Percentage of all financial allocations
Agriculture and forestry	58 309 297,00	24,17
Education	48 014 720,00	19,91
Health care	26 120 000,00	10,83
Social sector	63 039 634,61	26,13
State administration	37 585 294,76	15,58
Water	8 140 000,00	3,37
Sum	241 208 946,37	100,00

Source: Annual reports of the Czech Development Agency (2019–2020), own data processing

The results presented in Tables 5 and 6 show that Czech NGOs implemented projects having the close link to the human well-being of people living in priority partner countries. Therefore, their thematic engagement does not differ from the general expectations. This finding confirms *RH2*.

Figure 3 – Financial allocations to bilateral development projects of the Czech NGOs: thematic targeting in % of all financial allocations), years 2011–2018
Source: Annual reports of the Czech Development Agency (2011–2018), own data processing



However, the annual thematic structures of financial allocations show growing engagement of Czech NGOs in the thematic priority called as a state administration and civil society, when this increased engagement has been reported for the bilateral projects implemented particularly since the year 2015 (see Figure 3). These results correspond to the increased importance of the Czech development cooperation with the priority partner countries in this field. On the other hand, the engagement of Czech NGOs in the field of water and sanitation declined, which is visible when the years 2017 and 2018 are compared with the previous two years. Details concerning the thematic structure of financial allocations for the period of years 2011–2020 are presented in Appendix 3.

4 Conclusion

Czechia launched its first foreign development assistance in the mid-1990s as the first Central European post-communist country and thus it has the status of emerging ODA donor. In the year 2013, Czechia joined the elite group of ODA donors cooperating within the Development Assistance Committee of the OECD. As an ODA donor, Czechia is committed to several international and European Union targets concerning the volumes of ODA. Despite the political declarations, volumes of Czech ODA stayed during the period of years 2011–2020 below these commitments, defined by the ratio ODA/GNI (expressed in %). Czechia did not meet even its national target – to spend on ODA 0,20% of its GNI by the year 2020, when the mean value of the ratio oscillated in examined period around the value of 0,13%, calculated for all forms of ODA flows (bilateral as well as multilateral flows).

The main responsibility for the bilateral development projects is given to the Czech Development Agency, which is a state unit cooperating closely with the main authority – the Ministry of

Foreign Affairs. Projects are realized with the aim to meet the thematic and territorial priorities of the development policy, specified in Development Cooperation Strategies and related annual plans. The Czech Development Agency fulfils its mandate in partnership with public as well as private entities who serve as implementors of the bilateral projects in partner countries. The private business subjects are the major partners of the Agency, but the Agency cooperates closely with the Czech and foreign NGOs as well.

The aim of the paper was to assess financial allocations to bilateral development projects implemented by Czech non-governmental non-profit organizations in priority partner countries during the period of years 2011–2020. Two research hypotheses (*RH1*, *RH2*) where formulated to support this aim.

The Czech NGOs implement projects based on grants and tenders proposed by the Agency. During the period of years 2011–2020, 38,21% of all financial allocations to bilateral projects were assigned to projects implemented by Czech NGOs. The total volume of these allocations reached the value of 3 103,7 mil. CZK. These projects were focused mainly on cooperation with some LDCs (mainly Ethiopia) as well as Eastern European countries (Moldova, Georgia). This finding did not allow to confirm the *RH1* as the Czech NGOs were engaged in balanced way in LDCs and other ODA recipients.

The projects of Czech NGOs were implemented particularly in the fields closely related to human well-being and thus human development in ODA recipient countries. This finding confirmed the *RH2* concerning the engagement of NGOs in the fields related to the basic human needs of poor people in ODA recipient countries. However, in recent years, the cooperation of Czech NGOs in the field of state administration and civil society has emerged. These findings partly comply with the general expectations about the engagement of the CSOs, resp. NGOs, in the international development aid industry.

Acknowledgement

This paper was published with a financial support of the project SGS SP2021/51 "*Complex use of quantitative methods in economic disciplines*", realized at the Faculty of Economics, VSB-Technical University of Ostrava, Czech Republic.

References

[1] APPE, S. (2018). Directions in a Post-aid World? South-South Development Cooperation and CSOs in Latin America. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*. Vol. 29, pp. 271–283. DOI: https://doi.org/10.1007/s11266-017-9838-0.

[2] BANKS, N., HULME, D. (2012). The role of NGOs and civil society in development and poverty reduction. BWPI Working Paper 171.

[3] BROWN, L. D., KHAGRAM, S., MOORE, M. H., FRUMKIN, P. (2000). Globalization, NGOs and MultiSectoral Relations. The Hauser Center for Nonprofit Organizations and The Kennedy School of Government Harvard University, Working Paper #1.

[4] CLARKE, G. (1998). Non-governmental organizations (NGOs) and Politics in Developing World. *Political Studies*. Vol. XLVI, pp. 36–52.

[5] CZECH DEVELOPMENT AGENCY (2021). *About us*. [online]. [cit. 2021-01-20]. Available from <http://www.czechaid.cz/en/about-us/>.

[6] Czech Development Agency (2021). Výroční zprávy 2011–2020. [online]. [cit. 2021-04-20]. Available from <http://www.czechaid.cz/o-nas/zakladni-dokumenty/>.

[7] CZECHIA (2010). *Act of 21 April 2010 on Development Cooperation and Humanitarian Aid, and Amending Related Laws* [online]. [cit. 2021-07-24]. Available from <https://www.mzv.cz/public/51/66/1/541617_437009_Act_on_Development_Cooperation.pdf>.

[8] DREHER, A., MÖLDERS, F., NUNNENKAMP, P. (2010). Aid Delivery through Non-governmental Organizations: Does the Aid Channel Matter for the Targeting of Swedish Aid?. *The World Development*. Vol. 33, iss. 2, pp. 147–176. DOI: 10.1111/j.1467-9701.2009.01233.x.

[9] DUPUY, K., PRAKASH, A. (2017). Do Donors Reduce Bilateral Aid to Countries With Restrictive NGO Laws? A Panel Study, 1993-2012. *Nonprofit and Voluntary Sector Quarterly*. Vol. 47, iss. 1, pp. 89–106.

[10] EUROPEAN COMMISSION (2020). *Civil Society*. [online]. [cit. 2020-10-19]. Available from <https://ec.europa.eu/international-partnerships/our-partners/civil-society_en>.

[11] FOCUS2030. *Understanding Development Aid (An Overview).* [online]. [cit. 2021-06-23]. Available from <https://focus2030.org/Understanding-development-aid-an-overview>.

[12] FUCHS, A., DREHER, A., NUNNENKAMP, P. (2014). Determinats of Donor Generosity: A Survey of the Aid Budget Literatura. *World Development*. Vol. 56, pp. 172–199.

[13] LEWIS, D., KANJI, N. (2009). *Non-governmental Organizations and Development*. Oxon: Routledge.

[14] LEWIS, D. (2001). Management of Non-governmental Development Organizations. Oxon: Routledge.

[15] MINISTRY OF FOREIGN AFFAIRS (2021). *Bilateral development cooperation*. [online]. [cit. 2021-06-24]. Available from <https://www.mzv.cz/jnp/en/foreign_relations/development_cooperation_and_humanitarian/bilateral_development_cooperation/index.html>.

[16] MINISTRY OF FOREIGN AFFAIRS (2017). *Development Cooperation Strategy of the Czech Republic 2018-2030.* [online]. [cit. 2020-07-15]. Available from: <https://www.mzv.cz/file/2710363/CZ_Development_Cooperation_Strategy_2018_2030.pdf>.

[17] MINISTRY OF FOREIGN AFFAIRS (2010). *Strategy of the Development Cooperation of the Czech Republic 2010-2017* [online]. [cit. 2020-07-28]. Available from <http://www.czechaid.cz/wp-content/uploads/2016/09/Development_Cooperation_Strategy_2010_2017.pdf>.

[18] MINISTRY OF FOREIGN AFFAIRS (2001). *Concept of Foreign Development Aid of the Czech Republic for the period of years 2002-2007* [online]. [cit. 2020-07-28]. Available from <https://www.mzv.cz/public/7/36/4a/18290_14945_zrp_cz.pdf>.

[19] NUNNENKAMP, P., ÖHLER, H. (2010). Aid Allocation through Various Official and Private Channels: Need, Merit and Self-Interest as Motives of German Donors, *Proceedings of the German Development Economics Conference*, Hannover 2010, No. 15.

[20] OECD (2021a). *Official development assistance – definition and coverage*. [online]. [cit. 2021-06-23]. Available from <https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/officialdevelopmentassistancedefinitionandcoverage.htm>.

[21] OECD (2021b). *Net ODA (indicator)*. [online]. [cit. 2021-06-10]. Available from <doi: 10.1787/33346549-en>.

[22] OECD (2020). *Development Assistance Committee Members and Civil Society*. [online]. The Development Dimension, OECD Publishing, Paris. [cit. 2020-09-10]. Available from <https://doi.org/10.1787/51eb6df1-en>.

[23] OECD (2005). *Paris Declaration on Aid Effectiveness*. [online]. OECD Publishing. [cit. 2021-01-10]. Available from <doi: 10.1787/9789264098084-en>.

[24] OTT, J. S., VALERO, J. N. (2018). Nongovernmental Organizations and International Nongovernmental Organizations. In: Ferazmand A. (ed.) *Global Encyclopedia of Public Administration, Public Policy, and Governance*. Cham: Springer International Publishing AG.

[25] SANZ CORELLA, B., ADÁN NICOLÁS, J. E., VELDKAMP, T. (2020). *Civil Society and the 2030 Agenda*. European Commission, 2020.

[26] SMILLIE I. (1999). At Sea in a Sieve? Trends and Issues in the Relationship Between Northern NGOs and Northern Governments. In: Smillie, I., Helmich, H., Randel, J., German, T. (eds.) *Stakeholders Government-GNO Partnership for International Development*. Earthscan from Routledge.

[27] TORTAJADA, C. (2016). Nongovernmental Organizations and Influence on Global Public Policy. *Asia & Pacific Policy Studies*. Vol. 3, No. 2, pp. 266–274.

[28] UNITED NATIONS (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development.* [online]. [cit. 2020-10-20]. Available from <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>.

[29] WORLD BANK (2021). *Data. Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population).* [online]. [cit. 2021-06-25]. Available from <https://data.worldbank.org/indicator/SI.POV.DDAY>.

Appendix 1

Bilateral development assistance allocated with the use of bilateral development projects realized in priority partner countries under the responsibility of the Czech Development Agency (financial allocations in CZK)

	Total volume of financial allocations	Numbers of financial allocations	Financial allocations to projects of Czech NGOs	Number of allocations to projects of Czech NGOs
2011	288 005 641,00	66	85 677 560,00	30
2012	341 476 131,00	98	107 616 089,00	38
2013	287 117 966,00	103	122 635 530,00	43
2014	288 925 538,23	104	107 065 204,50	38
2015	364 093 912,15	123	130 470 194,80	44
2016	339 852 012,86	104	129 597 295,50	40
2017	321 546 538,33	106	126 165 177,00	39
2018	265 753 478,39	97	126 816 851,00	29
2019	276 386 148,82	50	96 089 752,27	20
2020	330 503 320,79	69	150119194,1	32
Sum	3 103 660 687,57	920,00	1 182 252 848,17	353

Source: Annual reports of the Czech Development Agency (2011–2020), own data processing

Appendix 2

Financial allocations to bilateral projects of Czech NGOs in priority partner countries: territorial targeting (in CZK)

Country/Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Afghanistan	4 000 000,00	18 000 000,00	19 000 000,00	24 902 756,00	21 947 638,00	19 985 952,00	15 994 494,00	0,00	0,00	0,00
Bosnia and Hercegovina	0,00	0,00	0,00	186 685,00	0,00	1 500 000,00	4 370 000,00	8 680 709,00	11 411 420,86	13 431 790,10
Cambodia	11 147 855,00	10 500 000,00	17 000 000,00	13 709 740,00	16 990 000,00	17 220 500,00	19 220 500,00	4 000 000,00	13 399 900,00	13 325 000,00
Ethiopia	27 212 596,00	22 037 547,00	30 900 000,00	37 097 430,00	37 825 420,00	38 319 436,00	33 375 518,00	43 798 092,00	29 553 297,00	36 997 940,00
Georgia	9 395 073,00	11 232 407,00	13 125 126,00	10 897 652,50	12 237 896,00	9 039 743,50	10 278 301,00	23 678 732,00	7 446 083,80	33 452 000,00
Kosovo	8 000 000,00	9 494 832,00	8 785 000,00	6 931 785,00	5 043 460,00	9 674 021,00	12 875 000,00	3 500 000,00	0,00	0,00
Moldova	12 921 751,00	16 456 750,00	26 635 638,00	13 339 156,00	32 425 780,80	29 857 643,00	26 051 364,00	23 194 318,00	25 879 050,61	38 212 584,00
Mongolia	9 351 721,00	16 341 617,00	7 189 766,00	0,00	0,00	0,00	0,00	0,00	0,00	
Palestine	0,00	0,00	0,00	0,00	4 000 000,00	4 000 000,00	4 000 000,00	0,00	0,00	0,00
Serbia	3 648 564,00	3 552 936,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Zambia	0,00	0,00	0,00	0,00	0,00	0,00	0,00	19 965 000,00	8 400 000,00	14 699 880,00
Sum	85 677 560,00	107 616 089,00	122 635 530,00	107 065 204,50	130 470 194,80	129 597 295,50	126 165 177,00	126 816 851,00	96 089 752,27	150 119 194,10

Source: Annual reports of the Czech Development Agency (2011–2020), own data processing

Appendix 3

Financial allocations to bilateral projects of Czech NGOs in priority partner countries: thematic targeting, years 2011–2018 (in CZK)

Theme/Year	2011	2012	2013	2014	2015	2016	2017	2018
Agriculture and forestry	23 102 148,00	27 007 072,00	25 721 298,00	20 212 299,00	25 476 230,80	22 542 245,00	22 856 140,00	35 997 793,00
Education	14 321 751,00	27 844 314,00	29 368 744,00	23 683 824,00	19 498 303,00	24 990 447,00	26 996 207,00	25 850 000,00
Energy	6 000 000,00	4 000 000,00	5 000 000,00	3 978 600,00	6 000 000,00	6 000 000,00	8 000 000,00	0,00
Environmental protection	0,00	0,00	0,00	1 200 000,00	0,00	0,00	0,00	0,00
Health care	17 535 845,00	13 423 127,00	17 101 058,00	26 890 978,50	24 418 816,00	14 911 811,50	12 446 495,00	18 033 439,00
Humanitarian food aid	2 000 000,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other social infrastructure and services	19 870 286,00	29 341 576,00	37 869 430,00	20 586 818,00	35 191 677,00	40 917 480,00	41 518 808,00	19 844 916,00
State administration and civil society	0,00	0,00	0,00	186 685,00	852 500,00	3 500 000,00	11 198 004,00	18 457 209,00
Trade and services	0,00	4 000 000,00	4 425 000,00	3 800 000,00	0,00	0,00	0,00	0,00
Water and sanitation	2 847 530,00	2 000 000,00	3 150 000,00	6 526 000,00	19 032 668,00	16 735 312,00	3 149 523,00	8 633 494,00
Sum	85 677 560,00	107 616 089,00	122 635 530,00	107 065 204,50	130 470 194,80	129 597 295,50	126 165 177,00	126 816 851,00

Source: Annual reports of the Czech Development Agency (2011–2018), own data processing

Financial allocations to bilateral projects of Czech NGOs in priority partner countries: thematic targeting, years 2019 and 2020 (in CZK)

Theme/Year	**2019**	**2020**
Agriculture and forestry	21 953 297,00	36 356 000,00
Education	23 556 900,00	24 457 820,00
Health care	6 843 000,00	19 277 000,00
Social	23 879 050,61	39 160 584,00
State administration	19 857 504,66	17 727 790,10
Water	0,00	8 140 000,00
Sum	96 089 752,27	145 119 194,10

Source: Annual reports of the Czech Development Agency (2019–2020), own data processing

Contact information

Ing. Eva Kovářová, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: eva.kovarova@vsb.cz

The Rise of Populist Radical Right Party ĽSNS in Slovakia: The Role of Education

Dana Kuběnková

Abstract: In this article, we answer the following question – are lower educated people more likely to vote for the populist radical right party Ľudová Strana Naše Slovensko than higher educated people? The aim of our paper is to estimate, based on the data from the Statistical Office of Slovakia and Population and Housing Census in 2011, the effect of different levels of educational attainment on voter's support for the populist radical right party in Slovakia – ĽSNS. For the electoral performance of ĽSNS in municipalities of Slovakia, we use vote share from results of national parliamentary elections that took place in 2020. We have found out that lower-educated people tend to support ĽSNS, and contrary population with higher education than secondary education without school-leaving exam associate with lower voting support for ĽSNS. These findings are in accordance with previous findings of research focused on Western Europe and Central and Eastern Europe. We hope these results could be used as implications for public policy.

Keywords: Educational attainment, LSNS, populist radical right parties

JEL Classification: D72, R11, R58

1 Introduction

One of the most prevalent factors in models aiming to elicit support for populist radical right parties (PRRP) is education. The relationship between education and electoral support has been proposed already in 1960 by Lipset. Nowadays, the surge of populist radical right parties and their electoral success (Eierman, Mounk, and Gultchin, 2017, Colantone and Staning, 2019) has brought scholars to test the plausible effect of education as contextual factor on this phenomenon repeatedly. Overall, the empirical findings of these studies on the relationship between education and vote for PRRP indicate that people with lower education tend to vote for PRRP.

Therefore, this article attempts to show that people with a lower level of educational attainment are more likely to vote for the PRRP in Slovakia than those with a higher level of education. We strongly believe that Slovakia can offer a compelling image since the Slovak Republic is one of the few countries, where the glory of PRRP had experienced numerous drops and resurrections (Mudde, 2007). Nonetheless, the voter support for PRRP appears to have remained stable since 2016, when out of nowhere, Ľudová strana Naše Slovensko (ĽSNS) had been successfully elected to national parliament. The ĽSNS, a neo-Nazi-affiliated party, was re-elected in 2020, finishing fourth with 17 parliamentary seats. Another reason for choosing Slovakia is the fact, that the literature on the topic of PRRP has grown rapidly, but mostly in the regions of WE (see Arzheimer, 2015; Ivaldi, 2018; Goodwin, 2015), while the further analysis of the development in CEE has been lagging. Given the surge of PRRP in addition to substantial democratic backsliding in countries of CEE region, this absence in the literature is striking. This negligence does not eliminate the possibility that concepts underlying populist voting in WE may be useful in understanding political behaviour in CEE. Nonetheless, adapting these concepts to CEE can still lead to potentially different implications as some of the authors (Howard, 2003; Pirro, 2014; Stanley, 2017) specifically pointed out to dissimilarities of PRRP in WE and CEE. According to Pirro (2013), the PRRP in CEE compared to WE do not represent a "silent counter-revolution", rather they capitalize on a "post-communist syndrome" resulting from the disappointments of the transformation process. The author suggests that this difference is most evident in the ideology of CEE parties – the PRRP handles pre-communist concerns such as clericalism and

irredentism, ethnic minorities, corruption, and European integration. In another view, most of these post-soviet countries had been part of the European integration, which was meant to be a fundamental pillar for establishing democratic changes, and yet a few decades later we are witnessing the surge of PRRP, which are defined by Mudde (2007) as a destructive threat to liberal democracy. Considering the above, it appears important enough for focusing the research on the phenomenon in CEE.

Therefore, in this article, we find it necessary to combine the regional dimension along with socio-economic and demographic factors included as control variables, as it can lead to a better understanding of voter's demand for PRRP while estimating the relationship between levels of educational attainment and vote for PRRP. We estimate simple OLS regression models for testing influence of different educational attainment levels, along with control variables, on ĽSNS´s electoral success in the LAU 2 regions of Slovakia.

1.1 The role of education in electorate performance of PRRP

In our work, we define populist radical right parties following definition of Mudde (2007), who interpret PRRP as political parties with a core ideology that is a combination of nativism, authoritarianism, and populism. While nativism is an ideology, which holds that states should be inhabited exclusively by members of the native group and that nonnative elements are fundamentally threatening to the homogenous group. Authoritarianism refers to the belief in a strictly ordered society. Populism is understood as a thin-centered ideology that considers society to be ultimately divided into two homogenous and antagonistic groups – the pure people versus, the corrupted elite", arguing that politics should be the volonté generale of the people.

There have been many attempts in estimating potential factors of electoral success of PRRP. Authors Ivarsflaten and Stubager (2013) point out in their work to contradict results of previous studies examinaning social structure as factor relevant for electoral success of populist radical right parties. According to these scholars electorates follows a definite pattern, although the main pattern is not seen in the voter´s occupational position but rather in their educational levels. Therefore, the idea of education as a factor relevant for higher election outcomes for PRRP is very common between scholars and voting behavior itself. As a result of several studies, the plausible hypothesis is that lower educated people are overrepresented among the voter base of PRRP (Ford and Goodwin, 2010; Ivarslaften and Stubager, 2013; Roodujin et al., 2017).

As various scholars found, there are more than two possible mechanisms, that could explain the relationship between the education and electoral performance of PRRP. The first group of authors and their relative works tend to imply that education provides cognitive tools that encourage individuals to be more receptive and tolerant to different cultures (Lipset, 1960), others pointed out to socialization of students into certain libertarian political principles and norms, that might occur at the institution of higher education (Stubager, 2008). Thus, those authors disagree over the nature of connection for a link between education and certain political ideas, rather than it is formed during the education process. The second group of authors argue that education has an influence on political preferences because it is linked to material position of those individuals. These authors argue that education is one of many possible variables, that maintain and regenerate socio-economic disparities within society and highlight the indirect influence of education – educated individuals might have better social standing within the social structure, thus those individuals with lower education can be more vulnerable to threats related to globalization and economics crisis (Spruyt, Keppens, and Droogenbroeck, 2016; Inglehart and Norris, 2016). In the meaning of pluralism as a part of populism, which stands for polarization of society into two homogeneous groups - we, the people v. the corrupted elites, it seems reasonable that educated people which politically and socially dominate (elites) might occur as a source of frustration to less educated people (Bovens and Wille, 2010). As a result, these studies

present education´s significant role in the majority of the justifications for PRRP voting, including anti-immigration sentiments, authoritarianism, and anti-elitism.

The authors Ivarslaften and Stubager (2013) divided these potential effects of education on PRRP into two connections. The first explanation implies, that the connection between education and material positions, which indicates that PRRP will perform better in a difficult economic time and incomparably deprived geographic locations. Contrary, the second one refers to the connection between education and values – individuals with and without higher education react differently to immigration, immigrant-origin minorities, and ethnic diversity.

Another interesting view on the link between educational attainment and electoral success PRRP has been offered by Savelkoul and Scheepers (2017) who tested their hypotheses under the recent explanations on the given relationship, that has been proposed more recently and innovatively (interethnic contact, associational involvement, social trust, euroscepticism) next to previously established explanations (perception of ethnic threat, nationalism, authoritarianism).

Although, some of the studies do not prove the significance of the relationship between education and extreme right voting (Norris, 2005), while others found that the individuals with intermediate education levels are more likely to vote for radical parties (Arzheimer and Carter, 2006; Rydgren, 2007). Overall, the studies generally offer adequate evidence for the influence of education on the electoral success of PRRP.

1.1.1 Central and Eastern Europe: The case of Slovakia

According to Mudde (2007), Slovakia is one of the few countries, where PRRP experienced persistent ups and downs in their electoral success. In this statement, he pointed out to Slovenská Národná Strana (SNS), which lost the parliamentary representation in 2002, but came back with the big victory in 2006 obtaining 11.7 percent of the vote. The electoral success of PRRP in Slovakia is stable since 2016, after the unexpected election of ĽSNS to the national parliament and further re-election in 2020. These unpredictable shifts in voter support for PRRP in Slovakia brought the attention of few scholars and they attempt to estimate the potential effects for this support. For instance, Rehák et al. (2021) based on their comparative analysis of electoral support for a traditional extreme right party (SNS) and the new radical right in Slovakia (ĽSNS) conclude, that while support for SNS is established on cultural and nationalistic factors, the support for ĽSNS is based on the regional economic factors such as the unemployment rate and wages. Similarly, Voda et al., (2021) referred in their work to the sudden electoral breakthrough of ĽSNS in 2016, and by further examination they suggest, that ĽSNS was successful in economically deprived regions with lower purchasing power. Both studies analysed the electoral performance of ĽSNS in the national parliament elections that took place in 2016 and years before.

Considering the research on the role of education on voter support for PRRP, along with the research of factors boosting the electoral success of ĽSNS, we formulated our hypothesis:

H1: Lower educated people are more likely to vote for the ĽSNS than higher educated people.

2 Material and Methods

Firstly, to make estimation possible, we had to identify the populist radical right party. In our work, we consider ĽSNS as a populist radical right party, even though in previous articles it was considered as a radical right party (Rehák et al., 2021; Voda et al., 2021). We categorized this party as PRRP based on the data of Expert Survey of Chapel Hill 2020, where all the given attributes signify, that ĽSNS is not just the radical right party, bus also populist (high ranks in anti-establishment salience, position on people vs elected representatives). These slight changes

in the party family are not special, as the rhetoric of the parties could shift very dynamically which can cause that the same party could be labelled differently across various studies (Leeuwen and Vega, 2021). Secondly, we had to gather data from various sources for our dependent and independent variables. For our independent variable – education, we considered the three different highest level of education attained – secondary education without school-leaving exam, secondary education with school-leaving exam, and higher education. Lastly, we decided to run a simple OLS regression model, which we consider as the most suitable for our empirical analyses.

2.1 Model and Data

For the purpose of testing our hypothesis we use for our dependent variable (LSNS) data gathered on the level LAU 2 – share of votes for ĽSNS gained in the parliamentary election in 2020. These data were collected from the Statistical Office of the Slovak Republic (ŠUSR). Our independent variables (lowedu, mhighedu, highedu, relig, minor) were gathered on the LAU 2 level and they were collected from Population and Housing Census in 2011. The rest of independent variables (unemployr, density, distreg_km, pop2029, vt2020) were collected from ŠÚSR. Descriptive statistic for used variables in our model, can be seen in Table 1. Variables referring to the share of people with the different highest level of education attained are named lowedu (secondary education without school-leaving exam), mhighedu (secondary education with school-leaving exam) and highedu (higher education). We divided the remaining variables into two categories. The variable minor represents the share of population belonging to the national minority, relig represents the share of religious population, unemployr represents average unemployment rates calculated between 2016 and 2020, density represents the density of municipality, distreg_km represents the municipality distance from the capital city of the region, pop2029 is the share of population with an age 20-29, vt2020 refers to turnout in the parliamentary elections in 2020.

Table 1 – Descriptive statistics

VARIABLE	LEVEL	OBS	MIN	MAX	MEDIAN	MEAN	STD. DEV.
LSNS	LAU 2	2926	0	52.632	9.176	9.718	5.581
lowedu	LAU 2	2926	26.087	98.055	63.414	63.394	9.384
mhighedu	LAU 2	2926	1.361	73.913	34.103	33.936	9.560
highedu	LAU 2	2926	0	35.937	7.825	8.466	4.377
relig	LAU 2	2926	26.829	100	88,615	86,006	10,650
minor	LAU 2	2926	0	99.052	1.887	16.461	27.168
unemployr	LAU 1	2926	2.63	18,92	6.66	8.315	4.459
density	LAU 2	2926	-0.347	4.132	1.770	1.762	0.443
distreg_km	LAU 2	2926	0	93.986	35.792	38.704	20.927
pop2029	LAU 2	2926	0	44.444	13.667	13.852	2.748
vt2020	LAU 2	2926	8.977	98.544	67.038	65.310	10.086

Source: Author, based on data from ŠÚSR and Population and Housing Census in 2011

3 Results and Discussion

The results of our OLS models for our hypothesis concerning voter incentives are presented in Table 2. Looking at the results, we can see the clear effect of education on voter's support for PRRP. We can accept our hypothesis (H1) on a statistically significant level - lower educated people are more likely to vote for the ĽSNS than higher educated people. To be more precise according to results (OLS 1) people with secondary education without school-leaving exams positively coincidence with vote for PRRP. While looking at the results of (OLS 2, 3) people

with secondary education with school-leaving exam and with higher are less likely to vote for ĽSNS, whereas the effect is while comparing the results strongest within people with higher education. Therefore, we proved in our model, that people with lower education tend to vote ĽSNS. Thus, our findings people coincident with the findings of other scholars (Ivarsflaten and Stubager, 2013) who argue, that level of education should be considered while estimating the effect of education. Accordingly, people with secondary education with school-leaving exam and higher education levels of educational attainment do not support ĽSNS. The effect of education is the strongest in the municipalities where is a higher share of individuals with a university degree, which results in the decline of voter's support for ĽSNS about 0,34 percentage point. Looking at the other socio-economic and demographic factors, the background is the same as was found in the study by Rehák et. al (2021). Thus, the higher share of the religious population, along with a higher share of minorities living in the regions and higher density of population results in lower voter support for ĽSNS. On the other hand, the higher population between 20-29, higher average unemployment rates, and long distance from the capital city of specific municipalities result in higher voter support for ĽSNS. The turnout in parliamentary elections in 2020 is not significant.

Table 2 – Regression models (1) - (3)

	OLS (1)	OLS (2)	OLS (3)
lowedu	0,092*** (0,012)		
mhighedu		-0,102*** (0,011)	
highedu			-0,335*** (0,025)
relig	-0,047*** (0,009)	-0,046*** (0,009)	-0,066*** (0.009)
minor	-0,122*** (0,004)	-0,122*** (0,004)	-0,124*** (0,219)
unemployr	0,0599* (0,024)	0,056* (0,023)	0,065* (0,023)
density	-2,065*** (0,221)	-1,989*** (0,221)	-1,620*** (0,219)
distreg_km	0,030*** (0,005)	0,030*** (0,005)	0,026*** (0,005)
pop2029	0,134*** (0,032)	0,130*** (0,032)	0,101* (0,325)
vt2020	-0,0211 (0,012)	-0,012 (0,012)	-0,003 (0,011)
cons	11,47*** (1,54)	19,954*** (1,214)	20,395*** (1,931)
N	2926	2926	2926
adj. R-sq	0,343	0,346	0,368

Source: Author, based on data from ŠÚSR and Population and Housing Census in 2011

Our findings are in accordance with recent studies (Rehák et al. 2021; Voda et al. 2021) on the PRRP in Slovakia and suggest that voter´s support for ĽSNS is stronger in regions suffering from higher unemployment rates. Nonetheless, these results are also pursuant to the findings of research we present in section 1.1 The role of education in electorate performance of PRRP, which results in - lower educated people are more likely to vote for the ĽSNS than higher educated people. There still may arise the questions based on our literature review – what additionally stimulates the effect of lower education on ĽSNS popularity? As the voting

campaign of ĽSNS referred both to the Roma issue and anti-elite establishment, we, therefore, think that for this specific case are applicable both approaches in recent literature within the relationship between education and vote for PRRP.

Slovak voters with lower education might have been less receptive and tolerant to minorities, especially the Roma minority, as studies suggest (Lipset, 1960, Stubager; 2008) and therefore they favor with ĽSNS, as ĽSNS actively stand up against the Roma minority. The second reason might lay underneath the connection of education and material position, implying that lower educated people are more vulnerable and unprepared to economic changes, such as globalization and economic crisis. This argument suggests, that PRRP will gain higher popularity in the regions that are economically deprived. Again, this analogy seems to be applicable to the electoral success of ĽSNS and be the potential driver of education effect, as also our findings proved, that ĽSNS did better in municipalities with a higher average unemployment rate.

4 Conclusion

Nowadays, the surging popularity of PRRP is common prevalence within democracies of Europe, and Slovakia is not an exception (Hainsworth, 2008). Authors Ivarsflaten and Stubager (2013) specifically pointed out in their work to contradict results of previous studies examining social structure as a factor relevant for the electoral success of populist radical right parties. According to these scholars, electorates follow a definite pattern, although the main pattern is not seen in the voter´s occupational position but rather in their educational levels. However, emphasizing the importance of education, along with a social class in determining political preferences and voting behaviour was already introduced in 1960 by Lipset. Given that the idea of relationship and education is not the new one, and there is very well-developed research, suggesting different approaches. Therefore, in our article, we rely on the case of Slovakia and its populist radical right party – ĽSNS. We address this relationship by testing our hypothesis stating, that lower educated people are more likely to vote for ĽSNS than higher educated people. We included in our simple OLS model educational attainment levels, along with socio-economic and demographic factors as control variables, that have been already empirically proved by other researchers as significant for PRRP vote (Rehák et al., 2021; Voda et al., 2021). According to results from our models, we could accept our hypothesis on the statical significant level and answer our research question. Therefore, lower educated people are more likely to vote for the ĽSNS than higher educated people. Our findings are in accordance with scholars focused on analysing voting support for ĽSNS (Rehák et al., 2021; Voda et al., 2021), as well as with the studies concentrating on the relationship between education and voter´s support for PRRP. However, our approach is limited, as we only hypothetically discussed what additionally drives the effect of lower education on the electoral success of ĽSNS but did not provide any empirical tests for these potential drivers, that have been proposed for instance by Ivarsflaten and Stubager (2013) or Savelkoul and Scheepers (2017), e.g., interethnic contact, associational involvement, social trust, Euroscepticism, perception of ethnic threat, nationalism, authoritarianism. This leaves an open space for further research investigation.

Acknowledgements

The paper was supported by the project VEGA 1/0774/19 Accumulation of human capital in the regions - economic and social consequences.

References

[1] ARZHEIMER, K. (2015). The AfD: Finally a Successful Right-Wing Populist Eurosceptic Party for Germany. West European Politics 38 (3), 535-556.

[2] ARZHEIMER, K., CARTER, E. (2006). Political opportunity structures and right-wing extremist party success. European Journal of Political Research 45 (3), 419-43.

[3] BOVENS, M., WILLE, A. (2010). The Education Gap in Political Participation and its Political Consequences. Acta Politica 45 (4), 393-422.

[4] COLANTONE, I., STANING, P. (2019). The Surge of Economic Nationalism in Western Europe. Journal of Economic Perspectives, 33 (4), 128-51.

[5] EIERMAN, M., MOUNK, Y., GULTCHIN, L. (2017). European Populism: Trends, Threats and Future Prospects. Available on the internet: Institute for Global Change: https://institute.global/insight/renewing-centre/european-populism-trends-threats-and-future-prospects

[6] FORD, R., GOODWIN, M. (2010). Angry White Men: Individual and Contextual Predictors of Support for the British National Party. Political Studies, 58:1–25

[7] GOODWIN, M. (2015). Ukip, the 2015 General Election and Britain's EU Referendum. Political Insight 6 (3), 12-15

[8] HAINSWORTH, P. (2008). The Extreme Right in Western Europe. New York: Routledge.

[9] HOWARD, M. (2003). The Weakness of Civil Society in Post-Communist Europe. Cambridge: Cambridge University Press.

[10] INGLEHART, R., NORRIS, P. (2016). Trump, Brexit and The Rise of Populism: Economic Have-Nots and Cultural Blacklash. HKS Faculty Research Working Paper Series RWP16-026.

[11] IVALDI, G. (2018). Contesting the EU in Times of Crisis: The Front National and Politics of Euroscepticism in France. Politics 38 (3), 278–294.

[12] IVARSFLATEN, E., STUBAGER, R. (2013). Voting for the populist radical right in Western Europe: The role of education. In E. B. Rydgren, Class Politics and the Radical Right (s. 122-137). London: Routledge

[13] LEEUWEN, S. E., VEGA, H. S. (2021). Voting and the rise of populism: Spatial perspectives and applications across Europe. Reg Sci Policy Pract. , 209–219.

[14] LIPSET, S. M. (1960). Political Man: The Social Bases of Politics. New York: Doubleday & Company, Inc.

[15] MUDDE, C. (2007). Populist Radical Right Parties in Europe. Cambridge: Cambridge University Press.

[16] NORRIS, P. (2005). Radical Right: Voters and Parties in the Electoral Market. Cambridge: Cambridge University Press.

[17] PIRRO, A. (2014). Populist Radical Right Parties in Central and Eastern Europe: The Different Context and Issues of the Prophets of the Patria. Government and Opposition, 49(4), 600-629.

[18] REHÁK, Š., RAFAJ, O., ČERNĚNKO, T. (2021). EU integration, regional development problems and the rise of the new radical right in Slovakia. Regional Science Policy Practice , 1-19.

[19] [ROODUIJN. M. (2017). Radical Distinction: Support for Radical Left and Radical Right Parties in Europe. European Union Politics 18 (4), 536–559.

[20] BAKKER, R., HOOGHE, L., JOLLY, S., MARKS, G., POLK, J., ROVNY, J., STEENBERGEN, M., VACHUDOVA. M. A. (2020). 2019 Chapel Hill Expert Survey. Version 2019.1. Available on chesdata.eu. Chapel Hill, NC: University of North Carolina, Chapel Hill.

[21] RYDGREN, J. (2007). The Sociology of the Radical Right. Annual Review of Sociology, 33, 241-262.

[22] [SAVELKOUL, M., SCHEEPERS, P. (2017). Why lower educated people are more likely to cast their vote for radical right parties: Testing alternative explanations in The Netherlands. Acta Polit 52, 544–573.

[23] SPRUYT, B., KEPPENS, G., DROOGENBROECK, V. F. (2016). Who Support Populism and What attracts People to It? Political Research Quarterly 69 (2), 335-346.

[24] STANLEY, B. (2017). Populism in Central and Eastern Europe. In P. T. edited by Cristóbal Rovira Kaltwasser, The Oxford Handbook of Populism (s. 140-160). Oxford: Oxford University Press.

[25] STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. 2014. Population and Housing Census. Available on the internet: <http://datacube.statistics.sk/#!/view/sk/SODB/hc40/Obyvate%C4%BEstvo%20pod%C4%BEa%20miesta%20s%C4%8D%C3%ADtania%2C%20pohlavia%2C%20podmienok%20b%C3%BDvania%2C%20ve%C4%BEkosti%20lokality%20%28obce%29%20a%20veku%20-%20HC40>

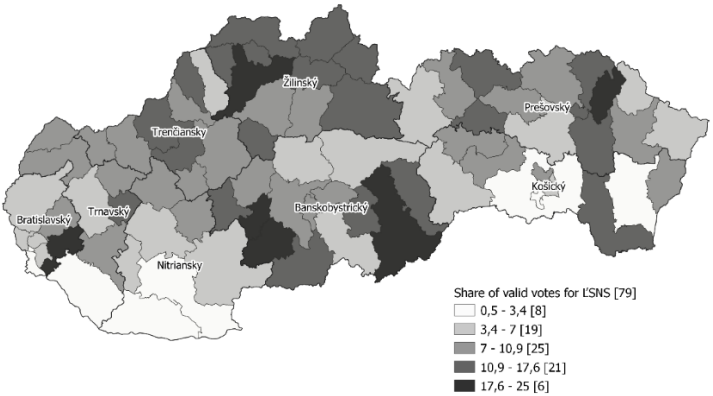
[26] STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. 2014. Demography and Social statistics. Available on the internet: <https://slovak.statistics.sk/wps/portal/ext/themes/demography/!ut/p/z1/jY_LDoIwEEU_qdMHUJZDlVLTKBQbsRvDyjRRdGH8fpG4FZjdTc7JvUMC6UgY-ne89q_4GPrbmM8hvZRtzTAXWm3coQRzVEy2NmUAlJwmoMmMLAqKIPduOwJYa7cTFERCwhp_Bvj68OcQfr7SWInMAkirEzBYeZc3nAPydf0zBYt-mJC5BUs_PO_e-w7iB3U0jas!/dz/d5/L2dJQSEvUUt3QS80TmxFL1o2X0ZTUDJBOTRHQ0RST0YwSVRDMjhTTDYyMEc2/>

[27] STUBAGER, R. (2008). Education Effects on Authoritarian–Libertarian Values: A Question of Socialization. The British Journal of Sociology 59, 327–350.

[28] VODA, P., KLUKNAVSKA, A., SPÁČ, P. (2021). From Trivialized Neo-Nazis to Parliament: Explaining the Electoral Success of the Extreme Right Party ĽSNS in Slovakia. Problems of Post-Communism.

Appendix

Figure 1: Spatial distribution of voter support for LSNS on the district level (share of valid votes in %)
Source: author, based on data from ŠÚSR



Contact information

Mgr. Dana Kuběnková
University of Economics in Bratislava, Faculty of National Economy, Department of Public Administration and Regional Development
Dolnozemská cesta 1, 852 35 Bratislava, Slovak Republic
E-mail: dana.kubenkova@euba.sk

Financial policy of sustainable development of the state: components and evaluation of efficiency on the example of Ukraine

Raisa Kvasnytska, Inna Dotsenko, Lesia Matviichuk

Abstract: The most significant influence on the old development of the state has the state financial policy, which is formed on the basis of various components. It is established that the basis for the formation of the basic model of state financial policy of sustainable development is the relationship of environmental, economic and social components. This assertion takes into account the manageability of development and focuses on the three-component concept of sustainable development. Methods such as dialectical, method of analysis and synthesis were used for the study. Model of the financial policy of sustainable development of the state generalized. Based on the theory of effective competition, the approach of an estimation of efficiency of financial policy of sustainable development of the state on an example of Ukraine is offered. The proposed approach involves the assessment of indicators that characterize the components of financial policy of sustainable development, and, based on them, the derivation of a generalized integrated indicator. The application of approach makes it possible to determine of sustainable development of the country and forecast it taking into account the dynamic conditions of her economy.

Keywords: sustainable development, state financial policy, model of state policy of sustainable development, components of the state financial policy of sustainable development

JEL Classification: H 11, J11, O11

1 Introduction

As claims Dabbousa and Tarhinib (2021) or Ahmed, Kousar, Pervaiz, Shabbir (2021) sustainable development of a country is the basis that determines the need to strike a balance between meeting the needs of current generation and safeguarding the interests of future generations. In modern socio-economic conditions, ensuring sustainable development becomes especially important, especially for Ukraine, given its political, economic, social and environmental problems. As noted by Doroguntsov and Ralchuk (2002), harmonization of its economic growth, social integration and environmental protection are extremely important for achieving sustainable development of the country. The central component in the overall state development policy is the model of financial policy for country's sustainable development. It should promote its comprehensive and equal economic growth; increase the basic standard of living in the country, fair social development in the conditions of efficient use of natural resources. At the same time, the issues of forming a basic model of state policy of sustainable development based on the relationship of environmental, economic and social components, which takes into account the balance of public interests, determine the relevance and essence of the study. Therefore, the purpose of the study is to determine the essence and components of the financial policy of sustainable development of the state, as well as to develop a methodology for assessing its effectiveness on the example of Ukraine. The methodology provides for the assessment of indicators by groups corresponding to the components of the state financial policy of sustainable development of the country, and the derivation on its basis of an integrated index of the effectiveness of the financial policy of sustainable development in the state. To achieve this goal, the focus is on the priority components of sustainable development (economic, environmental and social), which are integral parts of the country's sustainable development model, as well as on the components of financial policy. Achieving this goal is possible due to solving the following tasks: elaboration and systematization of indicators of country's sustainable

development according to their priority components; explanation of basic principles of forming the model of financial policy for country's sustainable development; development of methods for assessing the effectiveness of implementing the model of financial policy for country's sustainable development based on the example of Ukraine.

2 Theoretical foundations of sustainable development of the state

In recent years, well-known scientists have reflected issues and problems of sustainable development, in a number of scientific papers. It is worth noting that ideas about the need for sustainable development emerged in the early twentieth century. Vernadsky (1978) was the first to put forward the concept of the noosphere (the sphere of the mind), which is based on the idea of harmonization of the interaction between society and nature. Such scholars, as Mayer Gerald, Rauch James and Filipenko (2003) associate the emergence of the term "sustainable development" with the name of the Prime Minister of Norway Gro Harlem Brundtland after the publication of the report "Our Future" (1987) which was prepared for the UN by the International Commission on Environment and Development. In which "sustainable development" is interpreted as development that meets the needs of the present, but without compromising the ability of future generations to meet their own needs. Modern researchers, such as, Rudenko and Gorlenko (1996), when interpreting the concept of "sustainable development", emphasize the specification of the object, that is, the state, ecosystem or its components (nature, population, economy) or a territory taken as a particular ecosystem, thereby expanding the concept of "sustainable development" in accordance with the object of study. According to Danilishin and Shostak (1999), sustainable development is the system of relations of social production, in which an optimal ratio between economic growth, normalization of the qualitative state of the natural environment, growth of material and spiritual needs of the population is achieved. When interpreting the concept of "sustainable development", Doroguntsov and Ralchuk (2002), distinguish its components, namely: socio-economic and techno-environmental. The researchers focus on increasing the common good of humanity by ensuring the security of these components. Gossling-Goidsmiths (2019), interprets sustainable development as a concept that aims at achieving social progress, environmental balance and economic growth of the country. Based on the given definitions, it is appropriate to conclude that the common feature of sustainable development is balancing, harmonization of the humanity's social needs with the environmental and economic opportunities of territories. So, Bist (2018) examines the nexus between financial development, economic growth, and social sustainability and found a positive relationship between social progress, financial development, and economic growth. Therefore, the authors define sustainable development as a balanced system of interaction and interconnection of components of economic, social and environmental development of the country, which ensures optimal use of available resources with potential needs of society, while maintaining the possibility of using similar resources for future generations. The need to ensure the implementation of the postulates of sustainable development of the state necessitates the development of new approaches to the development and evaluation of public financial policy, which determines the system of measures, forms, methods of mobilization, distribution and use of financial resources by state institutions society for sustainable development (Vovk, 2020).

2.1 Theoretical foundations of financial policy of sustainable development of the state

An important component of the overall economic framework for country's sustainable development is the state financial policy of sustainable development, which allows the state to perform its various functions in accordance with strategic and tactical goals of sustainable development through elaboration of certain methods and implementation of measures for state financial resources mobilization, allocation and redistribution. The state financial policy of sustainable development embodies financial relations, which are specified by national strategies,

programs, management decisions that arise in the process of formulating and implementing the strategy of sustainable development of the country. Clark, Reed and Sunderland (2018), Goldstein (2001) fragmentarily illustrate the essence of sustainable development fiscal policy. Based on the study of this literature, the authors concluded that the main objectives of public policy of sustainable development are:

- creating conditions for maximizing the amount of financial resources generated by the state;
- implementation of mechanisms for rational allocation of the accumulated financial resources in accordance with the policy of sustainable development;
- application of financial methods that provide effective regulation, stimulation and control over economic, environmental and social processes in the country;
- elaboration of an effective financial mechanism for implementing the financial policy of the state;
- establishing an effective financial management system in the state.

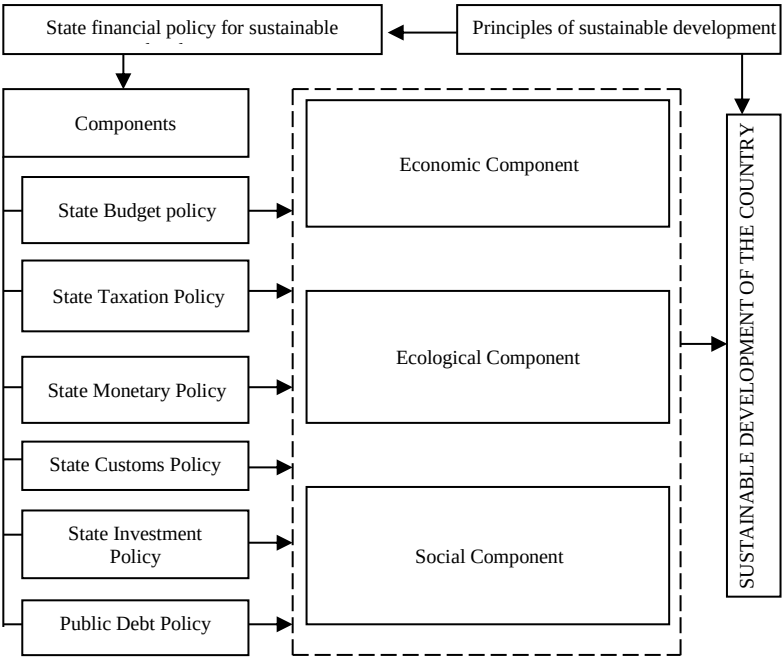
The Ukrainian model of state policy for sustainable development is being formed in the conditions of a prolonged economic crisis. t is based on balancing the environmental, economic and social components, with the appropriate application of the components of public financial policy (Figure 1).

Of course, shaping state financial policy for sustainable development should be considered from the standpoint of specifying approaches to the development of its main components, which determine the indicators of public financial policy for sustainable development in general.

The authors believe that the main components of the state financial policy of sustainable development include the following:

- state budget policy, which is an instrument of state regulation of social development and a set of financial relations, institutional support for accumulation and allocation of budget funds aimed at achieving financial and economic balance, the effectiveness of economic transformation. Budget policy reflects public interests, and thanks to it the functions and tasks of the state are realized, it is formed in the course of budgetary process and provides definition of the purposes and tasks in the field of public finances (Maksyuta, Chugunov, 2012);

Figure 1 - Model of public financial policy for sustainable development of the country
Source: Authors' view



- state taxation policy, whose essence is manifested in a set of organizational, legal and financial and economic measures of the state to regulate tax relations, is aimed at mobilizing and using financial resources in socio-economic development of the country. Ukraine's state tax policy is in line with the priorities of tax policy recommended by experts for EU countries: to stimulate investment and promote the solution of positive and negative externalities; increase the efficiency of tax administration and tax certainty; create jobs; reduce inequality and, finally, increase tax voluntariness (EU Tax Policy Strategy, 2021);
- state monetary policy, which is a set of measures in the field of money circulation and credit, which are designed to ensure the stability of the currency of Ukraine through the introduction of statutory means and methods, and includes systematic and coordinated measures of the National Bank of Ukraine: continuing the implementation of a flexible inflation targeting monetary regime based on a floating exchange rate, with an emphasis on maintaining financial stability and ensuring sustainable economic growth; continuation of compliance with the regime of floating exchange rate formation; application of foreign exchange interventions in order to perform the following tasks: accumulation of international reserves to achieve their adequacy according to the IMF composite criterion, etc. (Decision Of The NBU Council, 2020);
- state customs policy is a system of principles and activities of the state in the field of protection of customs interests and customs security of Ukraine, regulation of foreign trade, protection of the domestic market, development of Ukraine's economy and its

integration into the world economy. Priority areas for the implementation of the State Customs Policy by the Ministry of Finance of Ukraine are: promotion of security and international trade, providing simplification and harmonization of customs procedures; promoting the effective collection of customs duties; development of infrastructure, electronic technologies and services for international trade; protecting society, public health and environmental safety and combating the illicit flow of drugs and weapons; increasing the efficiency of international customs cooperation (Customs policy, 2021);

- state investment policy is the activity of the state to regulate investment activities to implement economic, scientific, technical and social policy through the application of a set of economic, organizational, legal and other measures of the state aimed at creating a favourable investment climate, restructuring, improving efficiency of national economy. The main objectives of investment policy are: increasing the fraction own sources of investment into the national economy; decentralization of the investment process (transfer the function of providing investments to business entities); attracting investments on a competitive basis; financing of investment projects in accordance with state programs (principle of targeting), etc.;
- public debt policy represents a system of actions to avoid and resolve possible debt problems at the state level, ensuring or restoring solvency and obtaining the maximum effect from the use of borrowed funds. To assess the current state and dynamics of public debt of Ukraine and determine the goals, objectives and measures in the medium-term in order to optimize the structure of public debt in terms of cost-risk ratio while maintaining an acceptable level of debt burden, the Ministry of Finance developed the tool known as "Medium-Term Public Debt Management Strategy for 2019-2022". (Medium-term strategy for public debt management for 2019-2022, 2019).

3 Research methodology and Data

The study was conducted using methods that are determined by the purpose and objectives of the study. Thus, the choice of research methods depended on the need to analyse the relationship between the goals of sustainable development of the state and the individual components that shape the public financial policy of sustainable development in general. First, such methods as dialectical, method of analysis and synthesis were used for research. With their help, the advantages and disadvantages of different methods of assessing the financial policy of sustainable development of the state and its individual areas are identified. In particular, the following were studied:

- the method of calculating the index of sustainable economic well-being proposed by Cobb and Delhi (1989). This method is based on determining the amount of domestic savings, which increase by the amount of education expenditures and decrease by the amount of natural resources and damage from environmental pollution;
- decisions made by the Heads of State and Government at the International Conference on Financing for Development (2002), which proposed the use of the following tools for assessing sustainable development: tax levers, investment in economic and social infrastructure, assessment of capital markets through banking systems, assessment of budgetary and monetary policy;
- methodology for assessing the financial policy of sustainable development of the state, based on indicators of the green economy, which was proposed by the United Nations Environment Program (United Nations Environment Program, 2006). According to it, such indicators are divided into three groups: indicators of economic transformation, indicators of resource efficiency, indicators of progress and prosperity;
- methods of assessing the financial policy of sustainable development based on the rating approach. This methodology is used by the Financial Monitoring Group of the Central

Office of Reforms at the Ministry of Community and Territorial Development of Ukraine (supported by the U-LEAD with Europe Program and the SKL International project) starting in 2019 (Assessment of financial management systems in integrated territorial communities, 2019). The method allows obtaining statistical information on the main indicators of financial support of the economy as a whole. It includes indicators of budgetary capacity; an indicator that characterizes the activities of the management staff of self-government bodies; an indicator that characterizes the financial capacity of households; as well as an indicator of capital expenditures, which characterizes the financing of investment and innovation activities.

To assess the financial policy of sustainable development of the state, the authors used a rapid assessment, which is based on the calculation of an integrated indicator and provides an analysis of the effectiveness of the main indicators of assessment of the above components. According to the analysis of works According to the analysis of works Borodkin and Aivazyan (2006), Kelly (1998), depending on the form of presentation of initial data and the purposes of integrated estimation, the most universal and rather simple in algorithmization is the aggregate approach to construction of an integrated indicator. This approach assumes that the source data are quantifiable indicators that are generalized by an object-property matrix, and the generalized indicator is calculated by aggregating the source indicators with an approximation of the structure of relations between objects.

Thus, the integrated indicator of financial policy of sustainable development of the state is a complex integrated assessment that takes into account all components of the financial policy of sustainable development and thus reflects the relationship between the various inseparable areas of its formation and implementation. It represents the importance of indicators that show the effectiveness of the formation and implementation of financial policy of sustainable development of Ukraine by its individual components. So they relate to: state budget policy (state budget revenues; state budget expenditures; state budget deficit); state tax policy (taxes on income, profits and increase in market value; rent and fees for the use of other natural resources; domestic taxes on goods and services); government monetary policy (inflation index; hryvnia devaluation index against the US dollar; total loans); state customs policy (receipt of import duties; foreign trade balance of goods and services (exports); foreign trade balance of goods and services (imports)); state investment policy (foreign direct investment in the economy of Ukraine; foreign direct investment from Ukraine; capital investment); public debt policy (the total amount of public and state-guaranteed debt; public debt service; repayment of public debt). In order to ensure the information unidirectionality of these indicators, they are divided into the following groups:

- explicit stimulators - indicators that under most conditions of use play a positive role, i.e. have a gradually increasing quality dependence, and therefore, the greater the value of the indicator the better quality of the object of evaluation;
- explicit disincentives - indicators that in most cases negatively affect the object of study, i.e. have a gradually decreasing quality dependence, and therefore, it is preferable to have a lower value of the indicator and, as a consequence a downward trend;
- stimulators-disincentives (nominators) - indicators that have an ambiguous quality dependence, if there is some value in the period of indicator change, which corresponds to the best quality of the object (Kvasnytska, 2016).

3.1 Algorithm for evaluating the effectiveness of public financial policy of sustainable development of the state

The following algorithm, proposed by the authors, implements the construction of an integrated indicator for assessing the effectiveness of public financial policy of sustainable development of the state:

1. input information data collection, i.e. the formation of data arrays for the definition and calculation of indicative indicators;
2. system of indicators determination which will become a part of the integral indicator. In this case, this system will include only metrics:

$$X = \{X_1, X_2, ..., X_n\}, \quad (1)$$

3. normalization of partial indicators with the establishment of compliance with larger values of better quality, i.e. reduction of their values to the segment [0; 1], which allows to obtain a generalized criterion in normal form. For further convenience, we will assume that the normalized amount has the same values of indicators as the initial;
4. correlation matrix calculation of R indicators. It is suggested to use pairwise correlation coefficients or correlation relations, depending on the form of the relationship between the indicators;
5. integrated indicator construction due to the certain steps. It should be mentioned that in the context of large-scale globalization of economic processes, the method based on the theory of effective competition is recommended as one of the most efficient to calculate an integrated indicator to assess the effectiveness of public financial policy of sustainable development of the state. After all, considering competitive processes at the level of individual states, nowadays economists use the very concept of "competitiveness", believing it to be a key attribute of such economic associations as countries and regions. Thus, according to the theory of effective competition, the algorithm for calculating the integrated indicator is carried out in according to the following sequential stages:

Stage 1. Unit indicators calculation that result in the formation and implementation of financial policy effectiveness of sustainable development of Ukraine for its individual components (Table 1) and the translation of indicators into relative values (points).

Stage 2. Criteria calculation of the formation and implementation of financial policy effectiveness for sustainable development of Ukraine.

Stage 3. Partial integrated indicators calculation by components of financial policy of sustainable development of Ukraine. Weighting factors are determined based on the weight of each indicator, which is allocated to assess a particular component of financial policy.

Stage 4. Final generalized indicator of financial policy of sustainable development efficiency of Ukraine calculation, which is determined as a linear convolution of partial integrated indicators. Weighting factors are identified based on the weight of each group of indicators. The indicators used in this work are taken for 2016-2020 according to official data of the Ministry of Finance of Ukraine (Statistical information, 2021), the National Bank of Ukraine (Financial sector statistics, 2021) and the State Statistics Service of Ukraine (Statistical information, 2021).

Therefore, it is recommended to use this algorithm to calculate the integrated indicator, which summarizes the financial policy of sustainable development of the state.

Table 1 - Indicators of state financial policy for sustainable development of Ukraine (based on its constituent components (2016-2020)

Indicators	2016	2017	2018	2019	2020
State Budget Policy					
State Budget Income, mln UAH	616274,8	793265,0	928108,3	998278,9	1076016,7
State Budget Expenses, mln UAH	684743,4	839243,7	985842,0	1072891,5	1288016,7
State Budget Deficit, mln UAH	-70130,2	-47849,6	-59247,9	-78049,5	-217096,1
State Taxation Policy					
Income Tax, VAT etc, mln UAH	114154,6	141945,3	188624,1	217040,4	225976,3
Rent for Use of Natural Resources, mln UAH	44092,2	48661,1	45265,7	46746,9	52475,7
Internal Taxes for Goods and Services, mln UAH	325628,5	422274,1	493360,6	502048,1	538896,2
State Monetary Policy					
Inflation Index, %	112,4	113,7	109,8	104,1	105,0
Devaluation Index UAH vs USD, %	112,2	104,5	99,3	85,5	119,4
Overall Amount of Credits, mln UAH	1005923	1042798	1118618	1033539	963664
State Customs Policy					
Clearance Duty Income, mln UAH	20001	24542	26560	29855	32125
Foreign Trade Balance of Goods and Services (export), mln UAH	1174625	1430230	1608890	1636416	1637399
Foreign Trade Balance of Goods and Services (import), mln UAH	-1323127	-1618749	-1914893	-1947599	-1681526
State Investment Policy					
Direct Investment in Ukrainian Economy, mln USD	3810	3692	4455	5860	-868
Direct Investments from Ukraine, mln USD	16	8	-5	648	82
Capital Investment, mln UAH	359216,1	448461,5	578726,4	623978,9	508217,0
Public Debt Policy					
Overall Amount of State and State-Guaranteed Debt, mln UAH	1929758,7	2141674,4	2168627,1	1998275,4	2551935,6
Public Debt Service, mln UAH	95865,9	111338,4	115445,2	119205,3	141582,4
Public Debt Repayment, mln UAH	111476,3	129559,0	234578,4	345247,1	585139,6

Source: Ministry of Finance of Ukraine (Statistical information, 2021), National Bank of Ukraine (Financial sector statistics, 2021), State Statistics Service of Ukraine (Statistical information, 2021)

The analysis of the selected indicators according to the components of the state financial policy of sustainable development of Ukraine, which are given in Table 1, allows us to draw the following conclusions. The largest amount of the state budget deficit is in 2020. Compared to 2016, its growth was 109,6%. The growth rate of tax revenues in recent years is positive, and in 2020, compared to 2016 – 97,9%. The devaluation index of the hryvnia against the US dollar in 2020 exceeded the mark of 119,4%. Thus, there is a decrease in government intervention in the redistributive processes of monetary policy. In Ukraine, there is a negative trend associated with foreign direct investment. Thus, in 2020, an outflow of investments in the amount of almost 868 million dollars was recorded. USA (222,8%). In the National Bank of Ukraine, the outflow is associated with the withdrawal of reinvested earnings of enterprises and companies in the real sector of the economy. In 2020, the total public and state-guaranteed debt of Ukraine increased, compared to previous years. Compared to 2016, its growth was 32,3%. The growth of financial indicators-disincentives of the state in recent years may pose a threat to the functioning of the economy, namely to slow down the implementation of socio-economic strategy of sustainable development. Therefore, it is important to forecast the dynamics of these indicators for the future. This task is realized precisely through the calculation of the integrated indicator that characterizes the state financial policy of sustainable development of Ukraine.

4 Results and Discussion

In accordance with the six components of the state financial policy of sustainable development of Ukraine described above and individual indicators that characterize the effectiveness of each component, the calculated indicators were translated into relative values using points, as follows:

- 5 points - if the indicator is the lowest in the analyzed period;
- 10 - if the indicators are equal to each other;
- 15 points - if the value of the indicator is the largest in the analyzed period.

On the basis of such translation of absolute indicators into relative, the point expression of indicators of the state financial policy of sustainable development of Ukraine is received (Table 2).

Table 2 – Indicators (values) of state financial policy for sustainable development of Ukraine by its constituent components (2016-2020)

Indicators	2016	2017	2018	2019	2020
	Points				
State Budget Policy (SBP)					
State Budget Income (SBI)	5	10	10	10	15
State Budget Expenses (SBE)	15	10	10	10	5
State Budget Deficit (SBDef)	10	15	10	10	5
State Taxation Policy (STP)					
Income Tax, VAT etc (Tax)	5	10	10	10	15
Rent for Use of Natural Resources (Rent)	5	10	10	10	15
Internal Taxes for Goods and Services (IntTax)	5	10	10	10	15
State Monetary Policy (SMP)					
Inflation Index (InfInd)	10	5	10	15	10
Devaluation Index UAH vs USD (DevInd)	10	10	10	15	5
Overall Amount of Credits (AmCred)	10	10	15	10	5
State Customs Policy (SCP)					
Clearance Duty Income (ClDuty)	5	10	10	10	15
Foreign Trade Balance of Goods and Services (export) (FTB (exp))	5	10	10	10	15
Foreign Trade Balance of Goods and Services (import) (FTB (imp))	15	10	10	5	10
State Investment Policy (SIP)					
Direct Investment in Ukrainian Economy (DirInvest in Ukr)	10	10	10	15	5
Direct Investments from Ukraine (DirInvest from Ukr)	10	10	15	5	10
Capital Investment (CapInvest)	5	10	10	15	10
Public Debt Policy (PDP)					
Overall Amount of State and State-Guaranteed Debt (StateDbt)	15	10	10	10	5
Public Debt Service (DebtServ)	15	10	10	10	10
Public Debt Repayment (Repay)	5	10	10	10	15

Source: authors' own processing

Calculation of criteria to measure effectiveness of public financial policy for sustainable development of Ukraine was carried out according to formulas that take into account the value of each criterion and indicator, due to the fact that they were calculated expertly, as each component of public financial policy Ukraine and the indicators that characterize them have different degrees of importance. Thus, the criteria have the following meanings: state budget policy (SBP - 0.2); state taxation policy (STP - 0.18); state monetary policy (SMP - 0.17); state customs policy (SCP - 0.14); state investment policy (SIP - 0.15); public debt policy (PDP - 0.16).

Thus, the effectiveness of state financial policy for sustainable development of Ukraine (SFPSD (Ukraine)) can be determined by the method of weighted arithmetic mean:

SFPSD (Ukraine) = 0,2SBP + 0,18STP + 0,17SMP + 0,14SCP + 0,15SIP + 0,16PDP

Each criterion can be calculated as follows:

1. SBP = SBI*0,45 – SBE*0,35 – SBDef *0,2;
2. STP = Tax *0,4 + Rent *0,25 + IntTax *0,35 ;
3. SMP = InfInd *0,45 – DevInd *0,3 + AmCred *0,25 ;
4. SCP = ClDuty *0,3 + FTB (exp)*0,45 – FTB (imp)*0,25 ;
5. SIP = DirInvest in Ukr *0,55 + DirInvest from Ukr *0,15 + CapInvest *0,3 ;
6. PDP = StateDbt *0,45 – DebtServ *0,15 + Repay *0,4.

The dynamics of the effectiveness of the state financial policy for sustainable development of Ukraine for 2016-2020 is presented in table 3.

Table 3 - Dynamics of the integrated indicator of the effectiveness of state financial policy for sustainable development of Ukraine for years 2016-2020

Criterial components of state financial policy for sustainable development	Years				
	2016	2017	2018	2019	2020
State Budget Policy (SBP)	5,5	5	6	6	7,5
State Taxation Policy (STP)	5	10	10	10	15
State Monetary Policy (SMP)	4	1,75	5,25	4,75	4,25
State Customs Policy (SCP)	0	5	5	6,25	8,75
State Investment Policy (SIP)	5,5	7	6,25	12	4,25
Public Debt Policy (PDP)	6,5	7	7	7	6,75
Integrated indicator of the effectiveness of state financial policy for sustainable development	4,545	5,9675	6,65	7,6025	7,865

Source: authors' own processing

The data in Table 3 represent the steady growth of the overall indicator of the effectiveness of state financial policy for sustainable development of Ukraine for 2016-2020. Harmonization of the determinants of the main components of state financial policy for sustainable development make it possible to raise to a higher level of efficiency both the process of forming the state financial policy for sustainable development and its implementation while taking into consideration trends in various spheres of financial sector. Thus, sustainable development of Ukraine can be ensured only through the implementation of state financial policy, as it is the basis for creating prerequisites for balanced growth of financial resources of the state, and hence the basis for socio-economic programs of sustainable development of the country and its regions.

5 Conclusion

The study shows that the problem of ensuring the sustainable development of the state must be addressed by taking into account the condition of economic, environmental and social components, as well as a set of factors influencing state financial policy. An important component of the economic dimension of sustainable development is the state financial policy for its sustainable development, the effectiveness of which is an integrated assessment that takes into account all components of financial policy for sustainable development and, thus, reflects the relationship between different inseparable areas of its formation and implementation.

According to the authors, the integrated indicator embodies the value of indicators that result in the effectiveness of the formation and implementation of financial policy for sustainable development of Ukraine for its individual components, and thus are directly related to: state budget policy; state taxation policy; state monetary policy; state customs policy; state investment policy; public debt policy. In the context of large-scale globalization of economic processes, to calculate the integrated indicator in order to assess the effectiveness of state financial policy for sustainable development, it is advisable to use a method based on the theory of effective competition. The analysis of the obtained results of the assessment of the effectiveness of the state financial policy of Ukraine in 2016-2020 shows an annual increase in the value of the integrated indicator, i.e. an increase in the effect of Ukraine's chosen state financial policy for its sustainable development. The application of the methodology for assessing the effectiveness of the financial policy for sustainable development of the state makes it possible to determine the condition and potential for sustainable development of a country and forecast it taking into account the dynamic conditions of the economy of a country. There has been no comparative analysis according to other countries so far. However, such an analysis is a prospect to continue the study, which will ensure comparative analysis of the effectiveness of management decisions at the state level in different countries to see the vector prospects for sustainable development of Ukraine.

References

[1] AHMED, F., KOUSAR, S., PERVAIZ, A., SHABBIR, A. (2021). Do institutional quality and financial development affect sustainable economic growth? Evidence from South Asian countries. *Borsa Istanbul Review.* Vol. 21 (3). [online]. [cit.2021-09-04]. Available from https://www.sciencedirect.com/science/article/pii/S2214845021000259. (Indexed in Scopus).

[2] BIST, J. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non-African low-income countries. *Cogent Economics & Finance*. Vol. 6 (1), p. 1449780. (indexed in Scopus)

[3] BORODKIN, F., AIVAZYAN, S. (2006). Social indicators: textbook. for students. of universities. Moscow. : Unity-Dana.

[4] CLARK, R., REED, J., SUNDERLAND, T. (2018). Bridging funding gaps for climate and sustainable development: Pitfalls, progress and potential of private finance. Land Use Policy. Vol. 71, pp. 335-346. (indexed in Scopus)

[5] DABBOUSA, A., TARHINIB, A. (2021). Does sharing economy promote sustainable economic development and energy efficiency? Evidence from OECD countries. *Journal of Innovation & Knowledge.* Vol. 6, pp. 58-68. (Indexed in Scopus).

[6] DALY, H., COBB, J. (1989). For the common good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future. Boston: Beacon Press, 1989.

[7] DANILISHIN, B., SHOSTAK, L. (1999). *Sustainable development in the system of natural resource constraints.* Kiev: National Academy of Sciences of Ukraine.

[8] DECISION OF THE NBU COUNCIL (2020). The basic principles of monetary policy for 2021 and the medium term. [online]. [cit.2021-02-09]. Available from https://bank.gov.ua/admin_uploads/article/MPG_2021-mt.pdf?v=4/

[9] DOROGUNTSOV, I., RALCHUK, O. (2002). Sustainable Development and Security: Communication Aspects. Kiev: Knowledge of Ukraine.

[10] EUROPEAN UNION (2021). EU Tax Policy Strategy. [online]. [cit.2021-02-10]. Available from https://ec.europa.eu/taxation_customs/general-information-taxation/eu-tax-policy-strategy_en/

[11] GOLDSTEIN, D. (2001). Financial sector reform and sustainable development: the case of Costa Rica. Ecological Economics. Vol. 37 (2), pp. 199-215. (indexed in Scopus)

[12] GOSSLING-GOIDSMITHS, J. (2019). Sustainable development goals and uncertainty visualization. *Proceedings of the International Cartographic Association*. Vol. 2, pp. 8-9.

[13] INSTITUTE OF BUDGET AND SOCIO-ECONOMIC RESEARCH. Assessment of financial management systems in integrated territorial communities. [online]. [cit.2021-09-01]. Available from https://decentralization.gov.ua/uploads/attachment/document/614/PFM_UKR.pdf.

[14] INTERNATIONAL CONFERENCE ON FINANCING FOR DEVELOPMENT. *Monterrey Consensu* [online]. [cit.2021-09-01]. Available from http://www.un.org/esa/ffd

[15] KELLY, K. (1998). A systems approach to identifying decisive information for sustainable development. European Journal of Operational Research. Vol. 109 (2), pp. 452-454. (indexed in Scopus)

[16] KVASNYTSKA, R. (2016). Systematization of indicators for assessing the effectiveness of the formation and use of investment potential of financial market institutions. *Finance in the modernization of the regional economy: Proceedings of the International scientific-practical conference*, Kyiv.: LLC "CP" COMPRINT", pp. 40-42.

[17] MAKSYUTA, A., CHUGUNOV, I. (2012). The budgetary component of social development. Bulletin KNTEU. Vol. 3, pp. 45-54.

[18] MAYER GERALD, M., RAUCH JAMES, E., FILIPENKO, A. (2003). *The main problems of development economics*. Kiev: Lybid.

[19] MINISTRY OF ECONOMIC DEVELOPMENT, TRADE AND AGRICULTURE OF UKRAINE (2019). Medium-term strategy for public debt management for 2019-2022. [online]. [cit.2021-02-09]. Available from https://mof.gov.ua/uk/osnovna-informacija.

[20] MINISTRY OF FINANCE OF UKRAINE (2021). Customs policy. [online]. [cit.2021-02-09]. Available from https://mof.gov.ua/uk/customs-policy/

[21] MINISTRY OF FINANCE OF UKRAINE (2021). *Statistical information.* [online]. [cit.2021-07-26]. Available from https://mof.gov.ua/uk.

[22] NATIONAL BANK OF UKRAINE (2021). *Financial sector statistics*. [online]. [cit.2021-07-26]. Available from https://bank.gov.ua/ua/statistic/sector-financial/data-sector-financial.

[23] RUDENKO, L., GORLENKO, I. (1996). Fundamental principles of sustainable regional development and their implementation in Ukraine. *Geographic problems of*

sustainable development strategies for the natural environment and society. Moscow: RAN.

[24] STATE STATISTICS SERVICE OF UKRAINE (2021). *Statistical information.* [online]. [cit.2021-07-26]. Available from http://www.ukrstat.gov.ua/.

[25] UNITED NATIONS. *United Nations Environment Program* (UNEP). [online]. [cit.2021-09-01]. Available from https:// https://www.unep.org/.

[26] VERNADSKY, V. (1978). *Living material*. Moscow: Science.

[27] VOVK, V. (2020). The formation of public financial policy as a determinant of sustainable development under the impact of globalization processes. Problems and Prospects of Economics and Management. Vol. 2 (22), pp. 168-177.

Contact information

Raisa Kvasnytska – Doctor of Economic Sciences, Professor
Khmelnytskyi National University, Faculty of Economics and Management, Department of Finance, Banking and Insurance
Institutska St, Khmelnytskyi, Ukraine
E-mail: rstepanivna@gmail.com

Inna Dotsenko – PhD, Associated Professor
Khmelnytskyi National University, Faculty of Economics and Management, Department of Finance, Banking and Insurance
Institutska St, Khmelnytskyi, Ukraine
E-mail: innochka.docenko@gmail.com

Lesia Matviichuk – PhD, Associated Professor
Khmelnytskyi National University, Faculty of Economics and Management, Department of Finance, Banking and Insurance
Institutska St, Khmelnytskyi, Ukraine
E-mail: matvijchuk.lesya@gmail.com

E-Government in the Czech Republic: Digital Constitution and Subsequent Legal Developments

Tomáš Lechner, Lenka Vaňková

Abstract: The paper deals with the legal analysis of the last two acts concerning eGovernment in the Czech Republic. The article places these regulations in the context of the current use of electronic public services and compares the new regulations with the theses of the strategic document Information Concept of the Czech Republic. The results of the analysis are not auspicious and call into question the spontaneous labelling of the first one of the discussed regulations by the digital constitution. This regulation brings no new category of electronic public service and has rather declaratory meaning. Our research shows that these new regulations have unfortunately very little potential to increase the use of electronic public services by citizens and they do not contribute to increasing the quality of legal regulation of eGovernment in the Czech Republic.

Keywords: Digital Public Services, EGovernment development, EGovernment projects, Public Services Regulations

JEL Classification: K23, K24, H11, H43

1 Introduction

The electronization of public administration is a process which, from the principle of public administration, has various limitations compared to the development of ICT in the private sector. These limitations, which are discussed by various authors [7], [9], [17], include for example digital divide, limited budgetary resources, conflict of interest, departmentalism, eGovernment service marketing, and staffing issues. However, the limitation given by the legislative framework is clearly the most significant, as it is already given by the Constitution of the Czech Republic, the public administration may only do what the law explicitly requires it to do. Similar legislation applies in other European countries as well. Therefore, the amendment of the relevant regulations is an inseparable step in the process of electronization of public administration. The importance of legal entrenchment of the specific rules for electronic public administration is discussed by different authors, e.g. [13], [16], [18], [21], [22]. On the other hand, the results of analyses of various eGovernment projects [7], [9], [13], [16], [17] show that this is only a necessary condition, but not a sufficient one for eGovernment to actually develop and meet the expectations associated with it.

In principle, the legal regulations, which regulate eGovernment in the European countries, can be divided into two groups:

- special regulations that directly regulate new electronic tools and institutes, such as the eIDAS regulation regulating, among other things, electronic signing, or the act on cyber security;
- changes in general procedural codes, such as the Administrative Procedure Code or the Tax Code, which open the possibilities for the application of electronic tools and institutes by public authorities.

Both changes must be made simultaneously, because without process changes, new tools cannot be used, and vice versa. Not only for public administration, but in general, it is valid that, if information and communication technologies are to contribute to productivity growth, in case of public administration it means to increase efficiency, their introduction must be associated with

restructuring of processes within the organizations [1], [7], [13]. The study [20] shows that most of fundamental changes in legal regulations paving the way for the development of eGovernment were approved in most European countries as early as the second half of the 1990s or at the turn of the 20th and 21st centuries. Nevertheless, the electronization of public administration is not developing too fast, as evidenced by studies from 2010 [5] and 2015 [6]. A certain lack of success of eGovernment projects is a common problem, which crosses border of the European Union. According to [10] the proportion of eGovernment projects failing (total or partial) in the first decade of the 21st century was between 60 and 85 %.

Within the European Union, improving regulation of eGovernment is integrated into the strategy of building a digital single market [6]. One of the applied methods is gradually replacing the original directives in various ways implemented into national legal systems by new regulations of the European Parliament and of the Council. In this context, we should mention following regulations:

- the Regulation (EU) No 910/2014 of the European Parliament and of the Council on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC (the eIDAS Regulation) (for details see for example [3]) or
- the Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (for details see for example [25]).

And in this situation, a completely new regulation, which has no equivalent in the European Union, and which covers a relatively wide issues of eGovernment, has been approved in the Czech Republic. We mean the Act No. 12/2020 Coll., On Rights of Digital Services, which is sometimes called the Digital Constitution, and this may be due to the extent of regulation and declaratory content, not thanks to the legal status, because it is not a constitutional act. Following this regulation, another relatively comprehensive amendment act has currently been approved, which amends some acts in connection with further electronization of public authority procedures.

The aim of the paper is to evaluate the quality of these new legal regulations and their potential impact on the further development of eGovernment in the Czech Republic in the context of the current use of public digital services. Especially, we try to answer the following questions:

- What makes this regulation so special that it is spontaneously called the Digital Constitution? What is really new within this act?
- Do these regulations fit into the concept of the current development of electronic public administration, both within the Czech Republic and within the European Union?
- How do these regulations increase the potential for the use of electronic public services and how could they contribute to increasing the efficiency of public administration in the Czech Republic?

The answers to these questions will also confirm or refute the basic thesis of the paper, which is: These regulations contribute to the quality of legal regulation of eGovernment in the Czech Republic and have the potential to increase the use of electronic public services by citizens in the Czech Republic.

2 Methods and analyses

The basic method used in this paper is a legal analysis of these two mentioned regulations:

- The Act No. 12/2020 Coll. On Rights of Digital Services (hereinafter only RDSA);
- The Act No. 261/2021 Coll., which amends certain acts in connection with further electronic procedures of public authorities (hereinafter only FEPA).

For a deeper analysis of the context, methods of comparison of legal regulations and strategic documents are used as well.

The current level of eGovernment development in the Czech Republic is investigated by calculations based on the results of a survey by the Czech Statistical Office and on the basic statistical analysis of open data on the use of Data Mailboxes provided by Ministry of the Interior, which are presented in the survey "Information Society in Numbers 2021: the Czech Republic and the European Union" [4] as well. The investigated data correspond to the usage of electronic public services just before the approval of the analysed regulations, thus in 2019.

2.1 Digital Constitution

The history of the RDSA itself is already worth attention. The initiative for this act came from the private sector. Specifically, the Information Technology and Telecommunication Association (ICTU), which is a professional association of companies active in the field of information technology and electronic communication, as well as other areas such as business and education [11], in response to the slow development of electronic public administration in the Czech Republic, it presented the basic ideas of this new legal regulation [23]. This fact correlates with the opinion that development of eGovernment is more supply-driven than demand-driven [8], [9], [10], [12], moreover there are studies, which show that demand for electronic communication with the public administration could be lower than its supply [2].

Another specificity of the RDSA is that it has spread effectiveness over a relatively long period of five years (see Table 1). It could be said that this is not only the act, but that it also plays the role of a long-term plan for the development of electronic public administration, which is otherwise supported in the Czech Republic by the strategic document "Information Concept of the Czech Republic" [19]. This document sets out objectives of the Czech Republic in the field of public administration information systems and the general principles of acquisition, creation, administration, and operation of public administration information systems in the Czech Republic for the period 2020 to 2025, which fully correlates with the spread effectiveness of the RDSA. At the end of this period, according to § 14 of the RDSA, all acts contained in the catalogue of services must also be provided as digital services or must be performed as digital acts.

Table 1 – Spread effectiveness of the Act No. 12/2020 Coll. On Rights of Digital Services

Entrance into force	The main change
1st of February of 2020	General entrance into force
1st of August of 2020	Introduction of register of public administration information systems and change in the Act on Basic Registers
1st January of 2021	Establishment of cloud computing catalogue
1st February of 2022	New rights: the right to a digital act certificate, the right to replace an officially verified signature, the right to use data, the right to register a right, obligation or legal fact, and also the right to enter contact details
1st January of 2025	Completion of the catalogue of services, full provision of digital public services and the administrator of the agenda information system must implement mechanism for correcting incorrect data kept in the agenda information system and further provide notification service about data changes kept in the agenda information system

Source: Own research of this Act

The RDSA defines the following terms:

- The service user is defined as a natural person or a legal entity, who is provided with a digital service by a public authority or who performs a digital act towards a public authority. As positive side of this definition can be seen a clear declaration of communication partner of public administration as a service user, which follows the basic theses of New Public Management [24], which, among other things introduces the public administration orientation towards citizens as consumers. So far, this approach has appeared in the strategic documents for the development of public administration since 2007 (discussed in [18]), however this is the first case of using this approach in legislation of the force of law.
- A digital service, which means an act performed by a public authority towards a user of a service within the agenda and kept in the catalogue of services as an act in electronic form. Unlike the first case, the evaluation of this definition is no longer positive. On the one hand, it mixes the attributes electronic and digital, the distinction of which is generally poor in legal regulations [22] and on the other hand there is a direct link only to the catalogue of services, which is subsequently questioned in § 14 paragraph 5. Furthermore, this definition is not compatible with the definition in Act No. 181/2014 Coll., on Cyber Security, which will cause application difficulties, as it will be always necessary to specify exactly what the definition of digital service is.
- A digital act is defined as a specific form of a legal act in electronic form, however again only with reference to the act kept in the catalogue of services. There is no duplicate definition in another legal regulation, but the restriction only to the catalogue of services again places significant demands on the quality of this catalogue and is questioned in the same way as the previous term above in § 14 paragraph 5.
- A catalogue of services is a part of the data kept in the basic register of rights and obligations, which is one of the basic registers of public administration. In particular, the data relate to the actions of public authorities performed within the agenda towards entities that do not have the status of public authorities and the actions of entities that do not have the status of public authorities in their performance towards public authorities. This means that the provision of digital services and the ability to perform digital action is fully subject to the catalogue of services, which is now being built, however it is based on the existing registration of agendas, the quality of which we have thoroughly analysed already in previous articles [14] and [15]. We showed that this registration including activities and roles was not kept in a very good quality, because agendas were described in a heterogeneous and sometimes also in an inaccurate way, and there occurred frequent changes, many of which are not supported by justifiable reasons resulting from change in relevant legal regulations.

The RDSA regulates a total of 11 areas, the schedule and basic content of which are listed in the Table 2.

Table 2 – Regulated areas by the Act No. 12/2020 Coll. On Rights of Digital Services

The Right	Analyses
The right to a digital service	The user of the service has the right to use the digital service, but non-business natural persons cannot be forced to use digital services or perform digital acts. A public authority has an obligation to provide a digital service, but this obligation does not apply to local authorities that have "only" the right to provide this service.
The right to perform a digital act	The law specifies five different communication channels, through which a digital act can be performed. These are Data Mailboxes, contact points of public administration (CzechPOINT), electronic communication network (e-mail), public administration information system allowing proving identity of the service user by using electronic identification or another method according to another legal regulation.
The right to a digital act certificate	A digital act certificate is provided to increase the certainty of the performed act. However, it has no other procedural influence. The wording of this right is the most debatable and ambiguous.
The right to replace an officially verified signature or an accredited electronic signature	As the eIDAS regulation stipulates that the highest level of an electronic signature, a qualified signature, has the same legal effects as a handwritten signature, this right is a solution for an officially verified electronic signature that cannot otherwise be implemented under the eIDAS regulation. In addition, the new procedures can replace also a recognized electronic signature. Only this right can be considered as fundamentally new.
The right to use data	The provision of § 7, which states that a public authority does not require data kept in the basic register or agenda information system, which are made available for the performance of the agenda or on the grounds of the service user´s consent, is basically duplicate to the provisions in the Act No.111/2009 Coll., on Basic Registers.
The right to register a right, obligation or legal fact	This is a completion of the original idea of a register of rights and obligations, namely that a service user has the right to enter in that register a right, obligation or legal fact, which concerns him or her and which arises from an act of a public authority listed in the catalogue of services.
The right to prove a legal fact	The practical impact of this right is that the user of the service is not obliged to submit a decision, document, identity card, certificate or provide any other data to exercise his or her right, fulfil an obligation or document a legal fact concerning him or her if he or she has proved his or her identity and data about him or her or about his or her rights, obligations or legal facts concerning him or her are kept in the basic register or agenda information system and are made available towards public authority for the performance of the agenda. This, proof of identity, for example by means of an identity card, can replace all other documents, provided that the above mentioned conditions are met.

The Right	Analyses
The right to enter contact details	The user of the service has the right to enter the contact details about the electronic address or the telephone number in the basic registers for sending information under this Act and for sending another information related to the provision of digital services, the scope of which he or she chooses.
The right to information in connection with the provision of digital services	The declaration that the user of the service is entitled to access the data kept about him or her in the basic registers and agenda information systems only repeats the same as already provided by the GDPR. However, an extension is also given here, which could be named the right to notifications of the expiry of documents.
The right to electronic identification and authentication	The right to electronic identification and authentication already follows from the eIDAS regulation and Act No. 250/2017 Coll., on electronic identification. Here it is only defined how to proceed in case of absence of a provision on the minimum level of guarantee of electronic identification for the use of digital services. It is stipulated that the minimum level must be significant (For details about different assurance levels of electronic identification schemes see [3]).
The right to technological neutrality	This right includes, on the one hand, the independence of the provision of digital service on a specific platform or technology, and, on the other hand, the strengthening of the provision of data in and open machine-readable data form (About usage of open data within eGovernment see for example [28]).

Source: Own research of this Act

2.2 Subsequent Legal Developments

From the analysis of the RDSA follows that this regulation covers all general approaches of the eGovernment and builds on already established general tools such as information system of data mailboxes [12], [18], and basic registers [15], [18] and basically only completes some minor functionalities, which however may have essential meaning for the service users, such as notification of the expiration of the document. However, there are also new approaches, which will need to be both specified by implementing regulations (for which, however, there is still total lack of authorization) and applied in procedural legislation (the second category of changes according to the initial categorization). It can be expected that during the entire period of spread effectiveness of this regulation, other regulations will be submitted and approved, which should hopefully together create digitally friendly legislation, as discussed in the Information Concept of the Czech Republic – see [19] chap. 4.2.

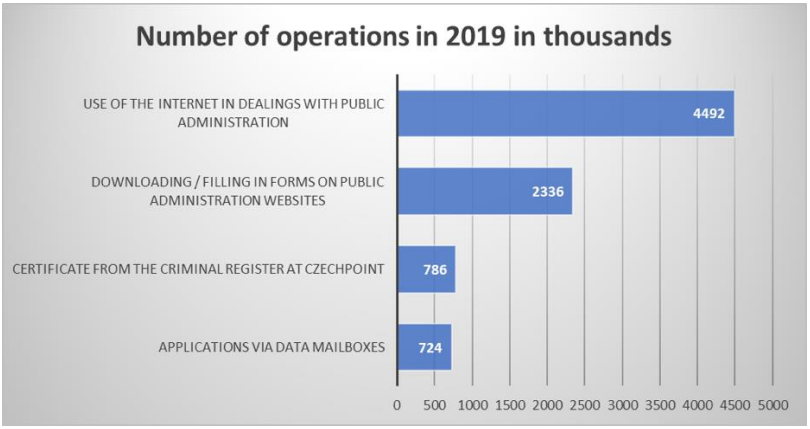
However, the subsequent legal development takes place in a very confusing and complicated atmosphere, and it certainly does not contribute to the qualities of the legal basis of eGovernment. Its current product is the FEPA, which came into force on July 10, 2021. As the RDSA amended 9 other acts and brought 11 specified rights, the exercise of which is spread over five acts of effectiveness, then FEPA amends 169 acts and has 13 (really thirteen!) different spread acts of effectiveness, the range of which correlates with the RDSA. It is therefore another regulation, which is a combination of a legal norm and a long-term development plan, which could indicate the conceptuality of the approach, however a deeper analysis of this regulation reveals some internal discrepancies resulting from spread effectiveness as well as the conflict with the original RDSA.

As an example of a conflict can be presented the provision of the Article CXLII that a natural person´s data box shall be set up free of charge and without delay by Ministry of the Interior for a natural person, who is registered in the basic register of inhabitants and has full legal capacity after the natural person has used for the first time a tool for an electronic identification issued within a qualified system of electronic identification towards the entity that enables proving identity in accordance with the law governing electronic identification. This is a clear contradiction in connection with the provision of § 14 RDSA, which stipulates that non-business natural persons may not be forced to use digital services. If, at the time when a natural person uses an electronic identification tool issued under a qualified electronic identification system to prove his or her identity towards some online public service provided by a public authority (and it does not have to be a digital service under the RDSA), he or she does not have a data box yet, it is probably because he or she does not want to use it. Its automatic establishment, which results, for example, in a change in the delivery of public authorities to this person, is therefore clearly in conflict with the quoted provision of § 14 RDSA.

As mentioned, the scope of regulation included in the FEPA is huge and it has impact on many processes. These impacts cannot be summarised simply, so we present here only illustrative examples. The necessary amendment to the verification acts, in which the process of official verification of the electronic signature is introduced, can be assessed positively. According to [26], public authorities should create incentives to popularize electronic signatures. There is also a positive regulation of access to the basic registers, which reflects the criticism of the principles of personal data protection made in [15]. The last positive benefit is in the area of provided open data. For example, official boards of all municipalities with extended authority will have to start being provided in this form, i.e. in the form of open data, which is consistent with the concept of open public administration [27].

In addition, the FEPA contains a number of more or fewer unrelated additions and changes that in the overall context seem clearly inconsistent and will bring procedural complications. An example is the provision of Article LXXX, which states: „An act that requires a signature of the person performing it, made through a public information system, shall be deemed to be signed if the public information system allows proof of the identity of the person performing the act, using electronic identification, the authorization of the act by the performer and the retrospective demonstration of the will of the performer.“ This is another creation of signature fiction, which is similar to the signature fiction introduced in the Data Mailboxes, and which still suffers from procedural problems [22].

Figure 1 – Usage of electronic public services by inhabitants of the Czech Republic in the year 2019
Source: Own calculation based on data presented by Czech Statistical Office [4].



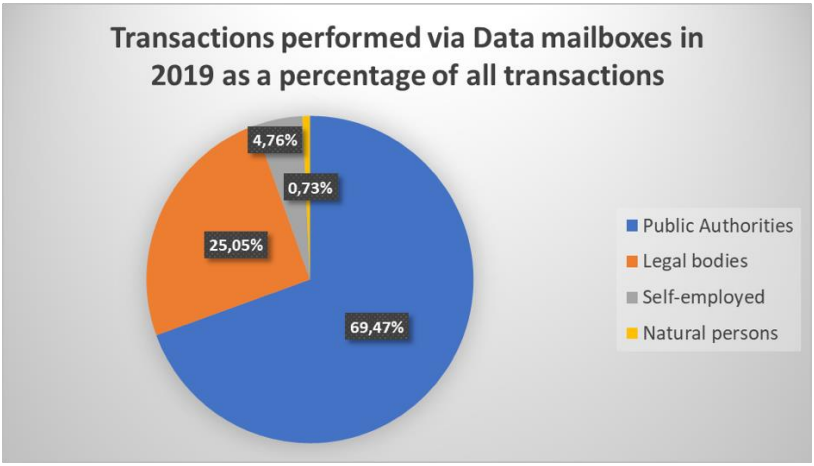
2.3 Actual Use of Public Digital Services

Following the fact that the RDSA has spread effectiveness, within which the main application of rights will take place from February 2022 to January 2025, the current state of use of eGovernment services is a state, which from the point of view of this "plan", is actually a default state. It will be possible to carry out an assessment of the actual impacts only after the end of this period, and what we are now evaluating is the potential benefit of this legal regulation.

The current state of actual use of electronic public services, i.e. what the RDSA calls a digital service, is shown in Figure 1. The two highest values are recalculated from the statistical survey of the Czech Statistical Office [4] according to the current population in the age category 16+ also presented by this office and are thus burdened with a corresponding error. While the two lower values are the actual number of transactions recorded by the operated public administration information systems.

The current use of the key tool of Czech eGovernment used for trustworthy electronic communication, i.e. Data Mailboxes, evident from Figure 2. This result clearly shows that the interest of natural persons in using communication via ISDS is small, which can be related to the above discussed FEPA provision on automatic establishment of Data Mailboxes for these persons.

Figure 2 – Transactions performed via Data Mailboxes
Source: Czech Statistical Office and open data presented by Ministry of the Interior [4].



3 Results and Discussion

The analysis of the RDSA clearly shows that this is a more declaratory standard than a real shift in the possibilities of electronic public administration. All communication tools for the right to perform a digital act have been already operating in the Czech Republic for many years (e-mail registries were established in 2001 and Data Mailboxes in 2009 [18]). Also, in terms of categorization of eGovernment projects carried out in [17], the RDSA does not bring any new project category. The motivations for the approval of this standard actually are (even according to the explanatory memorandum to the law) to influence the public administration so that it would accept internally the development of its own electronization and not reject it. This approach can also be noted in the European standards, e.g. Article 25(1) of the Regulation eIDAS says that an electronic signature shall not be denied legal effect and admissibility as evidence in legal proceedings solely on the grounds that it is in an electronic form or that it does not meet the requirements for qualified electronic signatures. It means that this approach of the RDSA is consistent with the European one.

It means that it must be precisely the extent of regulation and the declaratory approach that lead to the RDSA being spontaneously referred to as the Digital Constitution. However, it is not clear that these approaches have the potential to increase the electronization of public administration, as many formulations are insufficient, ambiguous and even sometimes associated with disproportionate cost increases. E.g. the right to a digital act certificate includes provision that this certificate must be supported by a qualified electronic seal and a qualified electronic time stamp of a public authority. But in all other provisions concerning electronic records possibilities of using both a qualified electronic signature and a qualified electronic seal are open, because using of a qualified electronic signature is much cheaper than using of a qualified electronic seal.

The related provision of the amended § 9 of Act No. 634/2004 Coll., on Administrative Fees, which states that the Administrative Office will reduce the fee by 20 %, but not by more than 1 000 CZK, if the application or another proposal to perform the act is submitted on an electronic form published in accordance with the law governing the right to digital services, could have a

certain potential for increasing the interest of persons in using eGovernment services. This does not apply if the application or another proposal cannot be submitted in another form than on this electronic form. The fee discount is rounded up to the full crowns. However, a similar effort was already being made at the beginning of the development of electronic registries and had no demonstrable impact [13].

As the results of the current use of eGovernment services show, these services are clearly used more by legal entities than by natural persons and among natural persons there is an interest in simple services regardless of the costs involved, as shown in the analyses in [13]. Thus, it seems that the motivations introduced in the RDSA, with one exception of the right to notification, are not in line with what could contribute to increasing the use of electronic public services by citizens in the Czech Republic. And this does not apply at all to the subsequent development in the form of the FEPA, where, moreover, there is a conflict with the declarations in the RDSA.

Thus, we can summarize the answers to the research questions as follows:

- No new category of electronic public service is described in the RDSA. This regulation has only a rather declaratory meaning.
- These regulations fit into the concept of the current development of eGovernment, both within the Czech Republic and within the European Union, but there could be found internal contradictions in these regulations.
- The RDSA brings some new motivations, but it seems they are not in line with what could really contribute to increasing the use of electronic public services by citizens.

All this means, that the basic thesis of the paper was refuted.

4 Conclusion

The performed legal analysis of current new regulations concerning the development of electronic public administration in the Czech Republic showed that these regulations do not meet expectations, do not provide necessary motivations for the actual development of electronic public services and increase the opacity of the resulting regulation. Although one of the goals of the "Information Concept of the Czech Republic" for the period 2020 to 2025 is the creation of digitally friendly legislation, the regulations analysed so far have met these goals insufficiently. The analysed regulations contain a number of conflicting and ambiguous provisions and in some cases even excessively and unjustifiably increase the costs of providing digital public administration services. The results of our analysis call into question the spontaneous labelling of the RDSA by the digital constitution and shows that analysed regulations do not contribute to the quality of legal regulation of eGovernment in the Czech Republic and have very little potential to increase the use of electronic public services by citizens in the Czech Republic.

Acknowledgements

This paper was supported by the project VŠE IGS F5/38/2021.

References

[1] ATKESON, A., KEHOE, P.J. (2007) Modeling the Transition to a New Economy: Lessons from Two Technological Revolutions. *The American Economic Review* 2007, Vol. 97, No. 1, pp. 64-88.

[2] BRYCHTOVÁ, Š., DUPLINSKÝ, J. (2003) Percepce postojů občanské veřejnosti a komunikace s municipalitou. *Scientific papers of the University of Pardubice. Series D.* Vol. 8., pp. 4–23.

[3] CUIJPERS, C. M. K. C., SCHROERS, J. (2014) eIDAS as guideline for the development of a pan European eID framework in FutureID. *Gesellschaft fur Informatik*. Vol. 23, No. 7, pp. 23-38.

[4] CZECH STATISTICAL OFFICE. (2021). *Informační společnost v číslech – 2021*. [online]. [cit. 2021-06-29]. Available: https://www.czso.cz/csu/czso/informacni-spolecnost-v-cislech-2021.

[5] EUROPEAN COMMISSION (2010) A Digital Agenda for Europe [online]. [cit. 2021-03-15]. Available: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF

[6] EUROPEAN COMMISSION (2015) The Digital Single Market strategy [online]. [cit. 2021-03-15]. Available: https://ec.europa.eu/digital-agenda/en/digital-single-market

[7] FOLEY, P., ALFONSO, X. (2009) eGovernment and the transformation agenda. *Public Administration*, Vol. 87, No. 2, pp. 371–396.

[8] GHAREEB, A. M., DARWISH, N, R., HEFNY, H. (2021) Assessing the performance of e-government services through multi-criteria analysis: The case of Egypt. In: *Machine Learning and Big Data Analytics Paradigms: Analysis, Applications and Challenges*. Springer: Cham. pp. 547-563.

[9] HEEKS, R. (2006). Implementing and Managing eGovernment: An International Text. London: SAGE.

[10] HEEKS, R., STANFORTH, C. (2007) Understanding e-Government project trajectories from an actor-network perspective. *European Journal of Information Systems*, Vol. 16, No. 2, pp. 165–177.

[11] INFORMATION TECHNOLOGY AND TELECOMMUNICATION ASSOCIATION (2021) *About ICTU*. [online]. [cit. 2021-05-18]. Available: http://www.ictu.cz/index.php?id=159

[12] LECHNER, T. (2010) Nástup komunikace prostřednictvím IS DS na obcích I. typu. In: ŠUSTEKOVÁ, E (ed.). *Internet ve státní správě a samosprávě*. Praha: Triada. pp. 141–145.

[13] LECHNER, T. (2013) Ekonomické dopady implementace ICT ve veřejné správě: důkazy z České republiky. *Politická ekonomie*, Vol. LXI, No. 5, pp. 675–690.

[14] LECHNER, T., LECHNEROVÁ, R., SILVAROVÁ, L. (2017) Quality Analysis of the Basic Register of Rights and Obligations. *Scientific Papers of the University of Pardubice, Series D*. Vol. XXIV, No. 40, pp. 108–119.

[15] LECHNER, T., VAŇKOVÁ, L. (2019) Basic Registers and Personal Data Protection: Critical View. In: VAŇKOVÁ, I. (ed.). *Proceedings of th 13th International Scientific Conference Public Economics and Administration 2019*. Ostrava: VSB – Technical University of Ostrava, pp. 243–253.

[16] MATES, P. (2011) E-Government v české veřejné správě. In TOMÁNEK, P., VAŇKOVÁ, I. (eds.) *Veřejná ekonomika a správa 2011*. Ostrava: VŠB-TU. [CD-ROM]

[17] MATES, P., LECHNER, T., RIEGER, P., PĚKNÁ, J. (2013) Towards e-Government project assessment: European approach (Vrednovanje e-Government projekata:

europski pristup). *Zbornik radova Ekonomskog fakulteta u Rijeci, Časopis za ekonomsku teoriju i praksu – Proceedings of Rijeka Faculty of Economics, Journal of Economics and Business*, Vol. 31, No. 1, pp. 103–125.

[18] MATES, P., SMEJKAL, V. (2012) *E-government v České republice: Právní a technologické aspekty*. 2. podstatně přepracované a rozšířené vydání, Praha: Leges.

[19] MINISTRY OF INTERIOR. (2020) *Informační koncepce ČR*. [online]. [cit. 2021-02-02]. Available: <https://www.mvcr.cz/soubor/informacni-koncepce-cr-2020.aspx>

[20] OECD (2001): Citizens as partners. Information, consultation and public participation in policy-making. Paris: OECD.

[21] POLČÁK, R. (2020) Regulatorní logika digitálních služeb a nový režim odpovědnosti ISP. In ŠKRABKA, J., VACUŠKA, L. *Právo v podnikání vybraných členských států EU*. Praha: Troas. pp. 223-233.

[22] POLČÁK, R. a kol. (2018) *Právo informačních technologií*. Praha: Wolters Kluwer.

[23] PROFANT, O. (2018) *S ICTU spolupracujeme na zákonu o digitální službě*. [online]. [cit. 2021-04-20]. Available: https://www.pirati.cz/tiskove-zpravy/ictu-a-pirati-pripravuji-zakon-o-digitalni-sluzbe.html.

[24] PROVAZNÍKOVÁ, R. (2009) *Financování měst, obcí a regionů – teorie a praxe*. Praha: Grada publishing, 2. aktualizované a rozšířené vydání.

[25] RÜCKER, D., KUGLER, T. (2018) New European general data protection regulation: a practitioner's guide: ensuring compliant corporate practice. München: C.H. Beck.

[26] SZOPINSKI, T., STANIEWSKI, M. W. (2017). Manifestations of e-government usage in post-communist European countries. *Internet research*. Vol. 27, No. 2, pp. 199-210.

[27] TWIZEYIMANA, J.D., ANDERSSON, A. (2019). The public value of E-government – A literature review. *Government information quarterly*, Vol. 36, No. 1, pp. 167-178.

[28] WIMMER, M. A., PEREIRA, G. V., RONZHYN, A., SPITZER, V. (2020). Transforming government by leveraging disruptive technologies: Identification of research and training needs. *JeDEM-eJournal of eDemocracy and Open Government*, Vol. 12, No. 1, pp. 87–113.

Contact information

Mgr. Tomáš Lechner, Ph.D.
University of Economics, Prague, Faculty of Economics and Public Administration, Department of Law
W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic
E-mail: tomas.lechner@gmail.com

Ing. Lenka Vaňková
University of Economics, Prague, Faculty of Economics and Public Administration, Department of Law
W. Churchill Sq. 4, 130 67 Prague 3, Czech Republic
E-mail: xsill00@vse.cz

Independent candidates in the European comparism

Ján Machyniak, Kristína Dzureková

Abstract: The present paper deals with the issue of the phenomenon of independent candidates in the electoral system with an emphasis on European experience. The starting point for processing the issue is empirical experience with the trend of ever-increasing success of independent candidates at the level of municipal and regional elections in the conditions of the Slovak Republic. Electoral legislation does not allow independent candidates to enter top politics, despite the fact that in some countries of the European Union, independent candidates are part of parliamentary elections (including those that use a proportional electoral system). In this context, the present paper is mainly devoted to the analysis of the current situation based on empirical data (election results) in relation to the success of independent candidates at those levels where the legislator allows them to enter the electoral process. At the same time, the paper draws attention to those European countries where independent candidates enter the electoral process at the highest level and seeks to stimulate discussion about the possible future development of the rising trend of success of independent candidates and their potential entry into top politics.

Keywords: Local Democracy, independentcandidates, political representation

JEL Classification: H83, Z18, J18

1 Introduction

The era of representative democracy in modern political systems has required (and it should be noted that rightfully) the existence of several types of ways in which elected candidates can be elected in representative bodies at all levels of the state. The most widespread way is, of course, the candidacy through a list of candidates for a specific political party. However, it should be noted at the outset that there is a gradual shift away from traditional membership in a political party, but the lists of candidates and the mechanism for drawing them up are still relatively well maintained. The existence of political parties in the political system in the context of elections and the electoral process is thus naturally complemented by the institute of independent candidates. The degree of intensity and involvement of independent candidates in the electoral processes is determined by the law's existing possibilities and limits on entering these processes. Although the electoral legislation of the European Union countries is relatively different in each type of election (with some exceptions), the fact remains that independent candidates represent a relevant political force (for example, the Slovak Republic in municipal and regional elections for the rest) and gradually become a phenomenon (due to the fact, that they cannot formally run for election at parliamentary level).

The issue of the phenomenon of independent candidates came to the forefront of the attention of not only the professional but also the general public at a time when the political system, as well as the party system, was subject to dynamic changes. The changes that have taken place in society over the last period are undoubtedly related to the institutional crisis of democracy in states with a parliamentary form of government. Public distrust in relation to political parties also required a pragmatic approach by political parties, resp. candidates in relation to the public. As the trend of success of independent candidates increases, so does the number of scientific papers that deal with this issue in a relatively short time, with different content and intensity. For more of among them we can mention the monographic work of Matúš Sloboda (2017), the collective monograph of the authors Natália Kováčová, Simona Kováčová, Dominika Cévarová, Kristína Kiššová

(2019), the scientific study of the team of authors Daniel Klimovský and Pavel Maškarinec (2016).

Matúš Sloboda (2017) in one of the parts of his scientific monograph offers a summary of selected researches carried out so far, which dealt with the issue of independent candidates in the area of local self-government, resp. municipal policy. In this context, it is recommended that, at local and regional level, the candidate's party affiliation must necessarily be conditional on success, as is the case at national level in the case of parliamentary elections.This trend is particularly visible in the case of smaller territorial units, where belonging to a political party does not play a decisive role. Based on their own analysis, the pair of authors Daniel Klimovský and Pavel Maškarinec (2016) argumentatively confirm this trend, as according to them, with the growing number of inhabitants of the territorial unit, the number of successful independent candidates decreases. However, the recent municipal elections, as well as regional elections, have brought success to independent candidates in places where this was not expected. In general, it can be stated that independent candidates are becoming a real phenomenon in local politics. In this context, it can therefore be assumed that in the future the requirements to allow independent candidates to enter top politics, following the example of several European countries, will intensify in the future. The second part of this paper will be devoted to this issue.

1.1 Independent candidates in municipal and regional elections in the conditions of the Slovak Republic

According to Slovak electoral legislation, not only candidates of political parties, but also candidates without a party background, the so-called Independent candidates may participate in elections to municipal self-government bodies as well as to self-governing bodies of self-governing regions. The following table illustrates the development of the success of independent candidates applying for positions in directly elected local government bodies in the conditions of the Slovak Republic.

Table 1 - Independent candidates in Slovakia 2002-2018 – election of mayors

	2002		2006		2010		2014		2018	
Number of independent candidates elected mayors	Count	Share %	Count	Share %	Count	Share %	Count	Share %	Count	Share %
	951	32.66	895	30.83%	979	33.67	1104	37.95	1232	42.42

Source: Own processing based on data from the Statistical Office of the Slovak Republic

From the above statistics, it is clear that since the beginning of the years under review, the number of elected or successful independent candidates for mayor has been increasing from a national perspective (except for the municipal elections held in 2006). At this point it should be noted that the elections to the municipal self-government bodies are held in the same year as the elections to the National Council of the Slovak Republic (except for 2014 and 2018 and the following ones, unless the situation of early parliamentary elections occurs again).Within the framework of their results, elections can to a greater or lesser extent reflect the societal moods in the context of top politics. However, the fact remains that the share of elected independent candidates for the post of mayors in the conditions of the Slovak Republic has been continuously increasing since 2010. Since the beginning of monitoring this phenomenon, this is an increase of 9.76%, respectively 281 mayors of municipalities and cities elected in this way. Similar trends can be

identified in the case of the success of independent candidates in the search for a mandate in the city or municipal council.

The continuous growth of independent candidates elected as members of municipal and city councils is more pronounced than in the case of candidates for the post of mayors. It concerns not only the number of successful candidates, but also those which the table above does not take into account - that is, the absolute number of independent candidates seeking a mandate in a local government collective body. Nevertheless, it is necessary to take into account the fact that the mandate of a member of the municipal or city council is the place that is relatively attractive for most individuals who have no or have minimal experience in politics. It is for this reason that they prefer the path of "independence" rather than institutionalized cooperation within a political party. Looking at the table above, it is clear that the success of independent candidates in directly elected collective bodies of local governments is growing dynamically. While at the beginning of the period under review, in 2002, 2,892 candidates were successful, in the last municipal elections in 2017, this number increased more than 2.5 times.The average value of these statistics is 5.9, which ultimately means that, while maintaining this trend, about 7,732 Members will hold the seat from the position of independent candidate in the next election.

The relatively different political space is represented by the regional level of self-government. This difference lies not only in its shorter historical existence, but also in the specific political relations and, in particular, in the strategies that political actors and independent candidates seek to use in order to gain a mandate in a monocratic and collective body of regional self-government.

Table 2 - Independent candidates in elections to the bodies of self-governing regions - election of the chairman

Year	**2001**	**2005**	**2009**	**2013**	**2017**
Bratislavský	3	1	2	1	9
Trnavský	2	2	1	1	2
Trenčiansky	1	3	1	2	2
Nitriansky	1	1	1	1	2
Žilinský	3	1	1	1	3
Bansko – bystrický	2	X	3	1	7
Prešovský	3	2	3	1	4
Košický	5	X	X	2	4
Total for SR	**20**	**10**	**12**	**10**	**33**

Source: Own processing based on data from the Statistical Office of the Slovak Republic

Table 2 reflects the historical development of the number of independent candidates seeking the mandate of the chairman of the self-governing region. In two self-governing regions, independent candidates did not appear in the chairmen election, in one even repeatedly. In the last period, a total of 85 candidates applied for this position from the position of independent candidate. Of these, four candidates were successful in absolute terms, one even twice with the status of independent candidate. The first independent candidate elected to the position of chairman of the self-governing region was the chairman of the Bratislava self-governing region in 2005. The last in the area of Central Slovakia in 2017 was the chairman of the Banská Bystrica self-governing region.

At this point, it should be noted that even in the case of successful independent candidates, they were not illegible or unknown people, but people who had been moving in the field of politics at various levels for some time.The first elected chairman of the Bratislava self-governing region was a member of the National Council of the Slovak Republic (even within several election

periods, for various political groups), mayor of Bratislava - Petržalka, member of the self-governing council (or vice-chairman of ZMOS).

It is also relatively interesting that while in the historically first elections of the chairman of the self-governing region, twenty independent candidates stand for office, in the 2005 elections this number fell by 50%. In the 2009 and 2013 elections, this number of candidates does not increase significantly and does not decrease, but in the last elections to the bodies of self-governing regions, a sharp increase can be identified. The elections of deputies of local councils also represent a specific political arena.

2 Material and Methods

Independent candidates represent a phenomenon in the Slovak political system, which finds application exclusively at levels lower than the state. Electoral legislation will allow independent candidates to participate in the electoral process (in terms of passive suffrage) at the level of municipal and regional policy. Top politics is thus unavailable for this type of candidate. Nevertheless, in several countries of continental Europe, electoral legislation not only allows for the entry of independent or non-partisan candidates, but also provides scope for their implementation and political action. In this paper, we are based on empirically verified facts about the success of independent candidates at the local and regional level in the Slovak Republic and open a discussion on the possibility of allowing independent candidates to participate in the process of selecting public policy actors at the national level. In the context of efforts to address this issue, we use several scientific methods. Among them, we can mention the content analysis, which is based on the study not only of election results, but also interpretations of selected authors in the context of European experience. In this way, we pay particular attention to those countries which, in their electoral codes, also allow non-party candidates to run for national parliaments.

Table 3 -Elected independent candidates in elections to the bodies of self-governing regions - election of deputies

Year	2001		2005		2009		2013		2017	
Name of region	Count	Share%	Count	Share%	Count	Share %	Count	Share %	Count	Share %
Bratislava	1	2.17	2	4.00	1	2.27	6	13.63	25	50.0
Trnava	X		5	12.50	6	15.00	6	15.00	14	35.0
Trenčín	X		3	6.66	10	22.22	11	24.44	22	46.80
Nitra	X		X		3	5.55	4	7.40	15	27.77
Žilina	3	5.76	5	8.77	11	19.29	16	28.07	25	43.85
Banská Bystrica	1	2.04	5	10.20	5	10.20	13	26.53	22	44.89
Prešov	5	8.33	12	19.35	6	9.67	6	9.67	22	35.48
Košice	8	14.03	7	12.28	13	22.80	11	19.29	16	28.07
Total for SR	18	4.48	39	9.46	55	13.48	73	17.89	161	38.70

Source: Own processing based on data from the Statistical Office of the Slovak Republic

From the above-mentioned statistical data, it is clear that in the first election period of directly elected collective bodies of self-governing regions, only a minimum of independent candidates sat on parliamentary benches. This fact can be caused mainly by the fact that it is a relatively new body, but also by the political situation in the sphere of great politics. In this context, it can be argued that each of the political actors was looking for a stable place in the political arena, respectively background. Obviously, we can say that this stability in the initial period was offered

mainly by the institutions of political parties, after all, the model of organizing regional self-government in the conditions of the Slovak Republic was the result of their political decision and party interests.

In the cases of the Trnava, Trenčín and even in the case of the Nitra self-governing region in two consecutive election periods, no independent candidate was elected to the position of a member of the regional council. This was probably due to the fact that in the first two parliamentary terms in 2001 and 2005, the regions were relatively well organized at lower levels than the state. Also, two of these three self-governing regions included another significant aspect, namely nationality (Horváth, Machyniak, 2018).

On the margins of statistical data, it should be noted that from the national perspective, in the second elections to the bodies of self-governing regions, twice the number of independent candidates sat in the parliamentary seats.It was three times in the third election period, four times in the fourth election and in the last election period, a total of 161 deputies hold their mandate as independent candidates, which ultimately represents almost nine times the number of successes of independent candidates compared to the initial term of office of directly elected bodies of self-governing regions. While maintaining the current trend and in the fragmentation of the party system can be expected that in the next elections to the bodies of self-governing regions will rise in the number of independent candidates even more pronounced.

3 Results and Discussion

It is indisputable that independent candidates become a relatively numerous active political force in elections to the bodies of self-governing regions, and especially in the case of municipal elections. Across the individual elections for the rest of the period, they are gradually gaining strength and making themselves known, often at the expense of political parties, which are typical institutions in the representative form of parliamentary government. The importance of political parties for a democratic, parliamentary form of government is indisputable, but it seems that in places where legislators are allowed to use passive suffrage even by independent candidates, political parties as institutions are oppressed in the background.Why is the success of independent candidates so great and where are the borders, resp. limits of their success? We find a large number of answers to this question in the professional and general public. These stem mainly from the practical experience resulting not only from the election results, but also from the performance of public function by these types of candidates.

In this context, several experts across the social sciences also point out that the public feels a significant degree of distrust of political representatives associated in political parties, which ultimately deepens the crisis of liberal (representative) democracy (Kulašik, Tichá et al., 2014; Merkel, 2015; Štefančík, Dulebová, 2017; Daubner, 2019; Dux, 2019; Bull, 2020). For democracy, political parties thus become a symbol of "public evil", resp. unnecessaryness in the political system. It is for this reason that the electoral part of this public prefers the so-called independent candidates. To a certain extent, this may also be an accompanying phenomenon of the ever-deepening crisis of democracy and the continuing distrust in the democratic partisanship of not only voters but also members of political groups. At this point, however, we would like to draw attention to the fact that the institutions of political parties are to a large extent an expression of the plurality of currents of opinion of society and are therefore a prerequisite for parliamentarism, resp. stability of political systems dominated by the parliamentary form of government. And the local level undoubtedly has its place and significance in the parliamentary form of government. In the conditions of the Slovak Republic, the legislator allows to apply for directly elected mandates at the national level only within the candidate lists submitted by political parties. At the local level, in addition to political parties or candidates for political parties, independent candidates also apply for directly elected seats. Not only the legislative

conditions, but also the public's attitude towards the institutions of political parties is behind the success of independent candidates at the municipal and regional level. At this point, however, it is noted that the success of independent candidates at lower levels than the state come the risks associated with the performance of democracy.That is why we cannot be indifferent to the crisis of democracy that has accompanied us for several years. From it stems the public distrust of political parties. This can ultimately be (only) one of the many reasons for the success of independent candidates in municipal and regional elections. Nevertheless, we are increasingly able to identify cases where the candidates decide tactically under which brand they will compete for the votes and trust of local community voters. There is a general belief in professional circles that political affiliation at local and regional level does not play a key role in voter decision-making. An argument in favor of this assumption may be the fact that in relatively small local communities, the inhabitants know each other so much that personification, resp. the personification of a candidate is a much greater motivating factor for deciding whether or not to grant a voter preference than an ideological focus or belonging to a political party.

The contributions published so far on the topic of independent candidates and the search for answers to questions concerning their success concludes that the important categories in this context are the size categories of territorial units. While large self-governing units are dominated by political entities, in the case of smaller self-governments they are mainly independent candidates (Balík, 2009; Haulík, 2010; Klimovský, Žúborová, 2011; Bernard, 2012; Klimovský, Maškarinec, 2016; Sloboda, 2017). In simple terms, we can say (taking into account expert opinion) that as the population grows, the success of independent candidates decreases and voter interest in party candidates grows. In the case of elections to the bodies of self-governing regions, for the other period we are across the entire territory of the Slovak Republic, resp. all self-governing regions recorded a significant increase in elected independent candidates. This fact mainly concerned the councils of self-governing regions. If we stay in the last regional elections, it can be seen that the increase in the number of elected independent candidates is more than double compared to the previous elections.

In our conditions, the success of independent candidates is becoming a phenomenon at the local and regional level, but some European countries, resp. their electoral legislation also allows independent candidates to enter top politics. The following table illustrates a relatively brief but clear overview of these European Union countries.

Table 4 - Independent Candidates in EU at parliamentary level

Country	Opportunity to stand as an independent candidate	Electoral system	Open / closed candidate list
Belgium	Not	Proportional	Open
Bulgaria	Yes	Mixed	------
Czech Republic	Not	Proportional	Open
Denmark	Yes	Proportional	Open
Cyprus	Yes	Proportional	Open
Estonia	Yes	Proportional	Open
Finland	Theoretically yes	proportional	Open
France	Yes	Two-round majority	------
Greece	Yes	Mixed	-------
Netherlands	Theoretically yes	Proportional	Open
Croatia	Yes	Proportional	Open
Ireland	Yes	Proportional	------
Lithuania	Yes	Mixed	------
Latvia	not	Proportional	Open
Luxembourg	Theoretically yes	Proportional	Open
Hungary	Yes	Mixed	------
Malta	Yes	Mixed	------
Germany	Yes	Mixed (Proportional)	------
Poland	Theoretically yes	Proportional	Open
Portugal	Not	Proportional	Closed
Austria	Theoretically yes	Proportional	Open
Romania	Yes	Proportional	Closed
Slovakia	Not	Proportional	Open
Slovenia	Not	Proportional	Open
Spain	Not	Proportional	Closed
Sweden	Not	Proportional	Closed
Italy	Not	Proportional	Closed
Great Britain	Yes	Majority	------

Source: own processing according to Ďurinová, 2017

It is clear from the table above that in countries such as Bulgaria, Cyprus, Croatia, Denmark, Estonia, France, Greece, Ireland, Lithuania, Hungary, Malta, Germany, Romania and the United Kingdom, the legislation allows independent candidates to apply for directly elected positions in the legislature. At this point, it should be noted that countries are different not only in the electoral system, but also in the rules and requirements associated with the candidacy of independent candidates. Most often it is about depositing or collecting a specified number of voter signatures. European experience shows that independent candidates can stand in those countries that use a non-proportional electoral system for national parliaments. As far as countries using a proportional electoral system for the legislature, only five countries of the European Union allow independent candidates to stand for election in national parliaments (Cyprus, Croatia, Denmark, Estonia, Romania).

Conclusion

Based on the acquired knowledge and interpretation of specific empirical data, it can be stated that over time, independent candidates have indeed become a phenomenon that is a stable part of elections and the electoral process at both levels of local government. In the last elections,

whether at the level of self-governing regions or cities and municipalities, we identify a significant increase. This concerns not only their absolute number, but especially their ability to obtain a mandate in the representative collective and monocratic bodies of territorial self-government. The reason for their ever-increasing success is the distrust of voters and society towards the institutions of political parties. On the other hand, it should be noted that political parties have a share in the growing success of their candidates, as they have resigned in recent decades to the need to build their regional and local structures. It was only a matter of time before another form of candidates began to fill this space. The natural reaction of political parties was not to rebuild or create these structures, but to try to make good use of the emerging trend of independent candidates. It is for this reason that we will probably meet candidates in the near future who will act as independent, but at certain stages of the electoral process the political entities themselves will also apply for these candidates (in the form of expressing support for the independent candidate). It is questionable how independent candidates can cope with this, resp. their voters, and last but not least, the very principle of governance of democratic rule of law.This is mainly due to the fact that the principle of the parliamentary form of government is based primarily on the stable operation of political parties within the political system.The phenomenon of the independent candidate can thus be perceived in this context as a non-systemic element, in a still relatively functioning parliamentarism in our conditions. Nevertheless, it can be expected that in the future there will be more significant efforts to change the electoral legislation, which would allow independent candidates to enter top politics (following the example of several European countries).

Acknowledgements

This paper was created within the project: *KEGA 001UCM-4/2019 – Dynamika premien verejnej správy SR.*

References

[1] BARDOVIČ, J. (2015). Politická participácia – príčiny a dôsledky nezapájania sa občanov do riešenia problémov v spoločnosti. In *Ľudské práva: Kam kráčaš demokracia*, UPJŠ 2015, pp. 69-81.

[2] BALÍK, S. (2009). Komunální politika. Obce, aktéři a cíle místní politiky. Samospráva a obec, volební systém, voličské chování, radniční koalice a starostové. Praha: Grada Publishing.

[3] BERNARD, J. (2012). Individuální charakteristiky kandidátů ve volbách do zastupitelstev obcí a jejich vliv na volební výsledky. In *Sociologický časopis*, Vol. 48, No. 4, pp. 613–640.

[4] BULL, H. P. (2020). Die Krise der politischen Parteien: Eine Schreitschrift. Tübingen: Mohr Siebeck.

[5] DAUBNER, P. (2019). Dekonštrukcia liberálnej demokracie 21. storočia ako politickej formy neskorého kapitalizmu. In *PHILOSOPHICA CRITICA*, vol. 5, no. 2, pp. 46-56.

[6] DUX, G. (2019). Demokratie als Lebensform. Die Welt in der Krise des Kapitalismus. Wiesbaden: VS Verlag für Sozialwissenschaten.

[7] ĎURINOVÁ, P. (2017). Možnosť kandidovať do národného parlamentu ako nezávislý kandidát v členských krajiných EÚ. Bratislava: Kancelária Národnej rady Slovenskej republiky.

[8] HORÁTH, P. – MACHYNIAK, J. (2018). Municipal elections in Trnava region. In *Slovak Journal of Public Policy and Public Administration*, vol. 2, no. 5, pp. 73-90.

[9] KLIMOVSKÝ, D. - MAŠKARINEC, P. (2016). Independent Candidates in the Local Elections of 2014 in the Czech Republic and Slovakia: Analysis of Determinants of Their Successfulness. In *Lex Localis – Journal of Local Self-Government*, Vol. 14, No. 4, pp. 853-871.

[10] KLIMOVSKÝ, D. - ŽÚBOROVÁ, V. (2011). Komunálne voľby 2010. In *Slovensko 1996-2010. Súhrnná správa o stave spoločnosti*. Bratislava: IVO.

[11] KOVÁČOVÁ, N. – KOVÁČOVÁ, S. – CEVÁROVÁ, D. – KIŠŠOVÁ, K. (2018). Politický marketing a voličské správanie v komunálnych voľbách 2018 na Slovensku. Brno: MSD.

[12] KULAŠIK, P. – TICHÁ, K. A KOL. (2014). *Bariéry a paradoxy demokracie*. České Budějovice: Vysoká škola evropských a regionálních studií.

[13] MERKEL, W. (2015). Demokratie und Krise. Zum schwierigen Verhältnis von Theorie und Emirie. Wiesbaden: VS Verlag für Sozialwissenschaften.

[14] SLOBODA, M. (2017). Víťazi a kandidáti vo voľbách. Fenomén nezávislého kandidáta, efekt funkcionára a rodový aspekt vo voľbách primátorov miest na Slovensku. Bratislava: Univerzita Komenského v Bratislave.

[15] ŠTEFANČÍK, R. – DULEBOVÁ, I. (2017). Jazyk a politika. Jazyk politiky v konfliktnej štruktúre spoločnosti. Bratislava: Ekonóm.

Contact information

doc. PhDr. Ján Machyniak, PhD.
University of St. Cyril and Methodius in Trnava, Faculty of Social Sciences, Department of Public Administration
Bučianska 4/A, 917 01 Trnava, Slovak Republic
E-mail: jan.machyniak@ucm.sk

Mgr. Kristína Dzureková
University of St. Cyril and Methodius in Trnava, Faculty of Social Sciences, Department of Public Administration
Bučianska 4/A, 917 01 Trnava, Slovak Republic
E-mail: kristina.dzurekova@gmail.com

Evaluation of the Health Facilities Performance by Value for Money Method

Daniela Mališová, Jana Štrangfeldová

Abstract: Today, one of the main tasks of health facilities is to measure the performance indicator. It is the evaluation of performance that can contribute to the improvement of the produced health services and subsequently achieve the goal, which is to improve the health status of the population. For this reason, the aim of the paper is to evaluate the performance of health facilities by the value for money method. The object of the research are Slovak faculty and university hospitals, which are directly financed from public finance. The subject is performance, measured by the value for money method, which considers the indicator of economy, efficiency, and effectiveness. In the paper we supplement the main method with descriptive statistics. The paper follows the period from 2011 to 2019. From the research results we find that the lowest values of performance in time were achieved by the faculty hospital in Žilina. The problem area of this hospital are indicators of the effectiveness of provided health services and efficiency. Overall, we recommend that the health facilities create common categories of indicators for measuring economy, efficiency, and effectiveness, or measuring the total value for money yearly. Such an approach will benefit patients, society, and the healthcare facilities themselves.

Keywords: Benchmarking, healthcare, hospitals, market failure, Slovakia, value for money

JEL Classification: C83, H41, I15

1 Introduction

The performance of the organization depends on the cooperation of individuals or groups, the quality of process settings and the internal organization of work. The executive organization is then able to achieve the set results in measurable values (Carton, Hofer, 2006). Performance as an economic category includes a clear definition of the value or goal that the organization wants to achieve. At the same time, we evaluate this category according to predetermined criteria. Such an approach to performance can be widely applied in the private sector to measure an organization's performance (Hubbard, 2009). Examples are organizations or companies focusing on the production of substitute goods. However, when applying the concept of measuring performance in the public sector, there are concerns about its application (more about concerns in the public sector in Štrangfeldová, Štefanišinová 2021). The reasons are complicated internal procedures, organizational background of public sector institutions (Strauss, Zechcer, 2013), ignorance, low motivation, and reluctance to apply the concept of performance in public institutions (Cepiku, 2017), low level of strategic decision-making or manipulative behaviour of employees in managerial positions (Verbeeten, 2014). However, measurement of performance is possible despite these concerns. However, it is important to consider and respect certain specifics that the public sector contains.

Performance of the health facilities is characterized by such specifics. Market failures mechanism in the field of health services create a competitive advantage for publicly owned facilities. The competitive advantage lies in gaining a monopoly position in the healthcare market. The reason is mainly the design of the health system. The specificity of the healthcare system implemented in Slovakia is precisely the fact that health services are considered as collective goods (Čepelová, 2017). They are characterized by divisibility and non-exclusion from consumption. Divisibility is present, for example in the form of a waiting list at the doctor, so the treatment is not provided without restrictions (especially time restrictions). However, there is controversy about non-exclusion from consumption. Datta-Chaudhuri (1990) points out that non-exclusion occurs when

this is not technically possible or when it is not socially appropriate. According to the legislation governing the provision of healthcare (*Act. No. 580/2004 Coll.*), Health care is provided to every citizen in the event of a life-threatening situation. However, certain health services are listed as fee-paying goods, which exclude patients who are not willing to pay for these services in addition to compulsory health insurance. An example of goods with a fee is treatment by a dentist without undergoing a preventive examination in the previous year, laboratory examination beyond the scope of health insurance coverage, or other specialized professional examination.

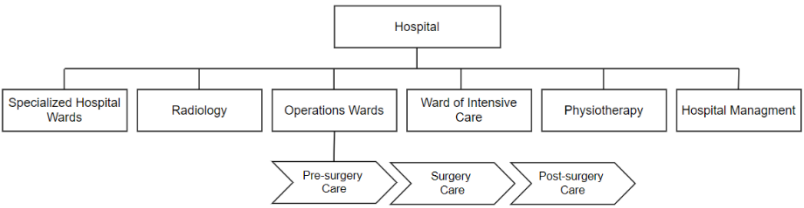
The quality of health services is a concept which, for the above reasons, cannot be fully objectified or generalized. Healthcare requires increased clarity, reliability, and centralized data collection for quality measurement. For this reason, it is important to monitor the performance level of health facilities. However, this is a complex process. The aim of the paper is therefore to evaluate the performance of health facilities using the value for money method. This method allows a relatively objective evaluation of the performance of organizations, considering certain predefined specifics.

1.1 Specifics of Health Services and Health Facilities

Health services are the content of the activities of health facilities. According to Jantošová, Foltínová (2015) health facilities are a basic means of providing healthcare. Health facilities act as economic operators that use existing resources to meet the needs of the population. According to the form, we can divide health care providers in Slovakia into outpatient, institutional and pharmacy. At the same time, the individual medical facilities together form networks of health facilities.

We know three networks of health facilities (*Slovak Government Regulation No. 640/2008 Coll.*). The public minimum network of health facilities consists of general and specialized outpatient care for children and adults; institutional healthcare; outpatient first aid care; home nursing agencies; hospice and mobile hospice. It is a collection of publicly available health facilities in a certain area. This area takes into account the population of the region, the morbidity of the population, age and migratory influences. According to the Statistical Office (2021), this public minimum network consisted of 14,937 health facilities in 2019. The second type is a fixed network of health facilities, which is made up of urgent patient admissions; specialized healthcare such as cardiology, neurology, pediatrics, neurology, surgery, etc.

Figure 1 – General Functional Division of the Hospital
Source: own processing according to Jantošová, Foltínová (2015)



The last network is the final network of health facilities, which consists of general and specialized hospitals located in the self-governing region of strategic importance. The institutional health facility provides patients with a complex of medical services. The organization of the institutional health facility is graphically represented in Figure 1. Hospitals provide health services of treatment that do not exceed 24 hours, but also health services whose length exceeds

24 hours. Gladkij et al. (2003) state that the division of health facilities into network is important precisely because of the practical division of healthcare services into groups. As well as to clarify the specifics of individual types of health facilities. It is the final network of hospitals that forms the sample on which we will examine the performance of the provision of health services.

The current challenge for the coming decade for hospitals is to provide more and higher quality healthcare, with less financial and human resources. To successfully meet this challenge, it is necessary that the health facility meets the basic principles of quality. Kortbeek (2012) outlines six principles that a health facility must follow. It must be safe - to avoid injuring patients in the provision of healthcare; effectively - provide services to those who benefit and refrain from providing services to those who do not benefit from the service; patient-oriented - to provide healthcare that respects and responds to individual patient preferences and needs; based on early diagnosis - reduce waiting times and delays in patient examinations; economical - to prevent excessive waste of financial, material, technical, human or energy resources; fair - to provide healthcare that does not differ in quality depending on the patient's personal characteristics (eg gender, ethnicity, socio-economic status, etc.).

From the above, we pay increased attention to the principle of efficiency. From the point of view of the public economy, the characteristics of this principle are associated with the overconsumption of health services and the theory of market failure. *The Act No. 580/2004 Coll.* imposes an obligation on every citizen to be covered by health insurance. Based on the payment of compulsory health insurance, the citizen is entitled to reimbursement of health care from this insurance. On the one hand, compulsory health insurance is perceived positively - a solidary contribution to the system enables the payment of healthcare even to citizens who do not have a sufficient socio-economic background. On the other hand, there is over-consumption in the use of such reimbursed healthcare (Butler, 1994). This is manifested by frequent non-acute visits to mostly outpatient doctors and causes an increase in waiting times, an increase in the workload of doctors, congestion of the provision of healthcare by non-acute cases or reduced benefit from the provided health service for the patient. These are also confirmed by international comparisons (OECD, 2018), which show that Slovakia ranks first in the number of doctor visits per capita (at the level of 11.5 visits) and second (at the level of 3,311 visits) in the number of visited patients per doctor. However, the average of the 23 European countries monitored is at the level of 7.5 doctor visits per capita and 2,147 patient visits per doctor. Based on these data, we can state that the overconsumption of health services is another specific feature of Slovak healthcare.

In the context of market failures, we can also include information asymmetry among the specifics of health services. This term refers to a situation where one of the parties has more or better information than the other (Schiller, 2004). In health services, a typical example is the doctor-patient relationship. The doctor has information that the patient does not have or cannot evaluate correctly. An example is the physician's knowledge of drug contraindications, information on available generic drug substitutions that the patient cannot easily verify. However, as demonstrated by a research project (Hlinková, 2019) implemented in cooperation with the private health insurance company Dôvera, a. s., information asymmetry also arises in the relationship doctor - health insurance company. Health insurance companies have more information about doctors' patients and work with this information on a long-term and systematic basis. Doctors do not have this option. The reason is the low level of digitization suitable for monitoring patient statistics (still widely used file system based on physical paper health cards of patients in outpatient health facilities), but also the inability to respond to all current trends in medicine. To eliminate this asymmetry, a project was created in which the health insurance company published detailed data on patients, their treatment, amount and type of prescribed drugs, etc. for selected doctors. Thereby supporting doctors' decisions in the provision of healthcare.

Imperfect competition on market is also a problem when examining health services. If we consider health services as mixed collective goods, then they are produced by both the private and public sectors. However, the guarantor of the provision of health services in Slovakia is the state. It regulates the scope and approach to the provision of health services through health policy. On this basis, the state determines who can enter the health services market (*Act No. 578/2004 Coll.).* The establishment of a health facility is possible only after the approval of the Ministry of Health of the Slovak Republic. An equally significant element is the creation of a price for health services. The public producer does not influence the creation of the price for the provided health care. The price for health performance is determined contractually and is the subject of negotiations with the health insurance company. While the insurance company has the option of not concluding a contract with all health facilities, it can decide based on the results of the quality indicators. The content of the contract is the volume of services and the amount of reimbursement for health services, which is paid once a month. It is the price of health services set in this way that has an impact on the debt generation of public producers. The reason is that there is an increase in the volume of health services that are not contractually covered, because of which they generate a loss for the health facility. For private producers, the price for health performance is not set contractually, but on the market. Therefore, it may vary depending on the health facility. The patient pays the price for the health procedure directly. In this case, patient can use commercial health insurance. However, as research shows (Sápoci, et al., 2015), only 7% of the population (380,000 inhabitants) use a combination of compulsory and commercial health insurance in Slovakia.

1.2 Possibilities of Measuring Performance in Health Facilities

Historically, with the advent of new technologies and the expansion of managerial skills, the methods used to measure the performance of healthcare facilities have also changed. At the same time, it is the private sector that is considered to be the bearer of innovative ideas. For this reason, it is not surprising that the public sector draws opportunities for innovation in performance measurement from the private sector (Bryson, George, 2020). In the 1980s, performance measurement began to be used in the public sector as well (El-Ghalayini, 2017). The introduction of strategic management is going through the same process. As already stated by Ch. R. Darwin in his central idea, the core of the concept of strategic management is the responsibility to change. Strategic management is becoming a necessary approach in today's organizations. Ginter, Duncan, Swayne (2018) state that strategic management must take PESTLE factors into account. They characterize these factors as political, economic, social / demographic, technological, legislative, and environmental. However, strategic management is not always present in the management of public organizations. For this reason, it needs to be implemented. The consequence of implementation in the public sector is the adoption of various schemes to assess the quality of the organization such as ESO (Efficient, Reliable and Open State Administration), CAF (The Common Assessment Framework) or in the case of healthcare facilities quality policy based on compliance with quality indicators.

We can use economic or managerial methods for a comprehensive measurement of an organization's performance. The identification of the advantages and disadvantages of different methods for measuring performance in organizations has been the subject of studies by several authors from different periods (Snow, Hambrick, 1980; De Waal, Kourtit, Nijkam, 2009; Willems, Boenigk, Jegers, 2014; Sobhanallahi, Gharaei, Pilbala, 2016). From the extensive collection of methods, for the purposes of the paper, we choose the currently discussed method of new public management - value for money. The aim of this method is to provide an evaluation of the organization's performance that takes into account 3E - efficiency, effectiveness and economy of the organization. Through 3E (Dolton, Gutiérrez, Still, 2014), the organization monitors the ratio of total costs per unit of output, the rate of achievement of the main goal of

the organization and the minimization of costs. Thus, quantitative, qualitative, and monetary indicators are used to measure 3E. Nemec, et al. (2020) Among the advantages of the value for money method is the parallel evaluation of allocation and technical efficiency. Moullin (2017) argues that the method helps organizations improve results without increasing overall costs. Also, the value for moeny method helps to develop performance measures that improve organizations and ensure the quality of services to the public. The result of measuring performance using the value for money method is a ranking, and if the organization reaches a value of 1, it shows 100 percent utilization of its resources (Barr, Christie, 2014). Benchmarking (Štrangfeldová, Štefanišinová, 2021), or SWOT analysis (Benzaghta, et al., 2021) or causal analysis are considered suitable additional methods that are used in the interpretation of the obtained results.

Performance measurement in healthcare facilities is currently based on quality indicators. These indicators are set internationally. The original idea of uniform quality indicators was introduced by the World Health Organization (Lawrence, Olsen, 1997). Based on quality indicators, it is possible to compare healthcare facilities at the national level, or after completing partial results for the country, to make an international comparison. There is currently a growing interest in patient-centered quality indicators, such as patient satisfaction or patient communication, which have usually been assessed using qualitative methods (Joling, et al., 2018). Measuring the performance of a health facility through quality indicators is suitable for the identification and analysis of problems, but it is less suitable for measuring changes (Horvat, Filipovič, 2018). This is because for these indicators to be used for quality assurance, they must be transformed into a measurable form. The measurable form (Biancone, Secinaro, Bresciasa, 2018) can be achieved, for example, by using quality of life scores, measurements of functional health status, or by using valid patient satisfaction questionnaires. Based on the introduction to the issue of quality indicators and the specifics of health facilities, we move to the selection of appropriate monetary, quantitative, and qualitative indicators for evaluating the overall performance of selected hospitals. When measuring efficiency and effectiveness, we focused on currently monitored quality indicators in hospitals. When measuring economy, we use the collected primary and secondary monetary data.

2 Material and Methods

Cooperation with selected institutional healthcare facilities was key for the analysis. For the needs of the research, we coopered with faculty (FH) and university (UH) hospitals in Slovakia, whose providers are the Ministry of Health of the Slovak Republic. We choose this subject because the monitored hospitals are connected to public finances - the state budget. This basic specificity of sample homogeneity allows to compare their inputs, outputs, and costs by the selected performance method. The sample consists of 11 hospitals (FH Banská Bystrica, FH Nitra, FH Ružomberok, FH Trnava, UH Košice, FH Žilina, UH Martin, FH Nové Zámky, FH Trenčín, FH Prešov and UH Bratislava). When obtaining data, we drew on primary data collected from the *Annual Reports of Hospitals*, *Financial Statements* and *Accounting Balance Sheets*, or from secondary integrated data provided by the INEKO portal (2020). In this paper we follow the period 2011 - 2019. All interpreted results are the outputs of our own calculations and measurements.

As stated in the theoretical basis, the evaluation of performance through the value for money method is based on the measurement of 3E - efficiency, effectiveness, and economy. To measure marginal indicators, we use quality indicators set for institutional health care. To express the overall effectiveness, we will monitor quality indicators: total mortality (quality indicator B.1.1) expressed as a proportion of the total number of hospitalized patients; the ratio of the number of deaths of patients from myocardial infarction (quality indicator B.1.4) after immediate admission to the total number of patients hospitalized with myocardial infarction aged 35-74 years; the ratio

of the number of deaths of patients to an acute cerebrovascular accident (quality indicator B.1.5) to the total number of patients hospitalized for a cerebrovascular accident. We choose these indicators because they are the most common reasons for the deaths of the population of Slovakia. According to the Health Profile of Slovakia (2019), ischemic heart disease is the main cause of death of patients (approximately every fourth death is caused by heart failure or heart attack). Stroke is, despite a decrease of 180 cases between 2000 and 2019, the second most common cause of death. For this reason, we consider quality indicators focused on these causes to be suitable for measuring the overall effectiveness of selected institutional health care facilities.

To express the overall effectiveness, we will monitor quality indicators: the ratio of the number of rehospitalized patients within 30 days (quality indicator B.1.13) to the total number of hospitalized patients in the same group of diagnoses; the number of rehospitalized patients within 90 days (quality indicator B.1.14) and the total number of hospitalized patients in the same group of diagnoses and the ratio of the number of reoperated patients (quality indicator B.1.15) to the total number to the total number of surgeries. A list of all monitored quality indicators for institutional health care facilities is given by Všeobecná zdravotná poisťovňa (2019). Please note that such an approach to measuring performance may contain some bias. However, we consider quality indicators to be appropriate to demonstrate the use of the value for money method. To express overall economy, we focus on monetary indicators. Monetary indicators are not included in the quality indicators. For this reason, we focus on the total costs expressed per unit per employee and hospitalization and personnel costs expressed per employee. The reason for choosing personnel costs is the fact that this cost subspecies makes up the largest proportion of the hospital's total costs.

Standardization is used for data editing. Standardization involves adjusting the data according to whether the hospital's goal is to maximize or minimize the indicator (Gal, Rubenfield, 2019). In the case of all marginal indicators, the aim is to minimize them. For this reason, we use the ratio expression with the lowest value, which was measured in the sample each year. Data standardization also allows us to fill in missing values. Therefore, when using the above procedure, in the case of missing values of health facilities, we supplement the worst recorded result in the sample in a given year. The product of the values of marginal indicators expresses the total value of the indicator. To calculate performance, we substitute the found values of indicators into the formula for calculating value for money (1):

$$VFM_{ij} = \frac{1}{\log_{\frac{1}{(H_{ij}E_{ij}U_{ij})}}} \quad (1)$$

Where:
H_{ij} – the overall economic performance indicator of the organization i in year j;
E_{ij} – the overall efficiency performance indicator of the organization i in year j;
U_{ij} – the overall effectiveness performance indicator of the organization i in year j.

The method expresses the relationship between all sub-indicators (Barr, Christie, 2014). The higher measured value of the entity means better use of resources and higher overall performance. Achieved value 1 expresses 100% use of resources of the monitored subject.

3 Results and Discussion

The efficiency indicator expresses how input sources are transformed into output value for customers or patients. According to Grönroos, Ojasalo (2004), we can express this indicator by how efficiently the input resources in the service process are transformed into outputs. The result of the overall efficiency of the monitored hospitals is shown in Table 1.

Table 1 – Total Efficiency of 11 Faculty and University Hospitals in Monitored Period (in percentage)

Efficiency/Year	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
FH Banská Bystrica	9,37%	10,08%	9,98%	14,06%	9,88%	9,51%	20,43%	14,74%	9,93%
FH Prešov	19,40%	11,43%	28,96%	43,11%	10,21%	23,31%	49,07%	15,05%	38,52%
UH Bratislava	15,61%	9,46%	9,67%	35,41%	5,49%	6,68%	12,21%	6,81%	15,20%
FH Nové Zámky	17,72%	9,24%	22,47%	14,18%	4,27%	13,94%	15,59%	7,58%	19,05%
UH Ružomberok	16,36%	18,65%	16,99%	58,42%	11,30%	26,40%	62,50%	62,77%	65,40%
FH Nitra	6,31%	10,80%	8,31%	8,20%	5,82%	7,79%	9,69%	7,39%	9,61%
FH Žilina	4,22%	3,60%	3,15%	18,84%	4,02%	7,71%	14,14%	17,01%	42,40%
UH Martin	24,37%	16,24%	23,25%	62,62%	16,22%	18,63%	35,40%	14,95%	31,71%
FH Trenčín	29,87%	9,99%	6,27%	42,78%	46,23%	14,83%	34,64%	24,35%	45,07%
FH Trnava	4,86%	13,71%	4,24%	9,74%	8,41%	7,57%	21,28%	6,39%	18,52%
UH Košice	7,11%	11,23%	6,80%	17,09%	6,92%	14,11%	13,27%	9,48%	8,55%
Minimum value	4,22%	3,60%	3,15%	8,20%	4,02%	6,68%	9,69%	6,39%	8,55%
Maximum value	29,87%	18,65%	28,96%	62,62%	46,23%	26,40%	62,50%	62,77%	65,40%
Average	14,11%	11,31%	12,74%	29,49%	11,71%	13,68%	26,20%	16,96%	27,63%
Statistical deviation	8,47%	3,93%	8,74%	19,79%	12,00%	6,74%	17,17%	16,17%	18,43%
Coefficient of variation	60,05%	34,76%	68,65%	67,08%	102,46 %	49,30%	65,53%	95,38%	66,69%

Source: own processing (2021)

The results show that UH Ružomberok achieved the highest long-term efficiency (average in the years at the level of 37.64%). In all monitored periods, this hospital shows the lowest values of the ratio of total patient mortality to the number of hospitalized patients. This result was also reflected in the measurement of the other two indicators. On the contrary, FH Nitra shows a long-term low level of efficiency (average in years at the level of 8.21%). This hospital achieves the second worst result in the number of deaths of patients from myocardial infarction to the total number of patients hospitalized with myocardial infarction aged 35-74 years (average in years at the level of 10.17%). From the descriptive results shown at the bottom of Table 2, we find that the average efficiency value in the sample increases over time (at 8.76% per year) but decreases in 2015 and 2018. Likewise, the result of the coefficient of variation shows significant slippages. We can state that there are significant differences in the efficiency of health care provision between the examined hospitals. At the same time, smaller capacity hospitals achieve better overall efficiency results.

Table 2 – Total Effectiveness of 11 Faculty and University Hospitals in Monitored Period (in percentage)

Effectiveness/Year	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
FH Banská Bystrica	45,63%	45,73%	14,23%	9,48%	11,84%	10,73%	10,30%	15,62%	20,30%
FH Prešov	56,58%	45,40%	51,36%	32,68%	38,10%	31,26%	22,71%	27,94%	25,24%
UH Bratislava	39,57%	35,50%	7,37%	7,71%	72,71%	87,31%	73,11%	97,19%	95,89%
FH Nové Zámky	100,00 %	100,00 %	93,45%	59,61%	46,96%	38,40%	40,43%	45,80%	51,96%
UH Ružomberok	52,66%	44,33%	49,61%	8,97%	27,96%	25,41%	26,84%	27,62%	18,92%
FH Nitra	58,63%	60,34%	81,38%	58,40%	51,95%	44,91%	35,38%	46,99%	41,75%
FH Žilina	17,39%	18,62%	2,66%	1,48%	10,20%	7,19%	5,97%	6,38%	8,51%
UH Martin	45,34%	31,55%	6,19%	3,58%	7,53%	4,74%	4,75%	5,05%	6,19%
FH Trenčín	50,38%	49,51%	28,10%	15,01%	13,76%	12,65%	10,14%	11,65%	22,37%
FH Trnava	46,60%	41,49%	7,86%	4,92%	12,06%	15,49%	13,60%	29,44%	37,51%
UH Košice	39,80%	30,80%	14,52%	8,95%	15,37%	11,13%	11,52%	14,53%	19,65%
Minimum value	17,39%	18,62%	2,66%	1,48%	7,53%	4,74%	4,75%	5,05%	6,19%
Maximum value	100,00 %	100,00 %	93,45%	59,61%	72,71%	87,31%	73,11%	97,19%	95,89%
Average	50,24%	45,75%	32,43%	19,16%	28,04%	26,29%	23,16%	29,84%	31,66%
Statistical deviation	19,88%	21,11%	32,01%	21,37%	21,56%	24,18%	20,38%	26,51%	25,34%
Coefficient of variation	39,58%	46,14%	98,72%	111,52 %	76,89%	91,96%	87,98%	88,84%	80,04%

Source: own processing (2021)

The effectiveness indicator expresses the relationship between outputs and results. Landes, McBain, Curran (2020) state in their study that effective is a hybrid concept that expresses the results obtained by the transformation process. In the case of the examined group, the effectiveness is monitored by qualitative indicators. These indicators examine patients' re-hospitalization and re-operability. In this context, the result of the transformation process in the provision of health services is the quality of health services. The results presented in Table 2 show that the highest effectiveness value is achieved by FH Nové Zámky. The second-best result was recorded by UH Bratislava. The lowest effectiveness value is shown by FH Žilina. In all monitored periods, it recorded the highest share of the number of re-hospitalized patients up to 90 days to the total number of hospitalized patients in the same group of diagnoses (hospital average in the years at the level of 23.34%). This value is 7.66% more than the average of the sample during the monitored years. The overall effectiveness in the group from 2011 to 2014 decreased annually to the level of 27.47%. The subsequent increase in effectiveness until 2019 is only 10.56% per year. Based on these results, we can conclude that the effectiveness of the varies depending on the equipment. Please note that the coefficient of variation reaches a high value, which confirms the diverse effectiveness of health outcomes.

Table 3 – Total Economy of 11 Faculty and University Hospitals in Monitored Period (in percentage)

Economy/Year	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
FH Banská Bystrica	44,84%	56,77%	26,45%	31,50%	28,60%	31,13%	33,66%	29,10%	40,36%
FH Prešov	53,70%	67,40%	29,42%	45,58%	47,04%	68,95%	58,88%	75,20%	65,68%
UH Bratislava	38,02%	46,15%	19,75%	28,67%	26,41%	32,89%	31,58%	20,15%	32,77%
FH Nové Zámky	49,54%	82,73%	40,74%	69,35%	70,08%	98,49%	97,01%	90,66%	85,76%
UH Ružomberok	57,70%	78,65%	28,94%	28,38%	25,85%	35,81%	33,01%	40,65%	46,25%
FH Nitra	82,74%	78,89%	54,43%	57,33%	58,52%	77,53%	68,28%	67,57%	59,41%
FH Žilina	52,83%	69,83%	43,76%	55,76%	51,07%	66,45%	57,10%	63,89%	62,21%
UH Martin	34,95%	43,13%	42,69%	25,72%	28,63%	32,72%	33,58%	35,22%	33,04%
FH Trenčín	48,46%	59,35%	49,95%	58,44%	60,39%	58,79%	65,54%	63,43%	67,53%
FH Trnava	60,43%	85,12%	34,86%	44,22%	45,37%	67,10%	62,24%	58,37%	73,10%
UH Košice	23,25%	29,44%	18,85%	22,26%	21,92%	41,63%	45,13%	53,70%	61,62%
Minimum value	23,25%	29,44%	18,85%	22,26%	21,92%	31,13%	31,58%	20,15%	32,77%
Maximum value	82,74%	85,12%	54,43%	69,35%	70,08%	98,49%	97,01%	90,66%	85,76%
Average	49,68%	63,41%	35,44%	42,47%	42,17%	55,59%	53,27%	54,36%	57,07%
Statistical deviation	15,41%	18,16%	11,84%	16,08%	16,68%	22,32%	20,33%	21,16%	16,97%
Coefficient of variation	31,02%	28,64%	33,41%	37,86%	39,56%	40,16%	38,17%	38,93%	29,74%

Source: own processing (2021)

However, the question remains to what extent the level of effectiveness is the fault of the hospital. As Krčméry Papulová (2020) states, is a problem mainly in the strategic management of the health system, in which there is no innovative potential. To increase effectiveness, industry 4.0 policies and procedures should be implemented, such as early diagnosis and monitoring of patients, digital data archive, coordination of procedures, and departmental cooperation. Unfortunately, the need for re-hospitalization is often associated with CC (complications and comorbidities), which generally lead to significantly higher resource consumption and other ancillary health services.

Based on the collected and standardized data of hospitals, in Table 3 we offer the results of the overall economy. FH Nové Zámky can be described as the most economical long-term institutional health facility in the group. The hospital shows an overall economy of 76.04% on average in the monitored periods. We observe that the economy increased from 2013 to 2016, while in 2016 the hospital showed the highest overall economy in the monitored group and in the monitored years. Since 2016, the hospital's economy has been declining (down to 4.5% per year). UH Košice and UH Bratislava show low values of overall economy. Of course, in both cases it is necessary to consider the fact that these are hospitals located in the two largest cities in Slovakia. Thus, it is reasonable to expect above-average costs for hospitalization or staffing. In the case of UH Košice, we observe that it showed the lowest economy in 2013. Subsequently, with the exception of 2016, the economy increased and for the most recent monitored year it is 4.55% above the average of sample. The overall economy of UH Bratislava decreased in 2018. In the following year, the overall economy increased, but it is still the lowest value in the sample. From the point of view of the sample, the average economy of hospitals decreased in 2013, then increased. The coefficient of variation in this case stagnates around 35.64%. We can state that hospitals differ the least when measuring the indicator of economy.

Table 4 – Value for Money of 11 Faculty and University Hospitals in Monitored Period (in percentage)

Value for Money/Year	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*Average*
FH Banská Bystrica	58,23%	63,19%	41,23%	42,07%	40,40%	40,03%	46,52%	46,00%	47,86%	47,28%
FH Prešov	81,33%	68,66%	73,59%	83,86%	57,55%	76,99%	84,53%	66,67%	83,70%	75,21%
UH Bratislava	61,38%	55,26%	35,06%	47,47%	50,59%	58,24%	64,52%	53,35%	75,71%	55,73%
FH Nové Zámky	94,64%	89,55%	93,65%	81,17%	54,00%	78,25%	82,39%	66,58%	93,36%	81,51%
UH Ružomberok	76,71%	84,25%	62,00%	54,71%	47,89%	61,75%	79,57%	86,81%	80,50%	70,47%
FH Nitra	66,03%	77,59%	69,74%	64,04%	57,08%	63,83%	61,33%	61,37%	61,63%	64,74%
FH Žilina	41,47%	42,92%	29,10%	35,63%	37,33%	41,09%	43,16%	46,31%	60,64%	41,96%
UH Martin	70,76%	60,40%	45,22%	44,66%	40,71%	39,38%	44,47%	38,84%	45,71%	47,79%
FH Trenčín	87,95%	65,26%	48,65%	70,15%	70,65%	51,08%	61,06%	57,31%	85,69%	66,42%
FH Trnava	53,66%	76,04%	34,07%	37,40%	42,79%	47,52%	57,33%	51,04%	77,27%	53,01%
UH Košice	45,84%	50,19%	36,63%	40,52%	37,99%	45,78%	46,27%	46,93%	50,38%	44,50%
Minimum value	41,47%	42,92%	29,10%	35,63%	37,33%	39,38%	43,16%	38,84%	45,71%	41,96%
Maximum value	94,64%	89,55%	93,65%	83,86%	70,65%	78,25%	84,53%	86,81%	93,36%	81,51%
Average	67,09%	66,67%	51,72%	54,70%	48,82%	54,90%	61,01%	56,47%	69,31%	58,97%
Statistical deviation	17,04%	14,36%	20,39%	17,47%	10,36%	14,06%	15,49%	13,44%	16,71%	13,41%
Coefficient of variation	25,40%	21,54%	39,42%	31,95%	21,23%	25,60%	25,39%	23,79%	24,11%	22,75%

Source: own processing (2021)

Table 4 shows the performance results measured by the value for money method. We can state that none of the monitored hospitals uses their resources 100%. FH Nové Zámky shows the highest average value for money in the monitored periods. This hospital also shows a very high level of effectiveness as well as economy. In a detailed examination of the hospital's data, we can state that it is an average-sized hospital, which in 2019 employed 1,376 employees and performed 22,899 hospitalizations. Thus, it is not confirmed that smaller capacity health facilities perform better. The second-best performance was recorded by FH Prešov. It is a larger hospital with a capacity of 2,433 and 35,231 hospitalizations in the reference year. The hospital showed low values of total mortality of patients to the number of hospitalized patients as well as the ratio of deaths of patients from myocardial infarction to the total number of patients hospitalized with myocardial infarction aged 35-74 years. This hospital also achieved low values of the ratio of total costs of hospitalization.

On the contrary, FH Žilina was placed at the other end of the evaluation of the performance of health facilities. By capacity the hospital can be included in the group among the average hospitals (capacity from 1,000 - 1999 employees). In 2019, FH Žilina employed 1,680 employees and performed 29,313 hospitalizations. The lowest values were recorded by the hospital when measuring the quantitative indicator of the total mortality of patients to the number of hospitalized patients (average change in the period at the level of 42.51%). Compared to FH Nové Zámky, which performed a related number of hospitalizations (for 2019 FH Žilina = 741 hospitalizations; FH Nové Zámky = 744 hospitalizations), the result is 24.68% worse. To achieve the values of the indicators of FH Nové Zámky, FH Žilina would have to avert 18.27 deaths. In terms of economic results, FH Žilina employs an average of 325 more employees, which is also reflected in the amount of personnel costs. In relation to the best, it is on average an increase in personnel costs by 4,068,122 EUR and total costs by 14,208,003 EUR. The main determinant of

the amount of personnel costs is the wages of employees. As data on the number of medical staff according to salary classification were not made available to us, it is not possible to calculate the costs in relation to the medical staff of the hospital. Of course, this is an opportunity for future expansion of research or for the hospital itself, to compare with the best in the group.

4 Conclusion

The application of the concept of performance measurement in the public sector is conditioned by several specifics resulting from the design of the healthcare system. In the area of measuring the performance of institutional health facilities, the specifics relate mainly to market failures. However, despite these specifics, performance measurements can support the efficient operation of health facilities. For this reason, the aim of the paper was to evaluate the performance of health facilities using the value for money method. Based on the performance results, we can state that the value for money method is able to objectively point out the problem areas of the studied hospitals. Of course, the construction of performance measurement presented by us can be extended and modified in the future by new approaches or qualitative, quantitative, and monetary indicators. However, as the results show, the highest rate of use of resources is shown by FH Nové Zámky. This hospital showed high results in the evaluation of effectiveness and economy indicators. UH Ružomberok shows the best result in measuring efficiency. On the contrary, the lowest level of performance was achieved by FH Žilina. The hospital recorded low values in measuring efficiency and effectiveness indicators. In the overall evaluation of individual indicators. Also, we find that there is a significant variability between hospitals. This is also reflected in the comprehensive performance evaluation, where six hospitals show below-average results. The reason for this may be the low motivation for strategic management in the monitored hospitals. It is strategic management that can influence the achievement of good results in the performance of the organization and the quality of services provided (Greer, Carter, 2014). Also, based on experience in the preparation of research, we state that for a uniform and valid measurement of performance, it is necessary to have the same data from organizations. The reporting of data is on the account of each hospital. As we have been pointed out, hospitals are not obliged to draw up *Annual Reports*, which has complicated the finalization of the research. However, it should be noted that this has led to a reduction in the choice of partial indicators for measuring efficiency, effectiveness, and economy. However, the research we conduct confirms the need to measure performance in the public sector and suggests challenges for the future. Measuring and evaluating performance can help change the governance of public service organizations.

Acknowledgements

This paper is part of the project VEGA 1/0334/19 Evaluating the performance of regional education by the value-for-money method, using the example of grammar schools.

References

[1] Act No. 578/2004 Coll. on Healthcare Providers.

[2] Act. No. 580/2004 Coll. on Compulsory Health Insurance.

[3] BENZAGHTA, A. M., et al. (2021). SWOT analysis applications: An integrative analysis applications: An integrative literature review. *Journal of Global Business Inside*, Vol. 6, No. 1, pp. 55 – 73. DOI: 10.5038/2640-6489.6.1.1148.

[4] BIANCONE , P. P., SECINARO, S., BRESCIA, V. (2018). Better Life Index and Health Care Quality Indicators, Two New Instruments to Evaluate the Healthcare

System. *International Journal of Business* and Management, Vol. 13, No. 2, pp. 29 – 39. DOI: 10,5539/ijbm.v13n2p29.

[5] BRYSON, J., GEORGE, B. (2020). *Strategic Management in Public Administration*. University Press: Oxford. DOI: 10.1093/acrefore/9780190228637.013.1396.

[6] BUTLER, C. (1994). Overpopulation, overconsumption and economics. *The Lancet*, Vol. 343, No. 8897, pp. 582 – 584.

[7] CARTON, R. B., HOFER, C. W. (2006). Measuring organizational performance: Metrics for entrepreneurship and strategic management research. Edward Elgar Publishing: Northampton.

[8] ČEPELOVÁ, A. (2017). Metódy hodnotenia verejných služieb a meranie ich kvality. *Aktuálne otázky trvalo udržateľného rozvoja miest a obcí*, pp. 40 – 47.

[9] CEPIKU, D. (2017). Performance Management in Public Administration: an Exploratory Study of Determinants and Effects. *Journal of Management and Governance*. Vol. 21, No. 4, pp. 963 – 991.

[10] DATTA-CHAUDHURI, M. (1990). Market Failure and Government Failure. *Journal of Economic Perspective*. Vol. 4, No. 3, pp. 25 – 39. DOI: 10.1257/jep.4.3.25

[11] DE WAAL, A., KOURTIT, K., NIJKAMP, P. (2009). The relationship between the level of completeness of a strategic performance management system and perceived advantages and disadvantages. *International Journal of Operations and Production Management*. Vol. 29, No. 2, pp. 1242 - 1265. DOI: 10.1108/01443570911005983

[12] EL-GHALAYINI, Y. (2017). Human Resource Management Practices and Organizational Performance in Public Sector Organization. *Journal of Business Studies Quarterly*. Vol. 8, No. 3, pp. 65 – 80.

[13] GAL, M. S., RUBINFELD, D. L. (2019). Data Standardization. *New York University Law Review*, Vol. 94, No. 4, pp. 737.

[14] GINTER, M. P., DUNCAN, J. W., SWAYNE, E. L. (2018). *The Strategic Management of Health Care Organizations.* John Wiley & Sons: New Jersay.

[15] GLADKIJ, I. et al. (2003). *Management ve zdravotnictví*. Computer Press: Brno.

[16] GREER, R. CH., CARTER, M. S: (2014) Strategic Leadership: Values, Styles, and Organizational Performance. *Journal of Leadership and Organizational Studies*, Vol. 20, No. 4, pp. 375 – 393. DOI: 10.1177/1548051812471724

[17] HORVAT, A., FILIPOVIČ, J. (2018) Healthcare system quality indicators: the complexity perspective. *Total Quality Management & Business Excellence*, Vol. 13, No. 1-2, pp. 161 – 177. DOI: 10.1080/14783363.2017.1421062

[18] HUBBARD, G. (2009). Measuring organizational performance: beyond the triple bottom line. *Business strategy and the environment*, Vol. 18, No. 3, pp. 177-191. DOI: 10.1002/bse.564

[19] INEKO. (2020). Kde sa liečiť? [online]. [cit. 2021-08-01]. Available from https://kdesaliecit.sk/nemocnica-roka/2020.

[20] JANTOŠOVÁ, L., FOLTÍNOVÁ, A. (2015). *Zvyšovanie kvality služieb a riadenie nákladov v nemocniciach na Slovensku.* [online]. [cit. 2021-08-01]. Available from

[21] JOLING, K. J. et al. (2018). Quality indicators for community care for older people: A systematic review. *PloS One*, Vol. 13, No. 1, pp. 20 – 27. DOI: 10.1371/journal.pone.0190298

[22] KORTBEEK, N. (2012). *Quality-driven Efficiency in Healthcare*. Universiteit Twente: Enschede.

[23] KRČMÉRY, S., PAPULOVÁ, Z. (2020). Výzvy v zdravotníctve súvisiace s nástupom 4. priemyselnej revolúcie. In *Recenzovaný zborník príspevkov z medzinárodnej vedeckej konferencie, 2020*. pp. 50 – 60.

[24] LANDES, S. J., MC BAIN, S. A., CURRAN, G. M. (2020). An introduction to effectiveness-implementation hybrid designs. *Psychiatry Research*, Vol. 283, 112 - 630.

[25] MOULLIN, M. (2017). Improving and evaluating performance with the Public Sector Scorecard. *International Journal of Productivity and Performance Management*, Vol. 66, No. 4, pp. 442-458. DOI: 10.1108/IJPPM-06-2015-0092

[26] NEMEC, J. et al. (2020). Účinnosť verejného obstarávania v slovenskom zdravotníctve. *Český finanční účetní časopis*. Vol. 2020, No. 1, pp. 27-39.

[27] OECD. (2019). State of Health in the EU: Health Profile of Slovakia, 2019, OECD Publishing: Paris.

[28] OECD. (2018). Consultations with doctors, In *Health at a Glance: Europe 2018, State of Health in the EU Cycle*. OECD Publishing: Paris. DOI: 10.1787/health_glance_eur-2018-52-en

[29] SÁPOCI, J. et al. (2015). Zdravie a zdravotná starostlivosť na Slovensku – nerovnosti v zdraví. STIMUL: Bratislava.

[30] SCHILLER, B. R. (2004). *Mikroekonomie dnes*. Computer Press: Brno.

[31] Slovak Government Regulation No. 640/2008 Coll. on a Public Minimum Network of Healthcare Providers

[32] SNOW, C. C., HAMBRICK, D. C. (1980). Measuring organizational strategies: Some theoretical and methodological problems. *Academy of Management Review*, Vol. 5, No. 4, pp. 527-538.

[33] SOBHANALLAHI, M. A., GARAEI, A., PILBALA, M. (2016). Provide a practical approach for measuring the performance rate of organizational strategies. *International Conference on Industrial Engineering*, Vol. 1/2016, pp. 115-124.

[34] STATISTICAL OFFICE SR. (2021). *Zdravotníctvo*. [online]. [cit. 2021-08-01]. Available from http://datacube.statistics.sk/#!/view/sk/VBD_SK_WIN/zd5001rr/v_zd5001rr_00_00_00_sk

[35] ŠTRANGFELDOVÁ, J., ŠTEFANIŠINOVÁ, N. (2021). *Hodnotenie výkonnosti verejných služieb*. Belianum: Banská Bystrica.

[36] STRAUSS, E. R., ZECHER, C. (2013). Management Control Systems – A Review. *Journal of Management Control*, Vol. 23, No. 1, pp. 233-268.

[37] VERBEETEN, F. H. M. (2008). Performance Management Practices in Public Sector Organizations: Impact on Performance. *Accounting Auditing and Accountability Journal*, Vol. 21, No. 1, pp. 427 – 454.

[38] VŠEOBECNÁ ZDRAVOTNÁ POISŤOVŇA. (2021). *Indikátory kvality 2019*. [online]. [cit. 2021-08-01]. Available from https://www.vszp.sk/poskytovatelia/indikatory-kvality/indikatory-kvality.html

[39] WILLEMS, J., BOENIGK, S., JEGERS, M. (2014). Seven trade-offs in measuring nonprofit performance and effectiveness. *International Journal of Voluntary and Nonprofit Organizations*, Vol. 25, No. 6, pp. 1648-1670.

Contact information

Ing. Daniela Mališová
Matej Bel University, Faculty of Economics, Department of Public Economics and Regional Development
Tajovského 10, 974 01 Banská Bystrica, Slovak Republic
E-mail: daniela.malisova@umb.sk

doc. Ing. Jana Štrangfeldová, PhD.
Matej Bel University, Faculty of Economics, Department of Public Economics and Regional Development
Tajovského 10, 974 01 Banská Bystrica, Slovak Republic
E-mail: jana.strangfeldova@umb.sk

The social aspect of Chinese crafts

Katarzyna Mazur-Włodarczyk

Abstract: The article presents the issues of Chinese crafts related to the social economy sector. It includes a section on the characteristics of China's third sector, the government's vision of community involvement - the idea of craftsman spirit, as well as examples of Chinese crafts-related social enterprises. The desk research method was used in the research. The available data sources in Polish, English, and Chinese were analyzed. The text draws attention to the fact that despite the relatively short history of the social economy in the PRC, craftsmanship has also marked its presence in it, as well as the fact that China places a very strong emphasis on ideological education, which, apart from encouraging pro-ethical behavior in business has a strong political tone and is an important element of China's economic strategy.

Keywords: China, crafts, Chinese crafts, social economy, economic culture

JEL Classification: B55, Z19

1 Introduction

In 2020, the handicraft market was estimated at US$718 billion (*Worldwide Handicrafts Industry to 2026 - Featuring Asian Handicraft, Oriental Handicrafts and NGOC Don Ha Nam*, 2021). However, traditional handicraft is not the only type of service provided by craftsmen. Apart from creating artworks, craftsmen have also been present in the third sector. Not being organizationally dependent on the public sector (Abramuszkinová Pavlíková, 2012), the third sector complements the private sector by facilitating the involvement of various stakeholder groups and having a specific goal in achieving social cohesion (Vidal, 2008). Chinese craftsmen started earning their reputation before the Chinese imperial era especially due to astonishing works of art designed for many imperial dynasties, both in governmental and private workshops (彭丽华, 2014). Their identity and status evolved, but mass production and the developing consumerism reduced both the demand for their works and the respect they earned during the times of the People's Republic of China (PRC). However, despite the above, the area of craftsmanship is still doing well (Kokko&Räisänen, 2019). Apart from its purely profit-oriented aspect, quite often craftsmanship indicates the need to engage in pro-social matters by undertaking socially integrating civic activities addressed to people, many of whom are at risk of social marginalization, by creating jobs and providing social services and local development (Ministerstwo Rodziny i Polityki Społecznej, 2017).

This article provides insight into Chinese craftsmanship and its relationship with the third sector in terms of the government's view of community involvement – promoting the *spirit of craftsmanship* and the social economy's solutions employed by the craftsmen themselves. The aim of the article is to answer the question of whether, despite the relatively short history of the social economy in China, this solution is popular and promoted among Chinese entrepreneurs and craftsmen.

2 Material and Methods

The desk research method was used in the study. The research analysis included articles published in scientific journals, reports and press articles related to the social economy and Chinese craftsmanship which were written in Polish, English and Chinese.

The research showed that not many Polish-language studies have been conducted to assess the relationship between the social economy and Chinese craftsmanship. The English-language articles discuss issues mainly related to social companies, while the Chinese-language papers cover mainly two groups of issues:

- Articles in which the social and economic development only slightly refer to civic organizations or they are closely related to the ecologically sustainable development;
- Articles which directly relate to the socialist economy with Chinese characteristics, in China also known as the political economy of the new era (Hong, 2020). These papers highlight the notions of community and social equality, however, they are significantly biased ideologically – they either present or refer to the theory of Deng Xiaoping, the Three Representations, as well as the scientific aspect of development and as such are a continuation of Marxism-Leninism and the thoughts of Mao Zedong (*The Theory Of Building Socialism with Chinese Characteristics*, 2016). Therefore, they do not apply to formally organized private enterprises defined by autonomous decision-making and activities beneficial for local and marginalized groups (Popoveniuc, 2012). Sometimes, they discuss some aspects of the community sector, but not with regard to the non-student voluntary sector and social enterprises.

3 Results and Discussion

3.1 Chinese social economy sector

On a global scale, the social economy is becoming more and more popular (Rey-Martí, Díaz-Foncea&Alguacil-Marí, 2020; Chen et al., 2020; Kubıckova&Hodzic, 2020). This is due to evolving needs and intense social and economic changes. However, the social economy sector has been a relatively new development in China. According to the data provided by the Social Entrepreneurship Akademie of LMU, the beginning of Chinese social entrepreneurship dates back to 1949 when the "Social Welfare Enterprises" were introduced (*Social Enterprise in China*, 2015). Yet, quite often the beginnings of the Chinese third sector are associated with the time period from 2004 to 2008 due to the following events: Chinese-British symposium on social enterprise and *non-profit* activities, translated publications on social economy widely available in bookshops[3], a sustainable social textile enterprise founded by Carol Chyau in the Tibet Autonomous Region and the Wenchuan earthquake in Sichuan Province which affected Chinese civic organizations (*China Social Enterprise and Impact Investment Report*, 2013). The next stage in the development of the Chinese third sector was marked by the performance of the first private Narada Foundation and training projects organised by the British Council - "Skills for Social Entrepreneurs" program (Arantes, 2020). In the following period, only a few scientific papers discussed the third sector in the PRC. According to Long Wang and Yanto Chandra (2020), until 2013 the few texts which discussed social enterprises were either conceptual or descriptive. Moreover, they mainly referred to the Hong Kong Special Administrative Region - which was a dependent territory of the British Empire from 1842 to 1997, and Taiwan - the area not considered as a part of the PRC by the international community (Chan&Yuen, 2013; Chan et al., 2011; Ho & Chan, 2010). Back in 2013, the majority of Chinese people were not familiar with the concept of a *social enterprise* (*China Social Enterprise and Impact Investment Report*, 2013). Between 2013 and 2014, Chinese social enterprises were mainly located in Beijing and Shanghai and later also in Shenzhen, Tianjin and Suzhou (Zhao, 2014). By 2017, there were over

[3] Including such books as: D. Bornstein, *How to Change the World: Social Entrepreneurs and the Power of New Ideas* and C. Leadbeater, *The Rise of the Social Entrepreneur*.

801,000 social organizations operating in China showing the development tendency in this sector (Wang&Wo, 2019). Nevertheless, when compared to Western countries, the management of social entrepreneurship in China has entered its initial phase (Zhang&Li, 2017). More recent studies[4] have shown the increasing interest in social economy in the PRC, however, a clear legal position (considered as strict) and appropriate legislation with regard to social economy have not yet been developed (*Social Impact Investment 2019. The Impact Imperative for Sustainable Innovation Ecosystems in South East and East Asian Countries*, 2019). On the other hand, a new trend of strengthening the system of the ecological economy (Yu, 2016) and emphasizing the sustainable aspect of craftsmanship has become evident (Zhan&Walker, 2018; Fan&Feng, 2019; Li, Ho&Yang, 2019).

3.2 *Craftsman spirit* - Chinese vision of community involvement in crafts

The Chinese vision of social involvement in craftsmanship manifests mainly in the term *spirit of craftsmanship* [工匠精神], which has become popular not only on the Internet, but also in the Chinese manufacturing industry. In 2016, the phrase *spirit of craftsmanship* was listed among ten most popular phrases [„2016年十大流行语”] (杨芳, 2016). The spiritual aspects of craftsmanship focus mainly on three qualities:

- respect (teachers, work performance and workers – craftsmen);
- continuous improvement (self-improvement and creation – developing the skills and talents necessary for technological achievements, thus innovation) (钱书成, 2020);
- development of professional ethics (aimed at offering the highest quality services – not only in individual processes and final products but also by following regulations and established rules which enhance respect in the entire society (张越, 李延彬&杨保强, 2020)).

The *spirit of craftsmanship* is also reflected in the socially expected qualities of craftsmen, such as: focus, responsibility, diligence/meticulousness, striving for excellence and professionalism (张圣荧, 2020).

The way in which the Chinese present the *spirit of craftsmanship* reveals its ideological foundations by referring to the socialist economy. The term *spirit of craftsmanship* was introduced in 2016 by the Prime Minister Li Keqiang, who called upon all industries to develop it. Former Deputy Prime Minister Liu Yandong and the current chairman Xi Jinping also referred to the *spirit of craftsmanship* in their speeches. The significance of the *spirit of craftsmanship* in China, has been reflected in the following slogans/ ideas which are or should be associated with this concept:

- the “Made in China 2025” program introduced in 2015;
- the shift from the notion of “made in China” to “created in China” and the change from a large manufacturing country to a strong manufacturing country (刘娇&杨敬江, 2020), becoming a manufacturing power (王新宇, 2016);
- the transformation and modernization of China’s manufacturing industry (陈文帅, 2019), thus moving towards the Chinese “age of quality” (沈晓筱, 2018);
- the great revival of the Chinese (龚群, 2021);
- addressing the evident tendency of seeking higher education – for the “intellectual” work in the future (王佳&刘丹, 2020);

[4] I.e. studies published in 2020.

- as a tool to counteract the relatively slow development of vocational education and overly traditional teaching methods (陈文帅, 2019);
- as a tool for preventing technical training without developing "moral quality" (陈文帅, 2019);
- the necessary condition for professional innovation (钱书成, 2020);
- developing the skills and talents considered as useful for the society (such as a response to social demand) which are developed to promote the country and "help China" (熊蕊, 2020) by contributing to Chinese progress (刘海风, 2018);
- a strategic approach to economic development which requires a long-term strategy and implementation plan (张鑫&李中, 2017);
- a tool preventing a skills' gap resulting from associating craftsmanship with low wages and intense work;
- referring to Chinese traditions, the greatness of ancient craftsmanship (蔺玲玲, 2017; 张景峰, 2016) and combining tradition with innovation by incorporating features of Chinese civilization into global development (*让工匠精神成为中国制造之"魂"*, 2016);
- aiming at educating an army of craftsmen (李月);
- stimulating internal consumption, as a stimulus to buy goods produced domestically rather than importing them or buying them outside China (*让工匠精神成为中国制造之"魂"*, 2016);
- striving to develop cultural trust (*传承弘扬陶瓷文化创新发展工匠精神*);
- the next stage in shaping a socialist society (Hong, 2020).

Developing a craftsmanship spirit in Chinese society requires: the ideological and political education provided in vocational and higher schools - strengthening the basic values of socialism and cultivating patriotism (刘琼芳, 2018), combining theoretical knowledge with practical training, education based on the predispositions and interests of pupils/students, conducting classes in smaller groups to understand the individual circumstances of each student (王新宇, 2016), providing modern vocational training by establishing and developing cooperation between schools and enterprises (陈晶, 2020), introducing a national certification system for craft skills (徐耀强, 2017), organizing craft competitions and exhibitions (*市人力资源和社会保障局关于印发"武汉工匠"评选实施办法（试行）的通知武人社发(2018)50号*, 2018), promotion of craft - including TV programs (龚群, 2021), accounts in the WeChat application (*省政协十二届一次会议《提升正气 大力弘扬劳模精神和工匠精神》（0078号）的答复*, 2020), etc.; sharing good practices - through meetings with well-known and respected craftsmen and entrepreneurs, improving teaching resources (e.g., by using information technology (颜征兵, 2020)), conducting pro-health practical courses (e.g., aimed at developing healthy habits in a family, pro-health behaviours in a workspace, providing rehabilitation) (王佳&刘丹, 2020)), as well as ensuring safety (e.g., settlement of craftsmen families, career counselling for spouses (*武汉工匠资格条件及政策指引*, 2019), etc.).

In conclusion, the social dimension which links social economy with the s*pirit of craftsmanship* is limited to social apprenticeships and internships for students (熊蕊, 2020) and pointing to the moral aspect of the social responsibility of the craft business.

3.3 International solutions of the social economy used in relation to Chinese crafts

Social companies in China tend to operate locally in such sectors as microfinance, education, poverty prevention and crafts (*Social Enterprise in China*, 2015). In 2014, 12% of social businesses produced handicraft (Zhao, 2014). Third sector activities related to Chinese crafts are

mainly presented from the perspective of social craftsmanship companies which are often established by foreigners (i.e., people of non-Chinese origin). The following social organizations are most popular on the Internet:

- *Tibetan-Qiang Embroidery Center* established in 2009 by Yang Huazhen after the earthquake in Chengdu in Sichuan Province - Great Wenchuan Earthquake. It provides employment for women from the Qiang ethnic group by offering training courses, workshops and products which combine traditional Qiang embroidery with traditional and modern aesthetics. There is also a museum for Tibetan-Qiang culture (Johnson&Shiling, 2016).
- *Jian'ai Crafts Limited Liability Company* that evolved from Jian'Ai Papercutting Design Studio. This company has been operating since 2011 as a social enterprise dedicated to helping haemophilia patients, their families and people with disabilities. By making paper carvings and sculptures, designing knitting patterns, providing decorations for celebrations and weddings, the company provides employment and boosts self-confidence. People suffering from haemophilia and their families are the company's main investors, with 20% of the profits being allocated for projects directly related to haemophilia, while 10% is used to support the Association for the Rehabilitation of Haemophilia. The company also aims at raising social awareness about this disease (*China Social Enterprise and Impact Investment Report*, 2013);
- Shanghai Social Innovation Park was established in 2010. It provides professional training - including graphic design, art school and handicraft, and employment for disabled people (China Social Enterprise and Impact Investment Report, 2013);
- Atlas design, a company that encourages women weavers from the Dong ethnic minority to share their knowledge, discover their hidden economic potential and emphasize the value of work created by women (Sowley, 2017);
- Dancing Yak, a company operating in the Tibet Autonomous Region, provides sewing courses and teaching manual production of goods for the poor, single mothers, people with disabilities and students (Social Enterprise in Sichuan, 2017);
- China Women's Federation and the authorities of Guizhou Province in 2013 initiated the Embroidery Plan project aimed at preserving the traditional embroidery of ethnic minorities, as well as offering support to women to find a job and improve their economic situation. The project was addressed to women from the Miao, Dong, Shui, and Yao minorities and included the opportunity to learn or improve embroidery skills, support in setting up their own enterprises, as well as assistance in distributing the resulting handicrafts in large cities (Ling&Wei, 2019).

Apart from activities aimed at increasing value - generating profit, these enterprises also provide training aimed at acquiring skills, popularizing a given craft and providing assistance to people in disadvantaged life circumstances by offering jobs and facilitating access to a given market.

It is worth emphasizing that as their business develops, the craftsmen themselves see the needs of local communities and try to use their skills for their benefit. They often organize training and workshops to transfer or improve specific skills in order to support people in a difficult life situation. These include:

- Li Dehua from Qianxi - Guizhou Province, a craftsman who uses pyrography - a technique of decorating wood, leather or other materials with burn marks with a stylus/ pyrograph, on gourds. In 2017, craftsman Li founded a company which provides employment for 130 people with disabilities (*Disabled craftsman helps locals live a better life with gourd pyrography*);
- Niu Chengguo, who represents the fourth generation of pyrographers on gourds, founded a cooperative association in Shunyi - a district of Beijing. It gathers 300

members and employs 200 people with disabilities to improve their living conditions and promote crafts (*Beijing Gourd Artist Helps World Understand Beauty of China's Intangible Cultural Heritage*, 2021);

- Osung Dorje, a craftsman who produces traditional bows in Jainca - Qinghai Province. He trains and employs craftsmen with disabilities by cultivating cultural heritage and helping people challenged by difficult life circumstances (Zhang, 2014);
- Wang Jintang, a craftsman from Queshan - Henan Province, mobilized the inhabitants to develop handicraft skills and open their craft workshops producing violins and other stringed instruments. There are currently 122 violin manufacturing plants in Queshan employing over 2,000 people. The development of crafts in the region increased the income of over a hundred families, created a place of employment, and offered training for people with disabilities (Shan&Lu, 2020);
- Pan Xiaohong living in Sunan - Gansu province, opened a craft workshop producing car decorations based on traditional Uyghur embroidery. The popularity of her products and the support of local authorities made it possible to start a business in which 58 people found employment, including 22 people with disabilities. The craftswoman also runs online workshops (Zhao, 2020);
- Dawa Dakpa, a boiler worker working in a studio in Daisu District - Sichuan Province. Thanks to funds and support from local authorities, he runs a crafts business with 16 employees. The craftsman also conducts workshops for people with disabilities and unemployed people from the area (Yao, 2016).

4 Conclusion

Despite the relatively short history of social economy in the PRC, craftsmanship has become a significant part of it. On the one hand, the Chinese pro-social approach toward craftsmanship has been developed as part of intended governmental actions and the widely promoted concept of the *spirit of craftsmanship*. In ancient China, the system of quality management and supervision for artisans was established very early on. Artisans had to engrave their names on their artworks for inspection and supervision (沈晓筱, 2018). Nowadays, the concept of the spirit of craftsmanship has been reintroduced to increase professional recognition. However, achieving this goal seems to be extremely ambitious and difficult since gaining the respect and confidence of a particular professional group requires time and the commitment of many generations of craftsmen. On the other hand, this spirit indicates that the Chinese strongly emphasize the significance of ideological education (and the emerging new socialist fashion, manifested in the number of statements and texts discussing to or referring to the idea of the spirit of craftsmanship), which not only encourages pro-ethical behaviours in business but being politically coloured, it is also an important element of China's economic strategy – the path to further economic growth. The social aspect of Chinese craftsmanship is also associated with more grass-roots initiatives, which include training or jobs offered by companies to disadvantaged artisans and by craftsmen who are interested in transmitting cultural heritage and providing assistance in the professional integration of people at risk of social marginalization.

References

[1] ABRAMUSZKINOVA PAVLIKOVA, E. (2012). *Social Economy and Responsibility*, Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, LX 1(4), pp. 9-14.

[2] ARANTES, W. (2020). *Transforming or Complying? The Rise of Social Enterprises in Shanghai*, Journal of Social Entrepreneurship, https://doi.org/10.1080/19420676.2020.1758195.

[3] *Beijing Gourd Artist Helps World Understand Beauty of China's Intangible Cultural Heritage*, (2021) [online]. [cit.2021-05-29]. Available from http://www.womenofchina.cn/womenofchina/html1/culture/arts/21051/7075-1.htm.

[4] *China Social Enterprise and Impact Investment Report*, 2013, Shanghai University of Finance & Economics Social Enterprise Research Center, Peking University Center for Civil Society Studies, the 21st Century Social Innovation Research Center, and the University of Pennsylvania School of Social Policy & Practice.

[5] CHAN, K.M., YUEN, Y.K.T. (2013). *An overview of social enterprise development in China and Hong Kong*, Journal of Ritsumeikan Social Sciences and Humanities, 5, pp. 165–178.

[6] CHAN, K.T., et al. (2011). Similarities and divergences: comparison of social enterprises in Hong Kong and Taiwan, Social Enterprise Journal, 7(1), pp. 33-49.

[7] CHEN, X.Y., WAN, P., QUAN, X.F., SIAL, M.S. (2020). *Does corporate social responsibility matter to management forecast precision? Evidence from China*, Economic Research-Ekonomska Istrazivanja 2020, 33(1), 1767–1795 https://doi.org/10.1080/1331677X.2020.1761420.

[8] *Disabled craftsman helps locals live a better life with gourd pyrography* [online]. [cit.2021-05-25]. Available from https://sw-ke.facebook.com/ChinaGlobalTVNetwork/posts/6123141521059950.

[9] FAN, K.K., FENG T.T.. (2019). Discussion on Sustainable Development Strategies of the Traditional Handicraft Industry Based on Su-Style Furniture in the Ming Dynasty, Sustainability, 11, 2008; https://doi.org/10.3390/su11072008.

[10] HO, A.P.Y., CHAN, K.T. (2010). *The social impact of work-integration social enterprise in Hong Kong*, International Social Work, 53(1), pp. 33-45.

[11] HONG, Y.X. (2020). *Socialist political economy with Chinese characteristics in a new era*, Socialist political economy, 3(2), pp. 259-277, https://doi.org/10.1108/CPE-10-2020-0017.

[12] JOHNSON, G.F., SHILING, H. (2016). *Master Yang: Protecting Cultural Heritage, Continuing the Tradition*, American International Journal of Social Science, 5(3), pp. 35-41.

[13] KOKKO, S., RAISANEN, R. (2019). Craft education in sustaining and developing craft traditions Reflections from Finnish craft teacher education, Techne Series A: 26(1).

[14] KUAN, Y.Y., et al. (2011). *The governance of social enterprise in Taiwan and Hong Kong: a comparison*, Journal of Asian Public Policy, 4(2), pp. 149-170.

[15] KUBICKOVA, K., HODZIC, M. (2020). *The evaluation of project management practices in the Czech social enterprises*, Economic Research-Ekonomska Istraživanja, 33:1, 999-1016, https://doi.org/ 10.1080/1331677X.2018.1553679.

[16] LI, W.T., HO, M.C., YANG, C. (2019). A Design Thinking-Based Study of the Prospect of the Sustainable Development of Traditional Handicrafts, Sustainability, 11, 4823; https://doi.org/10.3390/su11184823.

[17] LING, X.,WEI, X.Y. (2019). *Shaking Off Poverty - All China Women's Federation* [online]. [cit.2021-06-02]. Available from http://m.womenofchina.cn/womenofchina/xhtml1/special/1905/1977-1.htm.

[18] Ministerstwo Rodziny i Polityki Społecznej (2017). *Czym jest ekonomia społeczna i solidarna?* [online]. [cit.2021-05-07]. Available from https://www.gov.pl/web/rodzina/czym-jest-ekonomia-spoleczna-i-solidarna.

[19] POPOVENIUC, B. (2012). *The Quest for Social Economy*, Philosophy, Social and Human Disciplines, 2, pp. 51-67.

[20] REY-MARTI, A., DIAZ-FONCEA, M., ALGUACIL-MARI, P. (2020). *The determinants of social sustainability in work integration social enterprises: the effect of entrepreneurship*, Economic Research-Ekonomska Istraživanja, https://doi.org/10.1080/1331677X.2020.1805348.

[21] SHAN, J., LU, Y.M. (2020). *World's factory of violin' trains farmers into craftsmen, lifts region out of poverty* [online]. [cit.2021-05-23]. Available from https://www.globaltimes.cn/content/1210676.shtml.

[22] *Social Enterprise in China* (2015). Social Entrepreneurship Akademie of LMU, Monachium-Shanghai, [online]. [cit.2021-05-06]. Available from http://www.constellations-international.com/wp-content/uploads/2018/07/Social-Enterprise-Brief-2015-Constellations.pdf.

[23] *Social Enterprise in Sichuan* (2017) [online]. [cit.2021-04-12]. Available from https://chengdu-expat.com/chengdu-social-enterprises/.

[24] Social Impact Investment 2019. The Impact Imperative for Sustainable Innovation Ecosystems in South East and East Asian Countries (2019). OECD, Paris, https://doi.org/10.1787/9789264311299-en.

[25] SOWLEY, A. (2017). *Atlas design: Giving new life to Chinese crafts* [online]. [cit.2021-04-12]. Available from http://www.china.org.cn/china/2017-05/09/content_40775345.htm.

[26] *The Theory Of Building Socialism With Chinese Characteristics* (2016). A Chronology, Party literature research of the CPC Central Committee, Studies on the Theory of Socialism with Chinese Characteristics, China Renmin University, Singapore.

[27] VIDAL, I. (2008). *What is the social economy?*, pp. 22-25, https://doi.org/10.1007/978-1-4419-5707-8_6.

[28] WANG, L., CHANDRA, Y. (2020). *An Investigatin of Management Practices in Chinese Social Enterprises*, International Conference on Applied Management Advances in the 21st Century 2020 (AMA21 2020), https://doi.org/10.33965/ama2020_202003P024.

[29] WANG, O., WO, Y.T.B. (2019). *Social Investment Landscape in Asia*, AVPN [online]. [cit.2021-05-06]. Available from https://avpn.asia/si-landscape/.

[30] *Worldwide Handicrafts Industry to 2026 - Featuring Asian Handicraft, Oriental Handicrafts and NGOC Don Ha Nam* (2021) [online]. [cit.2021-04-25]. Available from https://www.prnewswire.com/news-releases/worldwide-handicrafts-industry-

to-2026---featuring-asian-handicraft-oriental-handicrafts-and-ngoc-don-ha-nam-among-others-301270586.html.

[31] YAO, L. (2016). *Home to Tibetan crafts faces challenges* [online]. [cit.2021-05-23]. Available from http://www.ecns.cn/m/hd/2016-08-04/detail-ifytxtex5096349.shtml.

[32] YU, X.M. (2016). *Social Entrepreneurship in China's Non-profit Sector*, China perspectives, 3, https://doi.org/10.4000/chinaperspectives.7051

[33] ZHAO, B.Y. (2020). *Embroidery helps a Yugur woman out of poverty* [online]. [cit.2021-05-23]. Available from http://p.china.org.cn/2020-08/31/content_76653622.htm.

[34] ZHAO, Z.Y. (2014). The State of Social Entrepreneurship in China SEFORÏS Country Report, NPI.

[35] ZHAN, X.F., WALKER, S. (2018). *Value Direction: Moving Crafts toward Sustainability in the Yangtze River Delta, China*, Sustainability, 10, 1252; https://doi.org/10.3390/su10041252.

[36] ZHANG, Y.T., Li, Y. (2017). *A literature review on social enterprises*, Research on Modern Higher Education, 3, pp. 35-40, 01006, https://doi.org/10.24104/rmhe/2017.03.01006.

[37] ZHANG, Z. (2014). *Skilled bow-maker preserves traditions and helps disabled* [online]. [cit.2021-05-23]. Available from www.chinadaily.com.cn/business/2014-09/24/content_18651272.htm.

[38] 陈晶 (2020). *工匠精神"引领下的高职院校"7S"管理模式的探究与应用*, 现代教育论坛, 3(6), pp. 94-95, https://doi.org/10.32629/mef.v3i6.1615.

[39] 陈文帅 (2019). *浅谈高职院校工匠精神的培养*, 教育研究, 2(3), pp. 116-117, https://doi.org/10.32629/er.v2i3.1747.

[40] 沈晓筱 (2018). *振兴传统工艺须弘扬工匠精神* [online]. [cit.2021-04-26]. Available from https://theory.gmw.cn/2018-06/19/content_29337897.htm.

[41] *传承弘扬陶瓷文化创新发展工匠精神* [online]. [cit.2021-04-30]. Available from http://topic.jdzol.net/html/xxjw/xwjj/10990.html.

[42] *《高职学生"工匠精神"培育体系的构建与实践》项目成果总结* [online]. [cit.2021-04-29]. Available from https://www.fjlzy.com/gjjs/cgzj.htm.

[43] 龚群 (2021). *工匠精神及其当代意义* [online]. [cit.2021-04-27]. Available from http://jspopss.jschina.com.cn/shekedongtai/202101/t20210119_6952091.shtml.

[44] 黄希 (2020). *高职教育中培养学生工匠精神的必要性与可行性研究*, 现代教育论坛, 3 (1), pp. 70-72, https://doi.org/10.32629/mef.v3i1.514.

[45] 蒋华林, 邓绪琳 (2019). *工匠精神:高等工程教育面向先进制造培养人才的关键* [online]. [cit.2021-04-30]. Available from http://qks.cqu.edu.cn/html/cqdxskcn/2019/4/20190417.htm.

[46] 李华 (2019). *遵从道德发展规律，探究中职德育课程中工匠精神的培育*, 教学方法创新与实践, 2(3), pp. 119-121, https://doi.org/10.26549/jxffcxysj.v2i3.1919.

[47] 刘琼芳 (2018). *简析工匠精神与高校思政课教师队伍建设*, 教育研究，1(3), pp. 15-16, https://doi.org/10.32629/er.v1i3.1501.

[48] *李克强力倡"工匠精神"，入选2016年十大流行语* (2016) [online]. [cit.2021-04-30]. Available from http://www.chinaconsulatechicago.org/chn/zzxw/t1424591.htm.

[49] 李月，*首届新时代中国卓越匠心文化论坛* [online]. [cit.2021-04-30]. Available from http://www.szlib.com/pdcn/home/Content/44579.

[50] 蔺玲玲 (2017). *企业创新需要工匠精神* [online]. [cit.2021-04-30]. Available from http://www.zykyj.com/eportal/ui?pageId=879886&articleKey=905764&columnId=939541.

[51] 刘海风 (2018). *基于现代学徒制的烹饪专业学生工匠精神培养途径分析*, 教育研究, 1(3), pp. 39-40, https://doi.org/10.32629/er.v1i3.1500.

[52] 刘娇, 杨敬江 (2020). *O2O 混合教学模式中塑造高职学生工匠精神研究 ---以《连锁经营管理》为例*, 现代教育论, 3(5), pp. 52-54, https://doi.org/10.32629/mef.v3i5.922.

[53] 马聪聪,张静 (2019). *中职学校的劳动教育以及工匠精神的传承*, 现代教育论坛, 2(12), pp. 29-31, https://doi.org/10.32629/mef.v2i12.507.

[54] 彭丽华 (2014). *唐五代工匠研究述评*, 井冈山大学学报(社会科学版), 35(2), pp. 124-130, https://doi.org/1O.3969/j.issn.1674-8107.2014.02.021.

[55] *让工匠精神成为中国制造之"魂"* (2016) [online]. [cit.2021-04-25]. Available from http://theory.people.com.cn/n1/2016/0815/c49154-28635960.html.

[56] 钱书成 (2020). *基于现代学徒制的高职院校学生工匠精神培养研究 ---以政府采购管理专业为例*, 现代教育论坛, 3(6), pp. 122-124, https://doi.org/10.32629/mef.v3i6.1631.

[57] *省政协十二届一次会议《提升正气 大力弘扬劳模精神和工匠精神》（0078号）的答复* (2018) [online]. [cit.2021-04-30]. Available from http://rst.ln.gov.cn/zfxxgk/fdzdgknr/jyta/szxta/szxsejychy/202009/t20200922_3977492.html.

[58] *市人力资源和社会保障局关于印发"武汉工匠"评选实施办法（试行）的通知 武人社发〔2018〕50号* (2018) [online]. [cit.2021-04-27]. Available from http://rsj.wuhan.gov.cn/zwgk_17/zc/qtzdgkwj/zcfg/202001/t20200108_676948.html.

[59] *市人民政府关于印发"武汉工匠"培育计划的通* [online]. [cit.2021-04-27]. Available from http://rsj.wuhan.gov.cn/zwgk_17/zc/qtzdgkwj/zcfg/202001/t20200108_676947.html.

[60] 王佳, 刘丹 (2020). *论工匠精神在眼视光职业教育中的培养*, 现代教育论坛, 3(7), pp. 146-147, https://doi.org/10.12238/mef.v3i7.2605.

[61] 王新宇 (2016). "*中国制造"视域下培养高职学生"工匠精神"探析*, 理论前沿, 职业教育研究, 2, pp.14-17.

[62] *武汉工匠资格条件及政策指引* (2019) [online]. [cit.2021-04-27]. Available from http://www.whzc.gov.cn/introductionlist?pid=babe6a7d-0f25-4989-935d-ae0114089fd1.

[63] 徐耀强 (2017). *论"工匠精神"* [online]. [cit.2021-04-29]. Available from http://www.qstheory.cn/dukan/hqwg/2017-05/24/c_1121024529.htm.

[64] 熊蕊 (2020). *高职院校学生"工匠精神"培养现状及问题分析*, 教育研究, 3(8), pp. 142-144, https://doi.org/10.32629/er.v3i8.3061.

[65] 颜征兵 (2020). *试论工匠精神培育与高校思想政治教育的有机融合*, 教学方法创新与实践, 3(10), pp. 58-60, https://doi.org/10.26549/jxffcxysj.v3i10.5372.

[66] 杨芳 (2016). *李克强力倡"工匠精神" 入选2016年十大流行语* [online]. [cit.2021-04-30]. Available from http://www.hubei.gov.cn/zhuanti/2016zt/zyzg2016/tpxw/201612/t20161216_928861.shtml.

[67] 张德洲 (2019). *职业院校现代学徒制"工匠精神"职业价值观育人模式探索与实践*, 现代教育论坛, 2(6), pp. 52-53, https://doi.org/10.32629/mef.v2i6.155.

[68] 张圣荧 (2020). *浅谈应用型高校如何培养有工匠精神的会计人才 ---以广州工商学院为例*, 现代教育论坛, 3(4), pp. 71,73, https://doi.org/10.32629/mef.v3i4.808.

[69] 张景峰 (2016). *不良社会环境需要改变（关注"工匠精神"缺失问题⑥）* [online]. [cit.2021-04-30]. Available from http://www.360doc.com/content/16/0613/18/9240781_567483482.shtml.

[70] 张鑫,李中 (2017). *用"工匠精神"推进中小微企业文化建设* [online]. [cit.2021-04-30]. Available from https://m.hanspub.org/journal/paper/23065.

[71] 张越, 李延彬, 杨保强 (2020). *以工匠精神引领新时代高职院校教师践行课程思政*, 教育研究, 3(1), pp. 6-7, https://doi.org/10.32629/er.v3i1.2330.

Contact information

Katarzyna Mazur-Włodarczyk, Ph.D. Eng.
Opole University of Technology, Faculty of Economics and Management, Department of Enterprise Management, E-Business and Electronic Economy
7 Luboszycka St, 45-036 Opole, Poland
E-mail: k.mazur-wlodarczyk@po.edu.pl.

Efficiency of Contracting out Services in the Public Sector - Experience from the Czech and Slovak Republic

Beáta Mikušová Meričková, Nikoleta Jakuš Muthová

Abstract: From the theoretical point of view, contracting out services in the public sector should convey efficiency gains. However, the practice results do not confirm the aforementioned assumption. The aim of this study is to contribute to the recent discussion about efficiency of contracting out in public sector via the use of multi-criteria efficiency evaluation using the method of the best value criteria. The study builds on the original research of contracting out in the Czech and Slovak public sector and assesses them from a comprehensive perspective. The research question is set: "Does contracting out in public sector in the Czech and Slovak Republic bring efficiency gains?" To answer the research questions two alternatives of services provision, namely internalisation and contracting, were evaluated. The three criteria, 1) expenditure on the provision of the service per citizen/employee, 2) the expenditure per performance indicator and 3) the quality of services evaluated on the basis of citizen/employee satisfaction as consumers of services were used in evaluation. It is not possible to come to the final conclusion about higher efficiency of internal versus external production. However, what can be clearly and un-doubtfully documented is the fact that depending on the concrete case the more efficient solutions differ. The core factor of the limited success of contracting out - the quality of contract management represent critical problem in the Czech and Slovak Republic.

Keywords: Contracting out, Czech Republic, multi-criteria efficiency evaluation, public sector, Slovak Republic

JEL Classification: H44, H72

1 Introduction

The study aims to respond to the matter of externalisation of the production of services in the public sector. Contracting of service in public sector production is based on a contractual relationship - a contract between a public institution and an external entity (Cooper, 2003; Kettner and Martin, 1990; MacNeil, 1978; Rehfuss, 1989). Worldwide, the problem of contracting out public sector services has roused the curiosity of both the expert and non-expert public for three decades (Savas, 1987; Osborne and Gaebler, 1993; Kettl, 1993) due to the fact that the government of each country spends a significant quantity of public funds to finance contracted services every year, and the importance of contracting out continues to grow (Kettl, 1993; Donahue, 1989; Martin, 1999; Brudney, et al., 2005; Miranda and Andersen, 1994).

Currently, in terms of contracting services in the public sector, the world economic theory solves the question "make or buy", the question of efficiency of contracting out in public sector. Despite a number of scientific studies on the subject, it is problematic to obtain an answer to this question mainly for the reason that many, especially older, foreign studies concentrate on the problem of simple comparing the cost-effectiveness of internalisation and contracting out services (Brudney, et al., 2005; Greene, 2002; Savas, 1987; Sclar, 2000; Siegel, 1999).

The standard procedure used to evaluate the efficiency of contracting out by international studies (Dilger, Moffett, and Struyk, 1997; Hodge, 2000; Kamerman and Kahn, 1989) is to compare the cost of contracting and the internalization of services. The stated procedure is considered to be limited in condition of Czech Republic (Ochrana et al., 2008; Páleniková, Mikušová Meričková, 2012; Pavel, 2006; Rousek et al., 2009; Soukupová, Klimovský, 2016, Soukopová et al. 2017) and also in condition of Slovak Republic (Balážová, 2006; Beblavý et al., 2006; 2007;

Meričková, Majlingová, 2005; Meričková et al., 2010; Meričková et al., 2007; Meričková et al., 2008; Nemec et al., 2020; Nemec at al., 2005) due to the costs of providing services for objective reasons cannot be calculated (evidence of complex costs of public sector activities is formally given, however, does not actually exist) and therefore it is likely to work only with the indicator of expenditures for providing services.

When evaluating the efficiency of services in the public sector, it is necessary to consider a number of criteria which are expressed through different units of measurement (e.g. value, natural, physical, capacity, relative, abstract and statistical indicators) (Halásková, Halásková, 2016; Halásková et al., 2018). Neither partial evaluation based on dominant criteria, nor the merging of related criteria to facilitate evaluation, are recommended as this results in a reduction in the objectivity, transparency and complexity of the evaluation. There is a need for a comprehensive multi-criteria evaluation based on the analysis of various criteria, which allows a more concise expression of the degree of fulfilment of public benefit objectives and does not require the reduction of non-economic indicators to economic indicators (Vlček, 2004, p. 73).

According to several authors (Fiala, Jablonský, Maňas, 1994; Lysá, 2002; Murtag, Heck, 1987; Vlček, 2004), practical approaches in the case of multi-criteria evaluation are mostly based on the evaluation of preferential relations between individual pairs of alternatives, provide only partial evaluation and are characteristic by a significant degree of influence of the results by the evaluated subjects. For this reason, it is necessary to look for ways to formalise the evaluation processes more precisely. This requirement is met by the method of the best values of the criteria. The choice of criteria for evaluating the efficiency of service provision in the public sector is dominated by the costs and quality of the service provided (Engelbeck, 2004; Epstein, 1984; Shetterly, 1998).

This is an incentive to improve the methodology for assessing the efficiency of contracting out services in the public sector by considering other efficiency indicators - expenditure on the performance indicator and considering the quality of services assessed by the level of satisfaction of consumers. The more complex assessment of the impact of contracting out services in the public sector can be considered unique in the domestic context of knowledge. Monitoring of input indicators (contracting expenditure) and output indicators (quality of contracted services) enables further improvement of the methodology of evaluating the efficiency of contracting out services in the public sector via the use of multi-criteria efficiency evaluation using the method of the best value criteria (input and output indicators) whose application in the field is innovative in an international context.

Method of the best value criteria working with input and output indicators better address to the risks of contracting out in public sector: 1) moral hazard or problem of hidden activity, and 2) incorrect selection or problem of hidden information (Arrow, 1985; Kettl, 1993; More, 1984; Pratt, Zeckhauser, 1986). Moral hazard can occur in contracting because the behaviour of the private partner is imperfectly controlled and the private partner does not bear the full risks of its own action or inaction. These conditions create a situation in which either shirking in performance of duties or inappropriate choices by the private partner adversely impact the goals (and, potentially, the reputation) of the public partner. In the adverse selection problem, agents within the private firm have information that is not shared with the public sector organization, and they use that information to make decisions that affect the public organization. The public organization, however, cannot check to see if the information is serving the public interest. For example, consider a public sector organization that wants to hire the best private partner. The private firms bidding for the contract know more about their own qualifications than the public sector organization ever will, and this information asymmetry may render impossible a full ex ante evaluation of the private offers. Bailey (1999, 290–292) examines the effects of such public services contracting problems.

The source of these risks is the discrepancy between the principal's (service provider/contracting authority) and agent's (service producer/supplier) aims. Both the principal and the agent pursue their own aims, which may or may not be consistent with each other (DeHoog, 1990; Sclar, 2000; MacNeil, 1974, 1978; Šebo, Maceják, 2008) and this could lead to service cost increasing (input indicator) and service decreasing (output indicator).

The issue of contracting of local public services has been the object of systematic research in the Czech and Slovak Republic for the last twenty years. In addition to papers (like Ochrana et al, 2008; Páleniková, Mikušová Meričková, 2012; Rousek et al., 2009) and books (Ochrana et al., 2007 and Meričková et al., 2010, Mikušová Meričková, 2020) prepared or co-authored by the authors of this article, there are several other interesting publications analysing contracting of local public services in the conditions of the Czech and Slovak Republic. We should mention especially the analysis by Pavel (2006) and Beblavý et al., (2006, 2007) documenting the limited transparency and inefficiency of local companies responsible for the delivery of local services. The Czech and Slovak contracting research focuses especially on the area of local public service management – Balážová, (2006) and waste management - Soukopová and Klimovský (2016), Soukopová et al (2017). This research study carries on and develops the outcomes of mentioned studies.

The aim of this study is to contribute to the recent discussion about efficiency of contracting out in public sector via the use of multi-criteria efficiency evaluation using the method of the best value criteria.

2 Material and Methods

The aim of this study is to contribute to the recent discussion about efficiency of contracting out in public sector via the use of multi-criteria efficiency evaluation using the method of the best value criteria.

The aim reacts to the research question "Does contracting out in public sector in the Czech and Slovak Republic bring efficiency gains?" The source of research question, the research gap is determined by controversial impact of contracting out on efficiency in public sector in international context (Brudney, et al., 2005; Greene, 2002; Savas, 1987; Sclar, 2000; Siegel, 1999; Dilger, Moffitt, and Struyk, 1997; Hodge, 2000; Kamerman and Kahn, 1989) and limited methodology evaluating the efficiency of contracting out in public sector in national context (Ochrana et al., 2008; Páleniková, Mikušová Meričková, 2012; Pavel, 2006; Rousek et al., 2009; Soukupová, Klimovský, 2016, Soukopová et al. 2017; Balážová, 2006; Beblavý et al., 2006; 2007; Meričková, Majlingová, 2005; Meričková et al., 2010; Meričková et al., 2007; Meričková et al., 2008; Nemec at al., 2005).

To answer the research questions two alternatives of services provision, namely internalisation and contracting out, were evaluated.

The research sample covers Czech and Slovak municipalities across different size categories (Table 1 and 2). We focused on the core sample of local public services: maintenance of local communications, maintenance of public lighting infrastructure, management of cemeteries, waste collection and waste disposal, and management of public parks and green areas and of ancillary services in public service organisations.

Table 1 – The research sample

Period of implementation of own primary research	The research sample	
	Contracting local public services	**Contracting of ancillary services in public service organisations**
Slovak Republic		
2009	131 municipalities of various size groups	114 organisations providing public services
2010	141 municipalities of various size groups	141 municipal authorities
2015	9 municipalities of various size groups	
2020	115 municipalities of various size groups	115 municipal authorities
2021	16 municipalities of various size groups	16 municipal authorities
Czech Republic		
2011		98 organisations providing public services

Source: Own research + Páleníková, Mikušová Meričková, 2012

Note: TIS- Research in cooperation on the research project Transparency International Slovakia. The results of the research for the years 2015 and 2021 can be considered as illustrative given the size of the research sample.

Compared to the simple cost-per-inhabitant analysis in our previous samples (Table 4), in this study we also used the method of best values of indicators (MBVI) to construct composite efficiency scores. MBVI is one of the nonparametric multidimensional approaches to the evaluation of efficiency of Decision Making Units (DMU) based on a weighted sum algorithm. Here we designated the service delivery method as a DMU. According to some authors (Fiala, Jablonský, and Maňas, 1994; Lysá 2002; Murtag and Heck, 1987; Vlček, 2004; Hinloopen, Nijkamp, and Rietveld, 1982), this method makes it possible to express the efficiency of evaluated DMUs, taking into consideration multiple indicators, measured in different units.

The method is simple to apply and easy to interpret. Following Žižka (1988, 146–147), we consider m service delivery alternatives A_i (i = 1 … m), and n indicators of evaluation K_j (j = 1 ... n). When we assign empirical values for all delivery alternatives and evaluation indicators, we obtain the evaluation matrix X. Because indicators use different measurement units we normalize their values x_{ij} as follows:

If the best value of the indicator is its maximum value, we normalize by:

$$a_{ij} = \frac{x_{ij}}{x_{max}} \quad (1)$$

If the best value of the indicator is its minimum value we normalize by:

$$a_{ij} = \frac{x_{min}}{x_{ij}} \quad (2)$$

Thus we generate a matrix of normalized indicator values (A), which fall in the interval (0, 1⟩. Then we assign the weights vj to the indicators, where:

$$\sum_{j=1}^{n} v_j = 100 \tag{3}$$

The final evaluation of the efficiency of each alternative is obtained by multiplying matrix A by the column vector of weights v_j:

Indicator | Weight of Indicator | Final Evaluation

K1 K2 K3 K4 … Kn

Alternative

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} & . & a_{1n} \\ a_{21} & a_{22} & a_{23} & . & . & a_{2n} \\ a_{31} & a_{32} & . & . & . & a_{3n} \\ . & . & . & . & . & . \\ . & . & . & . & . & . \\ a_{m1} & a_{m2} & . & . & . & a_{mn} \end{bmatrix} \cdot \begin{pmatrix} v_1 \\ v_2 \\ v_3 \\ . \\ . \\ v_n \end{pmatrix} = \begin{pmatrix} h_1 \\ h_2 \\ h_3 \\ . \\ . \\ h_m \end{pmatrix} \tag{4}$$

The most efficient service delivery alternative is the option with maximal composite score E. The composite efficiency of other options is given proportionally to Alternative Emax.

We have chosen three indicators of evaluation as efficiency benchmarks in our analysis:

- The costs of service delivery per inhabitant.
- The unit costs of service delivery (Table 2).
- The quality of service.

Table 2 - Unit Cost Indicators for Selected Local Public Services

Service	Calculation unit
Waste	1 metric tonne of waste
Public lighting	1 light point
Communications	1 km of communications
Public green areas	1 m2 of public green areas
Cemeteries	1 grave place

Source: Own research

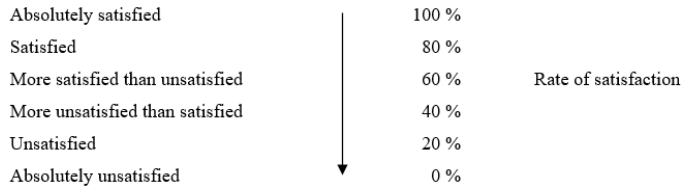
For local public services we have to acknowledge that measuring the quality of a service is generally much more difficult than measuring the quality of a good. Service quality may be identified in terms of performance characteristics, but their assessment may require subjective judgments. It can be measured through user satisfaction, but this is subjective because individual opinions on what constitutes a high standard of service quality may vary from one user to another.

To cope with this problem as well as possible we follow the research methodology of several existing studies in this area (Löffler, 2002; Wisniewski, 2001; Potůček, 2005). The citizens' satisfaction with local public services is the measure of local public services quality in these

studies. Data on service quality were provided by the users, the citizens of different municipalities, through a questionnaire. The samples are non-representative, so we accept that our summary data are partly preliminary.

Citizens evaluated local public service quality using the following scale:

Figure 1 – Rate of satisfaction
Source: Own research.



To calculate MBVI we assigned weights (v_j) to the indicators (Table 3). To set the weights we used Saaty`s method (Saaty et al., 1983) with inputs from a panel of experts on contracting in both countries.

Table 3 - Weights (VJ) for Indicators

Indicator	**v_i %**
Unit costs of service delivery per inhabitant	30
Unit costs of service delivery per service outcome	30
Quality of service	40
Σ	100

Source: Own research

3 Results and Discussion

We carried out a multi-criteria evaluation of the efficiency of contracting out local public services in the conditions of the Slovak Republic in 2009, 2010, 2015, 2020, 2021.

Table 4 - The results of the multicriteria evaluation of the efficiency of providing local public services in 2009, 2010, 2015, 2020, 2021

Year of evaluation		**2009**	**2010**	**2015**	**2020**	**2021**
Collection and removal of MSW	Internalisation	92.13	88.20	79.67	52.72	100
	Contracted out	96.58	95.99	29.29	99.20	49.10
Maintenance of public lighting	Internalisation	89.46	93.81	70.00	93.12	100
	Contracted out	93.66	96.61	93.70	97.40	X
Maintenance of local roads	Internalisation	98.55	89.79	71.34	92.40	50.85
	Contracted out	81.58	89.09	54.41	84.20	100
Maintenance of public greenery	Internalisation	91.83	78.30	77.00	41.70	100
	Contracted out	94.05	88.70	62.98	100.00	X
Cemetery services	Internalisation	94.61	96.13	85.39	47.75	36.88
	Contracting out	96.39	94.98	78.61	97.60	100

Source: Own research
X – not evaluated

We carried out a multi-criteria evaluation of the efficiency of ancillary services in public service organisations in the conditions of the Slovak Republic in 2009, 2010, 2021.

Table 5 - Results of multicriteria evaluation of the effectiveness of providing ancillary services in 2009, 2010, 2021

Year of evaluation		2009	2010	2021
Cleaning	Internalisation	94.34	56.40	75.24
	Contracted out	91.30	92.85	100
Catering for employees	Internalisation	79.22	73.04	74.93
	Contracted out	97.41	81.19	100
Management and maintenance of buildings	Internalisation	88.81	90.78	53.71
	Contracted out	89.23	74.97	100
IT administration	Internalisation	74.09	98.88	100
	Contracted out	95.25	77.83	73.3
Transportation	Internalisation	83.15	78.86	69.51
	Contracted out	97.67	99.91	100
Security services	Internalisation	76.10	64.43	100
	Contracted out	96.29	97.73	92.43

Source: Own research

X – not evaluated

In the conditions of the Czech Republic, we carried out such oriented research in 2011 at 98 public organisations providing cultural, social and education services, where we monitored the provision of ancillary services. As in the conditions of the Slovak Republic, we chose three criteria entering into the multi-criteria evaluation of efficiency. The first criterion is the expenditure on the provision of the service per employee, the second criterion is the expenditure per performance indicator and the third criterion is the quality of services evaluated on the basis of employee satisfaction as consumers of the service. A more efficient alternative to providing the service is the alternative that achieves a higher value within the evaluation. The results are shown in Table 6.

Table 6 - Results of multicriteria evaluation of the effectiveness of providing ancillary services in selected public sector organizations in Czech Republic in 2011

Public sector organizations	Culture		Social services		Education	
Services / **Variants**	**I**	**C**	**I**	**C**	**I**	**C**
Cleaning	98.42	100	84.5	100	94.2	100
Catering for employees	90.04	100	100	52.4	100	80.2
Management and maintenance of buildings	X	X	X	X	100	96.96
IT administration	91.49	100	84.05	100	73.1	100
Transportation	70	100	X	X	74.7	100
Security services	100	56.3	79.91	100	59.44	100
Average	89.99	91.26	87.12	88.1	83.57	96.19

Source: Own research

Table 7 summarises the effects of contracting out services in the public sector on the efficiency of their provision in the conditions of the Slovak Republic and the Czech Republic evaluated by

the multi-criteria method of best values of criteria, whereby expenditure per citizen / employee, expenditure on the performance indicator and quality of service assessed by the degree of consumer satisfaction were used as evaluation criteria.

Table 7 - Impacts of contracting out services in the public sector in the conditions of the Slovak Republic and the Czech Republic (% change in the efficiency of providing services brought by contracting out compared to internalisation)

Country	**Slovak republic**									**Czech Republic**
Contracting out of local public services	**Year of research**					**Contracting out of ancillary services**	**Year of research**			**Year of research**
	2009	**2010**	**2015**	**2020**	**2021**		**2009**	**2010**	**2021**	**2011**
Collection and removal of MSW	5	8	**-50**	46	-51	Cleaning	**-3**	37	25	8
Cemetery services	4	3	24	50	63	Catering for employees	18	8	25	**-20**
Maintenance of public greenery	**-17**	**-1**	**-17**	4	X	Management and maintenance of buildings	0	**-16**	**46**	**-3**
Maintenance of local roads	2	9	**-14**	**-8**	**49**	IT administration	19	**-21**	**-27**	17
Maintenance of public lighting	1	**-1**	**-7**	58	X	Transportation	15	21	30	27
						Security services	20	34	-8	6

Source: Own research

Multi-criteria evaluation of the efficiency of contracting out services in the public sector in more than 30% of cases of evaluated local public and auxiliary services in public organisations in different years of research is to the detriment of contracting out. In these cases, some of the evaluated indicators (expenditure per citizen / employee, expenditure on the performance indicator, quality of service), or several indicators achieve worse results in the case of contracting out. In addition, we must reiterate that we take into account the costs of contracting out services from the budgets of organisations, not the total costs associated with contracting out, which would include transaction costs of contracting out, i.e. costs associated with the process of public procurement of external production and costs associated with its subsequent monitoring.

Thus, in the conditions of Slovakia and the Czech Republic, contracting out is a more expensive and sometimes even lower quality method of providing the service, even though the theory assumes the opposite.

When contracting out services in the public sector in one specific form of PPCM implementation ("public-private-civil sector mix") and in its implementation it is necessary to be aware of the pros and cons of the decision (Petersen, Hjelmar, Vrangbaek, 2018). A public institution concludes a contract with a private organisation for the production of a certain public service, or ancillary service in a public organisation for a defined group of consumers. The public sector component that is contracted to provide the service is responsible for providing the service to the appropriate extent and quality. There are several forms of contractual security differing in the ways of invoicing the service, in the degree of distribution of production risk between public and private sector, in the conditions of using public property to produce the service, as well as in the duration of the contractual relationship (Ismail, 2013; Viana, Moreira, Alves, 2016).

The benefits of contracting out can be seen in the greater degree of transparency in the spending of public funds which results from clearly defining the purposes of using the funds, creating a greater opportunity for public control and thus increasing the accountability of elected bodies to voters (Hefetz, A., Warner, ME, 2012; Viana, Moreira, Alves, 2016). Another problem to which the contracting out of services in the public sector can contribute is the lack of public resources for the implementation of capital investments increasing the quality-of-service provision. At the same time, the application of contracting out services in the public sector initiates the improvement of public decision-making processes by defining performance indicators of public organisations (Yescomb, Farquharson 2018).

However, the implementation of contracting out services in the public sector also has major risks of information asymmetry and moral hazard, in addition to other problems associated with them, such as: losses from (unrefunded) wear and tear of public property, transaction costs, employee demotivation, rigidity, capital investment (Brown, Potoski, Van Slyke, 2015).

Differences in expenditure on services between different forms of providing services of comparable scope and quality suggest that this non-systemic decision-making, together with the subsequent poor quality of management, often leads to large financial losses in the field of public funds. Returning to the internalisation of a service can often be a way to make its provision more efficient, as stated by Kishimoto (2020, p. 230). In the case of local public services, the latest trend is the remunicipalisation of services (Albalate, Bel, Reeves, 2019; Albalate, Bel, Reeves, 2020), when municipalities decide to return to the internal provision of local public services.

Interesting findings in recent years are provided by studies on inter-municipal cooperation, which seems to be the most effective form of providing local public services (Soukopová et al., 2017; Bel, G., Fageda, Mur, 2014; Bel, Mur, 2009; Bel, Warner, 2015; Bel, Gradus 2018; Franzke, Klimovsky, Pinteric, 2016). In the monitored municipalities in the monitored period, inter-municipal cooperation represented only 15 to 18% of the applied forms of providing local public services. Qualitative research by experts in this area has led to several reasons for this situation (more Nemec, Mikušová Meričková, Soukopová, Šumpíková, 2020): high transaction costs, additional administrative costs associated with the organisation of cooperation (Klimovský, 2014), limited motivation of municipalities to choose the most efficient form of provisioning, non-functioning benchmarking - about successful examples of inter-municipal cooperation or so-called cases of good practice of which other municipalities often have no knowledge, insufficient, or absent "service testing".

4 Conclusion

The aim of this study was to contribute to the recent discussion about efficiency of contracting out in public sector via the use of multi-criteria efficiency evaluation using the method of the best value criteria.

Contracting out services in the public sector is a common phenomenon in the Czech and Slovak Republics, as evidenced by the results of our analysis. The results show that the practice has already begun to make extensive use of private sector capacity to provide various types of publicly funded services. At the same time, however, the data obtained point to the non-systemic nature of decision-making processes on the form of providing these services. In public organisations providing public services, or at the level of local governments, no preconditions for such systemic decision-making have been created, there is no monitoring of the complex costs of providing services (even in our analysis we were forced to work only with a partial indicator - service expenditures from the local government budget), i.e. also adequate information on the basis of which this systemic decision - making should be implemented. In addition to the objective causes of this situation, there are also subjective causes, such as the

reluctance of decision-makers to make changes. Cases that constitute violations of the Public Procurement Act are relatively common in practice (the reluctance of public organisations and municipalities to provide any information on how to select external service providers only indirectly confirms this).

Our research shows that most municipalities have never approached the evaluation of forms of service provision systematically and have not compared / tested services. Decisions to turn to an external company were thus made quite often on the basis of the "observed" (the neighbouring municipality does the same, so we do likewise); or on the basis of "inherited" (it has always been so in our country, so why change it if it works) (Nemec, Mikušová Meričková, Soukopová, Šumpíková, 2020).

Even if the externalisation decision was made "correctly", systemically, the outcome of the contracting out could ultimately affect the poor management of the contract between the public institution / contracting authority / participant and the producer / service provider / agent. Both the principal and the agent pursue their own goals, which may not be (and usually are not) consistent (DeHoog, 1990; Sclar, 2000; MacNeil, 1974, 1978; Bel. Gradus, 2018; Andersen, Spjelkavik, Henriksen, 2008). The discrepancy between the objectives of the principal (service provider / contractor) and the agent (producer / service provider) is the cause of two fundamental problems related to contracting out, which we have described above: 1) moral hazard or covert activity and 2) incorrect selection or hidden information problem. (Arrow, 1985; Kettl, 1993; More, 1984; Pratt, Zeckhauser, 1986). The result or success of the contracting out therefore depends on the extent to which the emergence of the mentioned problems - risks - can be eliminated. In this sense, several authors present factors or determinants of the benefits of contracting out and public sector services arising from the quality of contract management. The quality of contract management is a priority of current research on contracting out services in the public sector, where the standard view of the relationship between procurer and supplier through the lens of agent principal theory changes from competitive to partner perceived through behavioural economics. Our further research is also moving in this direction.

Acknowledgements

This paper was created within the project VEGA 1/0029/21 Management of contracting services in public sector.

References

[1] ALBALATE, D, BEL, G., REEVES, E. (2020). (Re) Municipalisation: A new era for ownership and control of local public service delivery? In BERNIER, L., FLORIO, M., BANCE, P. (eds), *The Routledge Handbook of State-Owned Enterprises* (pp. 568-584). New York: Routledge.

[2] ANDERSEN, B., SPJELKAVIK, I., HENRIKSEN, B. (2008). Benchmarking Applications in Public Sector Principal-Agent Relationships. *Benchmarking an International Journal*. Vol. 15, No. 6, pp. 723-741.

[3] ARROW, K. J. (1985). The Economics of Agency. In PRATT, J. W., ZECKHAUSER J. (eds) *Principals and Agents: The Structure of Business* (pp. 37-51). Boston: Harvard Business School Press

[4] BAILEY, S. J. (1999). *Public Sector Economics*. London: Macmillan.

[5] BALÁŽOVÁ, E. (2006). *Benchmarking služieb miestnej samosprávy na Slovensku*. Transparency International Slovensko. Prešov: Adin,

[6] BEBLAVÝ, M., SIČÁKOVÁ-BEBLAVÁ, E. (2006). *Inštitucionálne dilemy pri zabezpečovaní verejných služieb*. Transparency International Slovensko. Prešov: Adin.

[7] BEBLAVÝ, M., SIČÁKOVÁ-BEBLAVÁ, E. (2007). Faktory ovplyvňujúce rozhodovanie o spôsobe zabezpečovania služieb vo veľkých slovenských mestách. *Politická ekonomie*. Vol. 55, No. 2, pp. 245-261.

[8] BEL, G., FAGEDA, X., MUR, M. (2014). Does Cooperation Reduce Service Delivery Costs? Evidence from Residential Solid Waste Services. *Journal of Public Administration Research and Theory*. Vol. 24, pp. 85–107.

[9] BEL, G., GRADUS, R. (2018). Privatisation, contracting-out and inter-municipal cooperation: new developments in local public service delivery. *Local Government Studies*. Vol. 44, No. 1, pp. 11 – 21.

[10] BEL, G., MUR, M. (2009. Intermunicipal cooperation, privatization and waste management costs: Evidence from rural municipalities. *Waste Management*. Vol. 29, pp. 2772–2778.

[11] BEL, G., WARNER, M. E. (2015). Inter-municipal cooperation and costs: *Expectations and evidence. Public Administration*. Vol. 93, pp. 52–67.

[12] BROWN, T., POTOSKI, M., Van SLYKE, D. (2015). Managing Complex Contracts: A Theoretical Approach. *Journal of Public Administration Research and Theory*. Vol. 26, No. 2, pp. 294-308.

[13] BRUDNEY, J. L., FERNANDEZ, pp., RYU, J.E., WRIGHT, D. S. (2005). Exploring and Explaining Contracting Out: Patterns Among the American States. *Journal of Public Administration Research and Theory*. Vol. 15, No. 3, pp. 393-419.

[14] COOPER, P. J. (2003). *Governing by Contract*. Washington D. C.: CQ Press.

[15] DeHOOG, R. H. (1990). Competition, Negotiation, or Cooperation: Three Models for Service Contracting. *Administration and Society*. Vol. 22, No. 3, pp. 317-40.

[16] DILGER, R. J., MOFFITT, R. R., STRUYK, L. (1997). Privatization of municipal services in America's largest population cities. *Public administration review*. Vol. 57, No. 1, pp. 21-26.

[17] DONAHUE, J. D. (1989). The Privatization Decision: Public Ends, Private Means. New York: BasicBooks.

[18] ENGELBECK, R. M. (2004). Using Metrics to Manage Contractor Performance. [b. m.] : Graduate School of Business & Public Policy at the Naval Postgraduate School. [online]. [cit. 2015-03-15]. Available: http://www.acquisitionresearch.org/

[19] EPSTEIN, P. D. (1984). *Using Performance Measurement in Local Government*. New York: Van Nostrand Reinhold Company Inc.

[20] FIALA, P., JABLONSKÝ, J., MAŇAS, M. (1994). *Vícekriteriální rozhodování*. Praha: VŠE.

[21] FRANZKE, J., KLIMOVSKÝ, D., PINTERIČ, U. (2016). Does inter-municipal cooperation help to overcome territorial fragmentation? A comparative analysis of Brandenburg, Slovakia and Slovenia. In KUHLMANN, pp., BOUCKAERT, G. (eds)

Local public sector reforms in times of crisis: National trajectories and international comparisons (pp. 81–98). London: Palgrave Macmillan.

[22] GREENE, J. D. (2002). Cities and Privatization: Prospects for the New Century. New Jersey: Prentice Hall.

[23] HALÁSKOVÁ, M, HALÁSKOVÁ, R. (2016). Assessment of Financial Capabilities of Local Governments in EU Countries for the Development of Local Public Services. *Lex Localis Journal of Local Self – Government,* Vol. 14, No. 3, pp. 379-397.

[24] HALÁSKOVÁ, M., HALÁSKOVÁ, R., PROKOP, V. (2018). Evaluation of Efficiency in Selected Areas of Public Services in European Union Countries. *Sustainability*. Vol. 10, No. 12, pp. 1-17.

[25] HEFETZ, A., WARNER, M. (2004). Privatization and its Reverse: Explaining the Dynamics of the Government Contracting Process. *Journal of Public Administration Research and Theory. Vol.* 14, pp. 171-190.

[26] HEFETZ, A., WARNER, M. E. (2012). Contracting or public delivery? The importance of service, market, and management characteristics. *Journal of Public Administration Research and Theory*. Vol. 22, No. 2, pp. 289–317.

[27] HINLOOPEN, E., NIJKAMP, P., RIETVELD, P. (1982). The Regime Method: A New Multicriteria Method." In HANSEN, E. (eds). *Essays and Surveys on Multiple Criteria Decision Making* (pp. 33–56). Berlin: Springer.

[28] HODGE, G. A. (2000). Privatization: An International Review of Performance. New York: Routledge,

[29] ISMAIL, pp. (2013). Rationales for public private partnership (PPP) implementation in Malaysia. *Journal of Financial Management of Property and Construction*. Vol. 19, No. 3, pp. 188-201.

[30] KAMERMAN, pp. B., KAHN, A. J. (1989). *Privatization and the Welfare State*. Princeton: Princeton University Press.

[31] KETTL, D. F. (1993). *Sharing Power – Public Governance and Private Markets*. Washington D.C.: The Brookings Institution.

[32] KETTNER, P. M., MARTIN, L. L. (1990). Purchase of Service Contracting: Two Models. *Administration in Social Work*. Vol. 14, No. 3, pp. 15 – 30. ISNN 0364–3107.

[33] KISHIMOTO, pp., STEINFORT, L., PETITJEAN, O. (2020). *The future is public: Towards democratic ownership of public services*. Amsterdam, Paris: Transnational Institute. [online] [cit. 2020-11-19]. Available: www.tni.org/futureispublic

[34] KLIMOVSKÝ, D. (2014). Inter-municipal Cooperation in Slovakia: The Case of Regions with Highly Fragmented Municipal Structure. Nové Mesto: Faculty of Organization Studies.

[35] LÖFFLER, E. (2000). Defining Quality in Public Administration. In Government, Market and the Civic Sector: The Search for a Productive Partnership. Paper presented at the conference on NISPAcee´s International Scientifically Conference, Budapest, Hungary, April 13–15.

[36] LYSÁ, Ľ. (2002). Rozhodovanie i využitie multikriteriálnych metód v rozhodovacom procese riadiaceho subjektu. Liptovský Mikuláš: Vojenská akadémia v Liptovskom Mikuláši.

[37] MACNEIL, I. R. (1974). The many futures of contracts. *Southern California Law Review*. Vol. 47, pp. 696-816. ISSN 0038-3910.

[38] MACNEIL, I. R. (1978). Contracts: Adjustments of Long-term Economic Relations under Classical, Neoclassical and Relational Contract Law. *Northwestern University Law Review*. Vol. 72, No. 6, pp. 855-905.

[39] MARTIN, L. L. (1999). *Contracting for Service Delivery: Local Government Choices*. Washington, D. C.: International City/County Management Association.

[40] MERIČKOVÁ, B., NEMEC, J., SIČÁKOVÁ BEBLAVÁ, E., BEBLAVÝ, M. (2010). *Kontrahovanie služieb vo verejnom sektore*. Bratislava: Transparency Internation Slovensko.

[41] MERIČKOVÁ, B., MAJLINGOVÁ, S. (2005). Benchmarking v zabezpečovaní služby zberu a likvidácie tuhého komunálneho odpadu. *Verejná správa*. Vol. 60, No. 4, pp. 22 – 23.

[42] MERIČKOVÁ, B., NEMEC, J. (2007). Contracting-out Local Public Services – Situation and Trends in Slovakia and the Czech Republic. In Lessons and Recommendations for Improvement. Central and Eastern European Public Administration and Public Policy. NISPAcee Yearbook. Bratislava: NISPAcee, pp. 191 – 204.

[43] MERIČKOVÁ, B., SIČÁKOVÁ-BEBLAVÁ, E. (2008). Transakčné náklady a kontrahovanie verejných služieb. In Lisabonská stratégia pre rast a zamestnanosť. In *Zborník z medzinárodného vedeckého seminára.* Banská Bystrica: Ekonomická fakulta UMB.

[44] MIRANDA, R., ANDERSEN, K. (1994). Alternative Service Delivery in Local Government, 1982-1992. In *International City/County Management Association (ICMA).* The Municipal Year Book, 1994. Washington DC: ICMA.

[45] MORE, T. M. (1984). The new economics of organization. *American Journal of Political Science*. Vol. 4, No. 28, pp. 739 – 777.

[46] MURTAGH, F., HECK, A. (1987). *Multivariate Data Analysis*. Dordrecht: Kluwer.

[47] NEMEC, J., MIKUŠOVÁ MERIČKOVÁ, B., SOUKUPOVÁ, J., ŠUMPÍKOVÁ, M. 2020. Municipal solid waste management in the Czech Republic and in Slovakia: What has changed over the past 20 years? *Waste Management*. In print.

[48] NEMEC, J., SOUKUPOVÁ, J., MIKUŠOVÁ MERIČKOVÁ, B. (2020). Local public service delivery arrangements in the Czech republic and Slovakia. In KHOSROW-POUR, M. (eds) *Open Government: Concepts, Methodologies, Tools, and Applications* (pp. 1392-1410). Penssylvánia: Information science reference.

[49] NEMEC, J., VÍTEK, L., MERIČKOVÁ, B. (2005). Contracting-out at Local Government level: Theory and Selected Evidence from Czech and Slovak Republics. *Public Management Review*. Vol. 7, No. 4, pp. 638-647.

[50] OCHRANA, F., MERIČKOVÁ, B., NEMEC, J. (2008). Introducing benchmarking in the Czech Republic and Slovakia. Processes, problems and lessons. *Public Management Review*. Vol. 10, No. 5, pp. 673-684.

[51] OSBORNE, D., GAEBLER, T. (1993). Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector. Boston: Addison-Wesley Publishing Company.

[52] PÁLENÍKOVÁ, M., MIKUŠOVÁ MERIČKOVÁ, B. (2012). Outsourcing ve veřejném sektoru – Česká republika. In MIKUŠOVÁ MERIČKOVÁ, B., FRANTA, P. et al. (eds). *Optimalizace outsourcingu ve veřejném sektoru*. Praha: Wolters Kluwer.

[53] PAVEL, J. (2006). *Efektivnost a transparentnost obecních obchodních spolecností*. Transparency International Czech Republic. [online]. [cit. 2019-03-15]. Available: <http://www.transparency.cz/pdf/vz_obecni_firmy_pavel.pdf. >. [cit. dňa 01. 06. 2020].

[54] PETERSEN, O. H., HJELMAR, U., VRANGBAEK, K. (2018). Is Contracting Out of Public Services still the Great Panacea? A Systematic Review of Studies on Economic and Quality Effects from 2000 to 2014. *Social Policy & Administration*. Vol. 52, No. 1, pp. 130-157.

[55] POTŮČEK, M. (2005). *Strategic Govenanece in Central and Eastern Europe: From Concepts to Reality*. [online]. [cit. 2012-03-12] Available: http://www.martinpotucek.cz/download/strategic_governance_cee_paper.pdf

[56] PRATT, J. W., ZECKHAUSER, R. J. (1986). Principals and Agents: The Structure of Business. *Journal of Economic Literature*. Vol. 24, No. 4, pp. 1788-1789.

[57] REHFUSS, J. A. (1989). *Contracting Out in Government*. San Francisco: Jossey-Bass.

[58] SAVAS, E. S. (1987). *Privatisation: The Key to Government*. New York: Chatman House.

[59] SCLAR, E. D. (2000). You Don't Always Get What You Pay For: The Economics of Privatization. Ithaca: Cornell University Press.

[60] SHETTERLY, D. R. (1998). The influence of contract designs no contractor performance. *Public Performance & Management Review*. Vol. 24, No. 1, pp. 53-68.

[61] SIEGEL, G. B. (1999). Where Are We on Local Government Service Contracting? *Public Productivity and Management Review*. Vol. 22, pp. 365-388.

[62] SOUKOPOVÁ, J., KLIMOVSKÝ, D. (2016). Local Governments and Local Waste Management in the Czech Republic: Producers or Providers? In *NISPAcee Journal of Public Administration and Policy: the Network of Institutes and Schools of Public Administration in Central and Eastern Europe*. Vol. 9, No. 2, pp. 217-237.

[63] SOUKOPOVÁ, J., KLIMOVSKÝ, D., OCHRANA, F. (2017). Key Factors for Public Utility Efficiency and Effectiveness: Waste Management Services in the Czech Republic. *Ekonomický časopis*. Vol. 65, No. 2, pp. 143-157.

[64] ŠEBO, J., MACEJÁK, Š. (2008). *Záujmové organizácie a lobing*. Banská Bystrica: Ekonomická fakulta UMB.

[65] VIANA, L., MOREIRA, J. A., ALVES, P. (2016). Accounting for Public-Private Partnerships. In FARAZMAN, A. (eds.) (pp. 6214). *Global Encyclopedia of Public Administration, Public Policy, and Governance*. 6214 s. Cham: Springer.

[66] VLČEK, P. (2004). K problematike hodnotenia efektívnosti zabezpečovania verejných služieb na báze syntetického ukazovateľa. *Ekonomika a spoločnosť*. Vol. 5, No. 1, pp. 74 – 81.

[67] WISNIEWSKI, M. (2001). Using SERVQUAL to Assess Customer Satisfaction with Public Sector Services. *Managing Service Quality*. Vol. 11, No. 6, pp. 380–388.

[68] YESCOMBE, E., R., FARGUHARSON, E. (2018). Public-Sector Contract Management. In Public-Private Partnerships for Infrastructure: Principles of Policy & Finance. Oxford: Butterworth-Heinemann.

[69] ŽIŽKA, T. (1988). Technicko – ekonomické hodnotenie výrobkov metódami hodnotového inžinierstva." Paper presented at the conference *DT ČSVTS Akosť – právo – štandardizácia*. Banská Bystrica, Slovakia, December 7.

Contact information

prof. Ing. Beáta Mikušová Meričková, PhD.
Matej Bel University, Faculty of Economics, Department of Public Economics and Regional Development
Tajovského 10, 975 90 Banská Bystrica, Slovak Republic
E-mail: beata.mikusovamerickova@umb.sk

Ing. Nikoleta Jakuš Muthová, PhD.
Matej Bel University, Faculty of Economics, Department of Public Economics and Regional Development
Tajovského 10, 975 90 Banská Bystrica, Slovak Republic
E-mail: nikoleta.jakusmuthova@umb.sk

Evaluation of selected indicators of home health care in the Czech Republic

Eva Molnárová

Abstract: This article aims to measure quality and efficiency of home health care in Czech Republic. Home health care is present in Czech Republic since 1990 and its efficiency should rise thanks to many factors including law establishment. Author of this paper uses five indicators to demonstrate dependency within healthcare employees, non-medial employees, patients, and visits in 2010-2019 period. It is not possible to state the best or the worst year, because the indicators are changing throughout those years individually. However, year 2017 has the best rating in index 1, which deals with the number of patients per employee, index 4 which is the ratio of the number of visits and the number of employees in individual years and index 5 considering the proportion of visits and the number of non-medical healthcare employees for all monitored years. At the same time, it has the second best results of indicators for index 2 (number of patients per one of non-medical healthcare employees). During the pandemic situation with Covid-19 the home health care should rise even more and it could be interesting point of view for next paper following this one.

Keywords: Home care, long-term care, healthcare

JEL Classification: C10, C67, I10, I12

1 Introduction

Concept of home care is very differently understood between the individual c**o**untries and its sectors. It always involves long-term care. Long-term care is a concept of comprehensive socio-health support for people with limited self-sufficiency. These are most often people in old age, for people who suffer with both multimorbidity and so-called geriatric fragility. According to the World Health Organization, the goal of long-term social and health care is to stay what the highest possible quality of life in accordance with individual preferences and as high as possible independence, autonomy, participation, personal fulfillment and dignity. Long-term socio-health care as such is a set of services for people with reduced levels of functional, physical or cognitive capacity over time a period dependent on assistance with the basic activities of everyday life.

In general, home care can be understood as any care that takes place at the patient's home. Services that allow people to stay in their home environment. These services may or may not be provided only by professionals. We often see cases where patients are cared for in part by professionals and in part by their husband, wife, children or other relatives. Although the main emphasis is concentrated on formal care (provided by professiona**l**s), informal care is often taken into account as complementary to formal care and as co-decisive in allocation formal care. Informal care is provided by family members, friends and volunteers who are not usually paid or who are privately hired are paid informally.

As for the situation in Czech Republic, number of registered pending placement requests in residential services for the elderly in recent years the value of 80 thousand, according to qualified estimate of Association of Personal Services Providers Czech Republic. So there is a large excess of demand above the offer in all areas of long-term care. Modernizing and improving the provision of quality home medical care would certainly help a congested long-term care system.

The main goal of this article is to evaluate the productivity and quality of the home medical care system in the Czech Republic according to selected indicators for the period 2010-2019. Selected

indicators are the number of patients per employee, the number of patients per non-medical healthcare employee, the number of visits per patient, the number of visits per employee and the number of visits per non-medical healthcare employee. In support of the main goal, partial hypotheses were also formulated, in the form of research questions. Hypotheses can be divided into two parts. The first part deals with the productivity of the home medical care system.

- Hypothesis 1: Did the number of visits per non-medical healthcare employee increase in 2019 compared to 2010?
- Hypothesis 2: Did the number of patients per employee increase in 2019 compared to 2010?

The second part of hypotheses deals with the quality of the home medical care system.

- Hypothesis 3: Is the number of patients per non-medical healthcare employee decreasing between 2010 and 2019?
- Hypothesis 4: Is the number of patients per employee decreasing between 2010 and 2019?
- Hypothesis 5: Did the number of visits per patient increase compared to 2019 compared to 2010?

2 Literature Review

Home health care is enshrined in law and i tis a modern form of a health care provided in Czech Republic since 1990. The major growth of home health care providers came with a law number 160/1992 which has been effective since 1st of april 1992 and which made first private health facilities possible. The actual law about home health care is number 372/2011 on health services and conditions of their provision. Home care is an irreplaceable form of health care that is provided in the patient's own social environment (Ministerstvo zdravotnictví České republiky (2021). The health care in the patient's own social environment is provided by the visiting service and home care, which is nursing care, medical rehabilitation care or palliative care. (Zákon č. 372/2011 Sb.)

Home care as such is divided into two areas - home health care and home social care. The main difference between health and social care is the way how care is paid for. While social care is covered by the social care contribution, health care is covered by public health insurance. In the Czech Republic, the care allowance is provided to persons who, due to a long-term unfavorable state of health, are dependent on the help of another person. With this contribution, the state contributes to the provision of assistance that can be provided through social services or other forms of assistance in managing the basic needs of people (Ministerstvo práce a sociálních věcí (2021). The costs of the contribution are paid from the state budget. Another difference between these two areas of home care is that health care is provided by a qualified worker who goes to the patient's home and performs tasks that have been consulted with a physician in advance. In contrast, social home care takes place after an investigation of the client's needs. The worker then assists the patient in activities that are precisely formulated in advance, such as personal hygiene, food security, laundry and ironing, cleaning, shopping etc.

In the Czech Republic, a major step was taken in the field of home health care in 1993. In that year, the Association of Home Care of the Czech Republic was founded. It is a non-governmental professional organization that provides its services at the national level. It brings together providers of home health care agencies and defends their interests. He is the coordinator of the entire home health care sector and represents the agencies in negotiations with the Ministry of Health or in negotiations with representatives of health insurance companies. It is also actively involved in drafting legislation. One of the goals of the association is to defend the common interests of home health care operators, to defend the right of patients to health care in their

natural environment and to ensure favorable conditions for their lives. It is also a priority for them to participate in the preparation of laws and other measures that have a direct impact on the provision of health care. They also want to continue cooperating with the Ministry of Health, health insurance companies and others who are preparing laws and regulations affecting the quality of home health care. Among other things, it also tries to inform the general public about this issue (Asociace domácí péče České republiky (2021).

Home health care is a highly qualified and professional form of care which, thanks to its scope and quality, makes possible to reduce clients' stay in inpatient health care facilities to the necessary minimum. In addition, it creates suitable conditions for general practitioners in primary care, who, in cooperation with home care agencies, can provide a wider range of necessary health care to clients who would otherwise be hospitalized. The following activities can be included in home health care according to their expertise. Basic health care includes minor tasks such as dressing bandages or helping with the prevention and treatment of bedsores. More advanced professional health care then includes tasks such as monitoring the patient's vital signs, injecting or collecting biological material. Specialized health care then enables professional monitoring of chronically ill patients, installation of diagnostic devices etc. (Jarošová 2007).

Providing and securing home health care in terms of efficiency and effectiveness is the subject of many papers all over the world. For example, Valdmanis et al. (2017) evaluated this issue using data envelopment analysis (DEA). They examined the technical, scale efficiency and overall result on a national sample of home health care agencies (HHAs). They researched the issue in the conditions of the USA. They found that HHAs can save significantly by reducing inputs on average proportionally by 28 % for overall efficiency, 23 % for technical efficiency, and 6 % for scale efficiency. Of course, they encountered fundamental differences in individual states all the efficiency measures.

Other authors looked at the issue of home health care from a different perspective. For example, Geng et al. (2020) examined the evolution of the home health care market from 2005 to 2018. They found that the HHAs sector was gradually growing. Specifically, during the period under review, the number of agencies increased from 7899 to 10818. According to their research, chain owned HHAs doubled in number from 903 organizations in 2005, which was about 11.4% of all agencies in that year, to 1841 agencies in 2018, which was about 17% of the agency's market that year. However, these results are downloaded to the US market. Regarding the type of organizations monitored, for-profit nonchain agencies have been more represented over the years than for-profit chain agencies. Significant differences in geographical distribution, patient composition, and service quality were observed between chain and non-chain HHAs in the study. The authors considered that chains are playing an increasingly important role in home healthcare and that exploring this area can help inform reporting and quality monitoring, assess the adequacy of payments and ensure greater transparency and accountability in the HHAs market.

Kim and Norton (2015) look at the issue of home medical care from a different perspective. They try to estimate the effect of a 10 percent limit introduced in home health care on the intensity of treatment and the patient's discharge status. They are focusing on this issue in the period from 2008 to 2010. They used agency-level variations in the proportion of outstanding payments before the 10 percent limit was introduced to find out how home health agencies adjusted the number of home health visits and patient discharge status under the new law. According to their research, agencies have dramatically reduced the number of service visits below the 10 percent limit. Agencies also abandoned relatively healthy patients and sent sicker patients to nursing homes.

3 Material and Methods

In this chapter are information about data collection methodology and about method for analysing data.

3.1 Data collection

The term „employees“ was used in the data used for this research. The term "employees" includes a total of five groups of workers. The first of them are doctors, graduates of the master's degree program in general medicine at the Faculty of Medicine, ending with the university title "Doctor of Medicine" (in the Czech Republic, the title is abbreviated as MUDr.). Term „employees“ also includes physiotherapists, or medical professionals, specialists who take care of the condition of the musculoskeletal system. Ter also included non-medical healthcare employees, or general nurses, as well as general nurses with specialization and general nurses as health and social workers. The last item included under this term is other workers. Furthermore, the term "visits" is used in this paper. One visit is a set of all procedures performed in the treatment of one pacient.

All data concerning the number of patients, employees, services and expenses were drawn from the Institute of Health Information and Statistics of the Czech Republic, specifically from the document „Stručný přehled činnosti oboru domácí zdravotní péče za období 2007–2019“, or in English brief overview of the activities of the field of home health care for the period 2007–2019. The Institute of Health Information and Statistics of the Czech Republic is established by the Ministry of Health of the Czech Republic and creates statistical yearbooks and provides other statistical services entrusted to it by the relevant legislation (ÚZIS ČR, 2021).

Table 1 – Data collection (2010-2019)

Year	Number of patients	Number of employees	Number of non-medical healthcare employees	Number of visits
2010	143 423	4289	2783	5 709 983
2011	147 014	4328	2753	5 914 598
2012	148 011	4481	2867	6 006 011
2013	146 336	4468	2823	5 915 804
2014	140 953	4763	3041	6 935 449
2015	135 569	5040	3242	7 955 094
2016	141 369	4796	2899	6 917 313
2017	138 303	5406	3217	6 283 277
2018	139 824	5070	3062	6 445 616
2019	143 932	5205	3207	6 495 692

Source: Institute of Health Information and Statistics of the Czech Republic

In the examined period, the number of patients averaged 142,473, with the lowest number in 2015 being a difference compared to the average of less than 7,000 patients. On the contrary, the highest number of patients in 2012 was with 5.5 thousand extra patients compared to the average. The median number of patients during the study period is 142,396, thus almost the same as the average. This is due to the lower number of examined data.

The number of employees in the period under review oscillated around an average of 4785, with the lowest number being in the first year of the period under review, with a difference compared to an average of 496 employees. The highest number of employees was reached by Czech home

care in 2017, when compared to the average there was an increase of 622 employees. The median number of employees is 4779, again very close to the average.

Another statistical data is the number of non-medical healthcare employees. In the examined years, the highest number of non-medical healthcare employees in the same year was the highest number of employees in total. This year the non-medical healthcare employees were 3217, which is 228 more than the average of 2989. The lowest number of non-medical healthcare employees was in 2011, when it reached the level of 2753, which is 236. Median is 2970 in this category. An interesting statistic may be the ratio of non-medical healthcare employees on the total number of employees, which is related to the total number of employees. The highest share of non-medical healthcare employees in employees was in 2010, ie in the year when there were the lowest number of employees overall. This year, the share was 64.89%. On the contrary, the smallest share of non-medical healthcare employees in employees was in 2017, when the highest number of employees and non-medical healthcare employees was at the same time. This year, the share was 59.5%.

The number of performances is based on factors other than the number of employees. This statement is based on data from 2015, when the lowest number of employees in total (135,569) and the highest number of performances was 7,955,094. This extreme is almost 1.5 million performances higher than the average in this observed category, 6,457,884. The lowest number of performances was recorded in 2010, when there were 5,709,983 performances, or visits. This lowest level is almost 748 thousand smaller than the average in the given category. The median was 6,364,447, a difference of about 93.5 thousand compared to the average.

3.2 Method

Five indices were created for the purposes of this research. Index 1 shows the number of patients (*P*) per employee (*E*) and is calculated as the ratio of the sum of home care patients for a specific year and the sum of all employees in the home care system for a specific year, according to the following mathematical notation (1):

$$Index\ 1 = \sum_{y}^{n} \frac{P}{E} \tag{1}$$

The *y* can be substitute with a year from the researched period, ie from 2010 to 2019.

Index 2 is defined as the number of patients and the number of non-medical healthcare employees. The letter *P* in the formula again stands for a patients. The abbreviation *NME* stands for non-medical healthcare employees and *y* is the quantity that represents a selected year from the researched period (2010 to 2019).

$$Index\ 2 = \sum_{y}^{n} \frac{P}{NME} \tag{2}$$

Index 3 then shows the share of the number of visits (*V*) and the number of patients (*P*) in individual years (*y*).

$$Index\ 3 = \sum_{y}^{n} \frac{V}{P} \tag{3}$$

Index 4 is the ratio of the number of visits (*V*) and the number of employees (*E*) in individual years (*y*).

$$Index\ 4 = \sum_{y}^{n} \frac{V}{E} \tag{4}$$

And the last Index 5 is the proportion of visits (V) and the number of non-medical healthcare employees (NME).

$$Index\ 5 = \sum_{y}^{n} \frac{V}{NME} \tag{5}$$

4 Results and Discussion

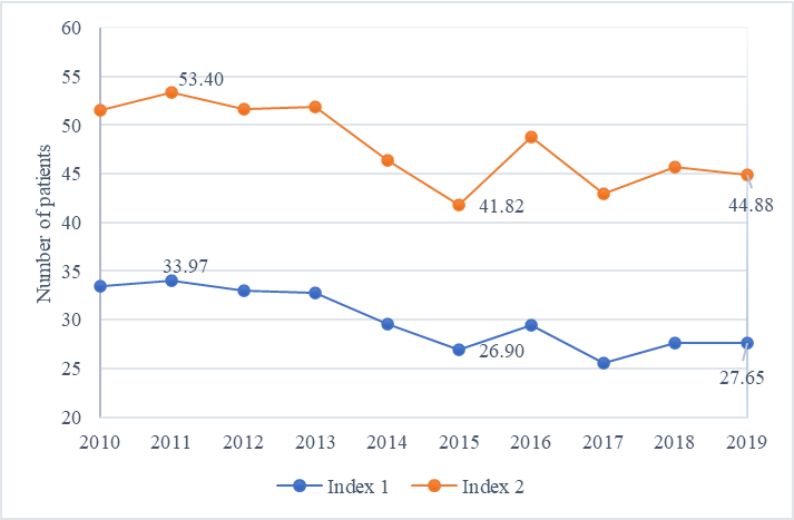
As already mentioned, five indicators were selected for the evaluation of home health care. The first index is the number of patients per employee. The desired value of this index is as low as possible. The lower the value, the higher the efficiency, in other words the lower the value, the more workers per patient there are. Index number 2 is defined as the number of patients per non-medical healthcare employee, therefore even here, as in the previous example, the desired value of the indicator is as low as possible. The lower the number, the lower the number of patients per non-medical healthcare employee. Index 3 is defined as the number of visits per patient. The lower its value, the less it was necessary to visit the patient. Index number 4 shows the number of visits per employee. Again, the lowest possible value is desirable. The lower the value, the fewer visits the worker had to make and the better services he could provide. A similar situation occurs with index number 5. It defines the number of visits per non-medical healthcare employee.

Table 2 – Calculated indicators (2010-2019)

Year	Index 1	Index 2	Index 3	Index 4	Index 5
2010	33,44	51,54	39,81	1331,31	2051,74
2011	33,97	53,40	40,23	1366,59	2148,42
2012	33,03	51,63	40,58	1340,33	2094,88
2013	32,75	51,84	40,43	1324,04	2095,57
2014	29,60	46,35	49,20	1456,26	2280,65
2015	26,90	41,82	58,68	1578,55	2454,14
2016	29,48	48,76	48,93	1442,31	2386,10
2017	25,58	42,99	45,43	1162,28	1953,15
2018	27,58	45,66	46,10	1271,32	2105,03
2019	27,65	44,88	45,13	1247,97	2025,47

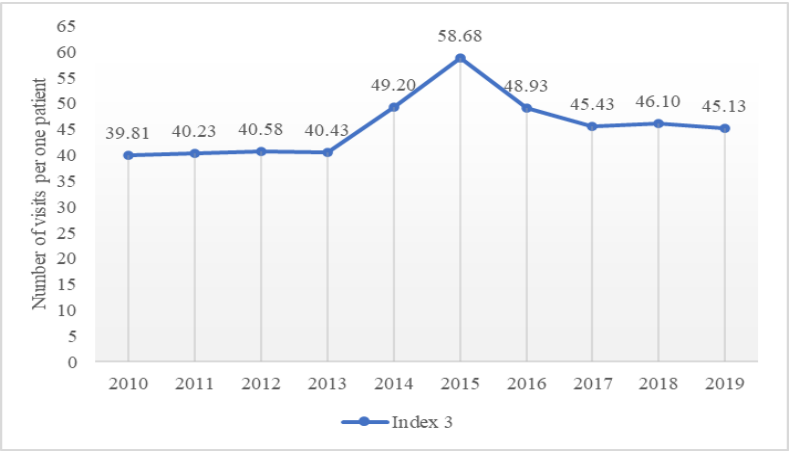
Source: author's calculations

Figure 1 – Development of index 1 and 2 (2010-2019)
Source: author's calculations



Both table 2 and figure number 2 shows the development of index 3, which shows the relationship between the number of visits and the number of patients. Compared to previous indices, in this case the year 2015 is the worst. The number of visits per patient is approximately 59. On the contrary, the most favourable indicator is in 2010, when the number of visits per patient is approximately 40. The year 2015 is significantly the worst. The second worst year, 2014, is still 10 visits per patient more favourable than the mentioned year 2015.

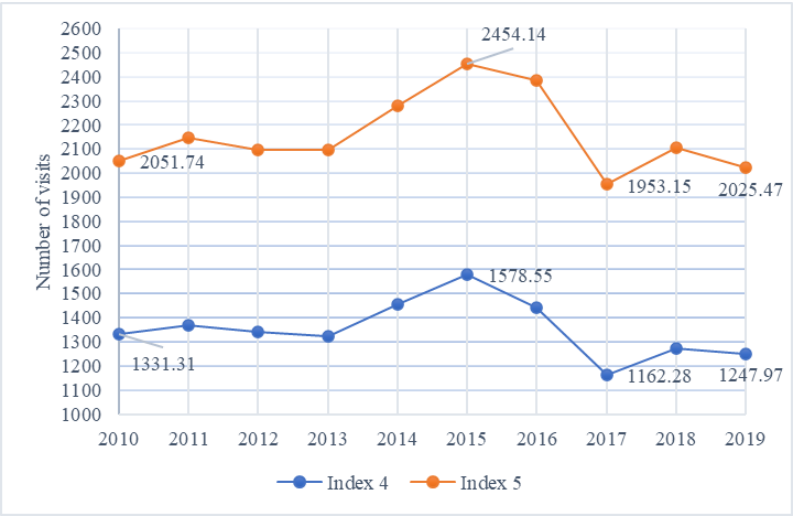
Figure 2 – Development of index 3 (2010-2019)
Source: author's calculations



The year 2015 has no positive index numbers 4 and 5 too. Here, too, it shows the worst value. Index number 4 deals with the number of visits per employee, in other words - how many visits per employee made in a given year. In 2015, one employee made approximately 1.579 visits. On the contrary, the best value came out in 2017, when one employee made about 1.162 visits.

In 2017, the most positive value was also for index number 5 - the number of visits per non-medical healthcare employee. In 2017, there were approximately 1.953 visits. The worst year was again the year 2015 with the value of the index 2425.14.

Figure 3 – Development of index 4 and 5 (2010-2019)
Source: author's calculations



5 Conclusion

It is not possible to select a single year from the research, which would have all the worst or the best indicators. However, 2017 has the best values for the index 1, 4 and 5 for all monitored years. At the same time, it has the second best results of indicators for index 2.

From the above, the main advantages of home care over other forms of health care follow. Economic efficiency - home care costs of client care and contributes to shortening the duration of hospitalization and the duration of health indications, according to many authors. There is also a faster return of the client to the society or work process, which arises from savings in the social benefits system and in the long run to increase economic efficiency in general. Individualized care - each client is a unique human being who has his or her individual needs. Home care agencies approach clients and their families individually and reflect their specific requirements. Complexity - home care provides a set of all activities related to treatment, nursing, rehabilitation, psychological and mental support and client care. This means that we have to apply a holistic approach to medicine in practice.

Home health care is becoming an increasingly important part of the health care system. During the COVID - 19 pandemic was a huge development of new technologies in the field of healthcare and, for example, telemedicine. These are factors that will certainly interfere in the development

of home medical care in the coming years. As home health becomes an increasingly important component of the health care system and its share of health expenditure at the national level is growing in many countries, it is important to understand the potential for efficiency. Therefore, further research is recommended as the sector continues to grow. This is also recommended by Valdmanis et al (2017). In addition, they emphasize the understanding of the cost structure of the industry.

Acknowledgements

This paper was supported by project SGS No. SP2021/67, International Evaluation of the Performance of Health and Social Services with a Focus on the Application of Multicriteria Methods, Faculty of Economics, VSB – Technical University of Ostrava.

References

[1] Asociace domácí péče České republiky (2021). [online]. [cit.2021-08-15]. Available from https://www.adp-cr.cz

[2] GENET, Nadine, ed. Home care across Europe: current structure and future challenges. Copenhagen: European Observatory on Health Systems and Policies, c2012. Observatory studies series. ISBN 978-92890-02882.

[3] JAROŠOVÁ, Darja. Úvod do komunitního ošetřovatelství. Praha: Grada, 2007. Sestra (Grada). ISBN 978-80-247-2150-7.

[4] Ministerstvo práce a sociálních věcí (2021). *Příspěvek na péči.* [online]. [cit.2021-08-10]. Available from https://www.mpsv.cz/-/prispevek-na-peci

[5] Ministerstvo zdravotnictví (2021). *Koncepce domácí péče.* [online]. [cit.2021-08-10]. Available from https://www.mzcr.cz/koncepce-domaci-pece/

[6] ÚZIS ČR (2015). *Stručný přehled činnosti oboru domácí zdravotní péče za období 2007–2019* [online]. [cit.2021-08-17]. Available from https://www.uzis.cz/index.php?pg=vystupy--statistika-zdravotnich-sluzeb--domaci-zdravotni-pece

[7] Zákon č. 372/2011 Sb., o zdravotních službách a podmínkách jejich poskytování (zákon o zdravotních službách) [online]. [cit.2021-08-10]. Available from https://www.zakonyprolidi.cz/cs/2011-372

[8] Valdmanis VG, Rosko MD, Leleu H, Mukamel DB. *Assessing overall, technical, and scale efficiency among home health care agencies*. Health Care Manag Sci. 2017 Jun;20(2):265-275. doi: 10.1007/s10729-015-9351-1. Epub 2016 Jan 4. PMID: 26729325.

[9] Geng F, Mansouri S, Stevenson DG, Grabowski DC. *Evolution of the home health care market: The expansion and quality performance of multi-agency chains.* Health Serv Res. 2020 Dec;55 Suppl 3(Suppl 3):1073-1084. doi: 10.1111/1475-6773.13597. PMID: 33284527; PMCID: PMC7720704.

[10] Kim H, Norton EC. Effects of the Ten Percent Cap in Medicare Home Health Care on Treatment Intensity and Patient Discharge Status. Health Serv Res. 2015;50(5):1606-1627. doi:10.1111/1475-6773.12290

Contact information

Ing. Eva Molnárová
VSB - Technical University of Ostrava, Faculty of Economics, Department of Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: eva.molnarova@vsb.cz

The role of the state in financing of local self-government in the Slovak Republic

Viera Papcunová, Jarmila Hudáková

Abstract: The aim of fiscal decentralization in relationship to municipalities was to increase their financial autonomy. Nevertheless, municipalities are constantly tied to the state budget through incomes from personal tax income and transfers, which go primarily to ensure the transferred competencies from state. The aim of the paper is to evaluate the role of the state in the financing of municipalities in the Slovak Republic on the basis of selected indicators. We analysed the selected groups of municipal incomes: incomes from personal tax income and transfers from the state budget in relationship to the total current incomes of municipalities. The object is cumulated data of municipalities in the time series 2014-2020. Database we obtained from the Ministry of the Finance of the Slovak Republic. The analysis showed that, despite the fiscal decentralization, total incomes from the state budget account for an average of 72.50% of the total current incomes of municipalities. Incomes from personal tax income accounts for an average of 44.26% of total current incomes and transfers account for an average 28.24% of total current incomes. Total incomes from the state budget (incomes from yield of from personal tax income and transfers) amount to more than 76% of total current incomes.

Keywords: Fiscal decentralization, incomes from personal tax income, municipalities, transfers from the state, Slovak Republic

JEL Classification: H24, H71, H83

1 Introduction

Public administration has to deal with several specific problems. One of the most discussed is the financing from public sources and the limited possibilities in deciding on the use of financial resources, which result from the legislative environment. At the same time, this is a consequence of an insufficient or non-existent efficiency evaluation system (Daňková, Čepelová, Koreňová, 2017). This is also confirmed by Vavrek (2020), who adds that if public administration entities want to survive and prosper in a globalized and competitive world, they must change their thinking and streamline their management.

The process of fiscal decentralization is generally a very complex process, which depends on many endogenous and exogenous factors, and these determine the success of fiscal reform at local and central level (Mazllami, Osmani, 2014). From a theoretical point of view, the base of fiscal decentralization is the fact that the fiscal and expenditures powers delegated to supranational governments support economic development by improving the efficiency of government (Oates,1972, Tiebout, 1956). The key issues in connection with the theory of fiscal decentralization have become moral hazard, the way of providing information, the problem of asymmetric information, the relations between the various levels of public government and so on (Poláček, 2017). From a practical point of view, the application of fiscal decentralization in the state depends primarily on the form of state organization (federal or unitary), but also on many other assumptions, such as country size, number of government levels, historical, legislative, social or economic background (Neubauerová, 2003). Clarke, Lu (2017) notes that, although China is formally a unitary state, in 2008, for example, central government expenditures accounted for only 21% of national budget expenditures. In contrast, even federal states such as Canada (43% in 2002) and the United States (51% in 1999) reported much higher percentages of these expenditures. Chen et al., (2020) notes, however, that before 1994, local governments in China had considerable leeway in distributing of local tax incomes. However, the 1994 tax

reform not only removed the local government's control over local tax incomes under the Budget Act and banned local governments to lend themselves. Slavinskaite (2020) adds that, in general, the degree of fiscal decentralization is higher in countries with high economic growth than in countries with low economic growth. Based on empirical research, this is also confirmed by Aristovnik (2012), who states that, in general, the degree of fiscal decentralization is statistically higher in developed OECD countries than in most emerging market economies (i.e. the EEC). Nižňanský, Cibáková, Hamalová (2014) consider fiscal decentralization to be a key prerequisite for the success of the decentralization process in public administration. According to them, the goal of fiscal decentralization is to reduce the central government's control over total public incomes and expenditures and to achieve the connection of local governments with the creation and use of resources. According to Mazllami (2021) fiscal decentralization reforms should assign fiscal decision-making powers and management responsibilities to local self-governments in the transfer of adequate financial resources. However, the experience of many transition economies also shows that the unavailability of financial resources leads to the inefficiency of public services causes the failure of local government. Nevertheless, Shin (2017) adds that fiscal decentralization can provide incentives for greater and more effective local economic development activity. At the same time, it notes that, on the one hand, fiscal decentralization promotes tax competition between local governments and, on the other hand, it can support the provision of public goods, which means that local governments in fiscally decentralized states have better infrastructure or education services. This is also confirmed by Sow, Razafimahefa (2017), who argue that fiscal decentralization can improve the fiscal balance by enabling the provision of public goods and services at a lower cost. It can put pressure on local governments to improve the delivery of public goods at minimal cost. In post-communist countries, including the Slovak Republic, tendencies towards decentralization were delayed and practically gained importance only in the first decade of the 21st century. The inadequate transfer of responsibilities in relation to fundraising powers has often become an obstacle to the success of fiscal decentralization in these countries (Maličká, 2019). The lack of funding in relation to fiscal decentralization is also confirmed by Mazllami (2021), who states that although there have been some attempts at decentralization in Northern Macedonia, local governments have failed to secure financial resources. In many cases, the vertical fiscal imbalance has deepened and the transfer pattern between levels of government has taken on the character of a transfer dependence of lower levels of government on the central level. Rodden (2002) notes, however, that the dependence of local governments on transfers may worsen the general government fiscal balance. Higher dependence on transfers, especially without debt limits, can worsen the overall balance. Subnational expenditures financed by the transfer may also, according to De Mello (2007) represent an additional (not a substitute) expenditure of the central state administration. Transfers can thus become a vicious circle, with higher dependence on transfers leading to higher local government deficits and requiring bigger transfers. If sub-national governments can finance a big part of their expenditures with their own sources of incomes (taxes and fees), they have a stronger incentive to behave fiscally (Governatori, Yim, 2012).

Municipalities in Slovakia need to be perceived as self-governments that have a relatively big number of competencies and a precisely defined territorial scope. Taking a deeper look at their competencies established by law in the context of their mission, it can be stated that they are important actors in local economic policy. Theoretically, it is from this area that their great development potential stems, which is limited precisely by their own financial insufficiency. These are the same competencies of municipalities and their different size with respect to the number of inhabitants. It is from this position that other differences arise, which are manifested mainly in economic strength, the size of the tax base, the possibility of different access to external financial resources, as well as limited internal financial possibilities (related to the amount of local taxes and the number of taxpayers, but also with the yield from personal tax income) (Tej, Burdová, Vagaš, 2018). One of the reasons for criticizing decentralization in the Slovak Republic

is the still great bureaucracy and insufficient systematization of public administration, and the local level is no exception. As part of the decentralization of public administration, a big number of duties and responsibilities have been transferred to local levels. On the one hand, proportionality was achieved in the performance, on the other hand, in many cases this transfer of competencies was not ensured by sufficient technical equipment or adequate administrative staff (Vartašová, Červená, 2019). The process of fiscal decentralization in the conditions of Slovak Republic took place in two stages. In the first stage in 2004, the purposefulness of subsidies was abolished, with which the state financially participated in ensuring the original competencies of local self-government. Nevertheless, the financing of the transferred competencies continued to be provided by the state through a targeted transfer. In the second stage in 2005, the only one share tax that the state began to redistribute to the level of local self-government became the personal tax income. From 2005 to the present, the rules for determining the share of this tax have changed several times at the level of municipalities. At present, 70% of the total volume of incomes collected through personal tax income is redistributed to the level of local self-government. The delegated performance of state administration continues to be financed through a transfer. Maruchnič, Čunderlík (2005) add that the state, on the one hand, guarantees this transfer to self-governing units under Act no. 564/2004 Coll. on the budgetary determination of the yield from personal tax income of territorial self-government expressed as a certain percentage of the total incomes of this tax collected by the state, but on the other hand, only a government decree decides on its allocation mechanism. This raises legitimate concerns on the part of local self-government representatives about the security and stability of such quasi-own incomes into their specific budgets. According to Gutman (2014) transfers between regional and local self-government should only be on the basis of solidarity (e.g. floods or if, for serious reasons, local self-government is unable to provide basic services - fiscal compensation). Transfers provided by the central government should be phased out. Also Maličká (2019) notes that if the share of own tax incomes of the total incomes of local self-governments increases, the transfer dependence of local self- governments on the central government level decreases and the vertical fiscal imbalance decreases. With this favorable development, local self-governments can make a bigger amount of expenditures, which reduces the share of received transfers on total expenditures.

2 Material and Methods

The aim of the paper is to evaluate the role of the state in the financing of municipalities in the Slovak Republic on the basis of selected indicators. We analyzed the selected groups of municipal incomes: incomes from personal tax income and transfers from the state budget in relationship to the total current incomes of municipalities. The object is cumulated data of municipalities in the time series 2014-2020. Database we obtained from the Ministry of the Finance of the Slovak Republic. The obtained data were processed via MS Excel. We analyzed following indicators:

% share of the personal tax incomes on current incomes =

$$\frac{the\ yield\ from\ personal\ tax\ income}{current\ incomes}\ x\ 100 \quad (1)$$

% share of transfers on current incomes =

$$\frac{transfers\ within\ public\ administration}{current\ incomes}\ x100 \quad (2)$$

% share of transfers on the delegated competences on the transfers within public administration

$$\frac{transfers\ on\ the\ delegated\ competences\ of\ state\ administartion}{transfers\ within\ public\ administration}\ x\ 100 \quad (3)$$

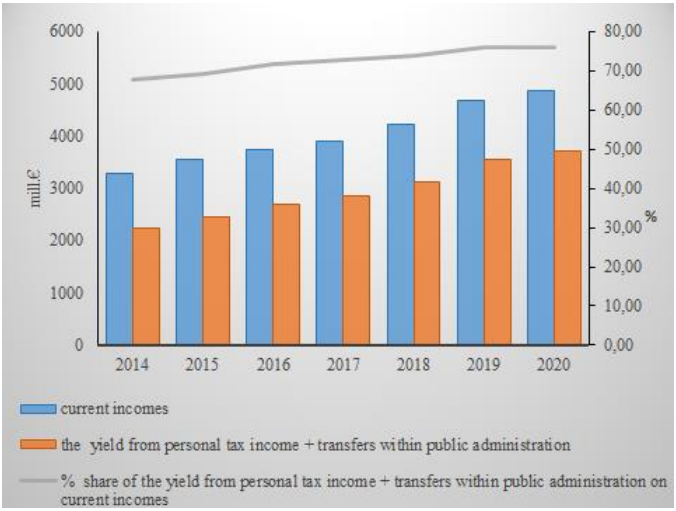
% share of the yield from personal tax income + transfers within public administration on current incomes =

$$\frac{the\ yield\ from\ personal\ tax\ income + transfers\ within\ public\ administration}{current\ incomes}\ x\ 100 \quad (4)$$

3 Results and Discussion

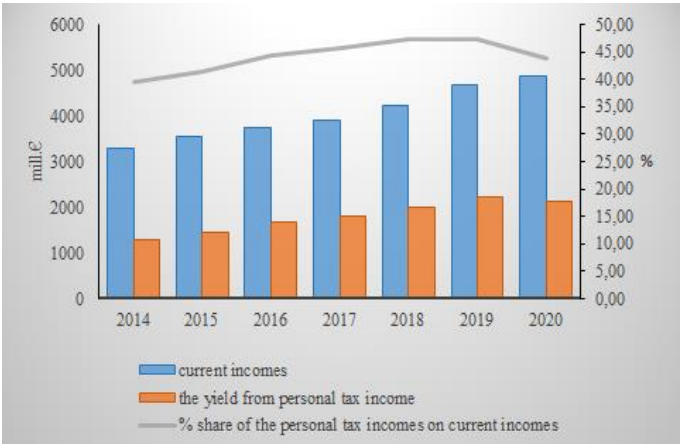
The total current incomes of municipalities increased every year during the time period 2014-2020. Compared to 2014 and 2020, the increase of these incomes represented 48.42%. The state contributes to the current incomes of municipalities through the incomes from the yield from personal tax income and transfers. The total volume of financial resources in the yield from personal tax income and transfers increased every year. In 2020, compared to 2014, the increase of these revenues was € 1,482 mill. €, which represents 66.39%. The share of these incomes on the total current incomes of municipalities ranged from 67.88% to 76.11% (Figure 1). It follows from the above that, despite the fiscal decentralization, the dependence of municipalities on incomes from the state budget is constantly increasing. This is also confirmed by Vartašová, Červená (2019), who note that such a situation leads municipalities to permanent dependence on the state (the yield from personal tax income and transfers). The consequence of such a situation is the fact that municipalities that are not able to obtain funding in other ways (e.g. by liquidating of municipal property or using specific grants or loans) simply do not invest in the further development of the municipality.

Figure 1 – % share of the yield from personal tax income + transfers within public administration on current incomes.
Source: Ministry of the Finance of the Slovak Republic, own processing



The negative of this situation is the fact that municipalities are very sensitive to any negative change at the level of the national economy, because it means a decline of their incomes. Such dependence of municipalities on the state budget is not specific only to the conditions of Slovak Republic. Busch, Mukherjee (2018) state that Indian states are also dependent on the central government, because almost half of their incomes come from the state budget. 24% of state incomes come from taxes that are collected by the state and are then divided into individual states on the basis of a multi-element formula. Another 20% comes from state incomes in the form of earmarked transfers.

Figure 2 – % share of the personal tax incomes on current incomes.
Source: Ministry of the Finance of the Slovak Republic, own processing



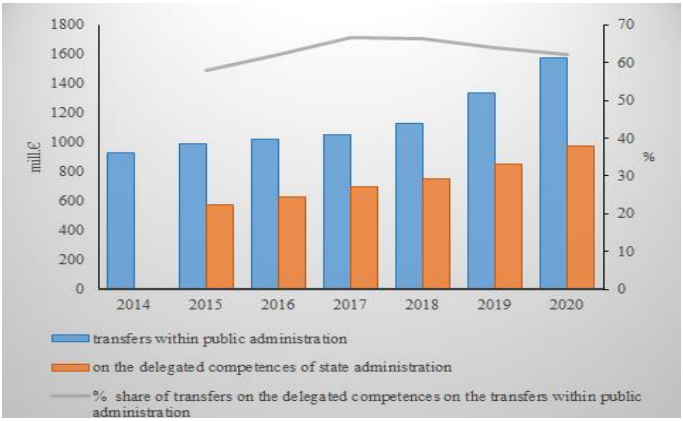
During the analysed time period, the rules for determining the incomes from this tax have changed in relation to municipalities. In 2014, municipalities received 67%, in 2015 68% and from 1 January 2016 to the present, municipalities receive 70% of the total volume of personal tax income. The total income from the yield from personal tax income increased every year until 2019. In 2020, the first economic problems in the world began to manifest themselves at the turn of April and March, when oil prices on world markets fell sharply. The Slovak Republic is an open economy, so any change significantly affects its economy. At the same time there was a pandemic COVID-19, which resulted in increasing government spending to combat the pandemic. And thanks to the lockdown, the overall growth of the Slovak economy also slowed down, which resulted in a decline of the volume of personal tax income at the state level. This was automatically reflected in a decline of incomes, which were redistributed among municipalities. The consequence of these changes was also a decrease the yield from personal tax income by 73 mill. €, which represents a 3.3% decrease. The yield from personal tax income is part of the tax incomes of municipalities, which also includes incomes from local taxes and fees, which municipalities receive directly from their inhabitants. Nevertheless, the yield from personal tax income on total current incomes ranged from 39.54% to 47.38%. (Figure 2).

Figure 3 – % share of transfers on current incomes.
Source: Ministry of the Finance of the Slovak Republic, own processing

Despite the fact that the share of incomes from the state did not change in 2020, there was a decrease of these incomes on total current incomes by 3.49%, precisely due to the decline in the Slovak economy. Although local self-governments in the Slovak Republic have no possibility to influence the tax rate and tax base, according to Maličká (2019) the yield from personal tax income is intended to cover original competencies and local self-governments themselves decide on its specific use, in contrast to the situation with delegated competencies, which are financed by earmarked transfers.

Transfers received by municipalities from the state budget are intended primarily to ensure the general performance of municipalities. The total volume of transfers increased every year, in 2020 compared to 2014 they increased 1.7 times, which represents an increase of 640 mill. €. The share of these transfers on current incomes ranged from 27.14% to 32.21%. Despite the fact that the total volume of transfers increased every year, their share on total current incomes had a fluctuating trend. In the time period from 2015 to 2018, the share of transfers on total current incomes decreased. In 2019 and 2020, the share of transfers on total current incomes increased (Figure 3).

Figure 4 – % share of transfers on the delegated competences on the transfers within public administration
Source: Ministry of the Finance of the Slovak Republic, own processing



Current transfers consist mainly of transfers for the delegated competences of state administration. In the process of decentralization of public administration, municipalities obtained on the basis of Act No. 416/2001 Coll. on the transfer of certain powers from state administration bodies to municipalities and higher territorial units of competence in various areas, e.g. in the fields of education, social affairs, etc. The state contributes to their provision through transfers for the delegated competences of state administration. Of the total volume of current transfers, transfers for the delegated competences of state administration range from 58.06% to 66.57%. The total volume of these transfers has increased every year. In 2020, these transfers increased 1.7- fold compared to 2015, it is representing 399 mill. € (Figure 4)

4 Conclusion

The foundations of fiscal decentralization in the Slovak Republic were laid in April 2004 and the aim of fiscal decentralization was mainly to ensure greater financial autonomy for municipalities through share tax and local tax, while ensuring income stabilization to ensure original competencies. Nevertheless, the state continues to financially support municipalities. This was also confirmed by the analysis of incomes through which the state contributes to the financing of municipalities. Total incomes from the state budget (incomes from yield of from personal tax income and transfers) amount to more than 76% of total current incomes. Already during the economic crisis in 2009, which resulted in a decline in personal tax incomes revenues, the inability of municipalities to finance their needs without state assistance became apparent. Therefore, for the municipalities, on the base of the Resolution of the Government of the Slovak Republic was approved an extraordinary subsidy from the sources of the state budget of the Slovak Republic in the amount of 100 mill. €. to cover the loss of personal tax income and to improve the initial situation in 2010. The current COVID-19 pandemic also it causes that municipalities have lower incomes from the state in the form of yield from personal tax income due to reduced economic growth in the country. Both of these crises have highlighted the strong dependence of municipal financing on economic development of state, while opening up new questions and challenges in the activities and management of municipalities. One way to reduce the dependence of municipalities on the state could be a more efficient use of municipal property. However, this should be preceded by a thorough comprehensive financial analysis based on the

evaluation of individual components of the municipal budget. Based on the results of such an analysis, it would be possible to consider changes in local self-government funding, e.g. return to a mix of taxes that will be redistributed to the municipal level.

References

[1] ARISTOVNIK, A. (2012). Fiscal Decentralization In Eastern Europe: Trends and Selected Issues. *Transylvanian Review of Administrative Sciences*, Vol. 37E, pp. 5–22.

[2] BUSCH, J., MUKHERJEE, A. (2018). Encouraging State Governments to Protect and Restore Forests Using Ecological Fiscal Transfers: India's Tax Revenue Distribution Reform. *Conservation Letters*. Vol. 11, pp. 1-10. DOI: http://10.0.4.87/conl.12416

[3] CHEN, Z., HE, Z., LIU, CH. (2020). The Financing of Local Government in China: Stimulus Loan Wanes and Shadow Banking Waxes. *Journal of Financial Economics*, Vol. *137*, pp. 42–71. DOI: https://doi.org/10.1016/j.jfineco.2019.07.009

[4] CLARKE, D., LU, F. (2017). The Law of China's Local Government Debt: Local Government Financing Vehicles and their Bonds. *The American Journal of comparative Law*, Vol.65, pp. 751-798

[5] DAŇKOVÁ, A., ČEPELOVÁ, A., KOREŇOVÁ, D. (2017). Process Efficiency of Local Self-Government in Slovak Republic. *Journal of International Studies*, Vol. 10, pp. 309-317. DOI:10.14254/2071-8330.2017/10-2/21

[6] De MELLO, L. (2000). Fiscal Decentralization and Intergovernmental Fiscal Relations: A Cross-Country Analysis. *World Development* Vol. 28, pp. 365-380.

[7] GOVERNATORI, M., YIM, D. (2012). Fiscal Decentralization and Fiscal Outcome. *Economic Papers 468*, pp. 1-28. DOI: 10.2765/27462

[8] GUTMAN, M. (2014). Fiškálna decentralizácia – skutočne? *Students Scientific Journal*, Vol. 9, pp. 16-22

[9] MALIČKÁ, L. (2019). Formálna dimenzia fiškálnej decentralizácie v kontexte vertikálnej fiškálnej nerovnováhy a finančnej autonómie miestnych samospráv Slovenskej republiky. *Politická Ekonomie*, Vol. 67, pp. 273–290. DOI: https://doi.org/10.18267/j.polek.1240

[10] MARUCHNIČ, I. J., ČUNDERLÍK, M. Ľ. (2005). Fiškálna decentralizácia v Slovenskej republike. *Mezinárodní a srovnávací právní revue*, Vol. *14*, pp. 64–77.

[11] MAZLLAMI, J. (2021). Fiscal Decentralization and Alternative Financial Sources for the Local Self-Government in Republic of North Macedonia - Overview. *SEEU Review*, Vol.16, pp. 14–29. http://10.0.9.174/seeur-2021-0006

[12] MAZLLAMI, J., OSMANI, R. (2014). The Impact of the Fiscal Decentralization Process in the Local Public Finance of the Western Balkan Countries: A Comparative Analysis. *Economy & Business Journal, International Scientific Publications*, Vol. 8, pp. 730-741.

[13] NEUBAUEROVÁ, E. (2003). Finančné aspekty decentralizácie verejnej správy. Bratislava: Vydavateľstvo Ekonóm.

[14] NIŽŇANSKÝ, V., CIBÁKOVÁ, V., HAMALOVÁ, M. (2014). *Tretia etapa decentralizácie verejnej správy na Slovensku*. Bratislava: Wolters Kluwer.

[15] OATES, W. E. (1972). *Fiscal Federalism*. New York: Harcourt Brace Jovanovich

[16] POLÁČEK, E. (2017). Fiscal Decentralization and its Impact on Development of Property Taxes in the Slovak Republic. *Acta Academica Karviniensia, Vol. 9*, pp. 44-56

[17] RODDEN, J. (2002). The Dilemma of Fiscal Federalism: Grants and Fiscal Performance around the World. *American Journal of Political Science*, Vol. 46, pp. 670–87.

[18] SHIN, G. (2017). Corporate Tax Policy and Multinational Corporations in the American States: Exploring the Intervening Effect of Local Fiscal Decentralization. *Journal of Urban Affairs*, Vol. 40, pp. 679-704. DOI: https://doi.org/10.1080/07352166.2017.1360728

[19] SLAVINSKAITE, N. (2020). Review of Fiscal Decentralization in European Countries. *International Journal of Contemporary Economics and Administrative Sciences*, Vol. *10*, pp. 345–355. DOI: https://doi.org/10.5281/ZENODO.4429787

[20] SOW, M., RAZAFIMAHEFA, I. F. (2017). *Fiscal Decentralization and Fiscal Policy Performance*. Washington, D.C.: International Monetary Fund.

[21] TEJ, J., BURDOVÁ, A., VAGAŠ, M. (2018). Cooperation Policy in Local Government Management as a Policy Tool of a Municipality. *Annales Scientia Politica*, Vol. 7, pp. 68 – 76

[22] TIEBOUT, C.M. (1956). A Pure Theory of Local Expenditure. *Journal of Political Economy*, Vol. 64, pp.416-424. DOI: https://www.journals.uchicago.edu/doi/10.1086/257839

[23] VARTAŠOVÁ, A., ČERVENÁ, K. (2019). Computerisation of Public Administration in Slovakia – Impact on (the Fiscal Position of) Municipalities. *Public Governance, Administration and Finances Law Review: in the European Union and Central and Eastern Europe*, Vol. 4, pp.26-43

[24] VAVREK, R. (2020). Multi-Criteria Analysis as a Tool For Assessment of District Towns. In *23rd International Colloquium on Regional Sciences*. Conference Proceedings, 2020. pp, 166-172

Contact information

doc. Ing. Viera Papcunová, PhD.
Constantine the Philosopher University in Nitra, Faculty of Natural Sciences, Institute of Economics and Management
Tr. A. Hlinku 1, 949 74 Nitra, Slovak Republic
Masaryk University, Faculty of Economics and Administration, Department of Regional Economics and Administration
Lipová 41a, 602 00 Brno-Pisárky, Czech Republic
E-mail: vpapcunova@ukf.sk

Mgr. Jarmila Hudáková, PhD., MBA
Constantine the Philosopher University in Nitra, Faculty of Natural Sciences, Institute of Economics and Management

Tr. A. Hlinku 1, 949 74 Nitra, Slovak Republic
E-mail: jhudakova@ukf.sk

Artificial Intelligence in Healthcare: Focus on Human Resources Substitution and Early Adopters in Slovakia

Peter Pažitný, Daniela Kandilaki, Kristina Randlová, Zuzana Rajdlová

Abstract: In the area of management of healthcare services, artificial intelligence has a potential to influence the production of healthcare services or even substitute healthcare professionals. Slovak healthcare system faces a shortage of doctors and nurses, and this is not going to change soon. So artificial intelligence is one of the potential solutions how to compensate the current and future shortage of doctors, nurses, and other healthcare personnel. The aim of this article is to (1) search for studies and use cases, where AI has the potential to substitute humans in healthcare and (2) find out if this AI/human substitution is a motivator for AI implementation in Slovakia. We are discussing five areas where artificial intelligence has potential to substitute humans, namely robotic surgery, radiology, radiomics, infectious diseases, and nursing. Regarding motivation for AI adoption in Slovakia, the lack of human resources was mentioned spontaneously by early adopters, but it is not the main motivation factor. In Slovakia, it looks, that medical and business leadership are much higher motivators. Medical leadership brings new (faster and more precise) ways of treatment people and business leadership has the potential to strengthen the leader position of early adopters.

Keywords: Artificial intelligence, early adopters, healthcare, human resources, substitution, Slovakia

JEL Classification: I10, I15, O15

1 Introduction

Lost Tapes of the 27 Club is a mental health project that raises awareness by producing artificial intelligence (AI) created songs of famous artists, that suffered from mental health problems and their lives were all lost when they were only 27 years old (see more at www.overthebridge.org). In the "Lost Tapes" project, artificial intelligence created and performed new songs from Amy Winehouse, Jimi Hendrix or Kurt Cobain.

Listening to these songs, its not only thinking about "what these artists might have created, were they still with us" (www.losttapesofthe27club.com), but mainly thinking about, to what extent artificial intelligence is able to do "human" actions and to what extent AI is able to substitute humans. And if artificial intelligence creates music, is it able to substitute humans in other areas of life?

In the area of management of healthcare services, the question is, if the artificial intelligence has a potential to influence the production of healthcare services or even substitute human resources in healthcare. Slovak healthcare system faces a shortage of doctors and nurses, and this is not going to change soon. So artificial intelligence is one of the legitimate solutions to compensate the shortage of doctors, nurses, and other healthcare personnel. Or as Mesko (2017) points out, while no AI is meant to replace physicians, those physicians who use AI might replace those who do not.

In this context, we can describe the production of healthcare services as a combination of (1) gross capital formation, (2) human resource and (3) artificial intelligence. Under gross capital formation we understand all infrastructure, machinery and equipment and intellectual property products as defined by the System of Health Accounts (OECD, 2017). Human resources in healthcare are all qualified health care workers that are working in the healthcare sector (adopted

from WHO, 2016). Artificial intelligence is defined as the use of computers for automated decision-making to perform tasks that normally require human intelligence (USAID, 2019).

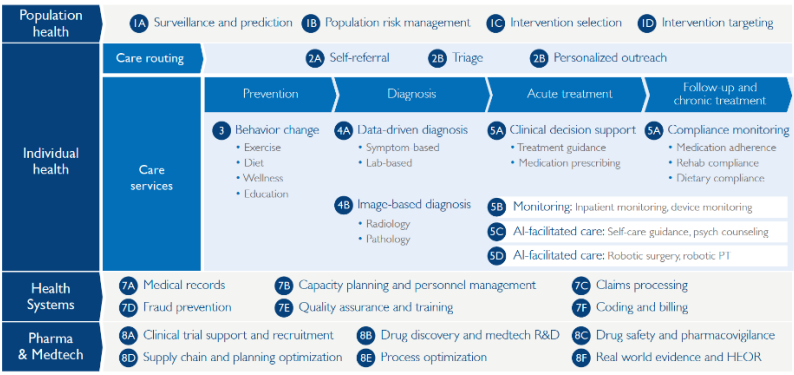
The High-Level Expert Group on Artificial Intelligence (EC, 2019) uses a more complex definition, where "Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal."

According to Somoili (2019) the core AI domains are: reasoning, planning, learning, communication, and perception. On other hand, processes like automation, telemedicine or digitalization are not considered as artificial intelligence. There is no doubt, that for example laboratory automation reduce manpower needs. According to Yeo (2018) the workload in the examined laboratory over 10 years has increased steadily against a constant headcount. Automation aims to manage increasing workload demands, reduce errors, and enhance laboratory performance while managing a limited labor force.

As we see from the definitions above, AI combines the very substance from both production factors – gross capital and human resources. The gross capital is presented by hardware part of AI – starting with computer hardware up to a robotic skeleton. The labor force part is presented by learning, thinking and up to decision-making abilities of AI.

Based on more than 260 use cases a framework of Artificial Intelligence in healthcare was created by US AID (2019). This is divided into four domains – population health, individual health, health systems and pharma & medtech. The potential substitution of medical personnel by AI is most likely to be in the domain individual health.

Figure 1 – Framework for all AI Use Cases in Healthcare
Source: Artificial Intelligence in Global Health, US AID, 2019



In comparison to the two-factor Cobb-Douglas production function (Gechert, 2019), we can think of artificial intelligence as a specific production factor. This approach was chosen by DeCanio (2016), where the two production factors - labour and capital - were extended by robots to present the three-factor production equation: labour, robots, and capital. De Canio concludes that if elasticity of substitution between human and robotic labor is greater than the 1.7–2.1 range, spreading of robots will have a depressing effect on human wages.

The emphasis of this article is not to calculate the elasticity of substitution between these factors, but rather focus of the substitution possibilities itself in healthcare and specifically in the context of the Slovak healthcare system. The aim of this article is to:

1. search for use cases, where AI has the potential to substitute humans in healthcare
2. find out if this AI/human substitution is a motivator for AI implementation in Slovakia

2 Material and Methods

This paper is based on (1) literature review to find appropriate use cases and on (2) qualitative approach.

Literature review was done by internet search using Google Scholar (www.scholar.google.com), by searching the database of the National Centre for Biotechnology Information (NCBI, www.ncbi.nlm.nih.gov) and by searching in materials of the Hello AI 2021 course (www.helloaionline.com). Keywords that were used: artificial intelligence, deep learning, healthcare, radiomics, human resources, healthcare renovation, AI vs HR, mechanization of healthcare, AI in medical, AI homecare. After the search a long list of studies emerged, and the studies were further analyzed, selected, and grouped. From the long list those studies were excluded, in which there was no answer to the questions whether AI improves the results of care, replaces, or has the potential to replace human resources in the future. When selecting the uses cases and studies, we focused on variability of use cases from more areas of health care. In total, we went through more than 100 studies in more detail, from which we selected the publications and use cases, in which we saw the answer to the basic question: AI vs human resources.

Qualitative approach was done by personal interviews with so called early adopters of AI, more specifically healthcare providers who already have real experience with the selection, implementation and use of artificial intelligence in Slovakia. These early adopters were identified by media search with keywords: artificial intelligence, healthcare, providers, Slovakia. The adoption of AI in Slovakia is in very beginning and is spread very rarely. So, the pool of early adopters is very limited and consist of private hospital using Brainomix (www.brainomix.com), private provider of diagnostic imaging using IcoBrain (www.icometrix.com) and a public hospital providing robotic assisted surgery by DaVinci surgical robot (www.davincisurgery.com). These early adopters were questioned in person (2 onsite visit, 1 online interview) following a semi-structured interview design, which covered areas as motivation and barriers for AI implementation and a part on recommendations for faster AI implementation.

3 Results and Discussion

In our research, we grouped the studies, publications and use cases, where AI with high potential to substitute or replace humans into five areas: robotic surgery, radiology, radiomics, infectious diseases, and nursing.

3.1 Use cases, where AI has the potential to substitute humans in healthcare

3.1.1 Robotic surgery

The most advanced interaction of artificial intelligence in physical world is robotics. According to HLEG (EC, 2019) robotics can be defined as AI in action in the physical world (called also embodied AI). AI physical interventions is a combination of AI and robots, where AI helps to control robotic surgical devices to perform surgery and controls robot that facilitates a patient's physical therapy routine. (Artificial Intelligence in Global Health, 2019).

The word control in this sense needs to be interpreted in caution, because it is closely linked to definition of autonomy. According to Panesar (2019), ‘‘autonomy’’ is not a singular state, but rather a scale in which the degree of human intervention is traded against full independence. Panesar further distinguishes zero to five levels of automation (Table 1).

Table 1 - Human vs. Robot Surgeons

Human vs. Robot Surgeons					
0 No automation	1 Some assistance	2 Partial automation	3 Conditional automation	4 High automation	5 Full automation
Traditional surgery: Human surgeon performs all tasks	e.g. Intraoperative image guidance; human still physically performs all surgery (DaVinci)	e.g. TSolution-One (ROBODOC) hip arthroplasty robot; reduced level of human input required but range of procedures	e.g. CYBERKNIFE, automated pre-operative planning and radiosurgery (but not technically „surgery“)	e.g. Robot capable of performing most, if not all parts of a complex procedure. Negligible human input required	e.g. Robot for warzones or deep space exploration? Fully autonomous, versatile; no human assistance needed

Source: Panesar et al., 2019

Robotic surgery utilizes the robotic systems to assist and aid in surgical procedures. Robotically assisted surgery was created to improve the capacity of surgeons performing open surgery. In the case of robotically assisted minimally invasive surgery, instead of straightly moving the instruments, the surgeon uses one of two methods to control the instruments; either a direct tele manipulator or through computer control (Murali, 2018). Robotic surgery can be applied on different body parts, like urology, oncology, ophthalmology, orthopedics, traumatology, or cardiac surgery (Ozmen, 2021 in print).

3.1.2 Radiology

Radiology is naturally a key AI segment. All input images are fully digitalized (MR/CT scans, mammograms, etc.). Usually implemented by entities which are decentralized and have full control over the collected patient data. Recent research in this area is very promising. According to McKinney at al. (2020) AI predicts breast cancer in mammography more accurately than radiologists – reducing false negatives and false positives.

This trend was also confirmed by Salim et al (2020), by external evaluation of three commercial AI algorithms for independent assessment of screening mammograms in Sweden. The results of this study indicated that a commercially available AI computer-aided detection algorithm can assess screening mammograms with a sufficient diagnostic performance to be further evaluated as an independent reader in prospective clinical trials. Combining the first readers with the best algorithm identified more cases positive for cancer than combining the first readers with second readers.

Further on, according to Dembrower et al (2020) AI reduces radiologist workload, allows earlier detection of critical cases. Commercial AI cancer-detector algorithm could be used in triaging mammograms to decrease radiologist time spent on clearly negative mammograms and use these resources for women at risk of having a false-negative screening. The study shows that a

commercial AI cancer-detector algorithm could be used as both a single reader to determine easily read, negative mammograms with no radiologist involvement, and to select women for enhanced supplemental screening after a negative double reading by radiologists.

3.1.3 Radiomics

According to www.radiopedia.org radiomics (as applied to radiology) is a field of medical study that aims to extract many quantitative features from medical images using data characterization algorithms. The varied use of artificial intelligence in the diagnosis and treatment of oncological diseases has given rise to a whole new method: radiomics. Radiomics is a quantitative processing of medical data that enables more accurate and faster diagnosis of cancer, personalized diagnosis, compilation of models of cancer development, evaluation of treatment responses and more. Rogers (2020) describes a gradual transition historical qualitative method of data processing using artificial intelligence as very beneficial. Quantitative diagnostics can, with the help of artificial intelligence, achieve such derivations in health that are invisible to the human eye. Radiomics is most often used in the diagnosis of cancer diseases of the head, neck, and chest, but it is also used in other areas of health care (Niha, 2020).

In addition to the initial diagnosis, radiomics also enables the prediction of the return of cancer. Tang (2021) describes the possible use of artificial intelligence to early predict the recurrence of esophageal cancer, using quantitative analysis of CT images of patients. Zhouying (2021) sees a great advantage of using artificial intelligence in the treatment of cancer patients in compiling personalized diagnostics and predictive models of cancer development, which is possible thanks to quantitative analysis of large amounts of data obtained from medical images (CT, MRI, PET CT), molecular marker of tumor cells analysis and others.

The involvement of radiomics in the health care of oncology patients represents a significant improvement and increase in the quality of care provided. The use of artificial intelligence reduces the time required for diagnosis and increases the number of patients that the doctor can treat, during his working hours. Radiomics therefore brings the possibility of solving insufficient human resources. However, artificial intelligence tools only improve the quality and speed up the doctor´s care, but they are not able to completely replace the doctors. Human resources are still an indispensable factor in the treatment of oncological diseases, and artificial intelligence is used only as a supportive tool for patient care (Mesko, 2018).

3.1.4 Infectious diseases

An important opportunity is the involvement of artificial intelligence systems in the case of infectious diseases. It is possible to use a diverse set of tools of artificial intelligence that reduce the direct contact of healthcare professionals with infectious patients as well as mapping the progress of the epidemic of infectious diseases. Rahman (2020) ranks among the usable tools such as monitoring the patient´s bed and vital functions without the physical presence of a nurse and remote diagnosis of patients. Another possibility is the use of drones to disinfect premises or transport drugs to patients. Kumar (2020) further expands these possibilities of using artificial intelligence with the possibility of effective data collection on patients, the spread of infection and subsequently the creation of models of epidemiological predictions.

These possibilities of using artificial intelligence increase the safety of medical staff, as replacing part of the activities of employees with artificial intelligence tools reduces the direct contact of medical staff with infectious diseases. There is a positive substitution in potentially dangerous job positions, with the results of increasing the safety of direct health care workers. Both above authors describe the possibility of using artificial intelligence tools to control the COVID-19

epidemic. Moreover, the described tools are universal and usable also in the case of other infectious diseases.

3.1.5 Nursing

In nursing, the robotic revolution has accelerated by the COVID-19 pandemics. In June 2021, the humanoid nursing robot Grace was presented. Grace is targeted to interact with elderly and help those isolated by the pandemics (Reuters, 2021). Pepito already in declared (2019) that it is very important involvement of nurses in the technological development of AI. On the other hand, artificial intelligence is perhaps the domain of the future, but empathy and compassion are difficult to model in machines (Asada 2015). Human nurses are more empathic and understand the emotions of human senses and their nuances, so its reason why they can provide better care than robots (Hojat, 2016).

Tran's research (2019) found that patients think that AI should help clinicians "predict" results. However, decisions, active care and recommendations should remain a human task. Technology would be "only" an aid for doctors. 12% of the examined sample, who were most suitable in their care for the use of AI technologies, perceived this possibility only as a supplement - and not as a substitute.

The problem is that the medical staff is scarce. The waiting rooms are full of people who often have only a trivial problem and home care is overloaded. The solution was presented by Darthmouth-Hitchcock and their Imagine care project. This system monitors the current real health needs of the client. It evaluates its life functions and fluctuations in his health. All data are analyzed and saved in the cloud. In case of problems and changes in health status, the system notifies the doctor. It is the moment when the patient really needs his care. It saves time, money, health, and medical staff (Belciug et al., 2020).

3.2 AI implementation in Slovakia

3.2.1 Motivation and barriers

The motivation for the introduction of artificial intelligence in Slovakia is conditioned by several specifics. The key and most important criterion is a unique combination of medical leadership with support from top management, respectively partners of the company (business leadership). This was clearly formulated and declared by all hitherto successful implementers of artificial intelligence in Slovakia.

In the context of clinical leadership, in addition to the physicians' own motivation to "be the first in Slovakia" after completing a foreign internship (or a conference), several important motivations for the introduction of artificial intelligence emerged. Medical reasons and the need to improve clinical benefits and patient well-being dominate. Attention is also paid to avoidable deaths (e.g., stroke), chronic diseases (e.g., oncology) and neurological diseases (multiple sclerosis, Parkinson's disease, or dementia).

Equally important motivations for the implementation of artificial intelligence are the effort to improve population health, prevention and prediction of chronic diseases, algorithmizing of treatment processes in the hospital and the need to strengthen patients' chances of affordable health care (horizontal equity).

In addition to clinical motivations, broader business motivations have also emerged. These manifested themselves primarily in the form of enthusiasm for the use of artificial intelligence as well as in the opening of new dimensions that artificial intelligence offers. This has been

linked to the provision of better health services than the competition, and to the confirmation of market leadership through the use of artificial intelligence. Closely related to this was the providers' strategy to invest in quality, not only in high-tech devices, but also in modern evaluation methods (such as artificial intelligence). In addition to the most technologically modern devices, the most modern software equipment (like AI) has been added.

One of the very stimulating business motivations for the introduction of artificial intelligence is the lack of workers. It is artificial intelligence that can help with technological sophistication in activities where it can compensate for the lack of healthcare professionals. For example, in radiology Slovakia is very specific. Slovak radiologists are not organ-specialized, while Western university radiologist are organ-oriented (e.g., musculoskeletal system), so in Slovak conditions we are not yet able to reach the level of a Western organ specialists. However, there is a chance in the implementation of artificial intelligence, which shows as good results as Western experts in the diagnosis of some serious diseases (e.g., multiple sclerosis, dementia, ...).

Finally, a very important motivation is to create savings in the health system by improving the review system, hospitalization management, or emphasis on prevention with a societal reason to differentiate itself from the competition - creating value for the client and avoiding unnecessary expenses.

Medical and business leadership as key factors were also supported by the fact that early adopters are not financially rewarded for investments in using artificial intelligence. Neither from the state budget nor from health insurance companies. Thus, neither capital costs nor operating costs are covered. Despite this handicap, they invest time, energy, and financial resources for the introduction of artificial intelligence in Slovakia.

The capital costs of artificial intelligence are paid exclusively by the implementers. Both among providers and in health insurance companies. For providers, one option is to agree on a cost-sharing agreement with the AI supplier, so the actual costs are a matter of internal trade policy. Operating costs are also covered by providers, while services that use artificial intelligence are not covered by public health insurance. Simply - there is no "code" for this, while providers agree that wider AI implementation would be faster if consultations using artificial intelligence were covered by health insurers.

3.2.2 Recommendations for faster AI implementation in Slovakia

The area where artificial intelligence is used in the Slovak healthcare system is very narrow, concentrated mainly in the field of radiology, robotic surgery and some activities of health insurance companies such as automated review activities.

First key recommendation for successful implementation of AI is digitalization of everything that can be digitalized. In this context, the Slovak healthcare system could be today characterized as mostly analogous with certain elements of digitalization, but only in some areas. One of the biggest challenges today is digitalization of laboratory diagnostics, pathology, and the whole medical documentation, in line with the transition to electronic communication, the launch of electronic online ordering systems, or pilot testing of chatbots, symptom checkers or risk prediction algorithms.

Second recommendation is clinical compatibility. It is important that the provider is convinced of the AI solution and that the technology corresponds to the ideas of the implementing physicians. There is a problem when AI is oriented only to normal performances and does not support the interpretation of less frequent, severe cases. At the same time, AI technology should not consume a lot of physician's times on typing in information. It is crucial for a successful implementation that the AI modality is user-friendly for physicians and healthcare professionals.

At the same time, the recommended treatment must be based on European standards, resp. standards close to Slovakia so that the result recommended by AI can be applied in practice and to suit local Slovak realities and settings. It is important to listen to clinicians where they see an AI system that will have added value. Forcing certain software "from above" (top-down) does not work. Also, it is necessary to listen to the sending doctors (neurologists, oncologists, ...) what are their requirements for the evaluation of CT/MR, because in the end they interpret these results and adjust the treatment.

Third recommendation is to measure indicators of benefit for the patient. Health insurance companies are willing to support services with the help of AI only if there is a clear benefit for the patient and at the same time created savings for the health insurance company. Using the principle of value for money. Conditional AI support by health insurance companies. Both private health insurance companies make the payment of the application of artificial intelligence conditional on a win-win-win mechanism. First, it is necessary to find a benefit for the patient. Secondly, it is necessary to find a payment mechanism for the provider (risk-sharing, success fee-based payment, value-based payment). Third, the solution must bring real financial savings over a certain time horizon (not necessarily short-term).

Fourth recommendation is a necessity of a modern legislative and institutional framework for artificial intelligence, especially a modern catalogue of healthcare services. Implementing e-health to create a suitable environment for making anonymized e-health data available, not only to providers and health insurers, but also to academics, research institutions, the pharmaceutical sector, and others.

4 Conclusion

In our research we focused on artificial intelligence in healthcare. First, by using literature review, we looked at areas, where AI has the potential to substitute or replace humans. Second, by using personal interviews with three early adopters of AI, we looked at motivations for AI adoption in Slovakia.

We have discussed five areas where artificial intelligence has potential to substitute humans, namely robotic surgery, radiology, radiomics, infectious diseases, and nursing.

Regarding motivation for AI adoption in Slovakia, the lack of human resources was mentioned spontaneously by early adopters, but it is not the main motivation. It looks, that medical and business leadership are much higher motivators. Medical leadership in the context bringing new (and faster and more precise) ways of treatment people and business leadership by meaning to be the first company that is introducing a new technology in Slovakia to strengthen the position among competition.

Acknowledgements

Peter Pažitný was a member of the team responsible for designing the National strategy for artificial intelligence in healthcare in Slovakia, that is funded by DG SANCO, and the main beneficiary is the Ministry of Health of the Slovak Republic.

Kristina Randlová took active part in the summer program Hello AI 2021 (www.helloaionline.com)

References

[1] ASADA, Minoru. Development of artificial empathy. Neuroscience research, 2015, 90: 41-50.

[2] BELCIUG, Smaranda; GORUNESCU, Florin. Intelligent systems and the healthcare revolution. In: Intelligent Decision Support Systems—A Journey to Smarter Healthcare. Springer, Cham, 2020. p. 259-266.

[3] DeCANIO Stephen J., Robots and humans – complements or substitutes?, Journal of Macroeconomics, Volume 49, 2016, Pages 280-291, ISSN 0164-0704, https://doi.org/10.1016/j.jmacro.2016.08.003.

[4] DEMBROWER Karin, Erik Wåhlin, Yue Liu, Mattie Salim, Kevin Smith, Peter Lindholm, Martin Eklund, Fredrik Strand: Effect of artificial intelligence-based triaging of breast cancer screening mammograms on cancer detection and radiologist workload: a retrospective simulation study, Lancet Digital Health 2020; 2: e468–74

[5] GECHERT, Sebastian; Havránek, Tomáš; Havránková, Zuzana; Kolcunova, Dominika (2019) : Death to the Cobb-Douglas production function, IMK Working Paper, No. 201, Hans-Böckler-Stiftung, Institut für Makroökonomie und Konjunkturforschung (IMK), Düsseldorf, http://nbn-resolving.de/urn:nbn:de:101:1-201910251415540055830 0

[6] HOJAT, Mohammadreza. Empathy and patient outcomes. In: Empathy in health professions education and patient care. Springer, Cham, 2016. p. 189-201.

[7] KUMAR, Shashank; Rakesh, D. Raut; Balkrishna, E. Narkhede, 2020. A Proposed Collaborative Framework by Using Artificial Intelligence-Internet of Things (AI-IoT) in COVID-19 Pandemic Situation for Healthcare Workers. In: International Journal for Healthcare Managenent, 4(13): 337-345, https://www.tandfonline.com/doi/full/10.1080/20479700.2020.1810453.

[8] McKINNEY et al: International evaluation of an AI system for breast cancer screening: Nature 577, 89-94 (2020)

[9] MESKO, Bertalan; Gergely, Hetényi; Zsuzsanna, Györffy, 2018. Will artificial intelligence solve the human resource crisis in healthcare? In: BMC Health Servicers Research, 18:545, https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/s12913-018-3359-4.pdf.

[10] MESKO, Bertalan. The role of artificial intelligence in precision medicine. 2017. https://www.tandfonline.com/doi/full/10.1080/23808993.2017.1380516

[11] MURALI N., N. Sivakumaran: Artificial Intelligence in Healthcare – A Review, International Journal of Modern Computation, Information and Communication Technology, 2018;1(6):103-110.

[12] NIHA, Beig; Kaustav, Bera; allavi, Tiwari, 2020. Introduction to radiomics and radiogenomics in neuro-oncology: implications and challenges. In: Neuro-Oncology Advances, 2(S4): iv3-iv14, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7829475/pdf/vdaa148.pdf.

[13] OECD, Eurostat and World Health Organization (2017), A System of Health Accounts 2011: Revised edition, OECD Publishing, Paris.http://dx.doi.org/10.1787/9789264270985-en

[14] OZMEN M.M., Ozmen A., Koç Ç.K. (2021) Artificial Intelligence for Next-Generation Medical Robotics. In: Atallah S. (eds) Digital Surgery. Springer, Cham. https://doi.org/10.1007/978-3-030-49100-0_3

[15] PANESAR et al.: Artificial Intelligence and the Future of Surgical Robotics, Annals of Surgery, volume 270, Number 2, 2019

[16] PEPITO, Joseph Andrew; LOCSIN, Rozzano. Mohou sestry zůstat relevantní v technologicky vyspělé budoucnosti? Mezinárodní časopis ošetřovatelských věd, 2019, 6.1: 106-110.

[17] RAHMAN, Abdur; Hossain, Shamim, Alrajeh, Nabil A., Guizani, Nadra, 2020. B5G and Explainable Deep Learning Assisted Healthcare Vertical at the Edge: COVID-19 Persective. In: IEEE Network, July/August 2020: 98-105, https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9136600.

[18] REUTERS (June, 2021): Meet Grace, the healthcare robot COVID-19 created, https://www.reuters.com/business/healthcare-pharmaceuticals/meet-grace-healthcare-robot-covid-19-created-2021-06-09/

[19] ROGERS, William; Sithin, Thulasi Seetha; Turkey, Refaee; Relinde, I.Y. Lieverse; René, Raziner; Abdalla, Ibrahim; Simon, Keek; Sebastian, Sanduleanu; Sergey, Primakov; Manon, Beugue; Damiënne, Marcus; Alexander, van der Wiel; Fadila, Zerka; Cary, Oberije; Janita, e van Timmeren; Henry, Woodruff; Philippe, Lambin, 2020. Radiomics: From Qualitative to Quantitative Imaging. In: Br J Radiol, February2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7362913/pdf/bjr.20190948.pdf.

[20] SALIM Mattie, Erik Wåhlin, Karin Dembrower, et al: External Evaluation of 3 Commercial Artificial Intelligence Algorithms for Independent Assessment of Screening Mammograms, JAMA Oncol. 2020;6(10):1581-1588. doi:10.1001/jamaoncol.2020.3321

[21] SAMOILI, S., Lopez Cobo, M., Gomez Gutierrez, E., De Prato, G., Martinez-Plumed, F. and Delipetrev, B., AI WATCH. Defining Artificial Intelligence, EUR 30117 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-17045-7 (online), doi:10.2760/382730 (online), JRC118163.

[22] TANG, Sun; Jing, Ou; Jun, Liu; Yu-ping, Wu; Chang-qiang, Wu; Tian-wu, Chen; Xiao-ming, Zhang; Rui, Li; Meng-jie, Tang; Li-qin, Yang; Bang-guo, Tan; Fu-lin, Lu; Jiani, Hu; 2021. Application of Contrast-Enhanced CT Radiomics in Prediction of Early Recurrence of Locally Advanced Oesophageal Squamous Cell Carcinoma After Trimodal Therapy. In: Bio Med Central, 21:38, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8157695/pdf/40644_2021_Article_407.pdf.

[23] TRAN, VT., Riveros, C. & Ravaud, P. Patients' views of wearable devices and AI in healthcare: findings from the ComPaRe e-cohort. npj Digit. Med. 2, 53 (2019). https://doi.org/10.1038/s41746-019-0132-y

[24] USAID, 2019 - AI in Global Health: Defining a Collective Path Forward, 2019 https://www.usaid.gov/cii/ai-in-global-health

[25] WHO, Global strategy on human resources for health: workforce 2030. World Health Organization. ISBN 978 92 4 151113 1, http://apps.who.int/iris/bitstream/handle/10665/250368/9789241511131-eng.pdf;jsessionid=F6035C1408B8D55425FC4E1BF8BEF465?sequence=1

[26] www.losttapesofthe27club.com

[27] www.overthebridge.org

[28] www.radiopedia.org

[29] YEO, C. P., & Ng, W. Y. (2018). Automation and productivity in the clinical laboratory: experience of a tertiary healthcare facility. *Singapore medical journal*, *59*(11), 597–601. https://doi.org/10.11622/smedj.2018136

[30] ZHOUYING, Peng; Yumin, Wang; Yaxuan, Wang; Sijie, Jiang; Ruohao, Fan; Hua, Zhang; Weihong, Jiang; 2021. Application of radiomics and machine learning in head and neck cancers. In: International Journal of Biological Sciences, 17(2), 475-486, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7893590/pdf/ijbsv17p0475.pdf.

Contact information

doc. Ing. Peter Pažitný, MSc., PhD.
Prague University of Economics and Business, Faculty of Management, Department of Management
Jarošovská 1117/II, 377 01 Jindřichův Hradec, Czech Republic
E-mail: peter.pazitny@vse.cz

Financial Management and Control Assessment Tool for Local Government Authorities

Romana Provazníková, Ruslana Rudnitska

Abstract: The aim of developing new Financial management and control (FMC) Assessment Tool for Local Government Authorities is strengthening of local government financial and general management and ensuring that the operational and financial relations between central and local government are compatible with securing the central government objectives. The paper presents the author's approach to the development and adaptation of FMC assessment tools to the local government authority needs. The development of a mechanism for evaluating the effectiveness of the FMC-system at the local level performs the number of important functions, among which the authors singled out: reducing information asymmetry by providing reliable and comprehensive information, protecting the property and documents, ensuring effective economic performance, observation of accounting principles and presentation of reliable financial records, obeying laws and executive acts, implementation of the effective system of risk control. The authors proposed such elements of FMC assessment for local government authority as Questionnaire for Senior Management; FMC benchmark criteria; Assessment Questions regarding relation local body and subordinated/related bodies; Questionnaire for preliminary assessment phase; Interview questions. The combination of instruments depends mostly on the scope of assessment.

Keywords: Budgetary Policy, Financial management and control, Local Government Authority, Public Finances

JEL Classification: H7, H83, M48

1 Introduction

The concept of good governance is interlinked with institutionalized values such as democracy, observance of human rights, accountability, transparency and greater efficiency and effectiveness of the government sector of any country. Good governance in the context of countries is a broad term. It has a significant impact on government performance and is therefore essential in building trust in government and delivering necessary structural reforms.

The central government has a key responsibility to manage the national economy and the balance between the public and private sectors. Local government (LG) expenditure forms part of public expenditure and therefore central government economic management decisions impact LG. Managing the economy the central government must have a comprehensive understanding of the impact that its decisions will have upon the different sectors of the economy including LGs. Without that understanding inefficiencies in public expenditure management will occur. Those inefficiencies can be compounded in the case of local government by inadequate information about the actual costs of providing services by local governments to certain standards as well as by the arrangements for the timing and transfer of funds from central to local governments as well as the arrangements for the equalization of resources against needs. The quality of financial management within local governments will determine how well the local government sector of the economy is managed and the central government will be concerned about the efficiency and effectiveness of LG and its actions should encourage LGs to improve its performance. Achievement of the goals of creating integrity-based public administration by local government authorities covers attainment of long-lasting improvements, transparency and accountability in public financial management (ACCA, 2010).

However, not only accounting for funds should be the focus of government managers, as long-term strategic planning needs monitoring of daily tasks for compliance with long-term goals, which requires assessment of the value of the programs and measurement of their accomplishments. Financial management is about much more than the preparation of budgets to meet the consequent budgetary control arrangements. An important element of general management is FMC, which is not just a form of financial and budgetary control, although these are part of Financial management and control. FMC is about the delivery of the objectives, to time, to standard, efficiently and effectively, by the management of the organization. This means that the manager should be involved in the formulation of the budget and that the expected achievements should be directly linked to the available budget. Accountability then requires that those objectives and performance standards are published and that in turn generates pressure upon managers to improve efficiency and effectiveness. Being ingrained in all business systems and functions FMC is essential to ensuring that an organization is functioning effectively and efficiently (DiNapoli, 2016). Institutional development of FMC-system will always lead to improved financial performance (Nyakundi, et al., 2014).

Financial management and control system`s challenges at the LG level are similar to the central government level (Eton, 2019). FMC at the local level should be focused on the achievement of the organization's mission, with special emphasis on reducing opportunities for fraud and minimizing corruption, avoidance of bad publicity and insurance of public confidence, prevent loss of resources, and information asymmetry neutralization through minimization of reporting errors.

Ineffective FMC is a consequence of serious deficiencies in financial data, systems and staff skills resulted in unreliable planning, budgeting and reporting (ACCA, 2010). Eton (2019) clarifies such problems of FMC for local authorities as a demonstration of oversight to implementation of planned activities just for the sake, that's why some projects appeared to be poorly coordinated and, in some cases, are abandoned before completion. DiNapoli (2016) states that one of the most dangerous things in weak Financial management and control system is that it leads to a lack of accountability and as a consequence, this results in the erosion of public confidence and support and hampers an organization's ability to serve the public effectively. Local governments FMC mechanisms in developing countries appeared to be weak at actual management of risks, so management at the local government level should tighten and strengthen the Financial management and control systems (Eton, 2019).

Therefore, it becomes increasingly important to define the main problems with the present financial and institutional arrangements between central and local government. The specific for transition and developing economies challenges are:

- suboptimal range of spending powers of local budgets: the lists and amounts of expenditures on the exercise of delegated and own powers are not settled; the mechanism of the calculation of expenses on the exercise of delegated powers is inefficient;
- insufficient financial capacity of LGs resulting in stringent budgetary restrictions imposed on the exercise of their powers and hampers the investment development of communities;
- lack of the available LG budgetary policy toolkit to support the day-to-day management of budget funds;
- lack of optimization and efficiency gains in the budget process and lack of medium-term budgeting;
- lack of proper financial transparency and accountability of LGs to municipalities, and mechanisms of independent external audit and public oversight over the management of local finances and municipal assets.

A particular concern of the central government is that weaknesses in financial management in LGs also result in inconsistent and sometimes poor service delivery of delegated powers, quite apart from the further concerns about poor internal financial control and lack of transparency. Examples of the weaknesses that presently exist in former Soviet Union countries can be defined as (*i*) non-efficient budget process prone to potential errors with potentially inconsistent use of accounting principles; limited capacity to monitor the budget for results, use budget funds cost-efficiently and in a result-oriented way, with a medium-term time horizon; (*ii*) weak fiscal framework and oversight of local government borrowing and (*iii*) limited accountability of local governments (weak internal and external audit).

The organizational and managerial infrastructure must support, know how to utilize and follow-through using accountability mechanisms to ensure that objectives and performance are achieved. Without that reforms will be largely nominal and will not achieve the benefits hoped for. It is also not simply a matter of writing rules and approving legislation. The aim of this article is to stress the importance of financial management and control development for local government and to propose the new Financial management and control Assessment Tool for Local Government Authorities. Such a tool might be used as the instrument for testing the FMC systems, based on assessment results, development of recommendations for improvement, as well as for comparison of the FMC systems in between different Local Government Authorities.

2 Theoretical background

During the analyses of theoretical aspects of the concepts of FMC system Lakis and Giriūnas (2012) gave a broad definition of FMC as "all-inclusive activity in financial and management accounting, as well as in the strategic management of projects, operations, personnel and the total quality management" (Lakis and Giriūnas, 2012). DiNapoli (2016) defines FMC as a process, effected by an entity's board of directors, management, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance. In a broad sense, FMC is the integration of the activities, plans, attitudes, policies, systems, resources and efforts of the people of an organization working together to achieve its mission (DiNapoli, 2016).

In terms of unfolding the permanent financial crises and increasing imbalances in capital markets, King (2011) defines FMC over fixed assets as "not just having a printout of bought assets but having an assurance that the assets you think you own are still there, and that they have not gone missing" (King, 2011). Some researchers consider FMC as an intervening variable in the budgeting process (Gachoka, et al., 2018). In the context of budget implementation Financial management and control systems manages public finance in a way that minimizes deficits and ensures value for money to taxpayers (Eton, 2019). FMC will be most effective when it is built into financial the entity's infrastructure and is a part of the essence of the organization (Saeed and Dashti, 2014). FMC being a part of Financial management and control system encompasses the managerial responsibilities, at all levels, of public income and spending centres related to implementing a system of control that ensures adequate planning, programming, budgeting, accounting, controlling, reporting, archiving and monitoring. Managers that bear these responsibilities should be held accountable for their activities (operational activities as well as activities related to FMC) (e.g. 'Welcome to the world of PIFC', European Commission, 2006). Based on the effectiveness concept FMC is a set of policies and procedures adopted by an entity in ensuring that an organization's transactions are processed appropriately to avoid waste, theft and misuse of organization resources, to enable the production of reliable reports and ensure compliance with laws and regulations (Nyakundi, et al., 2014). The study of Benedek et al. (2014) is focused on the FMC-system of the public finances' subsystem of local governments. FMC-system is defined as a management information system that serves as a basis for all

management decision making and, at the same time, ensures that steps are taken in the direction of the organization's goals (e.g. Benedek et. al, 2014).

FMC is mostly identified as measures instituted by an organization to ensure the attainment of the entity's objectives, goals and missions. INTOSAI specifies the following general objectives for FMC: 1) executing orderly, ethical, economical, efficient and effective operations; 2) fulfilling accountability obligations; 3) complying with applicable laws and regulations; 4) safeguarding resources against loss, misuse and damage (INTOSAI, 2004).

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed *The COSO Integrated Control Framework* (1992) aiming at uncovering fraud, identifying, managing organizational risks and established a system of FMCs. The COSO Guidelines specifies five necessaries for effective FMC components: Control Environment, Risk Assessment, Control Activities, Communication, Monitoring (COSO, 1992). An updated Internal Control-Integrated Framework is developed on a principles-based approach that provides flexibility and allows for judgment in designing, implementing, and conducting Internal control (COSO, 2013). Being an internationally recognized integrated framework for Financial management and control, the COSO model is based on 17 underlying principles and 81 points of focus necessary for an entity or organization to effectively manage risks through the implementation of Financial management and control (COSO, 2015). The versatility of the COSO model lies in the possibility of its use for different levels of management - a separate department or an organization as a whole.

Developed by the Federation of European Risk Management Associations (FERMA) and the European Confederation of Institutes of Internal Auditing (ECIIA) *Three Lines of Defense* is a widely used model to describe functional groups in any organization that have responsibilities related to FMC. First-line deals with operational management combining Management Controls and Financial management and Control Measures. The second-line performs supportive, oversight, control and monitoring functions covering Financial Control, Security, Risk Management, Quality, Inspection and Compliance. Third-line deals with independent and objective Internal Audit. Being implemented into systems and processes under the guidance of operational management FMC as the first line of defense. It should be noted that separate and clearly defined lines of defense are the key to the success of establishing an effective FMC system. Being quite flexible the Three Lines of Defense Model outlines coordination and assignment of specific duties related to risk and control within an organization, regardless of its size or complexity and clarifies the difference and relationship between the organizations' assurance and other monitoring activities (COSO, 2015).

The European Commission (2006) developed a *Public Internal Financial Control (PIFC*) framework for countries in a reform which encompasses the key requirements for adhering to good public governance principles: adequate FMC-systems, an independent and objective internal audit function and a central harmonization unit as accelerator and stimulator for PIFC-reform (EC, 2006). PIFC follows the latest in International Standards on Financial management and control – INTOSAI Guidelines for Internal control Standards for the Public Sector (2004), the EC IIA Position Paper on Internal Audit in Europe (2015). Internal accountability arrangements are recognized to be a determining factor, as is the content of accountability of those responsible for carrying out public tasks (EC, 2014).

Internal control Working Group of the Public Expenditure Management Peer Assisted Learning (PEMPAL) Internal Audit Community of Practice (IACOP) developed Guidance for Public Sector Internal Auditors to create a tool for assessing the Effectiveness of Internal control. The purpose of the guidance is to help internal auditors better understand the main features of effective FMC. The ways of assessing and evaluating the functionality of FMC systems are also under consideration. IACOP developed a generic four-level model for assessing the maturity (or

capability) of Internal control: 1st level - Informal (Ad-hoc /Chaotic); 2nd level - Defined (Standard / Repeatable); 3rd level - Managed & Monitored (Predictable); 4th level - Optimized (Efficient/ Effective) (IACIOP). The National Academy of Finance and Economics of the Dutch Ministry of Finance is also actively involved in the development and testing of the FMC assessment tool for central government authorities.

Regular assessment of the FMC system ensures the safety of the organization against fraud from senior management, company management and its employees. For this purpose, it is proposed to use individually developed test polls for each audited organization given its specifics. The premises on which the FMC assessment tool should be based embraces the idea that targeted actions for improvement of an entity's FMC and control are only possible after a thorough assessment which should deliver sufficient insight into the area's that are suitable for improvement. Only when that insight is available management can formulate relevant and realistic actions. DiNapoli, T. P. (2016) emphasizes the importance of the adaptability of the FMC assessment tool to the entity`s structure as it should be flexible in application to the entire entity or a particular subsidiary, division, operating unit, or business process. The key issues include the form of ownership of the entity, its size, industry specification, etc. In the context of local bodies, FMC help to assure that public funds are administered and expended in compliance with applicable statutes and regulations; that funds are used for purposes for which they were authorized and intended; and that there is accurate reporting regarding the use of those funds (Vermont League of Cities & Towns, 2017).

As FMC in the public sector basically cannot be separated from efforts to improve and enhance managerial performance impact on society, it is extremely important to implement FMC system on the local level to improve the financial accountability of the organization by driving decision-making by managers better (Kewo, 2017). Kewo (2017) states that FMC and assessment system on a local level is a very important part of the overall spectrum control mechanisms are used to motivate, measure and impose sanctions on the actions of managers and employees a prerequisite for better performance.

2.1 Financial management and control development in different countries

Establishing good governance requires local government officials to become more responsive to the demands of their environment, to provide better, transparent and accountable services (Kewo, 2017). To meet specifically for each country economic, operational and legal aspects the system of FMC should be adopted to the context of national administrative culture. Public FMC reform started in different countries at different times, and the start of the reform did not depend on the level of economic development of the country, for example in Croatia in 2004, Georgia in 2010, France in 2011. Preferably the system of FMC among the countries is based on generally recognized core principles of the COSO Framework, for example, the COSO concept model is widely used in France, United Kingdom, Croatia, Georgia, Kazakhstan.

Local government FMC-systems is prescribed by legal regulations, for example in Hungary such documents are - Act on the Local Governments of Hungary, Act on Public Finances, Government Decree on the Financial management and control system and the Internal Audit of Central Public Administration Bodies. In Georgia, the core document is Public internal financial control law, in Croatia – Public internal financial control act, in the Czech Republic some of internal control function contents Act on Financial control. Such countries as France and the United Kingdom do not have separate core documents on FMC.

The Concept of FMC varies, while some countries have special independent FMC institutions, others give the responsibility for FMC to the respective administrative entities; a decentralized system of FMC can be embedded and form an integrated part of the administration.

Supreme Audit Institution or similar body/organization exist in Kazakhstan in the form of Accounts Committee, in Georgia, Croatia - State Audit Office and in the Czech Republic Supreme Audit Office, in France - Accounts Chamber, in the United Kingdom - National Audit Office. It should be noted that the scope of the Supreme Audit Institution in mentioned countries cover local bodies and local budgets, except the Czech Republic. Czech Supreme Audit Office is not authorized to audit either finances of local and regional authorities or to audit companies co-financed by the state or by a self-government. In Kazakhstan and the United Kingdom financial inspection doesn't exist as an independent body but its functions are performed by the Accounts Committee and National Audit Office respectively. In some countries the functions of financial inspection are centralized – General Economics and Finances Control (Ministry of Finances) and General Inspection Service (Ministry of Finances) in France; Sector for budget supervision and supervision of concessions in Croatia. Still from the considered countries, the scope of financial inspection covers local bodies only in France and Croatia. Internal audit is a mandatory function only for the central government in France and the United Kingdom, while local representatives are deprived of such responsibilities. In contrast in Croatia and the Czech Republic, internal audit is obligatory for local and as for central level representatives.

The problem of a weak finance performance and FMC-system is widespread. Kewo (2017) complained about the poor performance of the local governments in planning at the local level such as provinces, districts and cities in Indonesia as "the management of financial resources the country still marked deviations, from the planning and budgeting, implementation, and accountability report" (Kewo, 2017). But demand always generates supply. The local council in Australia have demonstrated minimal levels of accountability in the late 1990s, this resulted in increasing demand for additional information on how governments manage and spend public funds (Jones and Beattie, 2015). Recognition of the problem is the prerequisite for the development and implementation of an effective system of counteraction.

3 Results and Discussion

The previously defined depth and scope of the FMC assessment determine which instruments are suitable to use, at what level and to what extent. *Depth'* refers to the question of whether a substantial, 'deep digging' assessment which contains document study, questionnaires and interviews should be conducted or, only a quick scan of the current situation. The depth of the proposed assessment is for the most part dependable on what is already known and the available time and resources to conduct the assessment.

FMC may vary significantly cause controls in small towns with few employees will naturally be different from controls in larger towns that have more employees in the financial function. The general concept requires the development and adaptation of basic FMC assessment tools to the LG authority needs. We suggest the following elements of FMC assessment for LG authority: Questionnaire for Senior Management; FMC benchmark criteria in a form of baseline MATRIX; Assessment Questions regarding relation local body and subordinated/related bodies; Questionnaire for preliminary assessment phase; Interview questions. It should be noted that as not one assessment environment is the same we advise combining instruments. This is partly dependable on the scope of the assessment.

3.1 Questionnaire for senior management

This tool should be developed to interview responsible representatives at the local level which bears the ultimate responsibility for a sound functioning FMC. It aims to assess the integrity and ethical values, the extent and the way senior management has sufficient oversight on FMC matters, the way senior management sets responsibilities and authorities throughout the entity (and if applicable, its subordinated and related bodies), the way commitment to competence is

guaranteed and in what way reporting and accountability structures related to the organizational objectives are set by senior management.

The leadership, the actions and the tone established by the senior management have a profound impact on how the responsibilities and tasks of the organization are performed, how objectives, goals and mission are achieved.

3.2 The FMC-assessment MATRIX

FMC benchmark criteria in a form of MATRIX encompasses the inner workings of FMC and its coherence combining a set of overall criteria determined by the benchmark criteria against which the assessment results should be analyzed. Criteria are described for the core managerial activities (e.g. risk management and ensuring proper controls). In addition, also specific criteria are mentioned which have a relation to the budget cycle (e.g. integration of budgeting with the planning process). The MATRIX can be divided into five sections:

1. General conditional characteristics: these elements contain the minimum requirements which should be in place to build and maintain a proper FMC system;
2. Criteria related to PLANNING activities;
3. Criteria related to EXECUTION activities;
4. Criteria related to CONTROL and MONITORING activities;
5. Criteria related to RESPONSIVE ACTIONS.

The key assessment criteria as outlined in the MATRIX can be summarized or grouped in a shortlist of FMC-related areas:

- *Managerial Accountability***:** the cornerstone of FMC. These criteria are aimed at how on the managerial levels the balance is organized between responsibility, authority and accountability;
- *Objective setting***:** criteria are aimed at assessing in which way objectives are set at the managerial and oversight levels. Also, the level of SMART-ness is assessed;
- *Risk and Control***:** defines criteria concerning the risk assessment, the risk management process and its relation to control activities;
- *Tasks and responsibilities:* aims to assess criteria related to specific tasks and responsibilities related to crucial (internal) control activities;
- *Planning and control:* defines criteria aimed at assessing how internally reporting lines are organized and what it consists of in terms of managerial information (Key Performance and Financial Indicators) and communication;
- *Monitoring:* assesses the criteria mainly concerning second-line functions and their monitoring role towards the first line;
- *Role of internal audit towards FMC:* criteria that link internal audits role to FMC (part of monitoring);
- *The budget cycle:* assesses criteria that connect the managerial (first and second line) responsibilities and –accountabilities to specific aspects of the budget cycle (e.g. budget execution).

3.3 Assessment questions regarding relation local body and subordinated/related bodies

The role of these questions is to evaluate the budgetary and managerial relations. Interviews should be conducted with local representatives of key functions which play a role in planning, execution, monitoring and adjusting the budgetary, managerial and operational relationship between the local authority and subordinated and/or related bodies.

The interview aims to show that the fundamental key requirements are expected to be in place (in regulation and practice), such as:

- Is the local authority responsible for the execution of delegated budgets to subordinated and/or related bodies as well as operational- and policy outcomes;
- The local authority has sufficient insight into the FMC at the level of subordinated and/or related bodies: hence, the local authority can rely on the managerial information send from these bodies;
- The local authority has sufficient insight into the budget execution of subordinated and/or related bodies as well as insight into the performance;
- Management (senior and operational) of the subordinated and/or related bodies has the responsibility for executing the budget and thus ensure that the operations which should achieve intended objectives are organized efficient, effective and well-controlled;
- Management (senior and operational) of the subordinated and/or related bodies is held accountable (by the local authority) for the execution of the budget, the operations (performance) and the quality of FMC (IC-system);
- Operational managers at subordinated and/or related bodies-level are involved in planning and budgeting/programming in coordination and cooperation with the local authority;
- Operational managers at subordinated and/or related bodies have sufficient delegated mandates to conduct their tasks and achieve their objectives: this includes the objectives of efficiency, effectiveness and proper control;
- Operational managers at subordinated and/or related bodies receive sufficient support from the local authority to achieve their objectives;
- Operational managers at subordinated and/or related bodies conduct risk management and adjust/asses their control systems based on it.

To get the picture complete regarding the fundamental key requirements as outlined above, it is first vital to get sufficient insight on the level of legislation and procedures. Examples of recommended documents to study in this respect are:

- The translation of strategic goals to operational objectives;
- The budget process: preparation, approval, execution and evaluation: how is this process regulated? Who is involved?
- FMC related regulations/procedures: how are KPI's linked to objectives, how is the accountability structure organized? What are the key-reporting lines (and about what?)? What requirements are formulated regarding FMC? What are key checks and balances in the relation between the local authority and subordinated and/or related body;
- Budget programs/budget passports: might give additional insight into how the previous aspects are worked out related to a specific program objective;
- Task, responsibility and mandate procedures give insight into the relation between local authorities and subordinated and/or related bodies.

3.4 Questionnaire for assessing and scoring the FMC system within an entity

The questionnaire for the preliminary stage should be based on the FMC-MATRIX which provides a baseline for benchmark criteria. For each criterion in each section, a key question should be formulated together with scoring possibilities. It should be noted that the assessment aims to make visible where the gaps are related to the benchmark baseline criteria. This means that the questionnaire does not provide a definite scoring, or maturity level rating, of the FMC overall. This is done on purpose since there is no one best way to configure the FMC. It is highly dependable on the context, the legislation, existing procedures and the organization and tasks of the entity itself.

The questionnaire is primarily useable to send out to key officials/employees within the distinctive lines of defence. It can be used tailor-made depending on the needs and wishes of senior management. However, it is recommended to use the questionnaire in its totality given the interdependency of the sections and criteria. The results of the questionnaire can be presented in (for example) a traffic light format in which it becomes visible in which area's deviations occur compared to the benchmark baseline.

3.5 Interview Questionnaire for self-assessment/interview set

Interview Questions for first-line (operational) managers

- How would you categorize the level of delegation in your institution? Very limited or not?
- Is it clear for you as a manager what your mandates are regarding operational decisions? Is this described?
- As a manager, are you able to make changes in the way the processes you are responsible for are organized? Can you give some examples? If you would see a way to make your processes more efficient, what would be your approach to introduce that change?
- Do you need permission from senior management for operational decisions (e.g. procurement, staff exchange etc.)?
- Do you have a say/influence or do you play a role in decisions in and phases of the budget cycle?
- Are the resources that you have (budget, people, assets) well balanced with the objectives that you need to achieve? If this would not be the case, what would be your course of action?
- Are the responsibilities for you and your staff clearly connected with the objectives that must be achieved? How this is expressed in for example task descriptions/job descriptions?
- How would you define the range of responsibilities? Is it confined to operational responsibility (reaching my operational objective)
- Are you responsible for the FMC measures that should prevent undesired risks in your process?
- Do you have KPI's related to the objectives that you need to strive for? What kind of KPI's? Where are they described? Examples?
- If objectives are not reached, what happens then?
- In general: do you see a clear connection between operational objectives (like yours) and the strategic goals of the institution?
- Are you also being held accountable for financial aspects?
- Do you have insight in your financial position?
- Do you get periodically feedback from the units/functions you are reporting to? What kind of feedback?
- Can you describe how objectives are set in the institution? What is your role in that process? Where are objectives described?
- Are objectives clear, precise, measurable, and realistic in your opinion? Are the objectives related to the budget? How is that done?
- Are there also objectives related to FMC and financial management? (At your level, at other levels?)
- Do risks within your realm of responsibility get assessed? Who does this? Is this registered somewhere?
- Are you, as a manager, involved in assessing and dealing with risks in your processes?
- What kind of risks is typical/inherent for your processes?

- Who implements control measures (if necessary) in your processes? Can you give some examples?
- Are your processes described? Who supports you (if any) in ensuring that your processes run smoothly?

Interview Questions for second-line functions (e.g. planning department or financial department)

- What information do you /your department have regarding the operational/program level? How does this information come about?
- What is your role in the budget cycle?
- What reporting mechanisms are in place? (Accounting system, information from internal audit etc.)
- Do you have insight in the risks that the operational/program level might face?
- What is the role of your department concerning the operational level?
- Does your department/unit play a role in the setting of objectives? If so, how?
- In your opinion: do you think objectives in the institution are logically aligned (cascade from strategic to operational level)?
- What is your role in the risk management process? (if any)
- Who assesses the risks in the institution? Is these process documents? Is there a risk register?
- Who keeps track of specific financial risks related to the budget? What is the course of action here? Is this described somewhere?
- In case you detect financial risks, what is your course of action?
- In case you detect operational risks, what is your course of action?
- Do you discuss risks (whether it's financial or not) with the operational level or with senior management?
- How would you describe the 'risk culture' in your institution? Is it a topic that is on the agenda?

Interview Questions for Internal Audit

- Do you assess the FMC unit as a specific topic of interest? How?
- How would you rate the awareness regarding FMC in the institution?
- Does internal audit assess specific aspects of the budget cycle? What elements?
- Does internal audit assess the quality of internal reporting? Provide an example
- Does internal audit assess the overall internal governance system? Provide an example
- Is internal audit involved in the managerial risk management process? Provide an example
- How are the follow-up arrangements organized for results of internal audits work? Is it discussed at the senior level? Is the operational/program level involved?

The suggested set of questions may be used in a self-assessment by the operational managers (from the working group) or by the assessor in an interview or a meeting with operational managers. These ways are depending on the maturity of the FMC configuration, as well as on the proficiency and skills of the assessor. If the entity staff is sufficiently competent and skilled, then is suitable to use the questions for the self-assessment approach. If not, then interviews performed by an external party are a good solution.

The efficient and effective provision by LGs of such important services as health, education and social care functions requires a high standard of general and financial management. So far as financial management is concerned this requires much more than being responsible for input controls. Budgets should be linked to objectives and performance standards. Costs should be analyzed over cost centres and particular activities (such as for education, individual schools,

courses, age groups, types of activity, transportation of children; for health diagnostic related groups, types of institution, different activities within hospitals such as operating theatres and ambulances; for welfare services, costs of administering different types of welfare benefits, costs of different benefits offices), not just those required for budgetary control purposes.

Changes to the financial management arrangements within LGs along with the development of output budgeting could also affect the present organizational arrangements for the preparation of budgets and therefore the role and responsibilities of the finance departments of regional councils. Shifting the FMC focus to outputs from inputs also means that performance outputs are linked to budgets. Therefore, to achieve improvements to budgeting and accounting in LGs and considering the principles of good governance (which mean that decisions should be transparent and take into account only those factors that relate to the particular problem or issue) this should not be treated as simply a technical reform.

As FMC is not a serial process but a dynamic and integrated process, a smaller entity's system of FMC may be less formal and less structured (COSO, 2013). Still, it`s critical for FMC Assessment Tool for Local Government Authorities to be focused on five general aspects which can be seen as the driving forces of FMC:

- Integration: refers to the extent to which crucial FMC-related processes are combined and/or are seen/organized in its interconnectivity (planning, programming/budgeting and accounting);
- Participation: refers to which extent relevant functions within the entity are involved in FMC-related activities (e.g. involvement operational management in planning and budgeting);
- Delegation: refers to the extent of delegated mandates, responsibilities and tasks. Delegation influences internal accountability arrangements;
- Coordination: refers to what extent FMC-activities are coordinated regularly (e.g. coordinating meetings with planning- and financial departments, Audit-/Control-Committee's);
- Communication: refers to to what extent relevant information regarding FMC flows through the entity in a timely fashion aimed at the right target groups (e.g. flow of managerial information, accounting systems).

To improve the quality of financial management a strong and effective finance department is necessary. That finance department should cover the responsibilities summarized above and should be accountable to the management of the local government. The financial department of the local government needs to play a key role in assessing efficiency and effectiveness or in the linking of budgets with service objectives, performance standards and performance outputs.

4 Conclusion

The system of FMC should be implemented at state agencies and should be actively used by local public authorities to help safeguard public assets at the local level and promote accountability in local government. The main purpose of our research is to propose a set of tools that will help to implement an effective system of FMC assessment at the local level (not only for developing countries). Therefore, the right combination of instruments that suits certain needs of an entity should be selected. At the local level, FMC-system efficiency should not be evaluated for the sake of assessing as the assessment should generate sufficient information for targeted action plans. Information asymmetry worsens the coordination of some general purposes of the system of FMC. To improve the coordination between central authority, local bodies, and subordinated entities it`s extremely important to find weak points of contact in the communication sphere.

We are aware that each country has its specifics, the size structure of the local self-government and the legal regulations of its functioning and as well the concept of FMC-system in individual countries varies. Suggested FMC assessment tool for Local Government Authorities is designed as a universal tool that an individual local authority should adapt to its conditions and the specific country legislation. Further research will be devoted to the adaptation and analysis of FMC-system implementation in the conditions of local authorities in selected countries.

References

[1] ACCA-Association of Chartered Certified Accountants. (2010). Improving public sector financial management in developing countries and emerging economies. [online]. [cit.2021-07-1]. Available from: https://www.accaglobal.com/content/dam/acca/global/PDF-technical/public-sector/tech-afb-ipsfm.pdf

[2] BENEDEK, M., TUBAK SZENTÉNÉ, K., BÉRES, D. (2014). Financial management and controls in Local Governments. *Public Finance Quarterly*, Vol. 59(3), pp. 296-309.

[3] COSO-Committee of Sponsoring Organizations of the Treadway Commission. (1992). Internal Control-Integrated Framework. Two volume edition 1994, New York. [online]. [cit.2021-07-1]. Available from: https://www.academia.edu/12912529/Internal_Control_Integrated_Framework_Committee_of_Sponsoring_Organizations_of_the_Treadway_Commission

[4] COSO-Committee of Sponsoring Organizations of the Treadway Commission. (2013). Internal Control – Integrated Framework. [online]. [cit.2021-07-1]. Available from: https://na.theiia.org/standards-guidance/topics/documents/executive_summary.pdf

[5] COSO -Committee of Sponsoring Organizations of the Treadway Commission. (2015). Leveraging COSO Across the Three Lines of Defense. [online]. [cit.2021-07-1]. Available from: https://www.coso.org/Documents/COSO-2015-3LOD.pdf

[6] DINAPOLI, T. P. (2016). Standards for Internal Control in New York State Government. *Office of the New York State Comptroller*. [online]. [cit.2021-07-1]. Available from: https://www.osc.state.ny.us/files/state-agencies/guidance/pdf/agencies-ictf-docs-int-control-stds.pdf

[7] EUROPEAN COMMISSION. (2006). Welcome to the world of PIFC. [online]. [cit.2021-05-10]. Available from: https://ec.europa.eu/budget/library/documents/overviews_others/brochure_pifc_en.pdf

[8] EUROPEAN COMMISSION. (2014). Compendium of the Public Financial management and Control systems in the EU Member States. [online]. [cit.2021-05-10]. Available from: https://op.europa.eu/en/publication-detail/-/publication/f5d1aca3-f349-11e6-8a35-01aa75ed71a1/language-en/format-PDF/source-190639133

[9] ETON, M. (2019). Internal Control and Budget Implementation in Kabale District Uganda. *International Journal of Science and Research*. Vol. 8(1), pp. 815-821.

[10] GACHOKA, N., ADUDA, J. K., OKIRO, K. (2018). The Intervening Effect of Financial management and controls on the Relationship between Budgeting process

and Performance of Churches in Kenya. *Journal of Finance and Investment Analysis*. Vol.7(2), pp. 53-79.

[11] IIA-Institute of Internal Auditors. (2015). Global Technology Audit Guide (GTAG). Continuous auditing: Coordinating Continuous Auditing and Monitoring to Provide Continuous Assurance. [online]. [cit.2021-05-10]. Available from: Pages - GTAG3 (theiia.org)

[12] IIA-Institute of Internal Auditors. (2013). The three lines of defense in effective risk management and control: IIA Position Paper. [online]. [cit.2021-05-10]. Available from: https://na.theiia.org/standards-guidance/Public%20Documents/PP%20The%20Three%20Lines%20of%20Defense%20in%20Effective%20Risk%20Management%20and%20Control.pdf

[13] IACOP-Internal Audit Community of Practice (2021). *Assessing the effectiveness of financial management and control*. PEMPAL Guidance for Public Sector Internal Auditors. [online]. [cit.2021-07-1]. Available from: https://www.pempal.org/

[14] INTOSAI-International Organization of Supreme Audit Institutions. (2004). Guidelines for Internal Control Standards for the Public Sector. *ISSAI*. Austria, Vienna: RECHNUNGSHOF INTOSAI. [online]. [cit.2021-07-1]. Available from: intosai_gov_9100_e (issai.org)

[15] JONES, G., BEATTIE K. (2015). Local Government Internal Audit Compliance. *Australasian Accounting, Business and Finance Journal*, Vol. 9(3), pp. 59-71.

[16] KEWO, C. L. (2017). The Influence of Internal Control Implementation and Managerial Performance on Financial Accountability Local Government in Indonesia. *International Journal of Economics and Financial Issues*, 7(1), 293-297.

[17] KING, A.M. (2011). Financial management and control of Fixed Assets: A Controller and Auditor's Guide. New Jersey: John Wiley & Sons Ltd.

[18] LAKIS, V., GIRIŪNAS, L. (2012). The Concept of Financial management and control system: Theoretical Aspect. *EKONOMIKA*, Vol. 9(2), pp. 142-152.

[19] NYAKUNDI, D., NYAMITA, M.O., TINEGA, T.M., (2014). Effect of Financial management and controls systems on the financial performance of small and medium scale business enterprises in Kisumu city, Kenya. *International Journal of Social Sciences and Entrepreneurship*. Vol. 1 (11), pp. 719-734.

[20] SAEED, M. D., & DASHTI, M. H. (2014). Study of Financial management and control of local government. *International Journal of Management.* Vol. 5(4), pp. 106-109.

[21] Vermont League of Cities & Towns. (2017). Internal Financial Controls Checklist for Municipalities. [online]. [cit.2021-07-1]. Available from: https://www.vlct.org/resource/internal-financial-controls-checklist-municipalities

Contact information

doc. Ing. Romana Provazníková, Ph.D.
University of Pardubice, Faculty of Economics and Public Administration, Institute of Economics Sciences
Studentská 84, Pardubice, Czech Republic
E-mail: romana.provaznikova@upce.cz

Assoc. prof. Ruslana Rudnitska, PhD.
Lviv Regional Institute of Public Administration, National Academy of Public Administration, Offcie of the President of Ukraine
Suhomlinskogo, 16, Lviv-Briuhovychi, Ukraine
E-mail: r.ruslana@hotmail.com

Transformation of the model of open innovation in the digital space

Tetiana Pushkar, Viktoriia Parkhomenko, Hanna Sobolieva, Hanna Zhovtiak

Abstract: The formation of the information society, which has been active in recent decades, actively promotes the transformation of the pattern of open innovation from the latest model of innovation, based on choosing an effective business model of innovation, to define it as a priority concept of innovation at the national level. The aim of the study is to determine the relationship between the development of the information society and the formation of the concept of open innovation under the influence of the global information environment. The object is the specificities of the manifestation of the model of open innovation in the global information environment and the opportunities for its implementation that provide the processes of digital transformation. To identify the manifestation of these processes, a comparative analysis of the positions of national economies of Ukraine and the Czech Republic on the basis of rating indicators that reflect key aspects of information society development: global competitiveness, economic freedom, network readiness, e-government development.
Consideration of manifesting the main trends in the information society allowed us to determine that under their influence, the concept of open innovation becomes a priority in innovation. Openness of information, its mobility and accessibility, the need to implement complex innovation programs increases the importance of scientific and innovative cooperation based on the implementation at the national and global level of cloud open science and open innovation information space, development of smart specializations, active knowledge and technology transfer, openness and availability of scientific information.

Keywords: Innovations, innovative activity, open innovations, information society

JEL Classification: F01, O31, O39

1 Introduction

Transforming information as an economic resource, intensifying information flows, increasing the openness of information, which on the one hand helps to expand new ideas and expand innovation, and on the other - exacerbates the problems of information ownership and legitimacy, creates new conditions for developing the latest model of innovation activities - open innovations. The formation of the information society, in which the availability of information, development of information infrastructure, simplification of access to its receipt and use is growing extremely fast, turns the pattern of open innovation into one of the priority models of innovation at all levels: from firm to large geographical regions and integration formations. The concept of open innovation defines the process of scientific and technical research and development as an open system. With this approach, any company can attract new ideas to create new products and enter the market with these products not only through their own innovative developments, but also through cooperation with other firms and obtaining information from the environment. At present, a significant number of factors actively influence the formation of a model of open innovation, including the growth of competition at the global level, significant reduction of product life cycles, accelerating "aging", increasing global mobility of innovators, strengthening government support for "small" innovative enterprises. availability of a universal information environment and the development of the latest information retrieval technologies, increasing the role of venture capital. Considering these factors, it is indisputable that the formation of the information society, the transition to the information economy, only increase

their impact. That is, these processes create a system of interrelated influences, actively creating the conditions for each other's development.

The formation of the information society contributes to the fact that the principle of openness is a priority in all spheres of life. This principle is reflected in the main priorities of EU policy, which are based on the concept of "discovery", which involves increasing transparency, openness, consumer orientation in various spheres of society. Openness, according to EU policy, finds its expression in scientific activities, where the concept of "open science" is proclaimed, in public administration, where "open government" is proclaimed, in politics, where "participatory democracy" is defined, in economics, where "open innovations" is the basic concept proclaimed. The latest innovation pattern "Open Innovation 2.0", introduced by the Dublin Declaration in 2013, outlined the unique possibility of explosive increase in total value due to such innovations that lie at the intersection of mega-trends such as digitalization, mass cooperation and sustainable development needs. The implementation of the Open Innovation 2.0 pattern clearly demonstrates that, emerging as the latest model of innovation for companies, open innovation under the influence of the information society reaches a new level and becomes a priority for the regional, national and international levels.

The purpose of the article is to substantiate the factors of formation of the information society, which determine the further formation of the pattern of open innovation and its formation as a priority at the level of national economies and integration associations.

Thus, it is possible to define the following hypothesis: the development of processes that contribute to the formation of the information society, deepening the digitalization of social institutions form the latest concept of open innovation, taking it beyond the theory of innovation of an individual company. To confirm or refute this hypothesis, the authors use a system of research methods and appropriate research methodology.

1.1 The concept of open innovation as a basis for the formation of the latest model of innovation

The concept of open innovation received its rationale at the beginning of the 21st century as the latest model of organizing the company's innovation, which changes the understanding of the movement of the idea from its inception to implementation in an innovative product. The reasons that helped move companies to the field of open innovation were the intensification of the dissemination of useful knowledge between the subjects of innovation, understanding the impossibility of making full use of ideas that may later be lost by companies, lack of even large companies necessary resources, equipment for use in production many patented developments and bringing them to an innovative product, a significant dependence of the value of the idea on the type of business model used by the company, the active dissemination of intellectual property in order to create its open market. The main features of the latest model of open innovation for companies were the organization of cooperation with scientists and the academic sector of science, the possibility of involving the company in innovative developments at any stage of the innovation process, the advantage of creating a perfect model of innovation over the market. from both internal and external ideas (Chesbrough, H., 2003). In the search for a solution to the most effective organization of the innovation process in the management of open innovation there are multilevel determinants of decisions on their implementation: "make or buy", "integrate or retain", "save or sell" when opening the innovation process (Lichtenthaler, U., 2011).

Gassmann, O., Enkel E., Chesbrough, H., looking at the future of open innovation, emphasize that in recent years the phenomenon of open innovation has emerged from a limited range of practitioners dealing with this issue in high-tech industries. Open innovations are transformed into the latest innovation practice, which is actively implemented. The main trends in the

development of open innovation, which significantly affect the formation of the model of open innovation is their active penetration into the industry ("from pioneers to the mainstream"); increasing the intensity of research, which is reflected in the fact that open innovations go beyond high-tech developments and are manifested in a wide range of areas; transformation of perception of the size of companies implementing the model of open innovations (from large companies to small enterprises); changing the structure of research and development from autonomous to development by creating strategic alliances; the latest perception of intellectual property in the process of increasing openness (from the object of protection to the product that is actively sold and bought) (Gassmann, O., Enkel E., Chesbrough, H., 2010). An important direction in the formation of a model of open innovation at the company level is to create a strategy that combines as much as possible all the opportunities provided by both the traditional model of innovation ("closed innovation") and the latest model of open innovation. It is within the framework of the strategy of open innovation that an appropriate business model of innovation activity should be formed, taking into account all the advantages and disadvantages (Appleyard, M., Chesbrough, H., 2007). Improving business models of innovation is one of the priority areas of modern research on open innovation. When industrial innovations become open, there are significant changes in the management of companies. External sources of knowledge become more visible and decisive in innovation (Chesbrough, H., 2016).

The open innovation model assumes the commercialization of external sources of innovation, which focuses on the values created by external innovations, rather than on how companies benefit from these innovations (West, J., Bogers, M., 2013).

At the moment, open innovation involves more than just openness to innovation. Open innovation is an innovation strategy based on the approach of companies to innovation, which involves the active participation of external actors in the innovation process (Marcolin, F., Vezzetti, E., Montagna, F., 2017). But changes in the approach to innovation, which began with the introduction of the open innovation model, are not limited to companies. The latest approaches to innovation are formed at the national and international levels, which is greatly facilitated by the processes of internationalization, globalization and the formation of the information society. The cycle of knowledge at the international level is critical for the development of innovation, improving national competitiveness in the sense that the internationalization and growth of global interdependence of national economies expands companies' access to academic knowledge and research skills in any country. These processes increase the relevance of the organization of cooperation at all levels in the formation of the model of open innovation (Inzelt, A., 2010). Collaborating with colleagues to gain access to the latest knowledge is a viable alternative for companies trying to increase their innovation. The growing popularity of the open innovation model thus contributes to the emergence of new participants in the innovation process (Ollila, S., Elmquist, M., 2010).

Open innovation as a concept can be implemented in many different ways, and the process of open innovation concerns both the transition to the model of open innovation and possible management practices. The practical experience of implementing open innovations by many leading companies in various contexts has determined their importance and role in the management of innovation processes (Huizingh, E., 2011). But, despite the definite place of the concept of open innovation, there is still a significant range of issues that need further research. West, J., Salter, A., Vanhaverbeke, W., Chesbrough, H. identified key trends in the study of open innovation, improving the measurement of these processes, outlining the application of the model, the study of the relationship of these issues with existing developments in economics and management (West, J., Salter, A., Vanhaverbeke, W., Chesbrough, H., 2014).

Thus, the active introduction of the model of open innovation in the practice of innovation of companies, at this stage outgrows the level of firms and reaches the level of formation of this model at the regional, national, international levels, ie transformed from the microeconomic level of innovation to the

macroeconomic level. At the macroeconomic levels, the formation of the model of open innovation is actively influenced by the processes of digitalization of the economy, the development of information economy and the formation of the information society.

1.2 Formation of the information society concept

The formation of the information society and information economy as its integral component is based on the intellectualization of life, which involves changing the perception of information and accelerating the exchange and processing of information. That is, intellectualization involves the process of developing the ability to perceive and process information, i.e. increase the intellectual potential of society, including the use of artificial intelligence. The transition from the knowledge economy, which was defined as a new concept of economic and social development in the 1950-1960s, to the modern concept of the information society is manifested in the definition of the role of information. If the knowledge economy defined information as a commodity, then in the information society, information is the environment in which it exists and develops. The basis of the information society is the high-tech development of information and communication technologies that facilitate access to and receipt of information.

At this stage, the information society has received a number of features that are significantly reflected in the formation of the model of open innovation. In the information society, any person, organization or enterprise in any geographical point and at any time can obtain the necessary information and knowledge. The information is received for free or for a fee, but it is not essential. The important thing is that there is constant access, which does not depend on other factors. To provide such access in society, it is necessary not only to produce modern information technologies, but to ensure their accessibility for all categories and segments of the population, enterprises and organizations, regardless of form, type and affiliation. Thus, in the information society a developed information and communication infrastructure is formed, which in turn initiates the creation of the latest information resources, accelerating scientific and technological progress in national economies. These processes cause radical changes in social structures, expanding the range of information activities and the provision of information services.

Considering the model of open innovation as a process of obtaining information, its processing and implementation, there is an active influence on its transformation of the processes of formation of the information society. Obtaining information that can be refined and embodied in innovation, not only accelerates, but also has ample opportunities. The basic position of the theory of open innovation, which determines that the idea can at any stage come to the company from the outside or leave it in the external environment, in the information society gets a new embodiment, because the accelerated and free movement of information, active knowledge transfer is inevitable. its capacitive component. Thus, the formation of the information society and the development of the model of open innovation at any level have an active mutual influence and determine the development of each other, which requires the definition of those processes that shape the conditions for the transformation of open innovation processes.

2 Material and Methods

One of the main methods used to assess the development of digital transformation, information society, innovation development is the index method, which is actively used to assess the dynamics of these processes based on statistical indicators of national and international statistical surveys. One of the main indices that determines the country's position on innovation development is the Global Innovation Index. The Global Innovation Index is a generalized indicator used in global studies of the ranking of countries in the world by the level of innovation in national economies. This index is defined as the ratio of the cost of innovation and the effect of them.

Assessment of innovation efficiency takes into account a number of important components of innovation: patents, technology and knowledge transfer, other results of research and development, as well as the effectiveness of entrepreneurial activity in the field of innovation. An extensive system of indicators that are taken into account in the calculation allows you to cover a significant number of aspects and to present the most detailed innovation processes and the formation of models of innovation in countries. The Global Innovation Index consists of 81 indicators that reflect the country's innovation opportunities, the quality of innovations, their results and the development of innovation infrastructure, in two groups:

- available resources and conditions for innovation (Innovation Inputs);
- achieved practical results of innovation (Innovation Outputs).

This approach allows you to objectively assess the effectiveness of innovation efforts in the country.

Table 1 - Leading countries in the global ranking of innovative development

Рік	Gill	Score	Economy
2020	1	66,1	Switzerland
	2	62,5	Sweden
	3	60,6	United States of America (the)
	4	59,8	United Kingdom (the)
	5	58,8	Netherlands (the)
2019	1	67,2	Switzerland
	2	63,7	Sweden
	3	61,7	United States of America (the)
	4	61,4	Netherlands (the)
	5	61,3	United Kingdom (the)
2018	1	68,4	Switzerland
	2	63,3	Netherlands (the)
	3	63,1	Sweden
	4	60,1	United Kingdom (the)
	5	59,8	Singapore
2017	1	67,7	Switzerland
	2	63,8	Sweden
	3	63,4	Netherlands (the)
	4	61,4	United States of America (the)
	5	60,9	United Kingdom (the)
2016	1	66,3	Switzerland
	2	63,6	Sweden
	3	61,9	United Kingdom (the)
	4	61,4	United States of America (the)
	5	59,9	Finland

Source: Cornell University, INSEAD, WIPO: The Global Innovation Index. https://www.globalinnovationindex.org/home

Considering the positions of countries in the global ranking of innovative development, it should be noted that in recent years, a stable place among the leaders in this indicator are Switzerland, Sweden, Britain and the United States (Table 1). The five leaders in terms of innovation development in the period 206-20299 consistently include four European countries.

Regarding Ukraine, it should be noted that certain processes in the national economy of the country have had a negative impact on the positions of the national economy in the ranking of innovative development. The best position (43rd place in the ranking) was occupied by Ukraine in 2017-2018 (Table 2). However, comparing with other processes, taking into account that this indicator evaluates the positions of 141 national economies of the world, we note that the level of innovative development of Ukraine occupies a fairly high position.

An important point for the characterization of innovation processes in Ukraine and the formation of new models of innovation in the national economy is that the country's relatively high position in the global ranking of innovation is formed mainly due to the achieved practical results of innovation (Innovation Outputs). According to this sub-index, the country's position is almost twice as good as the sub-index's assessment of available resources and conditions for innovation (Innovation Inputs).

Table 2 – Ukraine in the global ranking of innovative development

Ukraine	Gill	Innovation Inputs	Innovation Outputs
2020	45	71	37
2019	47	82	36
2018	43	75	35
2017	43	75	40
2016	56	76	40

Source: Cornell University, INSEAD, WIPO: The Global Innovation Index. https://www.globalinnovationindex.org/home

The processes of innovative development at the national level in the Czech Republic, based on the results of the assessment of the place of the national economy in global innovative development, are different from Ukraine (Table 3).

Table 3 – Czech Republic in the global ranking of innovative development

Czech Republic	Gill	Innovation Inputs	Innovation Outputs
2020	24	28	17
2019	26	29	21
2018	27	30	20
2017	24	27	16
2016	27	26	21

Source: Cornell University, INSEAD, WIPO: The Global Innovation Index. https://www.globalinnovationindex.org/home

Having a fairly high position in the global ranking of innovative development, the Czech Republic occupies a fairly high position both in terms of available resources and conditions for innovation (Innovation Inputs) and the achieved practical results of innovation (Innovation Outputs).

Thus, one of the main methods used to assess the development of innovation processes at the national and global levels are index methods, which are actively used along with rating and comparison methods, which allows to compare the current state and prospects of national innovation models with best innovation practices. Using these methods, we will analyze which processes of information society development at this stage are beginning to have an active impact on shifting the priorities of innovation in favor of further active development of national models of open innovation.

3 Results and Discussion

In the context of forming global information environment, which is the basis for the formation of the information society, the model of open innovation acquires the latest features that take its application outside the individual company. Accelerating the movement of information, simplifying access to it, increasing the value of information as an economic resource, which is directly related to the time parameters of receiving, processing the use of information, actively influences the efficiency of information resources, motivates the development of information infrastructure and new information technologies. This forms a vicious circle of interactions, when the development of information and communication technologies accelerates the process of informatization of society and the introduction of innovative products, which in turn brings national economies to a new level of innovative development, which in turn requires significant renewal of information infrastructure technologies.

The creation of the latest innovation models, among which the priority and information society is the model of open innovation strengthens and depends on a number of important economic processes. First, the formation of the information economy and information society brings competition to the global level, which on the one hand provides new opportunities for national producers, and on the other - strengthens and complicates the competitive environment. The assessment of the country's position in terms of the competitive potential of the national economy is conducted annually by the World Economic Forum (WEF), using index, rating methods and the method of comparing national economies. The Global Competitiveness Index is calculated based on statistics and the results of a global survey of leaders of leading companies in the region. The index consists of 113 partial indicators, grouped into 12 sub-indices, which reflect the quality of institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, market efficiency of goods and services, labor market efficiency, financial market development , the level of technological development, the size of the domestic market, the competitiveness of companies, innovation potential.

There are many index indicators that are used to assess the processes of forming the information society at the global level. One of such indicators is the Network Readiness Index, which characterizes the level of development of information and communication technologies in the world and its impact on national competitiveness. With the help of the Network Readiness Index, the driving factors and the degree of influence of network readiness and the possibilities of information and communication technologies in the country are assessed.

Forming the latest models of innovation in the information society is actively influenced by the development of entrepreneurship and the availability of economic freedoms in society. Openness of information involves not only access to it as an economic resource, but to increase the openness of all business processes in society. Openness of information on business, government activities in the field of economics and regulation of economic processes, accelerating the transfer of knowledge and technology in the information society is the basis for the formation of competitive relations, the interest of participants in innovation processes in their development. In the global economic environment, the level of economic freedom is often determined by the index of economic freedom, which reflects the fundamental right of each member of society to manage their own labor and property. The Index of Economic Freedom is based on 10 indicators: freedom of business; freedom of trade; tax freedom; government spending; monetary freedom; freedom of investment; financial freedom; protection of property rights; freedom from corruption; freedom of labor relations. Each of the components evaluated by the index is actively related to the processes that determine the formation of the information society, as well as directly based on the principles of openness and transparency of these processes.

An important component of forming a model of open innovation at the national level is the formation of e-government and e-government. On the one hand, the development of e-

government is an integral and mandatory component of the information society. On the other hand, e-government is a condition for increasing openness and transparency of economic processes, their state regulation, state involvement in entrepreneurship and innovation in the national economy . In the global context, the evaluation of these processes is also based on the index method. The E-Government Development Index, developed under the auspices of the United Nations Program on Public Administration (UNPAP), includes three groups of indicators: the degree of coverage and quality of Internet services, the level of development of ICT infrastructure, and human capital. That is, the components of the assessment of the development of e-government at the national level characterize the main processes that determine the development of the information society.

Based on the data of 2019, we will consider how the level of development of innovation processes in the national economy is correlated with the country's place in terms of global competitiveness, the level of network readiness, the development of economic freedom and e-government. As a basis for comparison, the national economies of Ukraine and the Czech Republic are compared with the development of these processes in the leading countries in terms of global innovation development **(Table 4).**

Table 4 - Ranking of national economies on the main indicators of assessing the development of the information society in 2019

Economy	Rank				
	The Global Innovation Index	Global Competitiveness Index	Network Readiness Index	Index of Economic Freedom	E-Government Development Index (2018)
Switzerland	1	1	7	4	15
Sweden	3	9	3	19	5
The Czech Republic	27	31	36	23	54
Ukraine	56	85	64	147	82

Source: Global Competitiveness Index. https://www.weforum.org/reports
Network Readiness Index. https://networkreadinessindex.org/
Index of Economic Freedom. https://www.heritage.org/index/ranking
E-Government Development Index. https://publicadministration.un.org/egovkb/en-us/Data-Center

The positions of the national economies of the leading countries in the ranking of global innovation development in terms of global competitiveness, network readiness, economic freedom, e-government development are quite high, which clearly demonstrates the relationship between these processes. The high level of competitiveness of the economy is directly dependent on innovation processes. In turn, ensuring high competitive positions and active innovation development is impossible without creating conditions for the realization of economic freedoms in society and is determined by the state and prospects of network infrastructure, information and communication technologies, involvement in increasing openness and transparency of economic procedures and public administration and society. Further development of processes that shape the information society and are reflected in global competition, the creation of the latest information infrastructure, ensuring economic freedoms and transparency of public procedures, is crucial for the development of models of open innovation. Awareness that the openness of information, simplification of access to it, contributing to the formation of the latest national concept of open innovation, requires a clear delineation of problematic issues that are

exacerbated in the information society. Information protection, transformation of approaches to protection of intellectual property rights, creation of the newest forms of research and design activity, transfer of knowledge and technologies on the basis of possibilities of information and communication technologies, increase of attention to ethics of use of scientific developments are only a small list of problematic questions. detailed elaboration in the development of concepts of open innovation at the state level **(Table 5).**

Table 5 – The impact of the formation of the information society on the formation of a model of open innovation at the national level

№	Processes of formation of information society	Reflection in the model of open innovations
1	Development of information and communication infrastructure, ensuring 100% access of the population to high-speed technologies for receiving and transmitting information	Creation of national and global cloud scientific, research structures, use of cloud technologies for the organization of cooperation in the field of scientific developments and innovations
2	The growth of information competence of the population, the introduction of information and communication technologies in everyday life	Acceleration of knowledge transfer processes, development of distance education, growth of intellectual potential in society
3	Development of e-government, self-government	Increasing the transparency of state participation in innovation processes, creating conditions for the influence of operational business structures on the tools of state regulation
4	Implementation of the concept of Smart-specializations of territories, in particular Smart-city	Creation and development of technopolises and technoparks, their inclusion in the structures of cloud science and cloud innovations
5	Implementation of programs for the creation of electronic information resources, including scientific, library, statistical, archival	Activation of knowledge transfer, increasing the availability of data for research, expanding opportunities for open access to scientific information, as well as the presentation of scientific results

Source: Own processing

Thus, the development of the information society is reflected in a set of measures that form a model of open innovation at the national level, actively promoting the development of national and global cloud research structures, organization of cooperation in science and innovation based on them, growth of intellectual and scientific potential. society, involvement of business structures in the formation of national programs for the development of innovations based on e-government, the development of technopolises and technology parks in the framework of programs Smart-specializations of territories, intensification of the transfer of scientific knowledge.

4 Conclusion

Thus, forming the model of open innovation at the macroeconomic level, transforming this model from the pattern of innovation of a company to the basic concept of innovation in the global economic space is under the active influence of the information society. The processes that cause

digital transformations in all spheres of public life, in relation to the model of open innovation at the national level, act not only as factors influencing its formation, but also are an integral part of this concept.

Accelerating the transfer of information and knowledge in the information society clearly reflects the basic idea of open innovation that any idea at any time can leave the company, any research and development can not necessarily be implemented and implemented in the company that carries them out. The ability to find, identify and effectively use the necessary information in the information society and open innovation becomes the key to successful innovation at any level.

References

[1] CHESBROUGH, H. (2003). Open Innovation: The New Imperative for Creating and Profiting from Technology. Boston: Harvard Business School Press. 227 P.

[2] LICHTENTHALER, U. (2011). Open Innovation: Past Research, Current Debates, and Future Directions. Academy of Management Perspectives. Vol. 25, No. 1. pp. 75-93.

[3] GASSMANN,O., ENKEL E., CHESBROUGH, H. (2010). The future of open innovation. R&D Management. Vol. 40. pp. 213-221.

[4] APPLEYARD, M., CHESBROUGH, H. (2007). Open Innovation and Strategy. California Management Review. Vol. 50. Issue 1. pp. 57-76.

[5] CHESBROUGH, H. (2016). Managing Open Innovation. Research-Technology Management. Vol. 47. pp. 23-26.

[6] WEST, J., BOGERS, M. (2013). Leveraging External Sources of Innovation: A Review of Research on Open Innovation. Journal of Product Innovation Management. Vol. 31, Issue 4. pp. 814-831.

[7] MARCOLIN, F., VEZZETTI, E., MONTAGNA, F. (2017). *How to practise Open Innovation today: what, where, how and why*. Creative Industries Journal. 10:3. pp. 258-291.

[8] INZELT, A. (2010). Collaborations in the Open Innovation Era. Nanotechnology and Microelectronics: Global Diffusion, Economics and Policy. Vol. 47. pp. 61-86.

[9] OLLILA, S., ELMQUIST, M. (2010). Managing Open Innovation: Exploring Challenges at the Interfaces of an Open Innovation Arena. Creativity and Innovation Management. Vol. 20, Issue 4. pp. 273-283.

[10] HUIZINGH, E. (2011). *Open innovation: State of the art and future perspectives.* Technovation. Vol. 31, Issue 1. pp. 2-9.

[11] WEST, J., SALTER, A., VANHAVERBEKE, W., CHESBROUGH, H. (2014). *Open innovation: The next decade*. Research Policy. Vol. 43, Issue 5. pp. 805-811.

[12] World Economic Forum, The Global Competitiveness Report 2019, 2019.

[13] World Economic Forum, The Global Competitiveness Report 2015– 2016, 2015.

[14] OECD (2020), "Digital Government Index (DGI): Methodology and 2019 Results", OECD Working Papers on Public Governance, No. 41, OECD Publishing, Paris.

Contact information

Tetiana Pushkar, PhD.
O. M. Beketov National University of Urban Economy, Department of Economics
7, Marshal Bazhanov Str., 61002, Kharkiv, Ukraine
E-mail: Tetyana.Pushkar@kname.edu.ua

Hanna Sobolieva, PhD.
O. M. Beketov National University of Urban Economy, Department of Economics
17, Marshal Bazhanov Str., 61002, Kharkiv, Ukraine
E-mail: soboliva.ag@gmail.com

Hanna Zhovtiak, PhD.
O. M. Beketov National University of Urban Economy, Department of Economics
7, Marshal Bazhanov Str., 61002, Kharkiv, Ukraine
E-mail: zhga77@gmail.com

Viktoriia Parkhomenko, PhD.
National Academy of Statistics, Accounting and Audit
1, Pidhirna St., 04107, Kyiv, Ukraine
E-mail: pviktoria@ukr.net

Estimation of Unemployment Using Changes in the Housing Market

David Slavata

Abstract: The aim of the article is to identify the relationship between housing market and unemployment. The relationship was searched by using of very unique data recorded from the housing market servers. The data describing number of apartments for sale, apartments for rent and single family houses for sale were recorded daily since 2018. The data was transformed to the universal housing market indicator. Using of the indicator there was constructed the model which was tested. I find out there is close relationship between housing market and unemployment. The changes on housing market and labour market are registered just in time. There is possible to construct very simple and easy model which can monitor daily changes of unemployment. The model can help to all analysts in their day to day decisions.

Keywords: Unemployment, forecast of unemployment, housing market, household behaviour

JEL classification: R30, P50

1 Introduction

Currently during the days of corona crisis there is a very difficult to forecast the development of basic macroeconomic indicators. Measures against covid can change the economic conditions in very short period. That is the problem for macroeconomists how to evaluate the limitations done against covid disease. In my opinion in online world there can be lots of data sources which can be used as in advance indicator for the future values of some macroeconomic indicators. That is my assumption for creating indicators of housing market to indicate the changes of macroeconomic indicators. The paper focuses on analyse of relationship between Czech housing market and future unemployment. By analysis of changes in supply of housing market it identify some sensitive indicators.

Currently, the flat prices in Czech housing market are increasing which possibly decrease the housing affordability for households. The problem of housing price bubble in Czech Republic tries to analyse Cadil (2009). Some authors (Zemcik 2011) in their paper investigated the situation of decreasing of U.S. real estate market after the beginning of the financial crisis. They used the regression analysis to explain the main fluctuations. There are even some other authors who analyse the real estate prices (Gomez-Gonzales, J. E. et al., 2018).

To analyse the changes in household behaviour on housing market it is necessary to uncover the main motivations why households offers their houses or apartments for sale or for rent. There are lots of sources which analyse the main top reasons for moving from homeownership or from rented flat. There are even some authors who analyse the housing markets from point of unemployment (Hughes 1991, Munch 2007). They try to inspect the relationship between labour market flexibility, unemployment and structure of housing market.

The most mentioned are: growing of family, not happy with the location, changing job, retirement, tired of the upkeep, need of money end the neighbourhood is going downhill. Yale Aly (2021).

The other source presents as top reasons why the homeowners move: home related reasons, the home is too small, the home does not meet the homeowners needs, the neighbourhood has changed, financial reasons, deferring maintenance, cashing in equity, personal reasons, new job, need a new challenge, different interests and priorities. Weintraub, E. (2021).

Eberlin, E. (2021) presents in his article the main common reasons renters move. They are: renter cannot afford the rent, apartment is too small, apartment is too large, job change of renter, maintenance issues, neighbours problem, renter want to change neighbourhood, separation/divorce/marriage, more available units, change in state support of tenant.

It is seen there are many of reasons for selling or renting. The motivations for making the decision for sale or rent can be different because of different kind of property. The motivations come from legal and material substance of real estate. There are many disadvantages or advantages of homeownership or rent.

For instance Haury, C. Amanda (2021) in article 10 Reasons Why Renting Could Be Better Than Buying states the 10 main reasons for renting of apartment. They are: no maintenance costs or repair bills, access to amenities, no real estate taxes, no down payment, more flexibility, few concerns about decreasing property value, flexibility to downsize, fixed rent amount, lower insurance costs, lower utility costs.

The different segments of real estate market implicates different decision which should be solved by responsible person. There are at least three different segments of real estate market with its advantages and disadvantages. Let analyse them taking into account the above mentioned motivations of homeowners and renters.

There are three different segments permanently offered on real estate market:

1. Single family houses for sale
2. Apartments for sale
3. Apartments for rent.

Except of mentioned three main segment of course you can find some other minor segment (such as single family houses for rent), but from the point of the presented three segments it has no meaning to implement it to the next analyse.

The single family houses for sale segment is in comparison and in general to the other segment highly heterogeneous. Each house can be characterised as unique. Many of differences cause many problem to calculate the real market price. Such as assumption leads me to express that the market price is difficult to determine by the seller and buyer. Within the condition of the significant heterogeneous segment it takes much more time to seek and determine market price by the seller and by the buyer. Once market price is determined there are plenty of other reasons why the house cannot be sold quickly (Oswald 1999). The social value of the house is usually higher than the market value. The house built and maintained for generations with substance of family memories increases the value of property. If there is no serious reason for sale, the owner in such circumstances will never sell. In case the owner lose the job, it is even very difficult to calculate the benefits from his new job (in different place) with the value of lost social relationship in the place where he lives. Such conditions leads me to assumption that there is no relationship between the number of single family houses for sale and unemployment. The main reasons why the owners sell their houses are different. They are death in family, divorce, marriage, maintenance, financial reasons etc.

Apartments for sale in comparison to the single family houses segment is highly homogenous. There are plenty of the similar apartments for sale. It is even not so difficult to calculate comparative value of the flat in few minutes. The value can be quickly calculate by the seller or buyer, so the agreement can be completed in short time in comparison to the sale of single family house. The banks are usually ready to provide loans to the buyers. They know the apartments are easy to be sold. The apartment provides some other advantages in comparison to the single family house. The maintenance of apartments is organised by condominium, so there is no needed to lose the time by organising reparations of house. The apartment is more anonymous with

comparison of single family house. The social value of apartment is much lower in comparison to the single family house. The apartments in general serves to young families in their beginning of common life. The conditions of ownership of apartment provide possibility for quick life changes. Such conditions for owning the apartment leads me to the assumption there can be indicate the relationship between the number of apartments for sale and unemployment.

Apartments for rent is the third significant segment. Compared with the segment of single family houses for sale, the apartment for rent is much homogenous. It can be compared with the segment apartments for sale. The main reasons why the apartments are offered on the housing market is to make a profit. Because of its homogeneity there is no problem to identify the market rent both for renter and for landlord. What makes the difference in comparison to the previous two segment is the lease agreement. The agreement conditions mostly come from the civil law of the country. The situation of the tenant is of course less stable in comparison to the ownership. The change of economic situation of the tenant can quickly cause the change of a decision for both sides of agreement. The rental sector is more dynamic in comparison to the rest of the sectors. Especially it will be sensitive to the all the changes connected with the households income. Because of this I assume a significant relationship between number of flats for sale and unemployment. I do even expect some time shifts because of the notice period implemented into the rental agreement.

As next I will make an analyse of collecting data to inspect weather there are some relationship between housing market and unemployment. I do expect some time shifts will be indicated.

2 Material and Methods

To analyse the relationship between changes of housing market segments and unemployment there were collected daily data from the 17.2.2018 – 4.7.2021. All together it represents 1230 independent data sentences. There were collected the informations:

1. Date of search
2. Number of apartments offered for sale
3. Number of apartments offered for rent
4. Number of single family houses offered for sale.

The data were collected using the www.trzniceny.cz. The data describing the level of unemployment were collected from public database of Czech Statistical Office (www.czso.cz) and from Labour Department (www.uradprace.cz). The data are provided monthly.

The steps for next analysis will be done as:

1. There will be set indicator in accordance of assumptions done in chapter 1.
2. Identification of main relationship of variables
3. The estimation of data by the ordinary least squares (OLS)

To analyse the relationship between housing segments and unemployment I constructed the main indicator, using the assumptions described in chapter 1 of this paper. I expect the segments Apartments for sale and Apartments for rent will have some relationship to the unemployment, while the segment Single family houses for sale does not have any relationship to unemployment. The segment single family houses for sale I will use as independent base for construction of indicator. I assume that the segment single family houses for sale is influenced by factors that do not affect unemployment (deaths, marriages, divorces etc.). I assume the same factors (deaths, marriages, divorces etc.) influence even the segments apartments for rent and apartments for sale. In the segments there is some constant level of offers initiated by the factors which do not have any relationship to unemployment. I will avoid such factors which do not have any relationship

to unemployment by deduction of number of single family houses offered for sale. To implement all the assumptions I will create indicator.

The indicator can be express as:

$$I_d = ((NAS_d + NAR_d) – (NSFH_d))/(NSFH_d) \quad (2.1)$$

Where

NAS……. number of apartments offered for sale in day d
NAR …… number of apartments offered for rent in day d
NSFH…… number of single family houses offered for sale in day d

To avoid fluctuations I will count all the values of indicator to its 30 day moving average

$$I_{d30} = (I_{d1} + I_{d2} +……+I_{d30}) / 30 \quad (2.2)$$

The value of indicator will be inspected using OLS model. To get as accurate information as possible the each values of parameters (NAS, NAR, NSFH) will be inspected using of time shifts. After each time shifts there will be done OLS estimation with its level of significance.

3 Results and Discussion

The table 1 presents the basic data that enter the OLS model. The indicator I is counted in accordance of assumption presented in Chapter 2. The unemployment has increased since beginning of 2018. At the moment the level of unemployment stays near 4%. The unemployment was influenced by the state subsidies during corona crisis. That is the main reason, why it has not increased sharply. The third column presents the values of indicator I.

Table 1 - Basic data

Month/Year	Unempl. in %	I
V.21	3,90	3,84
IV.21	4,10	3,90
III.21	4,20	3,71
II.21	4,30	3,48
I.21	4,30	3,21
XII.20	4,00	3,01
XI.20	3,80	2,84
X.20	3,70	2,36
IX.20	3,80	2,35
VIII.20	3,80	2,36
VII.20	3,80	2,37
VI.20	3,70	2,34
V.20	3,60	2,09
IV.20	3,40	1,81
III.20	3,00	1,40
II.20	3,00	1,27
I.20	3,10	1,22
XII.19	2,90	1,13
XI.19	2,60	1,09
X.19	2,60	1,04
IX.19	2,70	1,03
VIII.19	2,70	1,05
VII.19	2,70	1,12
VI.19	2,60	1,10
V.19	2,60	1,11
IV.19	2,70	1,12
III.19	3,00	1,16
II.19	3,20	1,16
I.19	3,30	1,11
XII.18	3,10	0,99
XI.18	2,80	0,95
X.18	2,80	0,93
IX.18	3,00	0,90
VIII.18	3,10	0,87
VII.18	3,10	0,85
VI.18	2,90	0,85

Source: own calculation, www.czso.cz, www.uradprace.cz

In the next table 2 will be created the OLS model to find significant relationship between unemployment and indicator of housing market I. There will be especially inspected the significant possibility of time shifts, which could help to forecast future unemployment.

Table 2 - OLS estimation results

Time shift	R -square	Explanation	Coef. ***	Const.
It0, U0	**0,915**	**0,839**	**0,513**	**2,375**
It1, U0	0,893	0,799	0,534	2,380
It2, U0	0,872	0,760	0,572	2,358
It3, U0	0,872	0,760	0,572	2,359

Source: Own calculations

*Note: *** symbol imply statistically significance at the level of 1%*

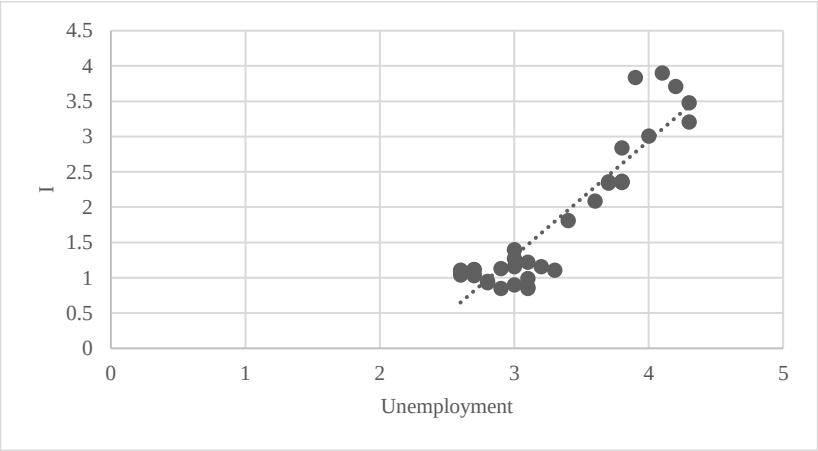
The OLS model does not confirm significant time shifts between contemporary level of unemployment and past level of housing market. The table 2 there was inspected the time shits one month back (It1), two months back (It2) and three month back (It3). The past levels were compared with the contemporary level of unemployment. The parameters deteriorated as the input values moved away from the starting position.

The best value we get if we compare unemployment with housing market parameters in the same time (U0, It0). The relationship between the housing market indicator and unemployment is represented by R – square parameter (0,915). It represents high relationship. The model can be explained by 83,9%. The statistical level of significance is less than 1%.

The model confirm the relationship between unemployment and housing market. All the labour changes of households are just in time transferred to the housing market. Such findings are useful to monitor everyday changes in unemployment, which this findings support. Many of macroeconomists must wait for official information on level of unemployment provided by labour department or by statistical office. The official publication of such indicator take month at least. This method offers fast, efficient and rational solution.

The relationship between unemployment and index I (created in chapter 2) can be seen in the next Table 3. You can see the trend connectors as well. The Figure 1 presents the positive relationship. The higher the value of index I, the higher the rate of unemployment.

Figure 1- Relationship between unemployment and I
Source: own calculation



The model presents the relationship between unemployment and I in done numbers of unemployment. There is the possibility, which it would be interesting to inspect, weather in very low rates of unemployment the relationship does not exist. The reason for this consideration is that in case of very low unemployment the tenants (or the owners) will be able to find very simply the job in the area where they live. Because of it they will not have to make a transfer to a new flat. The model in table 3 suggests there is no relationship below 3% rate of unemployment. It suggests no elasticity. To explain such consideration it would be good to explore the relationship between I and unemployment below the 3% level. Unfortunately, data are not yet available for such claims. It is also possible the shape of dependence will be different in case of different input values of unemployment.

3 Conclusion

The main results of the research are:

- No time shifts between the housing market and unemployment was confirmed.
- he relationship between the housing market and unemployment was confirmed.
- All the changes on housing market and labour market are done just in time (the changes are registered just in time in relevant database).
- There is possible to construct very simple model, which will registered daily movements in unemployment. It will help to all analysts in their day to day decisions.

The results done by OLS model confirm close relationship of housing market and labour market. Both the markets are like continuous vessel. If the household finds itself at a disadvantage due to the loss of employment, it starts immediately to solve the problem on the level of housing. The change of offer can be immediately indicated in housing market. It is expressed by increase or decrease of number of apartments for sale or for lease. It is typical, the household tries to find new, more suitable place for living. It probably seeks the new living in area with high potential of getting new job.

The model was developed on the base of Czech housing market data. It is challenge to make the similar research in other countries as well. I do hope there will be the same results as presented in Czech environment.

References

[1] CADIL, J. Housing Price Bubble Analysis – Case of the Czech Republic. *Prague Economic Papers 1* pp. 38 – 47.

[2] EBERLIN, E. 2021, 10 Common Reasons Renter Move. https://www.thebalancesmb.com/reasons-tenants-leave-rental-2125040.

[3] GOMEZ-GONZALES, J. E. et al., 2018. When Bubble Meets Bubble: Contagion in OECD Countries. Journal of Real Estate Finance and Economics, vol. 56, issue 4, pp. 546-566.

[4] HALÁSKOVÁ, M., HALÁSKOVÁ, R. (2014). Impacts of Decentralization on the Local Government Expenditures and Public Services in the EU Countries. Lex Localis- Journal of Local Self – Government. Vol. 12, no 3, pp. 623-642.

[5] HAURY, C. Amanda 2021, 10 Reasons Why Renting Could Be Better Than Buying https://www.investopedia.com/financial-edge/1112/reasons-renting-is-better-than-buying.aspx

[6] HUGHES, G., MCCORMICK, B. (1991). Housing Markets, Unemployment and Labour Market Flexibility in the UK. European Economic Review. Vol. 31, pp 83 – 114.

[7] MUNCH, R., J., ROSHOLM, M., SVARER, M. (2007). Home ownership, job duration, and wages. Journal of Urban Economics. Vol. 63, pp. 130–145.

[8] OSWALD, A., J., 1999. The Housing Market and Europ´s Unemployment: A Non Technical Paper. Working Paper. Warwick: Working Paper Series.

[9] WEINTRAUB, E., 2021. Why Do People Sell Their Homes? https://www.thebalance.com/why-home-owners-sell-1799021

[10] YALE A. 2021, https://www.newhomesource.com/learn/why-sell-your-home/

[11] ZEMCIK, P., 2011. Is There a Real Estate Bubble in the Czech Republic? Finance a uver – Czech Journal of Economics and Finance, vol. 61, issue 1, pp. 49-66.

Contact information

Ing. David Slavata, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: david.slavata@vsb.cz

Gender and electronic submission of tax returns

Jiří Slezák, Ivana Čermáková

Abstract: Since 2003 it has been possible to file tax returns electronically. But most tax entities prefer the physical form, whether they are taken directly to the tax office or via postal services. However, in recent years, there has been an increase in the filing of tax returns electronically, which has been and is affected by the COVID19 pandemic. The aim of the paper is to evaluate the relationship between men and women on the methods of filing tax returns and opinions on the electronic form of filing tax returns, primarily through a questionnaire survey and $\chi 2$ test of independence in a contingency table. The answers of the sample of respondents show that the electronic form of tax returns is mostly preferred by men over women.

Keywords: Tax returns electronically, Modern and Simple taxes, $\chi 2$ independence test, tax boxes

JEL Classification: K34, M41, O31

1 Introduction

On the issue of online communication and digitization in the Czech Republic, for example in (Sojkova, 2017). Spacek, Csoto and Urs (2020) proves that the level of digitization in the Czech Republic is very low, as evidenced by the Digital Economy and Society Index (DESI), which evaluates the level of digitization in the European Union (EU) and which ranked the Czech Republic in 17th place in 2020 (ec. Although the introduction of electronic devices and digitization of public administration services in the Czech Republic is one of the main priorities, the Czech Republic is not doing very well in this area, although it has improved in recent years, for example in Šimonová (2018)). More on the topic, for example in (Azis and Idris, 2014) or Parvianinen, Tihinen, Kaariainena and Teppola (2017). According to the SAO (2018), the biggest barriers to digitalisation of public and financial administration include, for example, unpreparedness of legal regulations, insufficient use of current electronic services by tax entities and insufficient communication of these services to entities or slow and insufficient modernization of systems.

The paper deals with the use of information technology in the administration of taxes, respectively in the submission of tax returns by tax entities. At the beginning of the COVID-19 pandemic, some tax offices shut down their services and people relied on other forms of communication with the authorities than they were used to in the past. More than ever, various electronic forms of filing tax returns came to the fore, which was difficult for some taxpayers because they were not used to other methods and did not know them. Probably for this reason, among other things, the Modern and Simple Taxes portal was launched at the beginning of 2021, which provides a more comfortable option for taxpayers to file tax returns. The electronic form of filing tax returns represents a number of advantages for entities, the biggest of which are undoubtedly time savings. It is possible to file a tax return electronically from home and it is not necessary to go with it to the tax office or send it via postal services. However, many people have respect for this form, or do not know how it is possible to file such a tax return.

The article is very beneficial in its thematic focus, especially at a time when the Czech Republic was hit by the COVID-19 pandemic, the effects of which are and will be significant on the economies of all countries and due to possible re-closure or reduction of financial services. Current topic, for this reason the author will address them in his future research.

2 Material and Methods

The data for the research were obtained based on the primary research, namely the method of questioning, through a questionnaire survey. Which was carried out using the method of Computer Asisted Web Interviewing - questioning through an online questionnaire. 51 respondents participated in the questionnaire survey, of which 23 were men and 28 women. Secondary data were provided by Finanční správa.

To verify the independence in the PivotTable, when the obtained (nij) and theoretical (n´ij) frequencies are compared, the $\chi 2$ test of independence in the contingency table is used. Deviations from the independence of individual fields of the contingency table are monitored by Pearson's statistics (1):

$$G = \sum_{i=1}^{r} \sum_{j=1}^{s} \frac{(n_{ij} - n'_{ij})^2}{n'_{ij}} \quad (1)$$

the first index indicates the i-th variant of the character A, the second index the j-th variant of the character B. The tested statistic G has a distribution with degrees of freedom v = (r – 1) (s – 1) if the null hypothesis X2 is valid.

To use this test, the size of the set must be such that the expected frequencies reach a value of at least 5.

For example, the Cramer coefficient (V) is used to measure the strength of the relationship between variables (2).

$$V = \sqrt{\frac{X^2}{n \cdot (m - 1)}} \quad (2)$$

where: m represents the greater of the two numbers r and s.

The value of the Cramer's coefficient is from the interval (0, 1). In the case of a zero value, there is no relationship between the variables, in the case of a value of 1, there is a complete relationship between the variables.

3 Results and Discussion

Filing a tax return electronically is an obligation for all business entities that own a data box or have an obligation to have their financial statement verified by an auditor (Finanční správa, 2019).

The "electronic filing for financial administration" (EPO) application is most often used for the electronic submission of tax returns. Within the EPO, it is possible to send a tax return:

- with a recognized electronic signature,
- without an electronic signature, but with delivery of a confirmation of submission,
- via data box,
- by verifying the identity by logging in to the data box, which is the most common method (Finační správa, 2019).

The Financial Administration also makes it possible to fill in tax returns through interactive forms, which enable a limited degree of automatic data completion (Finanční správa, 2019). It is possible to log in to the EPO application via the Citizen's Portal or via the National Identity Authority (NIA), which is intended only for natural persons (Finanční správa, 2020). Among other things, the EPO application enables automatic mathematical control of entered data, the

possibility of saving and retrieving, the possibility of an electronic attachment or display of help directly at individual lines of the tax return (Finanční správa, 2014).

As part of the incentive of the government of the Czech Republic, there was a change in 2021 in the area of filing tax returns. If a business entity uses the option to file a tax return electronically, its filing deadline is automatically extended by 1 month, which is good news for many entities who leave this obligation at the last minute.

Figure 1 shows the number of filings of personal income tax returns physically and electronically from 2012 to 2021.

Figure 1 - Development of the number of filed tax returns for personal income tax
Source: Finanční správa (2021), own processing

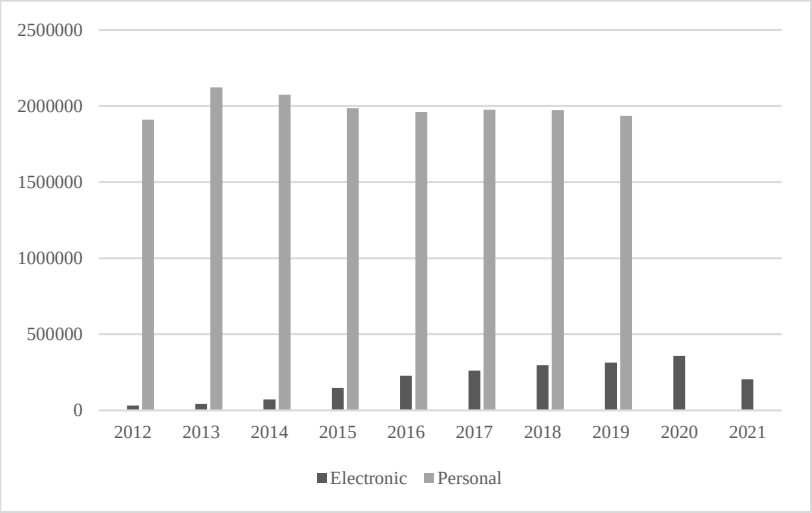


Figure 1 shows that most tax entities prefer the physical form of filing a tax return over the electronic form. However, the share of electronic tax returns is increasing every year. In 2012, a total of 31,726 tax returns were filed electronically, and as of 31 May 2021, 428,086 tax returns had been filed electronically.

The growing trend of electronic tax returns is likely to continue in the coming years, for example due to the introduction of the Modern and Simple Tax Portal, which was launched on the basis of an amendment to the Income Tax Act, more about this amendment in Slezák and Kahánková, 2021.

This portal provides a modern and friendlier environment for taxpayers and serves for better online communication with tax authorities. Login to this portal is possible in various ways, through the so-called E-identity, which includes the login of medium-sized bank data, then through the data box and through data assigned by the financial administration. The portal allows automatic pre-filling of data in the tax return and easier submission. It contains, for example, a tax calendar or the possibility of notification of future tax dates, more about the Modern and Simple Taxes portal, for example in (Slezák, Přikrylová, Hakalová and Bieliková, 2019).

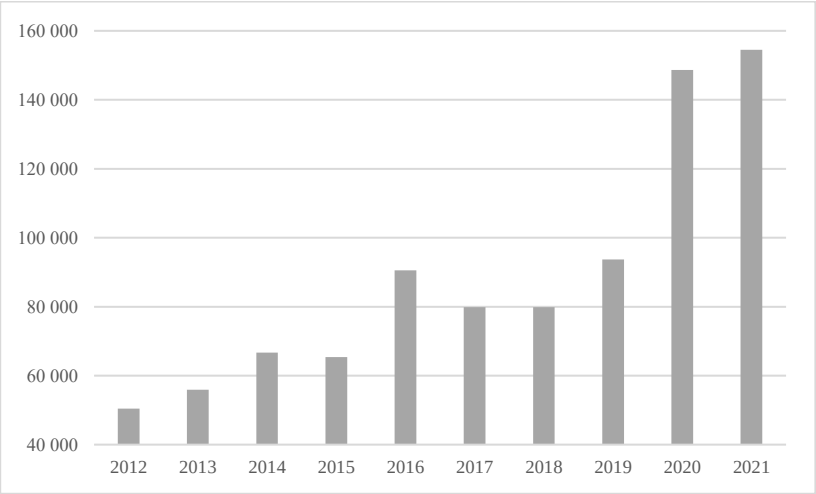
The basic tool for electronic communication is electronic mail. However, from a technical point of view, it is to some extent easy to falsify information about who and when exactly sent the message by e-mail, so this form of communication is used for the delivery of documents only to a very limited extent.

The most important tool for electronic delivery of documents between business entities and the financial office are data boxes, which enable online communication with the public administration, also enable, for example, finding out the status of the driver's points account, changes in the real estate cadaster and tax returns (Ministerstvo Vnitra, 2009).

If the tax subject has a data box set up, it is obliged to communicate with the financial authorities only through it. The obligation to establish a data box arises directly from the law, for example for people doing business as a tax advisor, insolvency administrator or statutory auditor. Other natural or legal persons establish a data box only at their own request. An application for the establishment of a data box can be submitted, for example, online, via an electronic ID card with an activated chip (eObčanka), which has been issued in the Czech Republic since 2018 or in person at the Czech National Verification Information Terminal (Datové schránky, 2020).

Figure 2 shows the development of the number of established data boxes for the period 2012–2021 (July 21).

Figure 2 - Development of the number of established data boxes from 2012 to 2021
Source: Datové schránky (2021), own processing

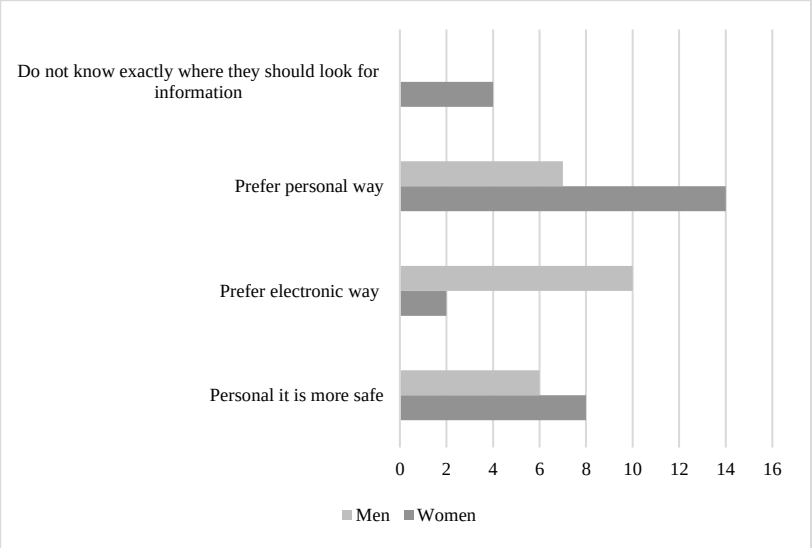


From Figure 2 it can be seen that the number of established data boxes increases in all monitored years. The largest year–on–year increase can be seen in 2020, where compared to 2019, the number of established data boxes increased by 148 646, which represents a 12.5% increase. This increase was influenced by the COVID–19 epidemic. This fact is evident in the monthly comparison. In April 2020, 22 336 data boxes were set up, which is 9 442 more than in March 2020 and 14 413 more than in April 2019. The higher number of data boxes set up in 2020 was also affected by the fact that in times of emergency in the Czech Republic, sending mail messages is free (Datové schránky, 2020).

A total of 51 persons participated in the questionnaire survey, who submitted a tax return for personal income tax at least once. Of this number, 12 people filed at least one tax return in any electronic way, the rest of the respondents always preferred the physical form, most often in the way that they printed the tax return at home on a computer and brought it to the post office. No respondent has yet had an established data box or electronic signature. Most respondents stated that the information provided by the financial administration on the electronic form of filing tax returns was sufficient.

Graph 3 below shows the most common reasons why respondents prefer the physical form of filing tax returns over the electronic form.

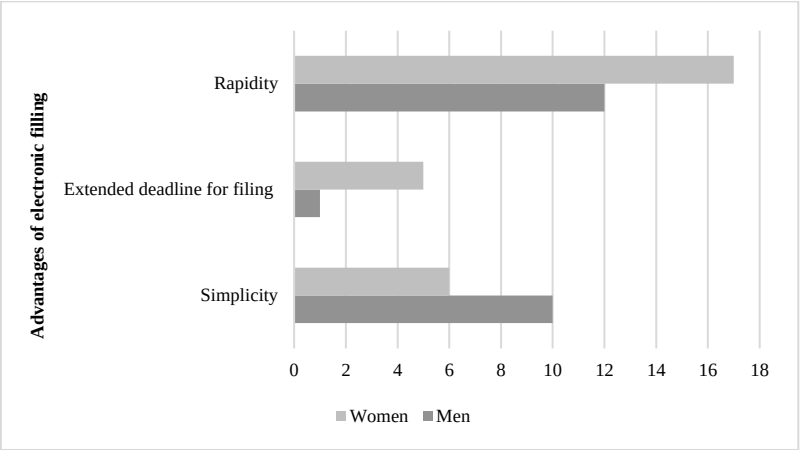
Figure 3 - The most common reasons for filing a tax return physically
Source: Computer Asisted Web Interviewing by authors



It is clear from Figure 3 that most respondents consider personal contact with the tax office or the postal service to be the most common reason why they do not use the electronic form of filing tax returns. 4 respondents do not know exactly where they should look for information on the possibilities of electronic filing, of which 3 have not yet registered the launch of the Modern and Simple Taxes portal. The remaining 8 respondents are concerned about the security and possible misuse of their data.

Figure 4 shows the most frequently mentioned benefits of electronic tax filing.

Figure 4 - Advantages of electronic filing of tax returns
Source: Computer Asisted Web Interviewing by authors



It is clear from Figure 4 that the most common benefits include simplicity and speed, and the associated time and administration savings associated with completing and submitting tax returns to the tax office. 6 respondents consider the extended deadline for filing a tax return to be the greatest priority.

Figure 5 shows the disadvantages of the electronic form of tax returns.

Figure 5 - Disadvantages of electronic filing of tax returns
Source: Computer Asisted Web Interviewing by authors

The most common disadvantages are considered impersonal communication with officials at the tax office, or at the post office, and concerns about the security of the data provided and, finally, the complexity of filling in the tax return.

Table 1 contains the theoretical and expected values of the methods of filing a tax return in terms of the division of men and women.

Table 1 – Theoretical and expected values of methods of filing tax returns

		Electronic	Electronic and Tax Office	Electronic and Post Office	Handwritten and Tax Office	Total
Men	**Theoretical values**	10	3	6	4	23
	Expected values	5.4	5.4	6.8	5.4	23
Women	**Theoretical values**	2	9	9	8	28
	Expected values	6.6	6.6	8.2	6.6	28
Total	**Theoretical values**	12	12	15	12	51
	Expected values	12	12	15.0	12	51

Source: authors

One of the most common ways to file a tax return is to fill it out on a computer and then send it to the tax office via postal services. Other forms include filling in a tax return on a computer and taking it to the tax office, as well as a handwritten tax return and taking it to the tax office, and an electronic form was equally popular among respondents. For women, the most common form of filling out a tax return on a computer and sending it via postal services, on the other hand, the least popular is the electronic form. Men preferred the electronic form of filing tax returns and filling in data on a computer and sending them to the tax office, while the least popular is the option of filling in data on a computer and taking them to the tax office.

Due to the fact that the conditions for the $\chi 2$ independence test in the contingency table were met (the minimum expected value is 5.41), it is possible to use the given test.

- The form of filing a tax return does not depend on the gender of the respondents.
- The form of filing a tax return does depend on the gender of the respondents.

Table 2 shows the results of the $\chi 2$ independence test in the contingency table.

Table 2 – Results of $\chi 2$ independence test in contingency table

	Value	P–value
Pearson Chi–Square	9.871	0.020
N of Valid Cases	51	

Source: authors

The value of the test criterion for the $\chi 2$ independence test in the contingency table is 9,871 and the p–value is 0.020. The P–value is lower than the chosen level of significance (5%), therefore the null hypothesis is rejected and an alternative hypothesis is accepted: The form of filing a tax return depends on gender. The electronic form of tax returns is mostly preferred by men.

The value of the Cramer's coefficient is 0.403 and their dependence is moderately strong.

Table 3 contains the theoretical and expected values of whether they will file tax returns through the My Taxes portal in terms of the division of men and women.

Table 3 – Theoretical and expected values of filing a tax return through the Modern and Simple Taxes portal

		Yes	No	Total
Men	**Theoretical values**	10	3	6
	Expected values	5.4	5.4	6.8
Women	**Theoretical values**	2	9	9
	Expected values	6.6	6.6	8.2
Total	**Theoretical values**	12	12	15
	Expected values	12	12	15

Source: authors

The questionnaire survey showed that 12 respondents plan to file a tax return through the Modern and Simple Taxes portal, most of whom are men, namely 9. The remaining part, ie, 39 respondents do not consider filing a tax return through the portal. 7 respondents, of which 5 women stated that they had never heard of this portal.

Due to the fact that the conditions for the $\chi 2$ independence test in the contingency table were met (the minimum expected value is 5.43), it is possible to use the given test.

- Filing a tax return via the Modern and Simple Taxes portal does not depend on the gender of the respondents.
- Filing a tax return via the Modern and Simple Taxes portal does depend on the gender of the respondents.

Table 4 shows the results of the $\chi 2$ independence test in the contingency table.

Table 4 – Results of $\chi 2$ independence test in contingency table

	Value	P–value
Pearson Chi–Square	5.667	0.017
N of Valid Cases	51	

Source: authors

The value of the test criterion for the $\chi 2$ independence test in the contingency table is 5,667 and the p–value is 0.017. The P–value is lower than the selected level of significance (5%), therefore the null hypothesis is rejected and an alternative hypothesis is accepted: Filing a tax return via the Modern and Simple Taxes portal depends on the gender of the respondents. Men usually prefer this option to file a tax return.

The value of the Cramer's coefficient is 0.304 and their dependence is moderately strong.

4 Conclusion

The paper deals with the analysis of online communication of business entities with financial authorities in the Czech Republic with a focus on filing tax returns. However, tax subjects still prefer physical communication. However, it should be noted that the development is improving every year towards an increase in the share of electronically filed returns. In 2019, 314,541 returns were submitted electronically, in 2020 it was 358,780 returns and by 31 May 2021 it was

already 428,086 returns. Based on a questionnaire survey, it was found that the main reason why people file tax returns physically is a personal form of communication with officials at the financial administration or at the post office. The personal form was found to be the main disadvantage in the case of the electronic form of tax returns. The most common way of filing tax returns is on the basis of a questionnaire survey, filling in the return on a computer and sending it via postal services. Furthermore, it was found through the $\chi 2$ independence test in the contingency table that the form of filing tax returns depends on gender and the electronic form of tax returns is mostly preferred by men, and filing tax returns via the Modern and Simple Taxes portal depends again on gender and respondents. The recommendation for financial administration in the issue of tax returns is that tax returns for all types of taxes should be filed electronically, which would simplify administration for both businesses and the financial administration itself. However, this option cannot yet be enshrined in legislation, and is therefore still on a voluntary basis.

Acknowledgements

This research is supported by Project SP2021/51 at VSB–Technical University Ostrava.

References

[1] AZIS, SA., IDRIS, KM. (2014). Does design matter in tax e-filing acceptance? In Proceedings of the *International Conference On Accounting Studies, ICAS 2014. pp. 451-457.*

[2] BENO, M., SAXUNOVA, D. (2018). The Digitization of Society – Case of Specific Chosen State Alliance of Four Central European States. In Proceedings of the 2018 *7th Software Engineering and Algorithms in Intelligent Systems, CSOC 2018. pp. 1-11.*

[3] DATOVÉ SCHRÁNKY (2020). *Upozornění pro uživatele datových schránek*. [online]. [cit.2020-06-24]. Available from https://www.datoveschranky.info/–/upozorneni–pro–uzivatele–datovych–schranek?inheritRedirect=true.

[4] DATOVÉ SCHRÁNKY (2021). *Statistiky* [online]. [cit.2020-06-24]. Available from https://www.datoveschranky.info/statistiky.

[5] FINANČNÍ SPRÁVA (2014). *Elektronická podání pro Finanční správu*. [online]. [cit.2020-06-24]. Available from https://www.financnisprava.cz/cs/dane–elektronicky/danovy–portal/elektronicka–podani–pro–financni–spravu.

[6] FINANČNÍ SPRÁVA (2019). *Daňové přiznání lze podat i jednoduše elektronicky*. [online]. [cit.2020-06-24]. Available from https://www.financnisprava.cz/cs/financni–sprava/media–a–verejnost/tiskove–zpravy/tz–2019/danove–priznani–lze–podat–i–jednoduse–elektronicky–9645.

[7] FINANČNÍ SPRÁVA (2020). *Elektronická podání pro finanční správu – seznámení*. [online]. [cit.2020-06-24]. Available from https://www.financnisprava.cz/assets/cs/prilohy/de–danovy–portal/cojeto_epo.pdf.

[8] FINANČNÍ SPRÁVA (2021). *Počty podání EPO.* [online]. [cit.2020-06-24]. Available from from https://www.financnisprava.cz/cs/dane–elektronicky/danovy–portal/pocty–podani–epo.

[9] MINISTERSTVO VNITRA (2009). *Revoluce v komunikaci, datové schránky jsou od 1. 7. 2009 realitou.* [online]. [cit.2020-06-24]. Available from

https://www.mvcr.cz/webpm/clanek/revoluce–v–komunikaci–datove–schranky–jsou–od–1–7–2009–realitou.aspx.

[10] NKÚ (2018). *Souhrnná zpráva o digitalizaci veřejné správy v ČR.* [online]. [cit.2020-06-24]. Available from https://nku.cz/assets/publikace-a-dokumenty/ostatni-publikace/zprava-o-digitalizaci-verejne-spravy.pdf.

[11] ŠIMONOVÁ, S. (2018). Communication Models of the Businesses in Relation to E–government? In Proceedings of the *12th International Scientific Conference Public Administration 2018*. pp. 175-185.

[12] SLEZÁK, J., PŘIKRYLOVÁ A., HAKALOVÁ, J., BIELIKOVÁ, A. (2019). Analysis of Implementing Digitalization and Automation in Accounting and Taxation in the Czech Republic. *Transactions of the Universities of Košice*. No. 2. pp. 33–40. ISSN 1335–2334.

[13] SLEZÁK, J., KAHÁNKOVÁ, B. Impacts of the Tax Package in 2021 on the Taxation of Employees and Self–Employed People in the Czech Republic. In Proceedings of the *38th Hradec Economic Days 2021*. pp. 687-697.

[14] SOJKOVA, L. (2017). Is the Czech Republic Preparing for Society 4.0? In Proceedings of the *13th International Conference, Liberec Economic Forum 2017*. pp. 125-135.

[15] SPACEK, D., CSOTO, M., URS, N. (2020). Questioning the Real Citizen–Centricity of e–Government Development: Digitalization of G2C Services in Selected CEE Countries. *NISPAcee Journal of Public Administration and Policy, Vol.* 13(1), pp. 213–243.

[16] PARVIAINEN, P., TIHINEN, M., KAARIAINEN, TEPPOLA, S. (2017). Tackling the digitalization challenge: how to benefit from digitalization in practice. *Ijispm-International Journal of Information Systems and Project Management*, Vol. 5(1), pp. 63-77.

Contact information

Ing. Jiří Slezák
VSB - Technical University of Ostrava, Faculty of Economics, Department of Accounting and Taxes
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: jiri.slezak@vsb.cz

Ing. Ivana Čermáková
VSB - Technical University of Ostrava, Faculty of Economics, Department of Applied Informatics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: ivana.cermakova@vsb.cz

Expenditures of Regions on Roads

Petr Tománek

Abstract: The paper focuses on the issue of one of the important components of regional expenditures, namely expenditures on roads management and maintenance. The competence of the regions includes the administration and maintenance of roads of II. and III. class in the region. The extent of roads in the regions originated historically and these roads passed to the regions with the establishment of the regions in 2000. The extent (length) of roads does not change much, but relatively varies between regions. To finance roads, resources for roads management and maintenance were included in the regional budgets, depending on the state of funds previously provided for these roads. The paper shows the expenditures of the regions, how the expenditures of the regions on these roads differ, resp. how other factors affect these expenditures. The aim of the paper is to show the different conditions of individual regions in the field of expenditures on roads of II. and III. class, due to the different lengths of roads in individual regions and due to other characteristics of this infrastructure, in connection with the issue of distribution of funds to regions within the budgetary allocation of taxes. The paper covers the issue of regional expenditures on roads, which it evaluates in terms of roads characteristics in the regions.

Keywords: Regional expenditures, roads, regional budgets

JEL Classification: H71

1 Introduction

Regions were established in the Czech Republic in 2000 as an independent level of territorial public administration. When defining the competence of regions in the area of self-government, areas such as secondary education, health care, transport services, social services, as well as administration and maintenance of roads of II. and III. class in the region and other smaller areas of public services were included in the competence of regions. The above definition of public services is important especially from the point of view that, in connection with the scope of these services, resources from shared taxes have been allocated to individual regions. This allocation of resources to regions was made in the form of relative shares of shared taxes, which, due to the different scope of public services in the region, differ significantly per capita (this is a difference of about 100% between the region with the lowest and highest revenues from shared taxes per capita). This system has been applied without changes since 2005. Since then, there have been changes in the area of public services provided by the regions, however, the method of tax sharing has not responded to this. In addition to regional revenues from shared taxes, regional budgets are supplemented annually by resources from transfers, which account for about 66% of total resources within the regional budget (transfers mainly include transfers to regional education).

Due to the diversity of regions, the issue of the size of resources for regional budgets is important for the financing of regions. The possibilities of using specific tax revenues collected in the territories of the regions are very limited (Tománek, 2001). Due to the differences in the nature of regions, the number of inhabitants cannot be used as a decisive criterion for sharing taxes to regions, similarly to the municipalities (Tománek, 2015). The use of shared taxes in the form of budgetary allocation of taxes (BAT) to regions also reduces possible large disparities in tax revenue between individual budgets and allows to spread the risks of non-fulfillment of tax revenue between the state and local government (Peková, 2011). Theoretical findings show that a number of requirements have previously been defined for the tax revenues of decentralized budgets (e.g. Musgrave, 1994); on the other hand, the criteria set for shared and entrusted taxes create individual conditions for individual decentralized budgets. The current real conditions

modify the conditions for providing appropriate tax resources to decentralized budgets, resp. theoretical knowledge in this area should be developed (Tománek, 2015), incl. issues of assessing tax autonomy within fiscal federalism (Blöchliger, 2011).

The above view on the issue of road financing in the regions is a detailed view on the given issue, which is not dealt with in more detail by theories or publications. From a regional point of view, the publications focus on road expenditure in the regions in general, but the differences between regions, monitoring road expenditure in individual regions and in terms of recalculation to a length unit of road, per capita and the like are not described. The issue of road financing is described in various publications (Andersson, 2012, Gomez, 2016, Poliak, 2017, Grahn, 2013, Liu, 2020), however, this paper deals specifically with the issue and specifics of financing the relevant segment of public expenditure under decentralized budgets (regional budgets) in the conditions of the Czech Republic, where self-governing decision-making of regions is particularly evident and where road expenditures are only a partial part of regional expenditures.

This contribution is focused on only one part of the sources for financing the regions, namely the sources resp. the expenditures for roads financing in regional administration. Regional expenditures on roads are one of the important areas of regional expenditures. These are expenditures on administration and maintenance of roads of II. and III. class in regional administration. The extent of roads varies in the regions and it is therefore necessary to assume that regional expenditures in this area will also differ. Regions have no limit to how many sources from BAT funds have to provide on roads and it's so at their own decisions.

The aim of the paper is to show the different conditions of individual regions in the area of expenditures on roads of II. and III. class, due to the different lengths of roads in different regions and due to other characteristics of this infrastructure.

The article wants to show, among other things, the issue of financing public goods in the regions, where these public goods serve not only to the inhabitants of given region, but also to other regions ; in the case of roads, the point is that vehicles from other regions can also move on the roads of a given region. The observed problem of road network maintenance can thus be considered as a kind of externality of the region, where the expenditures should be appropriately compensated to the region. The paper looks at the issue of roads financing in the regions from alternative perspectives, which could serve in the selection of appropriate criteria for regional financing.

The paper focuses on the issue of roads expenditures of existing regions. However, Prague is not included here, which represents on the one hand a region, but also a municipality, and the roads cannot be divided from this point of view, and therefore the data captured in this way are not comparable with other regions; Thus the contribution in all parts tracks only 13 regions[5] of CR . The paper for the analysis uses data for the period 2017 - 2019, which are not distorted by the crisis in connection with Covid - 19.

[5] These are the following 13 regions in the Czech Republic: South Bohemian Region (JHČ), South Moravian Region (JHM), Karlovy Vary Region (KVK), Vysočina Region (KVY), Hradec Králové Region (KHK), Liberec Region (LBK), Moravian-Silesian Region (MSK), Olomouc Region (OLK), Pardubice Region (PAK), Pilsen Region (PLK), Central Bohemia Region (STČ), Ústí nad Labem Region (ÚLK), Zlín Region (ZLK).

2 Methodology and data

2.1 Characteristics of the road network in regions

Road network size of II. and III. class vary from region to region. It is given both by the territory of the regions, but also by other parameters. Characteristics of the size of the road network in the regions are shown in graphs 1 to 3, which show both the total length of the road network in individual regions, but also its relative size in relation to the area and population. The values of these parameters vary significantly between regions, and therefore it can be expected that the expenditures spent by regions for the administration and maintenance of roads in individual regions will vary.

The regions of STČ, JHČ, PLK, JHM, KVY have the longest length of roads in the regions (see Figure 1), which are the regions with the largest area. However, it turns out that the length of roads does not correlate with the area of the region, so the relative share of roads length in regions by area varies and this share is highest in the regions STČ, KVY, KHK, PAK, ÚLK (see Figure 2) . The highest density of the road network is in the STČ region, while the lowest in the ZLK region. Furthermore, the length of roads in the regions can be characterized by a relative share to the number of inhabitants; KVY, JHČ, PLK have the longest road network per capita (see Figure 3), and the MSK, ZLK and JHM regions have the smallest. From these physical characteristics it is clear that the conditions of individual regions in the field of roads are very different.

The characteristics of the road network in the regions (see above) for the analysis of financing therefore differ. The problem of financing of the road network in the conditions of the Czech Republic is often discussed, due to the lack of financial resources of the regions. However, regions usually receive transfers from the State Fund for Transport Infrastructure for roads maintenance every year to ensure higher resources for roads financing; the provision of these transfers to the regions is based primarily on the length of the road network. It is not possible to directly identify whether these funds are sufficient, given that there is no overall characteristic of the state of roads quality in the regions.

Figure 1 - Length of roads of II. and III. class in regions (km)
Source: Data from the Road Database

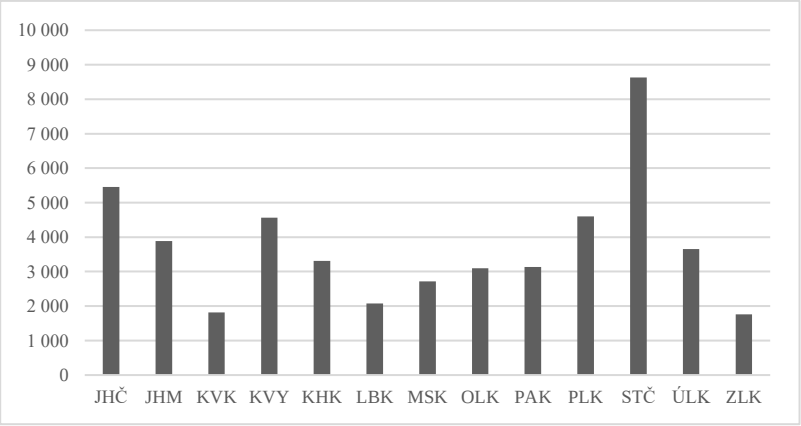


Figure 2 - Length of roads in regions per 1 km^2 of region area (km/km^2)
Source: Calculation based on data from the Road Databank and regional area according to the CZSO

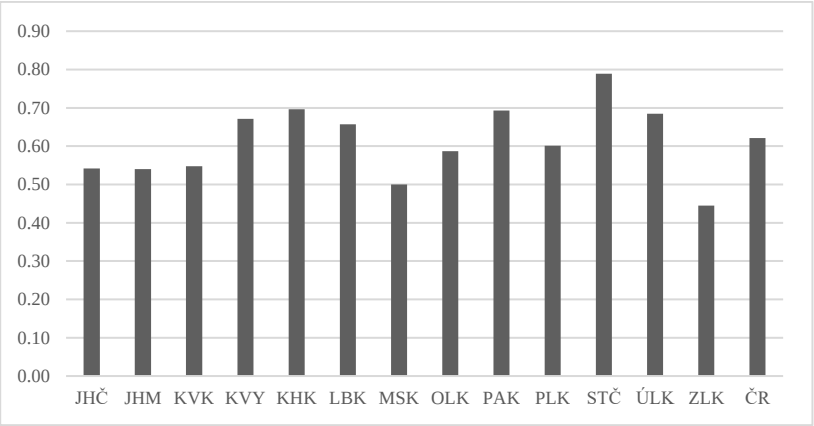
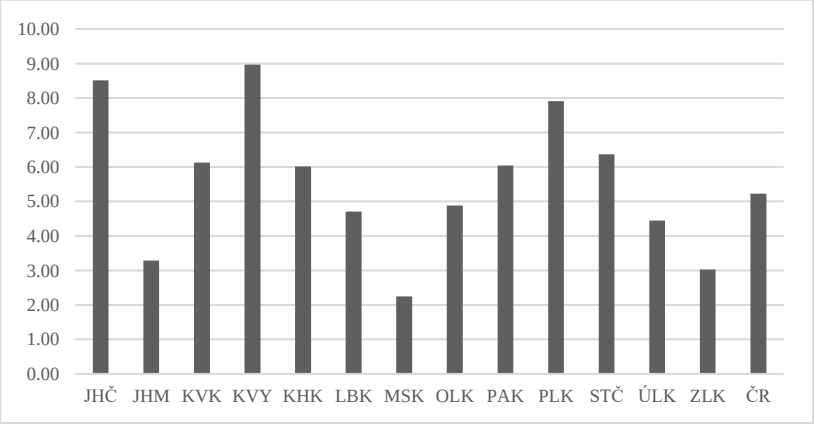


Figure - 3 Length of roads per 1,000 inhabitants of regions (km / 1,000 inhabitants)
Source: Calculation on the basis of data of the length of roads from the Road Databank



However, other available indicators can be used to characterize the road network in the regions, which are monitored at certain intervals by the organization of the Directorate of Roads and Motorways, which provides data in the form of a road database. It is mainly an indicator of traffic performance[6], which is measured on individual roads. The highest performances can be recorded

[6] Traffic performance on roads is reported in vehicle-kilometer indicators in 24 hours, which reflects the number of vehicles that pass on individual roads in 24 hours. The indicator is

in the regions of STČ, JHM, MSK and JHČ, the lowest are reported by the regions of KVK and LBK (see Figure 4).

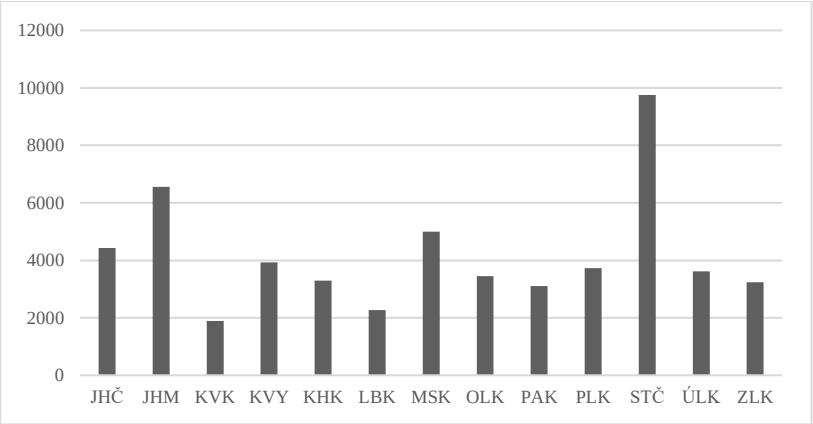
Based on transport performance, it is then possible to evaluate the indicator of average traffic intensity in the regions, as the average share of transport performance on roads in individual regions, which then reflects the average occupancy of roads in the regions. These values differ between regions and it turns out that the traffic intensity in the region with the highest intensity (MSK) is at the level of 227% of the level of regions with the lowest intensity (JHČ, PLK) (see Table 1).

Table 1 Traffic intensity in regions (1,000 vehicles / 24 hours)

	JHČ	JHM	KVK	KVY	KHK	LBK	MSK	OLK	PAK	PLK	STČ	ÚLK	ZLK	**ČR**
Intensity	0,81	1,69	1,04	0,86	0,99	1,09	1,84	1,12	0,99	0,81	1,13	0,99	1,84	1,11

Source: Calculation on the basis of values from graph 4 and graph 1.

Figure 4 - Total transport performance on regional roads (in 1000 vehicle-km / 24 hours)
Source: Road Databank, 2016



The above indicators cover the basic possibilities of characterizing the road network in individual regions[7], which should be reflected in particular in the resources that are provided to regions for roads so that the territory of the entire state (all regions) of roads II. and III. class could be maintained in the same quality.

2.2 Regional expenditures on roads

Regional expenditures on roads have an important place in the total expenditures of regions. The size of these expenditures can be characterized on the one hand from the point of view of total

determined for individual roads and there are also calculated average values on roads in regions. Measurement of traffic performance is performed at intervals of 5 years.

[7] The Road Databank also monitors roads widths (however, data are not available for all roads) and the number and area of bridges, where bridges are also reflected in roads management expenditures (bridges aren't specifically examined in this paper).

regional expenditures, which are significantly affected by the representation of subsidies in regional budgets and regional roads expenditures make share of 10.27%, or from the point of view of expenditures from BAT, where it's a share of 22.70% (see Table 2).

As already mentioned, no criteria are set within the BAT of regions, and therefore since 2005 the system of financing regions through BAT has been preserved, although conditions in the regions may change and the original method of determining the amount of funds provided to regions for roads is a question at all. In addition, the significance of regional expenditures in a given area may change over time within regional budgets.

Table 2 Expenditures of 13 regions on roads for the period 2017 - 2019 (in CZK, %)

	Expenditures	**Share in %**	**Expenditures paid from BAT ***	**Expenditures paid from RUD in %**
Roads	62 755 361 516	10,27	46 271 779 822	22,70
Total regional expenditures	**610 990 874 826**	**100,00**	**196 276004925**	**100,00**

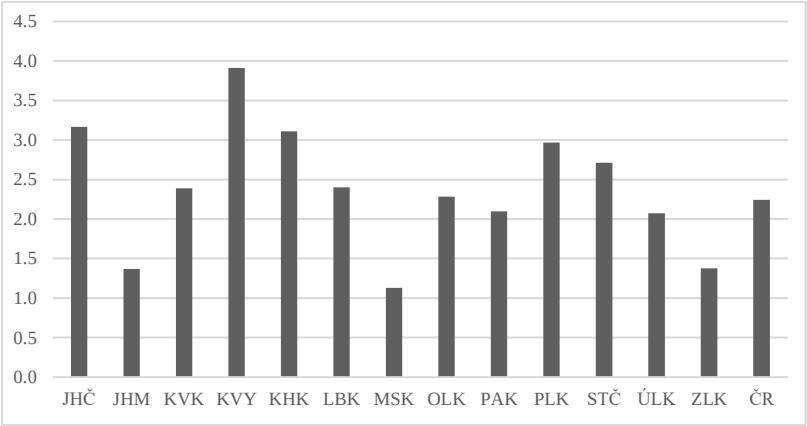
Source: calculation based on the Monitor and documents from the regions

*Notes: * Expenditures paid from the budgetary allocation of taxes (BAT) after deduction of resources from transfers, non-tax and capital revenues.*

From the point of view of providing funds to the regions for roads, it turns out that such a criterion cannot be the number of inhabitants of the region, which is one of the basic characteristics of the differences of regions in the Czech Republic. In this respect, it turns out that the differences in expenditures per capita between regions are three times as large between the regions with the lowest and highest expenditures (see Graph 4). This follows from the overall characteristics of the road network in the regions (see Chapter 2.1).

In terms of comparing the actual expenditures of the regions, which are monitored here for a period of 3 years, so it is possible to assess the values of regional expenditures per unit in terms of the length of the road network and in terms of transport performance.

Figure 5 - Regional expenditures on roads for the period 2017 - 2019 per capita (thousands of CZK)
Source: Calculation based on Monitor data



If we assess regional expenditures in relation to the length of the road network (see Figure 5), then the division of regions into two groups can be deduced, so it is into regions where expenditures are relatively lower than the length of the road network in the region and other regions with expenditures relatively higher than length of the road network. The first group includes the regions JHČ, JHM, KHK, LBK, PAK and STČ. This situation in these regions may be associated with factors such as: lower traffic intensity, lower amount of available resources of the region, lower priority of the region in ensuring roads management, lower costs of public procurement, but also other factors. Unambiguously stated values do not indicate any factor, because even though, for example, from the mentioned group of regions, most regions have an average traffic intensity, resp. below average, the JHM region is one of the regions with the highest traffic intensity.

The second view of regional expenditures is made through regional expenditures in relation to transport performance (see Graph 6). The use of the traffic performance indicator, or the traffic intensity indicator, can be combined with the assumption that more traffic on the roads causes more wear and tear on the roads and thus the need for higher expenditures on roads management (repairs). Looking at the comparison of the share of expenditures on roads with transport performance, the JMK, LBK, MSK, STČ and ZLK regions belong to the group of regions where roads expenditures are relatively lower than transport performance. Even in this case, the situation is not the same in terms of traffic intensity, however, most regions (except for the LBK region) belong to the group of regions with the largest traffic intensity among the regions.

Figure 6 Comparison of shares of roads length in regions and shares of regions' expenditures on roads
Source: Values are determined: length of roads = share of individual regions on the total length of roads of II. and III. class from 13 regions of the Czech Republic (data from Figure 1); regional expenditures = the share of individual regions on the total expenditures of regions on the roads (excluding expenditures paid from subsidies) from data from the Monitor and from regional documents.

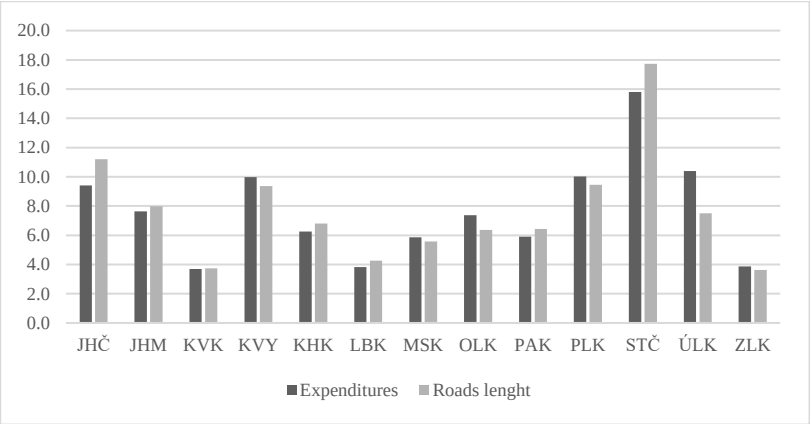
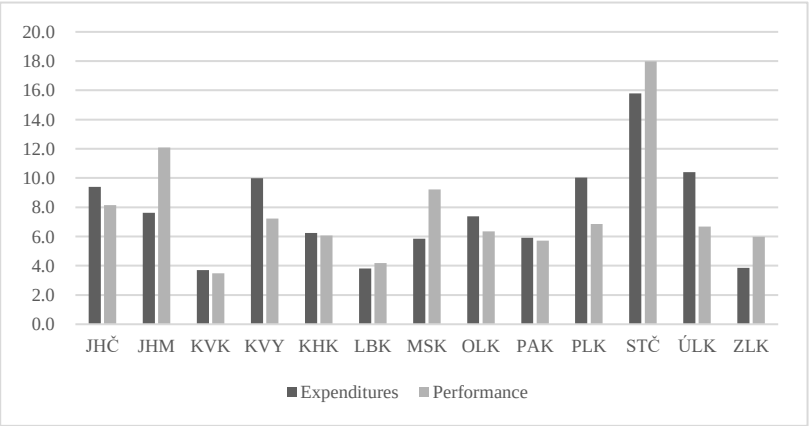


Figure 7 Comparison of the share of transport performance in regions and the shares of regional roads expenditures

Source: Values are determined: transport performance = share of individual regions on the total transport performance from 13 regions of the Czech Republic (see Figure 4); regional expenditures = the share of individual regions on the total expenditures of regions on the roads (excluding expenditures paid from subsidies) from data from the Monitor and from regional documents.



If we then compare both views on the expenditures of individual regions in relation to the size of the road network and the size of transport performance in individual regions, then from both perspectives the JMK, LBK, STČ regions are regions where expenditures are relatively lower and at least in these regions can be expected the overall average worse condition of roads compared to other regions or to the average. Of course, it does not have to be just these regions, but in connection with the mentioned factors, the situation may be similar in other regions.

3 Conclusions and discussion

The paper focuses on the issue of regional expenditures on one of the important expenditure areas of regions, which are expenditures that regions have in connection with the fact that they manage roads of II. and III. class. The system of resources from which the administration of regional roads is financed is based, apart from sudden transfers, on shared taxes, which are not provided to regions by reflecting criteria, but since 2005 fixed regional shares have been set in shared taxes, which reflected earlier volumes used to manage these roads. Since 2005, the shares of individual regions on shared taxes have not changed in any way, however, since then the conditions of individual regions in the given area of expenditures may have changed.

The analysis showed that the provision of funds to regions that are different in size both in terms of population and territory, is not appropriate to provide through these criteria of population and area. Based on a real analysis of regional roads expenditures, the paper tries to find possible criteria according to which funds should be provided to regions.

The basic parameter is its length of the road network in the regions, which is a parameter that does not change much. More dynamic changes can occur in the area of traffic intensity on the roads of regions, which may be related to changes in economic conditions of regions (e.g. in connection with the establishment or closure of economic entities in the region) but also other factors such as population movement for shopping, recreation, etc. These soft data, i.e. data on traffic intensity, are available and can be used to supplement knowledge about roads conditions in the region. Differences in traffic intensities are not negligible and averages vary up to 2.2 times between regions, which has an impact on the need for roads maintenance in the regions. However, monitoring the size of roads expenditures in relation to traffic intensity is not carried out.

Various analytical views on regional roads expenditures point to the complexity and diversity of the issue. The analytical data do not allow unambiguous conclusions to be drawn, especially in terms of the fact that regions are territorial self-governing units, which independently decide how to divide their available resources between areas of expenditures and thus how much money they spend on roads management and maintenance. Why it is not possible to unambiguously identify suitable rules for providing regional resources for roads, there are reasons such as traffic intensity, amount of available resources of the region, the region's own priority in ensuring roads management, the level of public procurement costs, but also other factors, which manifests itself in the state of the road network in the regions.

The paper shows that the relative amount of funds that regions spend on roads varies between regions both in terms of comparison to the length of the road network and in terms of transport performance. Of the 13 monitored regions from both perspectives, the JMK, LBK and STČ regions spend a relatively smaller amount of funds, and it is thus possible to assume a worse condition of the road network. Of course, in addition to the above indicators, other circumstances may also manifest themselves in the state of the regional road network, resp. solving problems, such as the condition of bridges in the regional road network, which was not considered in the analysis.

The performed analyzes of expenditures cannot give a clear answer and therefore it is necessary for the given system to look for an approach in the form of consensus between regions.

Acknowledgements

The article/paper was created within the frame of the TA ČR project TL01000145 “Methodological – Application Tools for Efficiency Financial Management of Territorial Structured Statutory City” and with financial support of the student grant project SGS No.

SP2017/129 “Economic Factors Affecting the Ensuring of Public Services with Collective Consumption” on Faculty of Economics, Technical University of Ostrava.

References

[1] ANDERSSON, R., SODERBERG, B. (2012). Financing roads and railways with decentralized real estate taxes: the case of Sweden. *Annals of Regional Science. Vol. (48)3, pp. 839-853.*

[2] BLÖCHLIGER H., CAMPOS, J. M. P. (2011). Tax Competition Between Sub-Central Governments. *OECS Working Papers of Fiscal Federalism.* No.: 13, pages 46.

[3] GOMEZ, J., PAPANIKOLAOU, A., VASSALLO, JM. (2016). Measuring regional differences in users' perceptions towards interurban toll roads. *Journal of Transport Geography*. Vol. 54, pp. 22-33.

[4] GRAHN-VOORNEVELD, S. (2013) The Effects of Decentralized capacity decisions for congested self-financed roads. *Transportation Research Part A-Policy And Practice. Vol 56, pp.49-60.*

[5] LIU, WD., ZHANG, YJ., XIONG, W. (2020). Financing the Belt and Road Initiative. *Eurasian Geography and Economics.* Vol. 61(2), pp. 137-145.

[6] MF ČR (2021). Monitor *(2017-1019).* [online]. [cit. 2021-06-15]. https://monitor.statnipokladna.cz/

[7] MUSGRAVE, R. A., MUSGRAVE, P. B. (1994). *Veřejné finance v teorii a praxi.* 1st ed. Prague: Management Press.

[8] PEKOVÁ, J. (2011). *Finance územní samosprávy. Teorie a praxe v ČR*. 1st ed. Prague, Wolters Kluwer ČR.

[9] POLIAK, M., SEMANOVA, S., MRNIKOVA, M., KOMACKOVA, L., SIMURKOVA, P., POLIAKOVA, A., HERNANDES, S. (2017). Financing Public Transport Services From Public Funds. *Transport Problems.* Vol 14(4), pp. 61-72.

[10] Ředitelství silnic a dálnic ČR – *Silniční databanka, 2021.*

[11] TOMÁNEK, P. (2001). *Hledání vhodných daňových příjmů krajů.* Závěrečná studie projektu GA ČR č. 402/00/0438. Prague, VŠE, pp. 137-151.

[12] TOMÁNEK, P. (2015). Influence of criteria of the employees number in the municipality to the tax revenues of municipalities. In *Theoretical and Practical Aspects of Public Finance 2015*. Prague, Wolters Kluwer. pp. 267-272.

Contact information

doc. Ing. Petr Tománek, CSc.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská tř. 33, 702 00 Ostrava 1, Czech Republic
E-mail: petr.tomanek@vsb.cz

Multi-criteria evaluation of the performance of health systems of EU Member States to the Health 2020 targets

Ivana Vaňková, Iveta Vrabková

Abstract: The international document Health 2020 points to the main regional targets, which are linked by 19 measurable indicators that assess the health status of the population in a given area. Each targets defined in this document represents a concrete step towards improving health care. The paper objective is to determine a ranking of the 28 EU Member States, with an emphasis on the position of the Czech Republic, according to the fulfilment of the first five Health 2020 objectives, including 15 indicators as of 2015. Based on the methodological procedure, an index indicator was calculated for each target, which subsequently became the basis for determining a ranking of states in terms of the targets achieved by the Technique for Order of Preference by Similarity to Ideal Solution. The weight of individual criteria was determined by expert estimation. The results generate an interesting finding that the results are influenced by the set weights of the individual criteria and that the overall results have the greatest impact on the achievement of the value under the fourth objective, which is aimed at improving the well-being of the people of Europe. The Czech Republic ranked 17th in terms of the ranking of individual states and is below the average of the 28 EU states. Sweden had the best ranking and Bulgaria the worst results.

Keywords: Health 2020, health system performace, TOPSIS method

JEL Classification: I14, C60

1 Introduction

Healthcare as a subsystem of the public sector and the economy as a whole of a given country is based on the interdependence (systematization) of specific procedures, activities and resources aimed at effective and efficient care of the health status of its population. As a compact part of society, the healthcare system must respond in a functional and timely manner to internal and external influences of a natural, social and economic nature. Quality of the healthcare system and its ability to respond to these influences is in the government´s hands. The availability of a country's health system is then crucial in coping not only with routine situations and healthcare needs, but also with emergency situation such as the COVID 19 pandemic crossing national borders.

The functionality and quality of the healthcare system from the perspective of the population health and social status is determined by public policies that are the starting points for effective management and improvement in the health sector. We may state that the quality, outputs and outcomes of the healthcare system are conditioned by the socio-economic maturity of the given country. In this point of view, it is important that states apply modern, effective and participatory healthcare policies, especially when they are part of larger entities like the European Union. At the EU level, specific public healthcare policies are adopted that concentrate to health protection in particular, as well as the WHO approaches.

EU Member States therefore apply their own original healthcare policies. However, the convergence and, more importantly, the improvement of the healthcare outcomes of the EU member states (e.g. life expectancy, premature and infant deaths, prevalence of chronic diseases, health financing to GDP ratio or the burden of negative phenomena such as smoking, alcohol, drugs) is very important not only in terms of the population´s health status, but also in terms of

increasing equity and quality of healthcare services in the EU context (Barták, 2012, Smith et al., 2008).

Comparative studies and individual policies of the EU Member States suggest that there have been relatively significant differences between countries in terms of both healthcare economics and healthcare outcomes over the long term, (Smith et al., 2008, European Commission, 2019). With the aim of cohesion and improved healthcare performance in Europe, a single set of measures called Health 2020 was implemented in 2013 across the policies of the member states, (MoH, 2013).

The assessment of the performance of the individual member countries´ healthcare systems according to multiple heterogeneous factors (Health 2020 indices) implies the use of a multiple attribute decision making, where all discrete variants can be identified, including the assignment of specific criteria values. One of the methods that allows for multiple attribute decision making is the TOPSIS method.

The paper objective is to determine a ranking of the 28 EU Member States, with an emphasis on the position of the Czech Republic, according to the fulfilment of the first five Health 2020 objectives, including 15 indicators as of 2015.

In the context of the paper objective this research question was formulated*: Is the Czech Republic's performance in meeting the first five Health 2020 targets in 2015 above the EU average?*

The paper is structured into five parts. The first part is devoted to introduction; the second part includes a brief theoretical definition of the possibilities of healthcare systems´ international evaluation and the first five Health 2020 goals of the World Health Organization. The third part of the paper is devoted to description of the monitored Health 2020 indicators´ evaluation and the TOPSIS method. The fourth part of the paper presents the results of the summary indices of the five Health 2020 goals and the calculations of the TOPSIS method. The conclusion is the fifth part of the paper and briefly summarizes the main findings of the research.

2 Evaluation of health systems

In healthcare, as Smith et al. (2008) state, performance evaluation and measurement monitor, evaluate and communicate the extent to which different aspects of the healthcare system meet their key objectives. The need to measure the performance of a healthcare system or its individual elements is based on the stakeholders' accountability - from citizens (the public), patients, healthcare providers, through insurance companies, public administration up to governments.

Healthcare system performance involves evaluation and measurement from the macro- and micro-perspective. These are specific areas of measurement of the outputs and outcomes produced by the healthcare system as a whole or in parts, and examples include population health or equity of access to health care, as well as the economics and efficiency of healthcare providers.

In the developed countries there is a growing demand for improved information, transparency of financing and managerial accountability of healthcare services and the healthcare system in general. It is not surprising, then, that most of the healthcare policy actors are finding out that without specific measurements and international comparisons, it is difficult to detect optimal service delivery solutions, design institutional healthcare service schemes and reforms, protect patients and healthcare payers, and make key investments (Papanicolas, Smith, 2013).

The international comparison of healthcare systems or their performance is a very popular topic among academic researchers as well as among supranational institutions such as OECD, WHO or the European Commission. The importance of international comparison of healthcare system

performance is growing because it also allows shaping more accountable healthcare policies, improving quality of healthcare or increasing the governance and partnership capacity in general. Equally important is the fact that the performance of healthcare systems has an impact on cross-border healthcare and health tourism. At the European Union level in particular, international comparisons are of one crucial importance, namely that they form the necessary basis for the development of the legal and organisational framework needed to implement the directives governing the free movement of people and services in healthcare, i.e. cross-border health care (Olsen and Dahl, 2007, Solé-Auró and Crimmins, 2008, Toor et al., 2018, Menne et al., 2020).

A comprehensive view of the level of healthcare systems and how they can be measured and compared is presented in the WHO Health 2020 paper: the European policy for health and well-being in the 21st century. The Health 2020 is based on 6 key objectives and 19 quantitative indicators telling about the level of the population´s health, of reducing health inequalities and of strengthening the role of public administration in the health area (WHO, 2021).

WHO: Health 2020 targets:

- Target 1: Reduce premature mortality in Europe by 2020, it includes six indicators (Alcohol (1), Measles, Polion (2), Tobacco (3), Mortality External Cases (4), Premature Mortality (5), Overweight (6));
- Target 2: Increase life expectancy in Europe, it includes one indicator (Life expectancy (7));
- Target 3: Reduce inequities in Europe, it includes six indicators (Life expectancy (7), Unemployment (8), School enrolment (9), Infant Mortality (10), GINI (11), Inequities Policies (12));
- Target 4: Enhance the well-being of the European population, it includes six the indicators (Unemployment (8), School enrolment (9), GINI (11), Life satisfaction (13), Sanitation (14), Social Support (15));
- Target 5: Universal coverage and the right to health, it includes three indicators (Measles, Polion (2), Health Expenditure (16), Our-of-pocket expenditure (17);
- Target 6: National targets or goals set by Member States, it includes two indicators (Target setting (18), Evidece Docum (19)). (WHO, 2021)

An international comparative evaluation incorporating the WHO Health 2020 targets was published by Zuidberg et al. (2021). In their paper, the authors evaluated selected indicators of 50 Member States of the WHO European Region in 2005, 2010 and 2015.

3 Methodology

3.1 Indicator index for Health 2020 targets

In the first phase, the research methodology involves collecting and validating the necessary data mainly from the WHO database, i.e. Health 2020 database. Some data were also drawn from the Health for All database (e.g. GINI coefficient, Unemployment rate) and the World Happiness Report (Life satisfaction). The data is evaluated for 2015 as it is available for all indicators (except for the indicators 12 and 15) and all surveyed EU countries at the time of this research.

In the second stage, the value of each indicator index and then the value of Health 2020 targets (C1-C5) for the 28 EU countries is calculated, following the methodology of Zuidberg et al. (2021). In terms of evaluation, there was the following methodological procedure (1).

The formula for the indicator index is the following:

$$Indicator\ index = \frac{(actual\ value - minimum\ value)}{(maximum\ value - minimum\ value)} x\ 100 \quad (1)$$

Some indicators are negative indicators (e.g. indicators 1, 3, 4, 5, 6, 8, 9, 10, 11, 17), in which lower value corresponds to better progress. Indicators 2, 7, 13, 14, 16 are positive indicators, in which a higher values corresponds to better progress. In case of negative indicators, the indicar index was subtracted from 100 to get the actual indicator index. The calculation of the indicator index was executed for each indicator of the EU states. Indicator indices of zero were rounded up to one to avoid problems with the calculation of the geometric mean.

The geometric mean of five Health 2020 targets was then calculated for each states. The formula for geometric mean are (2-6):

$$Target\ 1 = \sqrt[6]{ind\ index1\ x\ ind\ index2\ x\ ind\ index3\ x\ ind\ index4\ x\ ind\ index5\ x\ ind\ index6} \quad (2)$$

$$Target\ 2\ = \sqrt[1]{ind\ index7} \quad (3)$$

$$Target\ 3 = \sqrt[5]{ind\ index7\ x\ ind\ index8\ x\ ind\ index9\ x\ ind\ index10\ x\ ind\ index11} \quad (4)$$

$$Target\ 4 = \sqrt[5]{ind\ index8\ x\ ind\ index9\ x\ ind\ index\ 11\ x\ ind\ index13\ x\ ind\ index14} \quad (5)$$

$$Target\ 5 = \sqrt[3]{ind\ index2\ x\ ind\ index16\ x\ ind\ index17} \quad (6)$$

In the third phase, the weights of the calculated indexes of the five Health 2020 objectives are determined, for the needs of evaluating the ranking of countries according to the multi-criteria method – TOPSIS, (see Table 2). The weight of individual criteria was determined by expert estimation, the biggest weight is given by C1 and C2, because they are direct factors of the level of health of the population of the given country. Criterion C3 has a compromise weight, given that it is a question of Reduce inequities in Europe Infant Mortality. The lowest weights are determined by C4 and C5, because they include indirect (economic and social) factors of population health. All criteria are maximizing, as indicated in Table 1, where the values of the criteria for individual countries are color-coded (green best and red worst).

Table 1 - Criteria for Multi Criteria Evaluation

Criteria (C1-C5)	Weight (W_{c1-c5})	Characteristics (C1-C5)
C1 Index of target 1	0.3	Max.
C2 Index of target 2	0.3	Max.
C3 Index of target 3	0.2	Max.
C4 Index of target 4	0.1	Max.
C5 Index of target 5	0.1	Max.

In the fourth phase of the research, basal and ideal values are calculated according to the TOPSIS method and the order of countries is determined.

3.2 TOPSIS method

The TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) method is one of the Multi Criteria Decision Making methods. The purpose of the TOPSIS method is to select the variant that is closest to the ideal variant and farthest from the basal variant. (Ardelli, Vavrek, 2019, Vrabková et al, 2021)

The calculation procedure using the TOPSIS method can be described in the following steps:

- creation of a matrix D, in that the alternatives are ranked according to relevant and predefined criteria;
- construction of the normalized criterion matrix that is then used to calculate the normalized values according to formula (7):

$$r_{ij} = x_{ij} / \sqrt{\sum_{j=1}^{j} x_{ij}^2} \tag{7}$$

  where x_{ij} = the value of the j-th criterion achieved by the i-th alternative;

- multiplying by the weights of the respective criteria, according to relation (8):

$$v_{ij} = w_{ij}.r_{ij} \tag{8}$$

  where v_{ij} = weighted normalised value and w_{ij} = weight of the criterion;

- determination of the ideal variant H_j and the basal variant D_j, according to relation (9):

$$H_j = \max(w_{ij}), D_j = \min(w_{ij}) \tag{9}$$

- calculating the distance of the variants from the ideal variant and the basal variant, according to (4):

$$d_i^+ = \left[\sum_{j=1}^{k}(w_{ij} - H_j)^2,\right]^{1/2} \quad d_i^- = \left[\sum_{j=1}^{k}(w_{ij} - D_j)^2,\right]^{1/2} \tag{10}$$

- calculating the relative distance from the basal variant, according to (11):

$$c_i = \frac{d_i^-}{d_i^- + d_i^+} \tag{11}$$

  where c_i is an indicator of the relative distance from the basal variant.

The resulting values of c_i are in the interval <0, 1>, where 0 represents the basal variant and 1 represents the ideal variant. The variants are then ranked according to the values of c_i from highest to lowest, resulting in a complete ranking of the evaluated variants (Jablonský, Dlouhý, 2015).

According to the TOPSIS technique, an important step of the entire calculation is the determination of the weights of the criteria, that reflect the relative importance of each criterion. The weights can be determined, for example, through the ranking method, the scoring method, the Saaty method or the Fuller's triangle (Jablonský, Dlouhý, 2015). Vavrek, Bečica (2020) states that the weights of criteria can be set in subjective, expert, objective or integrated way (a combination of the first and the second approach).

4 Results

4.1 Method 1: Index of Targets of Health 2020 of methodology Zuidberg et al. (2021)

From the calculated values of the indicator indices, it is clear that the lowest ratings are achieved by two countries, namely Bulgaria (BGR) and Romania (ROU). Austria (AUT), France (FRA), Finland (FIN) and Luxembourg (LUX) also have high ratings.

Table 2 - Values of individual targets according to EU countries, in %

Country of EU		Index of Target 1	Index of Target 2	Index of Target 3	Index of Target 4	Index of Target 5
Austria	AUT	71.29	80.28	85.31	91.39	76.30
Belgium	BEL	69.86	77.25	81.47	87.48	79.43
Bulgaria	BGR	23.25	1.00	3.13	4.55	25.60
Cyprus	CYP	61.73	82.85	65.42	58.54	11.39
Czechia	CZE	50.60	49.01	82.45	90.71	57.93
Germany	DEU	63.74	73.28	79.48	85.97	71.20
Denmark	DNK	82.50	75.38	74.94	93.95	74.77
Spain	ESP	69.69	98.02	47.70	45.53	59.16
Estonia	EST	28.37	40.26	61.59	61.37	34.32
Finland	FIN	77.88	79.11	87.34	88.96	70.05
France	FRA	60.32	100.00	80.35	78.09	80.95
United Kingdom	GBR	62.49	76.31	68.95	74.59	66.19
Greece	GRC	35.91	76.20	22.30	19.10	49.06
Croatia	HRV	49.95	34.42	53.62	58.66	54.56
Hungary	HUN	41.69	16.80	52.44	66.02	53.20
Ireland	IRL	66.06	80.28	76.56	72.32	52.45
Italy	ITA	62.79	95.57	66.71	61.98	36.60
Lithuania	LTU	19.63	1.58	20.71	41.54	32.18
Luxembourg	LUX	76.28	99.30	82.86	79.18	57.89
Latvia	LVA	36.61	6.30	35.53	47.74	22.28
Malta	MLT	37.26	86.81	74.93	83.22	52.82
Netherlands	NDL	79.4	83.5	82.4	83.1	81.8
Poland	POL	59.15	35.82	54.75	67.45	34.64
Portugal	PRT	79.05	79.58	61.99	52.18	66.30
Romania	ROU	26.38	6.30	7.68	13.83	4.13
Slovakia	SVK	60.32	29.17	47.65	66.39	55.18
Slovenia	SVN	69.55	74.80	88.91	80.27	67.20
Sweden	SWE	90.56	89.38	86.95	89.44	90.72

The statistical characteristics of "target index values" (from Table 2) is given in Table 3. It can be seen from Table 3 that, on average, the best results are achieved by the countries monitored under Target 4. The worst results are achieved on average by countries under Targets 1 and 5. The largest differences between countries can be traced under Target 2. Overall, the statistical analysis suggests that there are two extremes between the monitored countries in the form of best (max.) and the worst results (min).

The average results for all targets from the perspective of individual countries are shown in the graph in Figure 1 (countries are ranked from worst to best). For clarity and broader context, two typical funding systems are distinguished – the Bismarck model (green column) and the

Beveridge model (blue column). From this perspective, it is not possible to state a deeper connection between the type of funding model and the results of fulfilling the targets of Health by 2020.

Figure 1 - Ranking and mean of values of targets according to EU countries, in %

In terms of ranking, the Czech Republic is in 15th place out of 28 EU Member States, the average value of the Czech Republic for the five target indexes is 66.14 %, and this is above the average of the whole set, which is 60,26 %.

A comparison of the average values of the indexes of individual targets for all countries (Table 3) with the value of individual indexes of the Czech Republic shows that within the first and second targets the Czech Republic achieved below-average results, however within 3-5 targets above-average results and to the top three states.

Table 3 - Statistická charakteristika target index values

N=28	Index of Target 1	Index of Target 2	Index of Target 3	Index of Target 4	Index of Target 5
Average	57.58 (CZE 50.6)	61.74 (CZE 49.1)	61.93 (CZE 82.45)	65.84 (CZE 90.71)	54.22 (CZE 57.93)
Median	62.11	76.25	67.83	69.88	56.54
Maximum	90.56	100.00	88.91	93.95	90.72
Minimum	19.63	1.00	3.13	4.55	4.13
SD	19.23	32.01	24.26	23.60	21.71

4.2 Index of Targets of Health 2020 of the TOPSIS model

The results of the calculations of the multi-criteria evaluation of the performance of health systems according to TOPSIS method, where the evaluation criteria are the targets of WHO Health 2020, show (Figure 2, Figure 3) that:

- the best results are achieved by six states, in the range of 0.93–0.80 (Sweden, Netherland, Luxembourg, Finland, Denmark, Austria);
- above-average values or in addition to the above-mentioned countries reach 11 states;
- The Czech Republic achieves a slightly below-average value (0.559), however, in terms of former post-communist states, the Czech Republic achieves the best results;
- the worst results are achieved by Bulgaria (0.062) and Romania (0.095).

In summary, it can be stated that in 2015, in the context of the monitored indicators within the five Health 2020 targets, the differences between the EU countries were quite large. The results are generated by three groups of countries. The first group consists of the five countries with the best results, followed by 11 states with above-average results and 11 states with below-average results.

Figure 2 - Ranking of EU states according to TOPSIS results

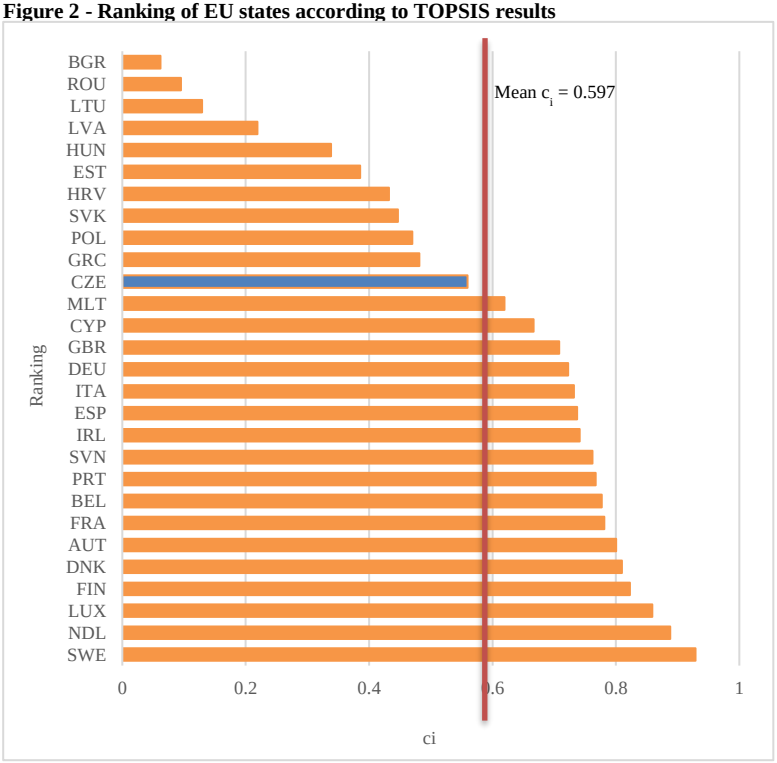
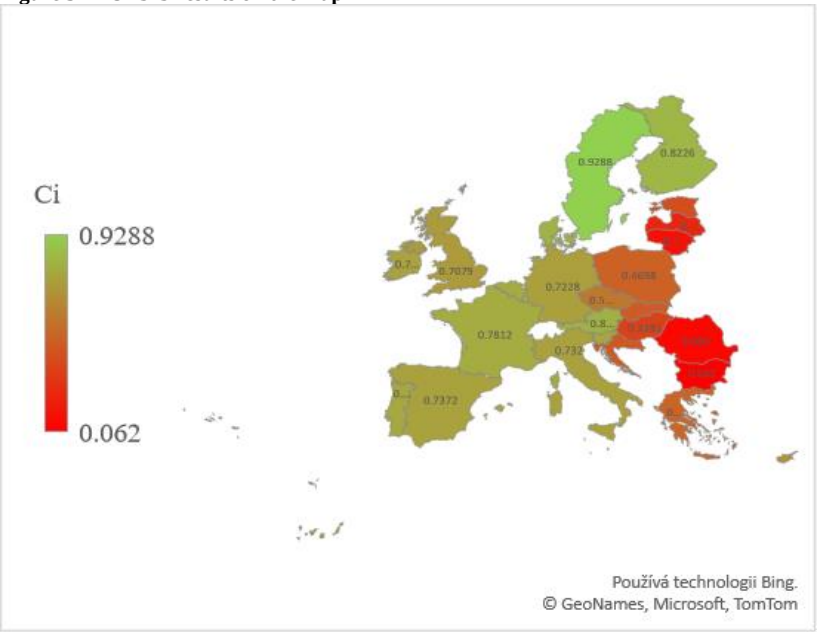


Figure 3 - TOPSIS results on the map



The results of the ranking of countries according to the TOPSIS method clearly did not confirm the results, which are presented in Figure 1, which is also evident in terms of the order when the Czech Republic is in 18th place and is below the average of 28 EU states. Obviously, the results are influenced by the weights set for each target. However, in both types of calculations, SWE (Sweden) is the best and BGR (Bulgaria) is the worst.

5 Conclusion

The paper dealt with the sub-topic of performance evaluation of healthcare systems of the 28 EU states by 2015, from the perspective of meeting the five Health 2020 objectives. These goals are defined by a set mix of specific indicators taking into account various factors (social, health and economic). The fulfilment of each objective is monitored through calculated indices (in %) of given indicators (Method 1) and these indices then form the evaluation criteria of the TOPSIS method (Method 2).

The evaluation shows that the 28 EU states are fragmented into four groups according to both methods - the first group consists of the five best performing countries, the second group consists of the above average performing countries, the third group consists of the below average performing countries and the fourth group consists of the very low (worst) performing countries. According to the calculation of method 1, where the indicators of the Health 2020 targets are not differentiated by weights, the Czech Republic belongs to the second group of countries with the above-average results. On the other hand, according to the calculation of method 2, where weights are assigned to the individual indicators of the Health 2020 targets (importance according to direct impact on health), the Czech Republic belongs to the third group of countries with the below average results.

Sweden has the best results in both calculation methods and Bulgaria the worst results. Post-communist countries (except the Czech Republic in method 1) perform below average in both methods. In this point of view, the results are in line with the findings of other authors (Zuidberg et al., 2021).

Two main findings emerge from the multi-criteria evaluation of the 28 EU Member States focused on the achievement of the first five Health 2020 targets as of 2015: (1) the final results, including the ranking of countries, are influenced by the chosen calculation method, in particular by the set weights of the criteria; (2) the fourth target, which includes a mix of criteria - Life satisfaction, Sanitation, School enrolment, Unemployment, GINI - has a significantly positive impact on the overall achieved results of Health 2020.

References

[1] ARDIELLI, E., VAVREK, R. (2019). Evaluation of eGovernment and Good Governance Development in EU Member Countries. *ACC Journal*. Technická univerzita v Liberci. 25(2): 7-20. ISSN 1803-9782.

[2] BARTÁK, M. (2012). *Mezinárodní srovnávání zdravotnických systémů.* Praha: Wolters Kluwer Česká republika.

[3] EUROPEAN COMMISSION. (2019). *State of Health in the EU.* [online]. [cit.2021-06-15]. Available: https://ec.europa.eu/health/state/country_profiles_cs

[4] JABLONSKÝ, J., DLOUHÝ, M. (2015). *Modely hodnocení efektivnosti a alokace zdrojů.* Praha: Professional Publishing.

[5] MENNE, B., EMILIA ARAGON DE LEON, A., BEKKER, M., MIRZIKASHVILI, N., MORTON, S., SHRIWISE, A., TOMSON, G., VRACKO, P., WIPPEL, C. (2020). Health and well-being for all: an approach to accelerating progress to achieve the Sustainable Development Goals (SDGs) in countries in the WHO European Region, *European Journal of Public Health*. 30(1): 3–9, https://doi.org/10.1093/eurpub/ckaa026.

[6] MINISTRY OF HEALT OF THE CZECH REPULIC. Health 2020. National Strategy for Health Protection and Promotion and Disease Prevention. [online]. [cit.2021-06-12]. Available: https://www.mzcr.cz/wp-content/uploads/wepub/8690/21944/Health%202020%20%E2%80%93%20National%20Strategy%20for%20Health%20Protection%20and%20Promotion%20and%20Disease%20Prevention.pdf

[7] OLSEN, K. M., DAHL, S. A. (2007). Health differences between European countries. *Social Science & Medicine*. Vol. 64, Issue 8, pp. 1665-1678, ISSN 0277-9536, https://doi.org/10.1016/j.socscimed.2006.11.031.

[8] PAPANICOLAS, I., SMITH, C. P. (ed) (2013). Health System. Performance Comparison. An agendy for policy, information and research. New York: Open Univerrsity Press.

[9] SOLÉ-AURÓ, A., CRIMMINS E. M. (2008). Health of Immigrants in European Countries. *International Migration Review.* 42(4):861-876. doi:10.1111/j.1747-7379.2008.00150.x.

[10] SMITH, P.C., MOSSIALOS, E., PAPANICOLAS, I. (2008). Performance measurement for health system improvement: experiences, challenges and prospects. World Health Organization. [online]. [cit.2021-06-10]. Available:

https://www.who.int/management/district/performance/PerformanceMeasurementHealthSystemImprovement2.pdf

[11] TOOR, J., ALSALLAQ, R., TRUSCOTT, J.E, HUGO C TURNER, H. C., WERKMAN, M., GURARIE, D., KING, C.H., ANDERSON, R. M. (2018). Are We on Our Way to Achieving the 2020 Goals for Schistosomiasis Morbidity Control Using Current World Health Organization Guidelines? *Clinical Infectious Diseases*. 66(4): 245–252. https://doi.org/10.1093/cid/ciy001.

[12] VAVREK, R., BEČICA, J. (2020). Capital City as a Factor of Multi-Criteria Decision Analysis—Application on Transport Companies in the Czech Republic. *Mathematics*. 8(10): 1765.

[13] VRABKOVÁ, I., ERTINGEROVÁ, I., KUKULIAČ, P. (2021). Determination of gaps in the spatial accessibility of nursing services for persons over the age of 65 with lowered self-sufficiency: Evidence from the Czech Republic. *Plos one*, 16(1): e0244991.

[14] WHO (2021). Health 2020: the European policy for health and well-being. [online]. [cit.2021-06-10]. Available: https://www.euro.who.int/en/about-us/regional-director/regional-directors-emeritus/dr-zsuzsanna-jakab,-2010-2019/health-2020-the-european-policy-for-health-and-well-being.

[15] ZHUIDBERG, R.J.M., SHRIWISE, A., BOER, M.L., JOHANSEN, S.A. (2021). Assessing progress under Health 2020 in the European Region of the World Heath Organization. *The European Journal of Public Health.* Vol. 30, No. 6, pp. 1072-1077.

Contact information

Ing. Ivana Vaňková, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: ivana.vankova@vsb.cz

doc. Ing. Iveta Vrabková, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: iveta.vrabkova@vsb.cz

Forming opinions on the role of the state in the beginnings of economic theory

František Varadzin

Abstract: The topic of the state in economic theory is addressed in this paper. Its purpose is to highlight the origins of such a commonly used category in economics, particularly in public economics. Its purpose is not only to provide a detailed record of its activities and changes, but also to emphasize the significance of earlier stages of economic thinking, which were developed in response to specific religious and socio-economic conditions and concepts of thought. Apart from sticking to the core European line, special emphasis is devoted to Central European authors, whose contribution to the concept of the state is largely overlooked by mainstream economics, which essentially means impoverishment of today's concept. The result of the paper is the assertion that in Central Europe since the 17th century there has been a specific concept of the state. The state was not the result of a social contract of individuals, but of a social and administrative institution functioning as a whole. The paper seeks to clarify the basic tendencies of thought that lead to the concept of the public sector and meritorious goods, because according to the author without methodological postulates one cannot understand the numerous statements of various authors, which in its consequences leads to unnecessary discussions and contradictions not only in the economic community but also between representatives of different political currents. This paper's ultimate goal is to contribute to the rationality of this debate.

Keywords: Cameralism, German historical school, history of economic thinking, mercantilism, state

JEL Classification: B10; B11, B12, H70

1 Introduction

Nowadays, we often forget the fact that our thinking is genetically dependent on the ancestors' ideological heritage. We accept the beliefs and attitudes that emerged in the past, without realizing it; we regard them as the dogma of our world, which is the result of the "revealed truth". However, if rationally critical thinking is to maintain the legitimacy of its existence, then to comprehend the contemporary world we must sometimes go back to the past and have a think about the meaning of categories and phrases by which we describe a new reality, often different in content from the reality in which the categories and phrases were born. Understanding the present in our conception also means knowing the past and the processes that took place in the minds of our predecessors.

The purpose of this article is to demonstrate the emergence of certain perspectives on the state as an economic category, which has distinct content at each stage and is thus a socio-historical phenomenon.

At the same time, the paper's scope is limited to the expansion of classical economics and is largely focused on the specifics of Central Europe.

2 Formation of the concept of the state in antiquity and the Middle Ages

The issue of the existence of public management, i.e., the state, as well as other public structures (church and self-government) and their operation in economic life, first appeared in the very formation of primary state societies. Today we can observe such phenomena as palace and temple

economies in Mesopotamian civilizations[8] and other ancient cultures. These economies developed alongside the general and private property, which took the form of family or individual property. It was not just about the land and the means of management, but also about the entire infrastructure - irrigation equipment, writing schools, state archives, etc. This was related to the tax system, which was based on land ownership or possession. It was typically in a natural form (1/10 to 1/3 of the harvest) or a work duty. The income from tributes, i.e., levies from dependent or semi-dependent states, was a significant part of the large empires' income. With further development, payments in metals (silver) are beginning to appear. From the beginning of the formation of public institutions, there were often leases of tax collection and the responsibility fell on the royal (temple) officials.

These epochs in civilization's development were reflected in the creation of laws. Here we can observe their ideological foundation here, especially in the preambles and declarative introductions. Following the proclamations of "liberation" from debt slavery, reduction of state administration power, exemption, or reduction of the tax burden, etc., we can point to the directions of influencing the state of real social and economic processes to maintain social balance. We can see from these known codes that the "invisible hand of the state" had a relatively strong influence on the life of the society at the time.

In ancient literature, we find relatively more comprehensive ideas about the role of society and the state. As an example, consider Plato, Xenophon's contemporary. In his Constitution[9], he defines the state as a necessary condition for human life and the functioning of society. His ideal state with communist elements is imbued with the idea of order, which determines regulatory rules that extend into the economic sphere. In some ways, this was a continuation of previous events, such as the Greek polis crisis, when several reformers arrived to try to reorganize social governance.[10] At the same time, it did not only remain with social reforms, but for example in Solon, we see currency reform, the introduction of a new system of weights and measures, and a change in the structure of state administration and justice. A deeper understanding of this way of thinking can be obtained by studying Xenophon's work "On Revenues,"[11] which is possibly the oldest systemic economic interpretation of this problem. The work was inspired by the efforts to rebuild Athens' destroyed economy following the Allies' defeat in the war (357-358 BC). He discusses the importance of state investment in infrastructure (ports, warehouses, and lodging facilities) as well as the advantages of state business in shipping and mining. In the spirit of the times, he is also considering the purchase of state slaves who will work for the benefit and well-being of the citizens. Simultaneously, he argues for the importance of maintaining peace in order for prosperity to grow.

---

[8] "The role of the temple in collecting and redistributing goods created the need for a whole new class of specialists, namely administration. Management became so complex that accounting procedures were needed…. This required the skills of people familiar with the tools and procedures of the bureaucracy." .“ (VAN DE MIEROOP, M. *Dějiny starověkého Blízkého východu, okolo 3000-323 př. Kr.* Praha: Academia, 2010, s. 38) Similarly, it is possible to point to King Entemen (ca. 2430 BC) and his public strikes and the implementation of conscious social reforms (KLÍMA, J. *Lidé Mezopotámie*. Praha: Orbis, 1976, s. 201) and other examples of the existence of the public sector.

[9] Platón, *Ústava*. Praha: OIKOYMENH, 2001.

[10] From the extensive literature see FREL, J. *Od tyranů k Sokratovi. Malý český Plutarch*. Praha: Mladá Fronta, 1969; OLIVA, P. *Sparta a její sociální problémy*. Praha: Academia, 1971.

[11] Published in Czech In: XENOFÓN, *Řecké dějiny*. Praha: Svoboda, 1982, s. 313-327.

Other approaches can be found here, for instance, Aristotle's[12] approach to the interpretation of the role of the state as a community of free citizens, which has never been denied. The reason for this was the fact that in the Greek Polis, and transferred to the Roman reality, it was impossible to imagine a citizen who did not belong to the community. Individualist conceptions of classical and neoclassical methodology were also something beyond medieval man's existence. His connection to other members of the community was an important part of his opinion anchor.

The transition between ancient and medieval thinking on public affairs was complicated. Aurelius Augustinus,[13] a major Christian theologian, recognizes the divine and earthly states, though these terms do not always have the same meaning. The divine state is a socially hierarchical ecclesiastical phenomenon - a heavenly community of the elect, whereas the earthly world is a society of doomed devilish beings. The earthly state is a violent institution that responds to sinful human nature and is not founded on the principle of justice. He then views human history as a fluctuation between the two states. His historical periodization is based on the Bible. Unlike Plato, the Community is a theocratic society whose purpose is to save Christians in this world, rather than a divine state of philosophers. This concept was later reflected in the conflicts between secular and ecclesiastical structures that pervaded Christian civilization's development. It also lasted into the modern era in various forms, such as the debate over the nature of Indians as beings, when the church recognized baptized Indians as members of the colonial community, which did not suit the conquistadors or the Spanish state's interest in immediate profits.[14]

The goal of life, according to the supreme Christian thinker Thomas Aquinas, is contained in the "eternal law," which contains God's will and the intention of enlightenment, which even his will cannot change, and which becomes a natural law for man and is gradually expressed in his mind. People are obligated, according to him, to preserve their lives, to know the truth about God, and to live in society."[15] The material-technical and natural conditions of the medieval inhabitants determined their social ties. The system's social existence was determined not only by horizontal but also by vertical ties.[16] Simultaneously, Thomas Aquinas asserts that "society contains, creates, and preserves all human fields; it carries out the highest perfection of the human species. As a result, its welfare, as well as the welfare of the species, takes precedence over the welfare of the individual".[17]

Ideologically the then European society was not oriented towards maximizing the benefit of the individual. Not that many of them did not strive for it, but it was regarded as undesirable because the basis of the ideological fulfilment of life was spiritual life, frequently accompanied by asceticism. In this sense, the value of material goods is positive when used for higher purposes.

---

[12] ARISTOTELES. *Athénská ústava*. Praha: Baset, Arista, 2004. Here he attempts to capture the logic of the functioning of public administration with an empirical description and historical insertions.

[13] Viz AURELIUS AUGUSTINUS. *O obci boží I, II.* Praha: Karolinum, 2009.

[14] See the work of the church dignitary Bartolomeo de Las Casas from 1552 for Charles V. (DE LAS CASAS, B. *O zemích indijských pustošení a vylidňování zpráva nejstručnější.* Praha: Lidová demokracie, 1954) The last important chapter in the dispute is probably the liquidation of the "Jesuit state" in Paraguay.

[15] HÖFFDING, H. a J. KRÁL. *Přehledné dějiny filosofie*. Praha: Nakladatel František Strnad, 1941, s. 84.

[16] See more PETRÁŇOVI, L. a J. *Rolník v evropské tradiční kultuře*. Praha: Set Out, 2000.

[17] BÍLÝ, J. *Homo oeconomicus evropského feudalismu*. Plzeň: Vydavatelství a nakladatelství Aleš Čeněk, sro, 2014, s. 286.

In Thomas Aquinas, the relationship between society and the individual is solved as a dialectical connection, where the individual cannot exist without society and society cannot exist without the individual. In this sense, society exists as an entity that takes care of its members and therefore ensures the general well-being of its members.[18]

This point of interpretation then became the ideological basis, when the government was interpreted by God's will as a means of protecting members of society, including the weakest. As a result, the medieval church was also conceived as part of the "divine" state's social policy. It is obvious that an ideally conceived state was often in contrast to reality. Rather, it resembled Hobbes's "Bella omnia contra omnes," but on the other hand, many self-sacrificing individuals in the organizational structures of society at the time respected these moral imperatives resulting from the institution's religious conception, thereby aiding in the preservation of society as a whole, albeit without preventing negative phenomena. It is necessary to realize that the Church, as a social organization, carried all the contradictions of the society of that time[19], but for its functioning, it had to maintain a considerable degree of ideological closeness, otherwise, it would disintegrate. As a result, doctrinal disputes arose, which, to a large extent, reflected societal problems, though we may not always understand them today due to word content shifts, different symbolism, incorrect interpretation of analogies and allegories, and so on. On the other hand, we see the conscious performance of many functions and activities by ecclesiastical organizations, which we now associate with the state as the guarantor of public goods (education, health care, librarianship, etc.).

The Middle Ages saw a significant fusion of state and ecclesiastical institutions in European cultural content, and thus their concepts of thought merged, though the duality of the divine and earthly state remained and constantly intertwined history and took place as a dispute between secular and spiritual power. There are also differences of thought between the contemporary and the then use of many categories, so that, for example, many of our terms used in the field of public goods at the time does not make sense. One of the most distinguished Middle Ages scholars put it succinctly: "Latin originated in a completely different era, the meaning of words used in antiquity and the Middle Ages changed, while the language itself remained the same as before... Latin overshadowed their signs of a qualitative breakthrough in world development…"[20] Self-government is one example. Until Hussite times, the highest representative in Czech lands in royal towns was the advocatus, who was originally a "locator civitatis," then a leaseholder (collector) of royal taxes and the king's deputy. His primary responsibilities were to uphold the law. Advocatus' revenues came from various royal privileges (court fines, customs revenues, and ungelt (medieval market fee), shops, and etc).

Councillors were elected to serve as self-government representatives, but their appointment was not uniform. Throughout the year, the councillors rotated in the position of Burgomaster, which was created as a counterweight to the advocatus. The Burgomaster was in charge of the city seal and was involved in municipal law-making. The councillor and the Burgomaster had the right to receive municipal revenue. The scribe was an important position, and Prague's highest scribe was known as the chancellor. The number of scribes differed depending on the size of the town and the number of languages spoken (Latin, Czech, German). The scribe's office was often

[18] For this concept, see Bílý, J. cds 296-302.
[19] In this context, Zikmund Winter writes that "For example, public notaries in our country, as in Italy, sat at their tables in temples, chapels and cloisters practicing their writing and legal craft. The Olomouc Order from 1318 forbids priests to compose and write threatening, arson letters to the arsonists." (WINTER, Z. *Život církevní v Čechách II*. Praha: Nákladem české akademie císaře Františka Josefa pro vědy, slovesnost a umění, 1896, s. 899)
[20] GUREVIČ, AJ *Kategorie středověké kultury*. Praha: Mladá Fronta, 1978, s.100.

associated with teaching at the town school, as the teacher was an assistant scribe. The most important position was held by the primas (mayor), i.e., the first councillor who was responsible for the management of the town. The councillors had paid officials at their disposal, who were paid individuals who collected the tax, delivered the summons to court, and performed other administrative tasks. It was also about the advocatus' assistants, helpers, and other individuals.[21] From the point of view of the concept of self-government, we can observe that the advocatus enters the Hussite wars as "the body of the lord of the town, soon the representatives of the town self-government stand next to him, who over time participate more and more in decision-making in urban matters".[22]

At the same time, towns were not only producers of public goods (administration, justice, protection), but also had their own economic dimension in the form of Mile Law, which restricted economic activities in areas adjacent to the town, commanded routes for buyers and warehouse rights, which required them to offer local merchants their goods. An economic policy that increased economic power resulted in the acquisition of urban property by the town and its inhabitants. As a result, towns are transformed into nuclei that begin to connect the surrounding territories into their reproductive process. This complex activity means an increase in the need for a new approach to economic theory. It can no longer contain ethically moral approaches but must instead respond to the practical needs of the economy.

3 The birth of the modern concept of the state in Central European economic thinking

With the advent of the Renaissance in the 14th century in Italian city republics, economic activities related not only to production (textiles, glass, iron products, etc.) but also trade, transport, banking, education, etc., began to develop actively. The need for economic development became a regular part of state activities. The transition from a natural into a monetary economy began to emphasize the issues of financial administration (taxes and expenditures), infrastructure construction (roads, ports, forts), professional state bodies (army, administrative authorities) are created, and thus the entire course of society is transformed.

The birth of mercantilism, a system of economic thinking based on the opinions of merchants and financiers, the first social groups that specialize in economic activities, is a reflection of this process. A dual approach can already be discerned within this first identifiable direction of economic thinking. Where this change in human attitudes and opinions was triggered by the rise of the middle classes' power (Italian city republics, Venetian and Flemish cities, business centres such as London or some Hanseatic cities), we can notice a tendency to limit state influence on economic development, as "nobility" was interpreted as a consumer of resources and defender of the "old order". On the other hand, it can be observed that many rulers are aware of the need for change, as evidenced by de Suly and later Colbert as representatives of conscious reforms in France, Prussian state reforms in the 17th and 18th centuries, etc.[23]

However, systematic organization of views on the role of the social sector in the national economy is associated with a special branch of mercantilism known as cameralism. The issue was that the conflicts of the 16th to 18th centuries had a significant impact on Central Europe. These were religious wars, wars with the Ottoman Empire, and dynastic disputes over European hegemony between the Habsburgs and other families. Due to the peculiarities of historical

---

[21] The description of the structure see WINTER, Z. *Kulturní obraz českých měst. Život veřejný v XV. a XVI. věku. I.* Praha: Nákladem matice české, 1890, kniha IV. Úřady a obce.
[22] KEJŘ, J. *Vznik městského zřízení v českých zemích*. Praha: Karolinum, 1998, s. 235.
[23] Here, the classical concept from Macchiaveli to Hobbes and other classics is not further explained.

development, there were a large number of states and small states (more than 300), and the position of landowners – the nobility – had been adjusted due to the demand for food in the relatively fast-growing economies of France, the Netherlands, and England. The so-called "second slavery" is emerging here, and all of this contributes to the strengthening of the states' feudal-clerical character. J. Bodin's teachings (1530-1596) also played a role. This is especially true of his work *Methodus ad facilem historiarum cognitionem,* which is based on the idea that God, who gave the laws to the world and man in his creation, is not responsible for acting on the principle of good and evil. Man is endowed with free will and must seek the meaning of his actions under the pressure of circumstances. The history of Bodin's method reveals more than just God's laws, but it also determines the goals that the state should pursue at a given historical stage. Natural law and the state system are the curricula in this sense, but politics, as defined by Aristotle as a science of the coexistence of man and state, modifies these fundamental principles of society. Natural factors, race, cultural coexistence, and other aspects of social existence all have an impact. The historical-philosophical method, which is based on comparison, allows one to learn about the natural divine principle and individual-specific forms that emerge in a given historical situation.

Bodin's concept had an impact not only on legal disciplines, but it also justified a particular way of viewing state administration's functioning. The fact that it did not fully converge with Roman law principles was a significant shift in this concept. In the Central European concept, it was no longer about universal principles and recommendations, but about measures that were appropriate for the time and circumstances. In Bodin's view, the state is more than just an aggregate of families; it is an economic unit that begins to distinguish rulers as both functions of the state and specific individuals. This establishes the basis for the separation of state property (public) and the monarch's personal property, which has the same character as other private property.

Thanks to these ideas, the ground in the German area is prepared for the operation of public sector workers. As a result, the first works dealing with the state's relationship to society and the proper functioning of the apparatus appear.[24]

At the end of the 15th century, the forefathers of German cameralists appeared in Italy. (Johanes Betrachinus - *Tractatus de gabelis, tributis et vectigalibus* (1489), Petras de Antibolus - *Tractatus munerum* (1493) These were rather instruction manuals explaining the fundamentals of taxation. The first representatives of cameralists followed Aristotle's policy. Christian Thomasius (1655-1728) had a significant impact on Aristotle's conception of the state. He was not an atheist, but he was among the first in Central Europe to attempt to explain legal and philosophical thinking regardless of religion.

According to Thomasius, science does not have intrinsic value; rather, its purpose is to provide procedures for problem solving. As a result, the task of politics is to create the best possible living conditions rather than the best possible state model.

Consequently, as seen in the works of the most prominent mercantile cameralists von Becher, von Hörnigk, and von Schröder, many thinkers influenced by Thomas endow cameralism with a practical character. Von Pufendorff, who views natural law and society as independent of religious principles, is also influenced by this approach. It is conceptually based on other thinkers of the constitutional conception, such as Grotius and Hobbes. Philosophically, he accepts Spinoza's and Leibnitz's approaches.

---

[24] For more information on this issue, see NIELSEN, H. *Die Entstehung der deutschen Kameralwissenschaft im 17. Jahrhundert.* Jena: Verlag von Gustav Fischer, 1911.

Cameral studies are defined broadly as the science of governance of local authorities and public enterprises. Thus, the cameral sciences included public accounting, management theory of economic and social subjects, law, and economic policy principles. As a summary of this knowledge, the term Policeywissenschaft was also used. (Policey - social, public.)

Thus, the cameral studies evolved into a science of state economics, the operation of state administration, and the issues of asset management. Simultaneously, groups of the so-called cameral sciences began to emerge. King Frederick Wilhelm I of Prussia established the first departments with a cameralist concept in Halle a der Saale in modern-day Saxony and Frankfurt a der Oder (1727) known as Cameralia Oeconomica und Policeywissenschaft). As a result, the cameral studies began to take shape as a science of state economics, the operation of state administration, and the issues of asset management. The so-called cameral sciences groups began to emerge as well. Johann Friedrich von Pfeiffer (1717-1787), a theorist of an absolutist economy based on the state's decisive role in the functioning of the national economy, was one of the key representatives.

The Thirty Years' War had a significant impact on the spread of absolutist ideas in the German area of the Holy Roman Empire. At the time, the population of the estuary, which was controlled by the Netherlands and Sweden, was declining, as was Germany's foreign trade. There was no single market because the entire territory was highly fragmented. The Holy Roman Empire included 166 secular states, 68 ecclesiastical states, and over 100 imperial cities.[25] All of these territories had varying degrees of sovereignty and their own state administration, both of which were required to be saturated with educated officials. At the same time, Prussia's "demonstration effect" had an impact.

The "Great Elector" Friedrich Wilhelm's practical measures to entice expelled Huguenots from France, particularly the Edict of Potsdam (1685), in which he guaranteed tolerance of Calvinism alongside the dominant Evangelical Lutheran faith, exemption from customs duties and taxes, and subsidies to start businesses, resulted in Prussia and Brandenburg's economic prosperity. This was preceded by the reception of Jews expelled from the Habsburg Monarchy (1671). Von Pfeiffer generalized these experiences and findings from personal activities in many works he began publishing in 1768. (Main works *Lehrbegriff sämmtlicher oeconomischer und Cameralwissenschaften* 4 volumes after 1770). His works are empirical in nature and are regarded as typical cameralist thinking. Perhaps this is why they were so prevalent, as they addressed specific issues with economic functioning. (For more details see *Von Pfeiffer*. Allgemeine Deutsche Biografie. Leipzig: Oveus - Philipp, 1887, pp. 641-642)

Johann Heinrich Gottlob von Justi was the second most important author (1720-1770). He began his career with the Prussian army as a regimental lodging provider after studying at the universities of Wittenberg, Jena, and Leipzig (staff rear function). Following additional practice in Saxony-Eisenach, he was appointed professor of cameral studies at the newly established Theresian Academy in Vienna. Later, he took over as professor of rhetoric. He collaborated closely with Friedrich Wilhelm von Haugwitz, a Theresian reformer. After the failure of silver mining, he left the Habsburg monarchy and went to work as a lecturer at the University of Göttingen. He then rejoined the Prussian army, but his efforts failed miserably, owing in large part to corruption. After his arrest in Küstrin, he died there.

His work was centred on reforming the Holy Roman Empire's larger territorial units. He envisioned the empire as a military and economic counterweight to the then-great powers of

[25] *Teritorium in Heiligen Rőmischen Reich*. In: de.wikipedia.org/wiki, kategorie: Teritorium-in-Heiligen-romischen-Reich

France and England. He drew on the work of French authors such as Fenlon, Sain Pierre, d'Argenson, and Montesquieu when writing his attitudes. As a result, he favoured private ownership and limitations on monarchist government. The government, on the other hand, must promote and coordinate necessary reforms, as well as support social measures for population growth. At the same time, it allows for certain foreign trade regulations to ensure the growth of productive forces. He specifically advocated for the abolition of octroi, i.e., a specific tax levied on food. The government ought to raise funds for the implementation of the goals by reforming the tax administration, i.e., abolishing excise duties and increasing the taxation of personal income. Agriculture and mining, which were intended to have an anti-import effect, were vital to him for the economy's development. Catherine the Great, the Russian Empress, had a strong influence on his approach. (For more details see *Johann Heinrich Gottlob von Justi*, *Allgemeine Deutsche Biography*. Leipzig: Jetzer - Kähler, 1881, pp. 747-753).

Joseph von Sonnenfels (1732-1817) was an important figure in the cameral sciences in the Habsburg lands. He came from the family of a Brandenburg rabbi. His father's name was Valter Lipman Perin, he converted to Catholicism in Vienna, and thus acquired a new surname. In 1746 he was elevated to the nobility as a free lord von Sonnenfels. His son Joseph von Sonnenfels, born in Moravia, studied law and worked for Count Hastig, another important Theresian official. In 1763, Joseph von Sonnenfels was appointed professor of Policey- and Kameralwissenschaften at the University of Vienna. He was one of the great proponents of the Enlightenment and was also a Freemason. Maria Theresa appointed him to the Court Council at the Secret Czech and Austrian Court Offices in 1779.

Christian Wolff (1679-1754) played an important role in shaping the environment in which Sonnenfels worked. He was a prominent lawyer, Enlightenment philosopher, and mathematics professor whose influence extended beyond the German border. He was a member of several royal learned societies, including the Academy of Sciences in St. Petersburg. He was inspired by Thomas Aquinas and preferred Leibnitz's ideas in his nationalism. His ideas were spread throughout the Habsburg lands by the first learned society in the monarchy, Societas eruditorum incognitorum in terris Austriacis, and the first scientific journal, Monatliche Auszüge.

Wolff held views similar to Aristotle on the concept of the state and public activities. However, he asserts that economics is the foundation of politics. One of the most important matters is to ensure the well-being of the state's citizens. Of course, he accepts the thesis that the meaning of human life extends beyond satisfying needs, and thus the state must care for its citizens' morale.

This leads to the concept of a regulatory state, which will set interest rates, among other things. It also intends to enact legislation governing working hours and wages. The reason for this is man's limited rationality, which prevents people from recognizing their true interests.

Since he was involved in various Theresian and Josephine reforms, it is difficult to pinpoint the main focus of this Mikulov native's activities. His efforts can be traced back to the use of standard German; he intervened in theatres; he actively participated in the legal settlement of the Jewish position; and his other activities are associated with police strengthening, etc. His contribution to judicial reform, particularly the prohibition of torture (1776), and his motivation for a comprehensive legal and judicial reform under Joseph II are particularly noteworthy. Joseph von Sonnenfels was not an original thinker in terms of creating new concepts, but in his works, he presented the ideas of several personalities in simple formulations - Turgot, Montesquie, Rousseau, Locke, and others. Von Justi's work was one of his most important sources. His cameralist work primarily consisted of *Leitfaden in den Handlungwissenschaften und in der Policeywissenschaft* (1776) and the three-volume textbook *Grundsätze der Policey-, Handlungs- und Finanzwissenschaft* (1765-1776).

His works exhibit a cameralist approach. He preferred the welfare of the state and the formulation of rules of conduct in political science. He was an ideological supporter of absolutism, which was to be mitigated by philanthropic approaches. That is why he was well-liked by both Maria Theresa and Joseph II. His professor's salary was significantly increased immediately following the publication of the first part of his textbook, and after Volume II, he received the title of Government Council in addition to the higher salary. Besides his professional activities, he was involved in belles-lettres and maintained relationships with many authors. (J.W. Goethe, G.E. Lessing, and others).

Sonnenfels, through his pupil Josef Ignác Buek (Butschek), also had a significant impact on the overall situation in the Czech lands in terms of ideological ferment. The formation of economic thinking in the countries of the Czech Crown reflects the overall situation in Central Europe. The reason is the affiliation with the Holy Roman Empire and the incorporation of these countries into the Habsburg system. The situation was further complicated by the fact that, following the re-establishment of the land, a large part of the intellectuals, led by J.A. Comenius, left and the natural process was not restored for many decades.

Own economic writings or writings with economic themes appeared here as early as the 16th century. This is, for instance, the famous work of the Bishop of Olomouc *Dubravia De pisonis (On ponds*) or instructions for farmers by Jan Brtvín from Ploškovice or property management by Mikuláš Černobyl. Both writings were published together near Veleslavín in 1587 under the title Hospodář. In the 17th century, the "*Instructions of Friedland*" by Adam Chval Kunáš of Machovice (1628) were expanded, as was the work of an economic administrator for the supervisor at the Jesuit estate *"Oculus domini"* by the Jesuit Kryštof Fischer, which was translated from Latin (1680) into German (1690) and Czech by the Jesuit Jan Barner under the title *"Economic Books*". The arrvial of mercantilists (P.H. Morgenthaler, F. Š. Malinský from Maliv), who, like Becker, Hörnigk, and Schröder, demanded active state policy and public support for the construction of their own production capacities and state infrastructure[26] is linked to further development in the Czech lands. In addition to general considerations, specialized works on transportation infrastructure (Kryšpín Fuk from Hradiště, an abbot of Strahov, a former merchant and later senior official of the Czech governance Gerhard Leux from Luxenstein) also appeared. The most famous of them was probably Jan Kryštof Bořek (1664-1730), a high-ranking official of the Czech governance, who, among other things, demanded that the state take over the construction and maintenance of roads into its administration. Simultaneously, he opposed private tolls because they increased the cost of economic development.

Only the advent of Theresian reforms brought a great impetus for the development of economic thinking in the Czech lands. The entire spiritual milieu established by recatholicism following the Thirty Years' War began to shift[27] under the influence of these reforms. Simultaneously, the administrative apparatus, religious groups, law, the army, education, and other institutions are undergoing changes.[28]

Karel Jindřich Seibt was the individual who most embodied the dawn of the new era. (1735-

[26] For more details, see KLÍMA, A. *Manufakturní období v Čechách*. Praha: Nakladatelství ČSAV, 1955, subkapitola II. 1., Merkantilismus v Habsburské monarchii.
[27] For this transformation, see WINTER, E. Josefinismus a jeho dějiny. Příspěvky k duchovním dějinám Čech a Moravy 1740-1848. Praha: Nakladatelství Jelínek, 1945.
[28] For more details, see Kol. autorů. Počátky českého národního obrození. Praha: Academia, 1990.

1806). He was a native of Upper Lusatia, studied humaniora [29] in Kosmonosy, and philosophy and law in Prague. At the age of twenty, he left for Leipzig, where he was educated by several excellent educators. Seibt himself acquired these skills and after returning to Prague began lecturing free of charge. He earned his living as a secretary to the archbishop's consistory. After the abolition of the Jesuit order, he became the director of philosophical studies and grammar schools (1775). He was an advocate of "social capitalism," i.e., strengthening the individual's position by the use of social ties. He was founded on utilitarianism, and he did not consider enrichment to be a sin. He considers the state as the result of the organization of citizens. In *Von der Einflusse der Erziehung auf die Glückseligkeit des Staates,* he claims, "The general bliss of the state is nothing but the individual bliss of citizens." (SLAVÍK, B. *From Dobner to Dobrovsky.* Prague: Vyšehrad, 1975, p. 44) However, he had some conflicts with the Vienna court mainly due to the permission of forbidden books. Maria Theresa, on the other hand, eventually came to his aid.

Seibt was the "head" of non-Austrian German culture, which included personalities such as S. Rautenstrauch and F.K. Kresl, who later held important positions in the Austrian administrative apparatus. The non-Austrian orientation was counterbalanced by a group centred around the Society for Plowing and Freedom of Crafts. They met at the noble families of Nostic and Fürstenberg. These included J. Dobrovský and F.A. Pelcl, and for a short time they also published the magazine Prager gelehrte Nachrichten (1771-1772). Many experts in the field of natural sciences, such as Jan Křtitel Boháč (1724-1768), Ignác Born (1742-1791), touched on some economic issues. Boháč attempted to describe the relationship between agriculture and industry and Born saw the main cause of the backwardness in the lack of education of the population and the application of scientific knowledge. In his conception, society's role is in the implementation of institutional reform with a focus on the advancement of science.

Among them, Josef Buček (1741-1831) was a pure cameralist economist. He was born in Příbor in the family of a draper. He became an officer in the Habsburg army after studying philosophy in Olomouc and law in Vienna, and as a result, he got to know a large part of the monarchy and Germany. As a disciple of Sonnenfels, he accepted his conception of the three-layered system of political science (police, business, and finance), which he applied in his work as a professor of the political and cameral sciences at the newly established department within the Faculty of Arts of Charles University. He acquired his professorship on the basis of Sonnenfels' influence and lectured here for another forty years. In 1784, these lectures were transferred to the Faculty of Law. At the same time, Buček took part in the activities of the Patriotic Economic Society, and when the first department of agricultural sciences was established at the Faculty of Arts in 1776, he was also appointed professor here. It was abolished in 1781. His most important writings were *Versuch über die Absichten der Landesregierung bei Leitung der Landwirtschaft* (1768), *Grundriss der Forstwirtschaft* (1778), *Abhandlung von der Polizei.* He also published a book on finance, *Geschichte und Betrachtungen über das böhmische alle und neue Finanzwesen* (1790).

He was a supporter of natural law and promoted the need for state intervention in agriculture (agricultural reform). He also raised his successor Václav Gustav Kopetz (1781-1857). However, this native of Chodová Planá was gradually transitioning from cameralism to classical economics, and his main ideological inspiration was K.H. Rau (1792-1870). However, he brought A. Smith and other classical economists to the Czech lands. We might consider Jiří František August Buquoy among those who developed partly in the cameralist tradition, but

[29] The study of humaniora was a lower level of education than the study of superiora. This system was originally introduced by the Jesuits, with the lowest level of study being inferiora.

already in their work, the germs of classical theories surfaced.[30] He was a polymath who lived on inherited estates, and his most important economic work was *Die Theorie der Nationalwissenschaft let einem neuen Plan und mehreren eigenen Ansichten dargestellt* (Leipzig, 1815). The work has two parts, the first is devoted to production technologies and calculations, the second is devoted to the description of the course of practical activities. He wrote three more additions, in which he addressed, among other things, the issue of economic institutions of the state, taxation, and technology.

His uncle, Count Jan Buquoy (1741-1803), after whom he inherited property, established the first general school system and social institution on his estate, which is interesting from the standpoint of public economics. Thanks to that, Joseph II. called him to Vienna to help the monarchy establish similar social institutions. This was the germ of systematic social care, which developed in later years.

The discrepancy between practice and theoretical views can be observed in the formation of Poland's economic thinking. The first representatives of mercantilism, Andreas Fricius Modrevius (1502-1589) and M. Rej (1505-1569) formulated a rather stronger conception of the state here, but in later development the influence of the estate conception of the nobility manifested itself. The power of the magnate families was so enormous that no theoretical interpretations, nor the growth of the economic power of the surrounding states, could push through the necessary economic reforms. The reformers' experiments, of which Hugo Stumberg Kolltaj is arguably the most well-known, and his contribution to the Constitution on May 3, 1791, were no longer able to prevent Rzecz Pospolita's disintegration.[31]

4 The influence of cameralism on the further development of the concept of the state in Central Europe

In German economic thinking, the concept of collective needs and collective goods had a strong position based on the previous cameralist tradition. Many works contain interesting observations that, to this day, economic theories do not always fully appreciate. L.H. von Jakob (1759-1827), who switched from philosophy to economics at the age of forty and, on the basis of J.B. Saye, considered state management as public consumption but placed it on the level of private economic activities, made a significant contribution to theoretical thinking. The loss of the company due to taxation must then be compensated by an increase in the benefit of state-financed consumption. The principle of thrift in public management, he believes, is the most important moment, and only what follows from the nature and character of civil society is public. Another group of economists could be studied, including G. Hufeland (1760-1817), K.H. Rau (1792-1870), Lorenz von Stein (1815-1890), A. Wagner (1835-1917), and others. [32]

It is sufficient to point out the richness of thought in one of the most important representatives of the German historical school, A. Wagner, on the basis of the division of the economy. He distinguishes individual economies, i.e., units led by a unified idea of natural or legal entities and

---

[30] In addition to economics, he had several inventions in the field of glassmaking, he founded one of the first nature reserves in our territory - Žofínská and Hojnovický primeval forests. (1838).

[31] For a basic overview of Polish thinking, see GROLOWSKI, Ž. *Rozvoj pojeć ekonomicznych w Polsce w końcu XVIII wieku.* Warszawa: Towaryzystwo wyższych kursow handlowych, 1908

[32] In the 19th century, the ideas of the classical state based on "contract social" associated with classical economic thought (A. Smith, D. Ricardo) began to prevail in Central Europe in later years, the contribution of Italians (U. Mazzola, M. Panteleoni and others). However, this broader context is not monitored here due to the scope of the paper.

divides them into individual, family, legal private persons (associations, cooperatives, joint ownership), public persons (municipalities, state, and other public organizations), and further he divides them into private, based on personal (profitable interest) and general, following economic principles in general.

The opposite of individual economies is the national economy, in which there is no single will (except for centrally controlled economies). He describes this as an organic or social concept of the national economy. This system is driven by psychological motivations. The operation of the system is then based on a voluntary or forced principle. He sees the solution in the concept of Stein's administrative doctrine as the heiresses of the mercantilist Polizeiwissenschaft.

The extensive legacy of German economists was reflected in American institutionalism and also influenced the development of economic thinking in the 20th century in Germany.[33]

Bernard Bolzano was a specific figure who was intriguing, yet almost did not impact the development of ideas in the Czech state in the form of followers, in economic thinking about the challenges of a public economy in the Czech lands (1781-1848).[34]

The work *On the Best State* was written as a utopia about the functioning of society, and Bolzano originally considered publishing it, but in 1848 forbade it to be published. After 100 years, it was finally printed in German in 1932 and Czech in 1934. Nonetheless, we know that this work was well-known, as evidenced by the fact that several authors wrote about it.[35] He was self-taught in terms of economic theory's roots, and even Buquoy's then-famous treatise Die Theorie der Nationalwirtschaft remained uncut in his large collection. However, he was influenced by the French utopians Saint Simon, Etien Cabot, the reformer of Prussia von Stein, and others.

His utopian socialism and communism led him to a different vision of the public sector than anyone in the Czech lands could have envisioned in the nineteenth century. For instance, he proposed the abolition of private ownership of houses and flats and their replacement by municipal ownership, with rents to be derived from the cost of acquisition and maintenance. He saw the basis of the administration in the municipality, demanded the creation of institutional science as a structure of payment from state money and taxation should be only on persons with above-average incomes[36]. His disciples and friends, such as J. Hoffmann, R. Zimmermann, K. Lieblein, and others, tried to promote his socio-economic ideas even after his death. Several hundred of his exhortations[37] were thus published between 1849 and 1852, and others in 1884.

Bolzano's influence on subsequent thinking development in the Czech lands was limited, as his concept was widely rejected and the author himself did not specify how to achieve "the best state." However, thanks to his flawlessly rationally working intellect, he created an inspiring

---

[33] For more details, see VYBRAL, V. *Německá teorie státního hospodářství*. Praha - Brno: Nakladatelství Orbis, 1937.
[34] For more details, see SEIDLEROVÁ, I. *Politické a sociální názory Bernarda Bolzana*. Praha: Nakladatelství Československé akademie věd, 1963.
[35] See e.g. BRAF, A. *Politické vědy v Čechách na sklonku věku osmnáctého a v první polovici devatenáctého*. Tiskem ALOISA WIESNERA v Praze Nákladem České Akademie 1909; HORÁČEK, V. *Bolzanův nejlepší stát*. V Praze: Nákladem vlastním,1907.
[36] For more details, see BOLZANO, B. *O nejlepším státě*. Praha: Mladá fronta, 1981.
[37] Exhortation has no equivalent in the Czech language. It originated from the Latin "exhortatio" - sermon and from the German "Erbauungsrede" - exhortation, command, incitement. Probably the best translation is educational speech. Selection from Bolzano's exhortatios see BOLZANO, B. *Exhorty*. Praha: Nakladatelství Lidové noviny, 2008. A total of 577 Bolzano's exhortations are known.

image that makes one think even today. Following generations of Czech economists attempted to apply the findings of economic research to Czech conditions, and so adopted classical economics and the Austrian school of thought.

The basic Czech work in the field of state and municipal management was written in 1887 (second edition 1892) by Josef Kaizl (1854-1901). This doctor of law worked as a private associate professor at the University of Prague. He taught national economics and financial sciences here. He also served as finance minister in Thun's government.

Ideologically, he was influenced by the German historical school (A. Schäffle), with whom he became acquainted closely as a scholarship holder at the University of Strasbourg, and the Austrian school's subjectively psychological approach. He was the first author to publish a comprehensive textbook of economics in Czech.[38] His main focus was on the so-called socialism "ex cathedra". This was reflected in his conception of the state. He saw the centre of his activities in the social-economic policy. Unquestionably, the state's and municipalities' active approach to public finances was reflected in its concept of public finances. In this area, he published a major work that sought a systematic interpretation of finance from the perspective of public entities.[39]

Book I deals with "public management and financial science" and defines municipalities and their management, political economy and state sciences, municipal property, and their budgeting. It concerns general and societal needs, and even formulates the germ of the "free-rider" theory. "Even where it would be possible to leave the provision of such needs to a private act, the activity of the state (municipal) evidences that satisfaction through a private group of citizens at private and special costs would prove at the same time satisfying the need for citizens who they did not accede to the group and their costs: e.g. lighting, drainage, medical equipment, etc.“[40] This Kaizl's work became a basic textbook of the approach to public sector issues even during the First Republic. However, Karel Engliš (1880-1961) took the lead then.

In the writings of Frederyk Skarbek, we find a gradual transition to the classical concept of the state in Poland (1792-1866). In his work Gospodarstvo narodove I, II. (Warszawa 1821) economics is understood in the context of administrative sciences, and in the later work Ogolne zasady nauki gospodarstwa narodowego czyli czysta teorja ekonomity politycznej. (Warszawa 1858) we can clearly observe a strong preference for classical viewing. However, there is a trend here that is comparable to F. List's idea of the national economy as the economic system basis.

5 Conclusion

Mercantilism, which had two parallel branches, had a profound impact on the concept of the state as an economic category. A group of scholars from developed countries advocated for the state to play a larger role in foreign trade regulation and private enterprise institutionalization. In some practical systems (Colbert, the reforms of Peter I of Russia, etc.), the support of the economy led to the emergence of state-owned companies and a state-run sector.

The second branch of mercantilism, cameralism, arose from the practical needs of state administration, such as the necessity to resolve tax concerns, legal issues, social issues, construct an army, police force, etc. This creates a system of the cameral sciences, designed to educate

---

[38] See KAIZL, J. *Národní hospodářství*. Praha: Nákladem J. Fořta a soudr., 1883.

[39] See KAIZL, J. *Finanční věda.* Praha: Tiskem a nákladem Josefa R. Vilímka, 1892. Ta se členila na části Kniha 1. *Hospodářství veřejné a finanční věda*; Kniha 2*. Druhy a vývoj financí;* Kniha 3. *Důchody výrobní;* Kniha 4. Poplatky - *Všeobecná teorie daní.*

[40]Kaizl J. . *Finanční věda,* s. 9-10

civil servants in then fragmented Central Europe and Italy. Its main centre was Central Europe, and we can see many ideas here that are part of the public economy today, nevertheless due to multidisciplinarity, there is a lack of theoretical generalizations. The state, on the other hand, was viewed as a unified entity that pervaded all aspects of human life.

Although in the second half of the 19th century, even in Central Europe, the classical conception of the state based on the theory of the social contract prevailed, the cameralist tradition remained in the background. The state is a social institution that grows through society, manages it and is responsible for it. It was also connected with the Christian tradition and the advent of Marxism and the concept of the state as a national subject.

References

[1] ARISTOTELES. (2004). *Athénská ústava*. Praha: Baset, Arista.

[2] AURELIUS AUGUSTINUS. (2009). *O obci boží I, II.* Praha: Karolinum.

[3] BÍLÝ, J. *Homo oeconomicus evropského feudalismu*. (2014). Plzeň: Vydavatelství a nakladatelství Aleš Čeněk, sro

[4] BOLZANO, B. *Exhorty*. (2008). Praha: Nakladatelství Lidové noviny.

[5] BOLZANO, B. *O nejlepším státě*. (1981). Praha: Mladá fronta.

[6] BRAF, A. Politické vědy v Čechách na sklonku věku osmnáctého a v první polovici devatenáctého. (1909). Tiskem ALOISA WIESNERA v Praze Nákladem České Akademie

[7] DE LAS CASAS, B. O zemích indijských pustošení a vylidňování zpráva nejstručnější. (1954). Praha: Lidová demokracie.

[8] FREL, J. Od tyranů k Sokratovi. Malý český Plutarch. (1969). Praha: Mladá Fronta.

[9] *Johann Heinrich Gottlob von Justi*. (1881). Allgemeine Deutsche Biography. Leipzig: Jetzer – Kähler.

[10] GROLOWSKI, Ž. *Rozvoj pojeć ekonomicznych w Polsce w końcu XVIII wieku.* (1908). Warszawa: Towaryzystwo wyższych kursow handlowych.

[11] GUREVIČ, AJ *Kategorie středověké kultury*. (1978). Praha: Mladá Fronta.

[12] HÖFFDING, H. a J. KRÁL. *Přehledné dějiny filosofie*. (1941). Praha: Nakladatel František Strnad.

[13] KAIZL, J. *Národní hospodářství*. (1883). Praha: Nákladem J. Fořta a soudr.

[14] KAIZL, J. Finanční věda. (1892). Praha: Tiskem a nákladem Josefa R. Vilímka.

[15] KEJŘ, J. Vznik městského zřízení v českých zemích. (1998). Praha: Karolinum.

[16] KLÍMA, A. *Manufakturní období v Čechách*. (1955). Praha: Nakladatelství ČSAV.

[17] KLÍMA, J. *Lidé Mezopotámie*. (1976). Praha: Orbis.

[18] Kol. autorů. *Počátky českého národního obrození*. (1990). Praha: Academia.

[19] NIELSEN, H. Die Entstehung der deutschen Kameralwissenschaft im 17. Jahrhundert. (1911). Jena: Verlag von Gustav Fischer.

[20] OLIVA, P. *Sparta a její sociální problémy*. (1971). Praha: Academia.

[21] PETRÁŇOVI, L. a J. *Rolník v evropské tradiční kultuře*. (2000). Praha: Set Out.

[22] *Von Pfeiffer*. (1887). Allgemeine Deutsche Biografie. Leipzig: Oveus - Philipp.

[23] PLATÓN, *Ústava*. (2001). Praha: OIKOYMENH.

[24] VAN DE MIEROOP, M. Dějiny starověkého Blízkého východu, okolo 3000-323 př. Kr. (2010). Praha: Academia.

[25] SEIDLEROVÁ, I. *Politické a sociální názory Bernarda Bolzana*. (1963). Praha: Nakladatelství Československé akademie věd.

[26] SKARABEK, F. Ogolne zasady nauki gospodarstwa narodowego czyli czysta teorja ekonomji politycznej. . (1926) Krakow: Druk WL Anczyca i spólki.

[27] SLAVÍK, B. (1975). Od *Dobnera k Dobrovskému.* Praha: Vyšehrad.

[28] VYBRAL, V. *Německá teorie státního hospodářství*. (1937). Praha - Brno: Nakladatelství Orbis.

[29] WINTER, Z. *Život církevní v Čechách II*. (). Praha: Nákladem české akademie císaře Františka Josefa pro vědy, slovesnost a umění, 1896.

[30] WINTER, Z. Kulturní obraz českých měst. Život veřejný v XV. a XVI. věku. I. (1890). Praha: Nákladem matice české.

[31] WINTER, E. Josefinismus a jeho dějiny. Příspěvky k duchovním dějinám Čech a Moravy 1740-1848. (1945). Praha: Nakladatelství Jelínek.

[32] XENOFÓN, *Řecké dějiny*. (1982). Praha: Svoboda.

Contact information

prof. PhDr. František Varadzin, CSc.
Silesian University, School of Business Administration in Karviná, Department of Economics and Public Administration
Čechovova 1241/19, 716 00 Ostrava Radvanice, Czech Republic
E-mail: varadzin@opf.slu.cz

Usage of methods of financial analysis at the level of regional self-government: Case study of the Trenčín region

Roman Vavrek, Petra Gundová, Jiří Bečica, Eva Benková

Abstract: This paper aims to assess the present state in the use of methods of financial analysis in the municipalities at the Trenčín self-governing regional level in the Slovak Republic. Following the main research goal, two research problems were addressed. Attention was paid to the question of whether the municipalities in the Trenčín region use methods of financial analysis, and what are the most significant methods of financial analysis used by the municipalities. Using the questionnaire method, an empirical survey was carried out on a sample of the elementary set of the Trenčín self-government region municipalities, with a questionnaire return rate of 35.14%. The survey results indicated that the Slovak municipalities do not use methods of financial analysis. According to the results, only 25.77% of the municipalities apply some financial analysis methods in creating their municipal budgets.

Keywords: Municipalities, financial analysis, Slovak Republic, Trenčín self-governing region

JEL Classification: H72, M21, P43

1 Introduction

Public sector efficiency in the strict sense of the word, according to Peková (2011), is seen as a result of the relationship between inputs and outputs. According to Cibáková and Ninášová (2006), it is based on two conditions – Pareto efficiency and the individual efficiency associated with the creation of specific public goods. However, a tendency towards inefficiency is considered to be the main problem from a long-term point of view: a) the effort to maximize inputs of organizations, b) absence of intense pressure to reduce costs, c) stagnation of outputs/ minimizing organizational outputs. The literature outlines several options for measuring efficiency in public administration. Provazníková (2009), Malý, Nemec (2011), Loskot (2012), and others focus on either individual methods or groups of methods. One of these groups is evaluation methods based on one criterion, also including financial indicators/analysis. Financial analysis in the public sector should particularly take into account different principles of funding, compared to the private market sector. Some indicators of financial analysis can be used in public non-profit organizations (including municipalities) with almost no modifications; the use of some is either not suitable for this sector (e.g. profitability indicators) or should be adapted (indicators of indebtedness). Financial analysis also offers specific indicators directly for the non-profit sector, e.g. autarky indicators. Using different indicator types (not only financial ones but also performance indicators) is desirable for territorial self-governments and for organizations established by them, primarily because the results lead to the reflection of elected representatives (the management) on a more effective way of managing these organisations.

Given that the object of our research is municipalities of the Slovak Republic, we consider it necessary to provide some brief theoretical background on them. According to the authors, a municipality is an independent self-governing territorial unit which unifies citizens with permanent residence on its territory; it is actually the level of local self-government. Vavrek (2015) state that the basic and general definition of a municipality as a primary unit of local self-government is based on the constitution of an individual state and is always being amended. According to the Act No. 369/1990 Coll., the Act of the National Council of the Slovak Republic on Municipal Establishment, a municipality (town) is a legal entity which, under the conditions provided by law, independently manages its property and income. The municipality (town) finances its needs mainly from its own revenues as well as from state subsidies. The main role

of the municipality (town) in the exercise of self-government is to care for universal development of its territory and the needs of its inhabitants. The state may intervene in the activities of the municipality only in the manner provided by law. Obligations and restrictions can be imposed on a municipality (town) exercising self-government only by law and under an international treaty. In matters of territorial self-government, and in order to ensure the tasks arising for the self-government by law, the municipality (town) may issue generally binding regulations. The execution of assigned tasks of local government may be transferred to the municipality (town) by law. The costs of transferring the execution of state administration in this way shall be paid by the state. During its administration, a municipality (town) may issue generally binding regulations within its territorial competence on the basis of an authorisation provided by law and within its limits.

Financial analysis is used to assess the financial situation of organizations; its purpose is to assess the financial health of the organization and formulate recommendations for its future development. We can see here that the tools of financial analysis are used to evaluate the degree to which formulated financial objectives are achieved (ex post analysis) or predict the future development of the financial situation of a company (ex ante analysis) (Hiadlovský et al., 2016). A thorough financial analysis identifying the causes of deviations and discrepancies, establishing causal relationships, is one of the most important tasks of the financial management of an organization (Lesáková et al., 2019); implicitly, it is assumed to be used in private sector organizations, which does not exclude its use in organizations in the public sector as one of the tools of their economic decision-making. For this thesis we proceed from the assumption of the observance of the principles of economy, efficiency, and usefulness of spent public funds, which should be one of the primary objectives of all organizations operating in the public sector, including territorial self-government (municipalities). However, financial analysis of organizations in the public sector has its specific characteristics. Unlike profit-making companies, the main goal of these organizations is to secure public goods for their citizens and advance the public interest. Despite the absence of a primarily profitable goal, non-profit organizations (municipalities) can still make a profit. Using financial analysis can be a weakness in the management of the organization, and the results of the financial analysis can be compared, especially when comparing homogeneous entities, which is respected in this case.

Ochrana et al. (2010) emphasize the importance of any monitoring of financial indicators that will, in the long term, help to rationally finance various services from public sources. Using the example of contributory organisations, Merlíčková Růžičková (2011) points out that there is a greater emphasis placed on the importance of the main mission when setting up non-profit organisations, and although the amount of revenues is secondary, it is not irrelevant.

It is then interesting to use selected indicators of financial analysis using the example of specific non-profit organisations in the field of culture, for example the functioning of contributory professional theatres in the Czech Republic (Bečica, 2018) or Poland (Galecka and Smolny, 2019). From the point of view of the practical use of financial analysis in territorial self-government (municipalities) and the organizations established by them, the most frequently used indicators are financial stability indicators, reflecting the capital structure of the organization, indebtedness, and autarky indicators. Each publicly founded organization first uses its own capital for financing, and if that is not enough, it then also uses foreign capital. The use of external resources is to some extent desirable, but it is associated with risks that, at the municipal level, the elected representatives of territorial self-government are usually not willing to take. The most frequently used indicators of financial analysis in territorial self-government are the indicators of indebtedness. It is desirable that, over time, the value of indebtedness indicators either does not increase or is at an acceptable level, which is, due to the generally conservative approach of elected representatives of local government, respected. Indebtedness is usually evaluated using the indicator of total indebtedness or the indicator of equity indebtedness. The total indebtedness

indicator can also be defined in terms of long-term and current indebtedness. The value of the equity indebtedness indicator depends on the developmental stage of the organization and the attitude of the elected municipal representatives toward risk. The autarky indicator for public organizations can be divided separately into its main and secondary activities (typically for non-profit organizations established by municipalities in the areas of education, culture, health, social life or sports). The indicator provides information about the extent to which the organization is self-sufficient in terms of its ability to cover expenses from its revenues. The autarky indicator of the main activity, based on costs and revenues, can be positively evaluated if its value is 100%. If the indicator is below the predetermined optimal value, it indicates that the coverage of costs by the organization's revenues is insufficient.

2 Materials and Methods

The aim of this paper is to determine the current situation in the use of financial analysis at the level of territorial self-government in the Slovak Republic. When developing this paper, two research questions were identified:

Q1: Do municipalities of the Trenčín self-governing region use methods of financial analysis?

Q2: What are the most important financial analysis methods in municipalities of the Trenčín self-governing region?

To obtain the necessary data to fulfil the stated objective and answer the research questions, we decided to carry out a questionnaire survey, which was conducted from 19 September 2019 to 4 October 2019. The questionnaire survey was carried out in two phases to ensure the maximum possible rate of return of the questionnaire. The questionnaire was developed using the Google Docs tool and consisted of 7 closed-ended questions and 5 identification questions (see Appendix 1). We decided to use the closed-ended questions since in the case of open-ended questions, we often see that the respondents are unwilling to answer the questions. We addressed the whole basic set of 276 municipalities of the Trenčín self-governing region. We tried to send the questionnaires electronically directly to mayors of given municipalities, as we assumed that they have the most knowledge and competence in the analyzed area of financial analysis. We obtained information about the mayors' e-mail addresses directly from the municipal websites. In terms of citizen awareness these days, the municipality website and contact details can be taken for granted. This fact was also evident from the results of Mohelská, Sokolová research (2017), according to which 99% of Czech municipalities publish a contact or e-mail address on their website; the contact is often directly to the mayor. Scott (2006) states that websites provide the most basic public services and citizens are therefore more connected with the government. Web content and its usage requirements are constantly increasing. Municipalities must monitor and enhance the quality of their websites regularly, in order to attract and satisfy users. On the Slovak municipality website, it is also possible to find some information on the financial situation of municipalities. We received 97 full questionnaire replies out of 276 questionnaires sent, for a return rate of 35.14%. The following table shows the division of the selected sample and basic set (all municipalities are located in the Trenčín self-governing region) based on the criteria of the district.

Table 1 – Classification of the selected sample by districts

district	research sample		base sample		response rate
	abs.	rel.	abs.	rel.	
Bánovce nad Bebravou	20	20.62%	43	15.58%	46.51%
Ilava	11	11.34%	21	7.61%	52.38%
Myjava	8	8.25%	17	6.16%	47.06%
Nové Mesto nad Váhom	11	11.34%	34	12.32%	32.35%
Partizánske	7	7.22%	23	8.33%	30.43%
Považská Bystrica	10	10.31%	28	10.14%	35.71%
Prievidza	16	16.49%	52	18.84%	30.77%
Púchov	5	5.15%	21	7.61%	23.81%
Trenčín	9	9.28%	37	13.41%	24.32%
Bánovce nad Bebravou	20	20.62%	43	15.58%	46.51%

Source: Authors' own processing

The table shows that the largest number of municipalities in the sample comes from the districts of Bánovce nad Bebravou (20.62%) and Prievidza (16.49%). The average population of 97 municipalities in the sample is 1,502 and the current mayor holds his office for less than 7 years on average, i.e. less than two terms of office.

Descriptive statistics was used to verify the survey, including selected moment characteristics, which were graphically supplemented by ANOM analysis. Using the Kendall coefficient of rank correlation, we observed a linear relationship between the frequency of using financial analysis methods and the motives for their implementation, or rather frequency of the use of financial analysis methods and the use of specific methods of financial analysis (see also Vavrek, 2019). All analyses were developed in MS Excel, Statistica 13.4, Statgraphics XVIII.

3 Results and Discussion

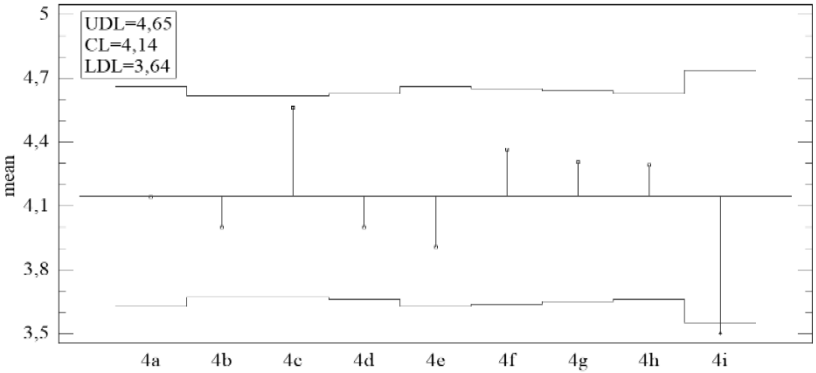
The first question in the questionnaire was a classification question and divided the sample into two groups. Municipalities were supposed to indicate whether they are currently using one of the methods of financial analysis. The results showed that financial analysis is not used at the level of self-government, as up to 72 municipalities (74.33%) answered the question negatively. To assess their financial situation, only 25 municipalities (25.77%) carry out financial analysis. We evaluate this fact negatively. In this case, it is questionable whether the respondents know what financial analysis is and what it is composed of. Under the Act on Accounting No. 431/2002 Coll. as amended, municipalities keep their books using the double-entry bookkeeping system. In a case where municipalities monitor the development of their economic results or the development of other financial indicators, for example, we can claim that they already use the methods of financial analysis (in this case, specifically horizontal analysis). Utilizing financial analysis methods, municipalities could identify the occurrence of unfavourable facts well in advance and, if corrective (remedial) actions are taken, they could prevent a negative situation or minimize its consequences. The results of the financial analysis also help to identify the weaknesses and strengths of the municipality, which are also important in terms of strategic management and decision-making for a longer period.

Since the issue of financial analysis is extensive and there are different types of methods and indicators, we were interested in assessing their significance from the perspective of local government, namely municipalities. 64% of respondents consider the indicators of indebtedness to be an especially important group of indicators. We can deduce that capital structure is important for the given municipalities, i.e. the ratio of their own to external resources, which can

be monitored through the indicators of indebtedness. For municipalities, indicators that express the percentage of debt from current incomes are especially important. In this case, Act no. 583/2004 Coll., the Act on Budgetary Rules of Territorial Self-Government and on amendment of some acts, states that the total amount of the municipality's debt should not exceed 60% of the actual current revenue of the previous financial year. Based on this indicator, the most indebted municipalities are identified in the Slovak Republic and the per capita debt is quantified. Within the Trenčín self-governing region, the per-capita debt in 2018 was 75 euro (the average of Slovak self-governments is 93 euro per capita). It can be argued that it is important to monitor the indebtedness indicators, from which sources the individual activities of the municipality are financed.

48% of municipalities consider indicators based on the value of cash flow to be a particularly important group of indicators, which we consider logical, as municipalities monitor the development of their incomes and expenditures. The results of the questionnaire survey showed that municipalities do not attach much importance to prediction models. This may also be due to the fact that individual representatives of municipalities do not have the necessary knowledge and awareness of prediction models. The following chart presents the differences in the use of individual methods of financial analysis.

Figure 1 – Differences in the use of different methods of financial analysis by ANOM analysis.
Source: Authors' own processing



** Note: The designation of the individual motives (a-m) corresponds to the designation of the methods listed in Appendix 1.*

As in the previous case, it is not possible in most cases to observe a linear correlation between the frequency of one of the methods of financial analysis with that particular method (Figure 1). However, the use of liquidity (4a), profitability (4d) and cash flow (4f) indicators correlate significantly with the frequency of using financial analysis methods. Based on these results, we conclude that those municipalities that work more often with financial analysis emphasize primarily these three groups of indicators. Here we can see a link with the results of the motives for using financial analysis methods. All municipalities stated that they consider the drawing up of a budget to be an especially important motive for financial analysis. Given that the budget is prepared for the following budget period (except for multi-annual budgets), we can speak of short-term management and decision-making, for which liquidity and cash flow indicators are important. These groups of indicators are also referred to as analytical tools for short-term

management and decision-making, i.e. associated with activities up to one year. In the case of liquidity indicators, the municipality focuses on whether it can meet short-term liabilities with a maturity of up to one year.

Table 2 – Rank correlation of the frequency of use of financial analysis methods and the use of specific methods of financial analysis

item in the questionnaire	rank correlation
4a	0.341
4b	
4c	
4d	0.392*
4e	
4f	0.414*
4g	
4h	
4i	

* Significant at significance level $\alpha < 0.05$

Source: Authors' own processing

The last question in the questionnaire was focused on finding the main reasons / benefits for which municipalities use methods of financial analysis. Respondents had a choice of seven options.

Table 3 – Benefits of using financial analysis

benefits of using financial analysis	percentage
Simplicity in terms of calculation and interpretation	28%
Time-saving (speed)	24%
Comprehensive assessment of the overall financial situation	92%
Identification of the main factors affecting the financial situation	44%
Analysis of past development of the financial situation	12%
Determination of market position	4%
Possibility to predict the financial situation for the future	36%

Source: Authors' own processing

Municipalities could choose more than one option. The above table shows that the main reason is a comprehensive assessment of the overall financial situation (92%). This finding also corresponds to the outcome of the question on financial analysis motives (Figure 1), as up to 20 respondents consider finding the current financial analysis a very important motive for applying financial analysis methods. A comprehensive assessment of the overall financial situation is an assessment of not only current, but also past and future financial developments. The second reason is to identify the factors that have influenced financial health. In this case, it is necessary to quantify the impact of the deterministic factors affecting the financial situation of the municipality. Consequently, corrective actions can be directed to the problem area. The possibility of prediction was indicated by 36% of respondents, while the need for forecasting at the municipal level is important, especially when drawing up budgets for the following period. Here too, our previous finding, that the analyzed municipalities do not consider their comparison with other municipalities important, was confirmed. The reason of finding the market position was ranked last (4%). In the conclusion of this part, we can state that the results of the survey conducted by us showed that the use, or rather the non-use, of any method of financial analysis

cannot be linearly linked to the size of the municipality (r_K = 0.123; p = 0.427), i.e. from this point of view, the municipalities are equal in our survey.

4 Conclusion

In the present-day situation, we can observe that increasing competitiveness and effectiveness is becoming more important in both the private as well as public sector. We agree with the opinion of Papcunová (2013) that one of the methods for increasing the effectiveness of municipalities is to use financial analysis and specify the financial conditions of municipalities. The municipalities' financial stability and responsible financial management are basic significant starting points for their long-term sustainable development and their competitiveness (Otrusinová and Kullová, 2019; Sebestová et al., 2018; Sytnyk et al., 2019). This was the reason the paper dealt with the use of financial analysis at the level of territorial self-government in the Slovak Republic. The questionnaire survey results show that the municipalities situated in the Trenčín self-governing region in the Slovak Republic do not use methods of financial analysis (74.32%). The reason for not using financial analysis is that the municipalities are too small, and there is a lack of skilled and qualified staff with experience and knowledge in financial issues. Municipalities use methods of financial analysis mostly in creating their budgets for the next budget period, with liquidity and cash flow being the most significant indicators. This corresponds with the finding of Daniels et al. (2018) that liquidity and its indicators are immensely significant in the territory of municipalities. Their survey results confirmed the fact that the usage of financial advisors of higher quality may result in greater liquidity. We are in compliance with the claim of Otrusinová and Kulleová (2019) that municipalities can define the mutual relationships between short-term assets and short-term liabilities depending on their circumstances and limitations, e.g. in dealing with flow and specific transfers, tax income, expenses and money in funds. A more significant problem that the municipalities may face is the cash flow of projects and operational liquidity management.

Acknowledgements

This paper was created within the project "Performance evaluation of public service providers in the Czech Republic". Project registration number SP2021/18.

References

[1] BEČICA, J. (2018). Income Self-Sufficiency and Profitability of Professional Theatres in the Czech Republic. *Review of Economic Perspectives*, Vol. 18 (3), pp. 285-299.

[2] CIBÁKOVÁ, V., NINÁČOVÁ, V. (2006). *Základy ekonomiky verejného sektora*. Bratislava: Merkury.

[3] DANIELS, K., DORMINEY, J., SMITH, B., VIJAYAKUMAR, J. (2018). Does financial advisor quality improve liquidity and issuer benefits in segmented markets? Evidence from the municipal bond market. *Journal of Public Budgeting, Accounting & Financial Management*, Vol. 30(4), pp. 440-458.

[4] GALECKÁ, M., SMOLNY, K. (2019). Criteria for the optimal financing model of public theatres. *Review of Economic Perspectives*, Vol. 19(2), pp. 119–136.

[5] HIADLOVSKÝ, V., RYBOVIČOVÁ, I., VINCZEOVÁ, M. (2016). Importance of Liquidity Analysis in the Process of Financial Management of Companies Operating in the Tourism Sector in Slovakia: an Empirical Study. *International Journal for Quality Research*, Vol. 10(4), pp. 799-812.

[6] LESÁKOVÁ, Ľ., VINCZEOVÁ, M., ONDRUŠOVÁ, A. (2019). Factors Determining Profitability of Small and Medium Enterprises in Selected Industry of Mechanical Engineering in the Slovak Republic – the Empirical Study. *E & M Economics and Management*, Vol. 22(2), pp. 144-160.

[7] LOSKOT, S. (2012). Model CAF v roce 2011. *Veřejná správa*, Vol. 23(7), pp. 8-9.

[8] MALÝ, I., NEMEC, J. Možnosti zvyšování efektivnosti veřejného sektoru v podmínkách krize veřejných financí. Brno: Masaryk university.

[9] MERLÍČKOVÁ RŮŽIČKOVÁ, R. (2011). *Neziskové organizace*. Olomouc: ANAG.

[10] MOHELSKÁ, H., SOKOLOVÁ, M. (2017). Digital Transparency in the Public Sector – Case Study Czech Republic. *E + M Economics and Management*, Vol. 20(4), pp. 236-250.

[11] OCHRANA, F., PAVEL, J., VÍTEK L. (2010). Veřejný sektor a veřejné finance. Financování nepodnikatelských a podnikatelských aktivit. Prague: Grada Publishing.

[12] OTRUSINOVA, M., KULLEOVÁ, A. (2019). Liquidity Values in Municipal Accounting in Czech Republic. *Journal of Competitiveness*, Vol. 11(1), pp.

[13] PAPCUNOVA, V. (2013). Evaluation of financial performance of contributory organizations under the jurisdiction of municipalities. *Acta Regionalia et Environmentalica*, Vol. 10(1), pp. 13–18.

[14] PEKOVÁ, J. (2011). *Finance územní samosprávy: teorie a prax v ČR*. Prague: Wolters Kluwer ČR.

[15] PROVAZNÍKOVÁ, R. (2009). Financování měst, obcí a regionů: teorie a praxe. Prague: GRADA Publishing.

[16] SCOTT, J. K. (2006). „E" the People: Do U.S. Municipal Government Web Sites Support Public Involvement? *Public Administration Review*, Vol. 66(3), pp. 341-353.

[17] SEBESTOVA J., MAJEROVA I., SZAROWSKA I. (2018). Indicators for assessing the financial condition and municipality management. *Administratie si Management Public*, Vol. 31, pp. 97-110.

[18] SYTNYK, N., ONYUSHEVA I., HOLYNSKYY Y. (2019). The managerial issues of state budgets execution: The case of Ukraine and Kazakhstan. *Polish Journal of Management Studies*, Vol. 19(1), pp. 445-463.

[19] VAVREK, R. (2015) Disparity of Evaluation of Municipalities on Region and District Level in Slovakia. In Proceedings of the Hradec Economic Days, HED 2015, Vol. 5(3), pp. 315-321.

[20] VAVREK, R. (2019). Evaluation of the Impact of Selected Weighting Methods on the Results of the TOPSIS Technique. *International Journal of Information Technology & Decision Making*, Vol. 18(6), pp. 1821-1843.

Appendix 1 - Questionnaire

Question no. 1: Do you use any of the methods of financial analysis to determine/evaluate the financial analysis of your municipality? (yes/no)

Question no. 2: Indicate how often you use any of the methods of financial analysis. (once a year, …, daily)

Question no. 3: Please indicate the significance of individual motives for using financial analysis in your municipality using the methods of financial analysis (5-degree scale)

Question no. 4: Indicate the significance of the use of each group/method of financial analysis (5-degree scale)

a) Liquidity indicators
b) Activity indicators
c) Indebtedness indicators
d) Profitability indicators
e) Differential indicators
f) Vertical analysis
g) Horizontal analysis
h) Prediction methods
i) Cash-flow indicators

Question no. 5: State the main advantages of (reasons for) using financial analysis methods (8 answer options)

Question no. 6: Please indicate the main reasons for not using the methods of financial analysis in your municipality (8 answer options)

Question no. 7: In what time horizon do you plan to use any of the methods of financial analysis (5 answer options)

Question no. 8: Identification questions (district, number of inhabitants)

Contact information

PhDr. Roman Vavrek, PhD.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava, Czech Republic
E-mail: roman.vavrek@vsb.cz

Ing. Petra Gundová, PhD.
Matej Bel University in Banská Bystrica, Faculty of Economics, Department of Corporate Economics and Management
Tajovského 10, 975 90 Banská Bystrica, Slovak Republic
E-mail: petra.gundova@umb.sk

Ing. Bc. Jiří Bečica, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava, Czech Republic
E-mail: jiri.becica@vsb.cz

Ing. Eva Benková, PhD.
University of Prešov, Faculty of Management, Department of Intercultural Communication
Konštantínova 16, 080 01 Prešov, Slovak Republic
E-mail: eva.benkova@unipo.sk

Allocative efficiency of providing long-term social care: evidence from the practice of public and private nursing homes

Iveta Vrabková, Ivana Vaňková

Abstract: The main role of the state in many democratic countries is social protection of the population. In all modern states, special attention is paid to the population aged 65+. One of the substantial factors is the demographic aging of the population, which brings problems in both the social and economic spheres. The aim of the paper is to evaluate the allocative efficiency of nursing homes in the Czech Republic according to the input-oriented DEA model with a focus on the income of nursing homes in terms of their legal form. The allocative efficiency were examined from a set of nursing homes (a total of 522 nursing homes in the year 2019), which operate in individual regions of the Czech Republic. The results of allocation efficiency are examined in three models, namely overall efficiency, pure efficiency and scale efficiency. Attention was given to the legal form of nursing homes. The liberalization of social services makes it possible to create conditions for competition and improve the quality of services provision. Nursing homes a private profit institution were found to have the best efficiency scores. Contrary, in the case of nursing homes a private non-profit institution, it has been shown that they achieve slightly worse results in terms of pure efficiency compared to the average of the whole group. It can be stated that the average score of allocative efficiency for all nursing homes in the region is influenced by the composition of types of nursing homes.

Keywords: Allocative efficiency, care for the elderly, data envelopment analysis, financing

JEL Classification: C67, H44, H55

1 Introduction

The changes in today's society are reflected in discussions about the scale of the state's function in providing services for its population. In many democratic countries, the provision of public services is perceived as one of the main roles of the state, in terms of ensuring the security of the population, hygienic protection, education or social protection and care. The scope and structure of social care, including social services, is influenced by the accepted model of the Welfare state. The liberalization of social services also plays an important role, which to a certain extent creates conditions for competition and the improvement of social services. (Aspalter, 2003; Taylor-Gooby, 2008; Greve, 2015).

A significant and dynamic part of social services is focused on the long-term care of elderly. A population aging is not only a social problem but also economic. Modern public economics sees the solution to the efficiency of public funded social services and programs as a compromise between efficiency and equity in the concept of "of Pareto improvement ", (Stiglitz, Rosengard, 2015; Pestieau, 2018). On the other hand, international research shows that a population aging, especially in countries with a strong Welfare State policy, increases the pressure on public budgets on both the expenditure and revenue sides. Public policy makers are constantly looking for new solutions for the provision of social services to ensure the sustainability of the system in the required quantity and quality. Possible solutions include a higher degree of involvement of private entities in the system of providing social services. (Arltová et al., 2016; Kim, Lim, 2015; Sirovátka, Válková, 2017). The impact of the population aging on the economic productivity of the state are indicated, for example, by the indicator of old-age dependence. According to the authors Horecký, Průša (2019), the ratio between the number of people over the age of 65 and the working population is growing in the countries of the European Union. In 2016, the value of the old-age dependency indicator was 28.1 % and in 2070 it is expected to increase to 49.7 %.

From the point of view of public budgets, we can therefore expect a reduction in tax revenues and an increase in expenditure on long-term care for the elderly.

In the Czech Republic, subsidies from the state budget are the most important source of income for social service providers – nursing homes. According to the Ministry of Labor and Social Affairs of the Czech Republic (2019), there was an average increase in the subsidy for one bed in nursing homes by 96 % between 2014-2019. The study also proves that in the above-mentioned years, the cost of nursing homes in the Czech Republic increased on average by 37 %. The most significant cost item is personnel costs and on average it accounts for 73 % of the total costs of nursing homes, regardless of their type (public / private, non-profit / profit).

The long-term care market for the elderly in the Czech Republic is strongly asymmetric in terms of the type of providers. The dominant providers are public non-profit institutions. The reason is, as Horecký, Průša (2019) states, a financing system that is extremely unfavorable for private providers and investors, unlike in most European countries. The economic importance of the social services segment is underlined by OECD statistics, which state that the social services sector is the fastest growing service sector in Europe, with more than 10 million employees and an increase of 2 million jobs between 2008-2012. The privacy of social service providers plays an important role in this market. The private sector has a large share of the social services market, especially in the Netherlands, Denmark, the UK, France, Spain, Italy and Belgium.

The requirement of efficiency and sustainability of long-term care for the elderly is, in view of the above arguments, a relevant research topic and a fundamental requirement of society. The topic of the efficiency of long-term care is the subject of a number of studies in various countries, as evidenced by studies that used non-parametric multicriteria methods to evaluate efficiency, especially the Data Envelopment Analysis model, e.g. (Min et al., 216; Dulal, 2018; Luasa et al., 2018; Tran et al., 2019), and many others, as evidenced by the study Emrouznejad, Yang (2018), dealing with the use of the DEA model in the literature for the period 1978-2016. However, the evaluation of the technical efficiency of social services according to the DEA model is, in contrast to other areas of the public sector (health care, culture, education, public administration), completely ignored.

The aim of the paper is to evaluate the allocative efficiency of nursing homes in individual regions of the Czech Republic by 2019 according to the input-oriented DEA model with a focus on the income of nursing homes in various legal forms.

The analysis subjects are two levels of production units. The first level is represented by 522 nursing homes, which provide residential social services of long-term care for people aged 65+ with reduced self-sufficiency. These are facilities that are set up by both local and regional governments (hereinafter Public Non-profit Institutions) and private entities (hereinafter Private Non-profit Institutions and Private Profit Institutions). The key incomes of these facilities are subsidies from public budgets, payments from service clients and own incomes. An essential fact is that the guarantors for the availability of all social services are self-governing regions and they reperesent the second level of the evaluated production units. There are 14 regions in the Czech Republic, including the Capital City of Prague. The efficiency of 522 nursing homes is examined from the perspective of an input-oriented DEA model, which assumes the minimalization of inputs at given (unchanging) outputs.

Within the research, two research questions (RQ1, RQ2) and two hypotheses (H1, H2) were determined.

RQ1: "What effect do the results of pure efficiency and scale efficiency have on the results of the overall allocative efficiency of nursing homes in the regions?" H1: "Worse efficiency results

of nursing homes in individual region affect the results of pure efficiency, which are worse than the results of scale efficiency."

RQ2: "Is allocative efficiency affected by the composition of nursing homes in the region in terms of their legal form?" H2: "The average value of the efficiency of the basic set and sample sets does not differ."

2 Literature review

The issue of the long-term care system is one of the key areas of the social protection system of the population. Attention is paid to this topic both in the national strategic documents of individual states of the European Union and in many professional articles. The problem that the individual articles deal with is the interconnection of the basic mechanisms of organization, financing and management in order to increase the synergy effects resulting from their interaction. The subject of the articles is mainly the evaluation of the performance of facilities that provide long-term care. The key methods for this evaluation belong to multi-criteria methods.

Björkgren, Häkkinen, Linna (2001) also evaluated the efficiency of 64 long-term care facilities in Finland using the DEA method. Efficiency was determined on the basis of four types of efficiency: cost, technical, allocative and scale efficiency. The results showed significant differences at the level of individual homogeneous production units and the authors' recommendations were aimed at improving the management and allocative of resources (personnel and financial).

Allocative efficiency according to the DEA model was evaluated by Fizel, Nunnikhoven (1993), in the conditions of nursing homes, with regard to whether the care service is provided by for-profit or non-profit entities.

The determinants of efficiency and the potential for increasing efficiency at the local and national level in the field of social services for the elderly in Norway in 2003 were assessed by Borge, Haraldsvik (2009). They used input and output oriented CRS models for evaluation, chose six outputs, which included numbers of different types of social services for seniors (residential, outpatient and field), as input they chose expenditures on social services from the municipal budget in 2003. Homogeneous units were 420 municipalities. They used regression analysis and bootstrap to explain the results obtained according to the DEA model.

Martin, Jérôme (2016) also dealed with the performance of nursing homes. The subject of the analysis was 370 units that provide long-term care on a profitable basis. The analysis focused on the evaluation of cost-efficiency and the results show that if institutional pressure to reduce costs is exerted, the cost-efficiency of nursing homes improves. The article by Luasa et al. (2018), provides a methodological and empirical view of the evaluation of technical efficiency and scale efficiency of homes providing long-term care. 39 public and 73 private homes were surveyed using the DEA method oriented on input variables. The results of the analysis were partially presented according to the division of the examined sample of units with regard to the type of ownership, capacity and location of the facility and the quality of long-term care provided. Proven results have shown that private facilities are less efficient than public facilities. In particular, facilities which tend to improve the quality of care provided show a deterioration in the technical efficiency of the facilities.

Min et al. (2016) used the DEA method for the efficiency of nursing homes with regard of organizational changes (change in the number of employees in direct service activities per client of the facility in the context of the quality of care provided) that took place within the period.

Wichmann et al. (2018) implemented an international evaluation of the efficiency of long-term care facilities for the elderly of six Europeans (Belgium, England, Finland, Italy, the Netherlands and Poland) according to the DEA model. The efficiency estimation model included two personnel inputs and the number of beds, two outputs the quality of life index of seniors and the quality index of dying. The results were very different and it was not possible to make general or specific recommendations.

Using a combination of the DEA model (Epsilon-based measure, EBM) and the MEA method (metafrontier efficiency analysis), Taiwan evaluated the operational efficiency and quality level of 91 residential senior care facilities (59 general senior care facilities, 32 nursing homes) in Taiwan (2017). The results of the estimation of the operational efficiency of 91 production units were compared in relation to the achieved level of quality through regression analysis. The study concluded that the relationship between operational efficiency and the level of quality of nursing homes is negative and neutral for general senior homes. It was also found that the privacy of nursing homes is more efficient than public providers.

The technical efficiency of 388 "nursing homes" from California in 2009 was evaluated by Dulal (2018), according to an input-oriented model with variable returns from the DEA model. In the second phase of the evaluation, the author focused on the "a left censored random-effect Tobit regression model". The evaluation examined the relationship between the average level of technical efficiency and the level of quality of nursing homes. The quality of nursing homes was assessed according to the outputs of the health inspection, the professionalism of the employees and the availability of the website. Dulal (2018) concluded that efficiency is not related to quality. This means that effective nursing homes did not belong at the same time to full quality nursing homes and vice versa.

Luasa, Dineen, Zieba (2018) focused on evaluating the efficiency of 111 Irish nursing homes, namely 39 public nursing homes and 73 private nursing homes according to the input-oriented DEA model. The interval of the average value of technical efficiency was analyzed in the second phase of evaluation according to the bootstrap method. The average pure technical efficiency (according to the model with variable economies of scale) of all nursing was 62 % and the average efficiency of scale efficiency was 88 %. The authors came to two important conclusions: private nursing homes are less effective than public nursing homes, and with the increasing size of nursing homes, technical efficiency increases.

Tran et al. (2019) pointed out the connection between demographic changes in the population, especially the issue of population aging and the increased demand for long-term care facilities. The aim of the article was to examine the literature in terms of statistical methods used to evaluate the efficiency of the facility, selected input and output parameters for its evaluation and indicators taking into account the quality of long-term care provided. Standard techniques for measuring efficiency include DEA, stochastic methods and their specifications (orientation, categorization of scale efficiency). In conclusion, they stated that when interpreting the results of the efficiency of the facility, it is appropriate to keep in mind the quality of health care provided and the quality of life of the population. Quality assessment should reflect its multidimensionality (structure, process, result).

3 Research objective, methodology and data

The evaluation of the efficiency of financing long-term care for nursing homes is verified in 522 nursing homes in the Czech Republic, i.e. in 99.4% of nursing homes operating in the Czech Republic. This ensemble does not contain nursing homes, which disappeared or started their activities during 2019.

Table 1 distinguishes three types of legal forms of nursing homes, namely public non-profit institutions, private non-profit organizations and private profit institutions and their numbers in the regions. From the total number of 522 nursing homes in the Czech Republic are:

- 350 (67 %) public non-profit institutions;
- 108 (21 %) private non-profit institutions;
- 64 (12 %) private profit institutions.

The largest number of nursing homes of the private profit institution type is in the Capital City of Prague, namely 41% of the total number of nursing homes. There are no private profit institutions in the Vysocina and Zlin regions.

In 2019, nursing homes in the Czech Republic collected an average of 10.8 thousand CZK per month from public sources (excluding the client care allowance). Subsidies from public sources were not provided to six private nursing homes in three regions - Liberec, Hradec Kralove and South Moravian.

Table 1 - Subsidies and costs per bed and month according to the legal form of nursing homes, year 2019

Name of a region (R1-R14)	Public non-profit institution				Private non-profit institution				Private profit institution			
	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
R1 Cap. City of Prague	17	19.6	37.2	52.8	23	17.5	38.2	45.7	21	2.5	31.8	8.0
R2 Central Bohemian	56	14.8	33.6	44.2	4	10.1	31.3	32.3	13	10.6	25.3	41.8
R3 South Bohemian	28	15.3	36.3	42.2	3	13.5	44.0	30.7	3	11.0	33.7	32.6
R4 Plzen	12	10.5	28.0	37.6	8	14.9	35.1	42.4	1	3.2	23.2	14.0
R5 Karlovy Vary	9	15.2	36.4	41.8	3	11.0	27.4	40.1	5	11.7	29.5	39.6
R6 Usti	31	11.2	27.8	40.3	6	7.7	24.0	32.2	3	11.7	32.8	35.6
R7 Liberec	14	14.8	35.1	42.0	2	18.7	33.7	55.5	1	0.0	31.6	0.0
R8 Hradec Kralove	28	14.5	35.6	40.8	3	22.1	39.7	55.7	4	0.0	13.3	0.0
R9 Pardubice	16	13.5	32.9	41.1	3	13.4	34.4	39.1	5	0.8	26.0	3.0
R10 Vysocina	19	11.5	31.2	36.8	4	11.1	33.4	33.2	0	0.0	0.0	0.0
R11 South Moravian	32	17.0	35.9	47.3	9	6.7	24.1	27.8	1	0.0	23.9	0.0
R12 Olomouc	27	14.5	32.4	44.9	6	10.4	28.5	36.3	1	7.1	28.1	25.3
R13 Zlin	21	10.2	29.9	34.2	11	13.5	34.2	39.4	0	0.0	0.0	0.0
R14 Moravian-Silesian	40	13.9	34.4	40.6	23	12.5	31.1	40.3	6	3.1	26.9	11.7
Min	9.0	10.2	27.8	34.2	2.0	6.7	24.0	27.8	0.0	0.0	0.0	0.0
Max	56.0	19.6	37.2	52.8	23.0	22.1	44.0	55.7	21.0	11.7	33.7	41.8
Mean	25.0	14.1	33.3	41.9	7.7	13.1	32.8	39.3	4.6	4.4	23.3	15.1
SD	12.1	2.5	3.0	4.4	6.7	4.1	5.5	8.2	5.6	4.7	10.7	15.8

Note: (a) number of nursing homes, (b) average amount of subsidy from public sources in thous. CZK per 1 bed and month, (c) average costs in thous. CZK per 1 bed and month, (d) share of subsidies in costs per 1 bed and month in %.

Source: Ministry of Labor and Social Affairs of the Czech Republic

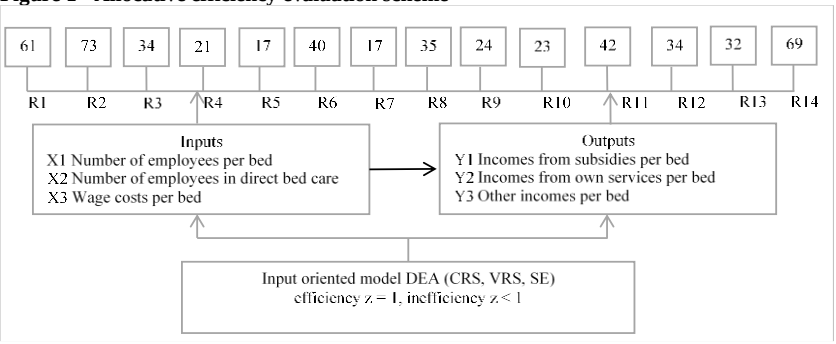
The average cost of nursing homes in the Czech Republic per 1 bed and month was 31.1 thousand CZK. The average share of subsidies in the cost per bed and month was 33%. However, in the case of nursing homes (public non-profit institution) this share is 42%, in the case of nursing homes (private non-profit institution) this share is 39% and nursing homes (private profit institution) this share is 15%.

3.1 Methodological approach

Evaluation of the allocative efficiency of long-term social care of nursing homes is verified within 14 regions (R1-R14), see Fig 1 a total of 522 nursing homes operating in 2019 are included in the evaluation (ie 99.4% of nursing homes operating in the Czech Republic). The evaluation was carried out according to the established procedures and methods, especially according to the logic of the evaluation scheme below (Fig 1):

- calculation of allocative efficiency for 14 regions (R1-R14) of a given set of DMUs (nursing homes - for each region calculation was implemented according to the input-oriented DEA model),
- within each region (R1-R14) the results of IO DEA calculations were evaluated (statistics min., max., standard deviation, number of effective units, total average results for each region),
- the average results of allocative efficiency for individual regions of the CRS, VRS and SE models were analyzed using correlation and regression analysis. This was grouped according to individual 14 regions and according to the legal forms of the nursing homes: public non-profit institution; private non-profit institution, private profit institution. The IBM SPSS Statistic program was used for the calculations.

Figure 1 - Allocative efficiency evaluation scheme



The starting point for the evaluation of allocative efficiency was a search of professional sources and statistics, detection of performance technical and financial parameters of nursing homes (see Table 2) and also interviews with the management of nursing homes. The most important sources of data were internal (non-public) sources by the Ministry of Labor and Social Affairs of the Czech Republic (2019), the public register of social services and public networks of social services of 14 self-governing regions.

Chosen inputs and outputs were statistically tested. The correlation relationship between the input and output parameters was analyzed according to Speaman's correlation coefficient, then the confidence interval was also calculated for the correlations according to the bootstrap method.

3.2 Input and output analysis

The values of the average, median, maximum, minimum and standard deviation (SD) of selected inputs and outputs for 522 nursing homes in the Czech Republic as of 2019. All parameters are relative, i.e. converted into one bed of a nursing homes. This recalculation made it possible to analyze and compare all nursing homes, regardless of their size.

Table 2 - Statistical characteristics of inputs and outputs, year 2019 (n = 522)

N=522	Mean	Median	Maximum	Minimum	SD
X1 Number of employees per bed	1.31	1.00	12.4	0.31	1.03
X2 Number of employees in direct bed care	0.54	0.40	4.9	0.05	0.48
X3 Wage costs per bed (in thousand CZK)	275.3	275.5	722.5	17.1	80.4
Y1 Incomes from subsidies per bed (in thousand CZK)	161.6	161.5	694.6	0.0	83.1
Y2 Incomes from own services per bed (in thousand CZK)	229.1	229.9	751.7	28.9	56.1
Y3 Other incomes per bed (in thousand CZK)	11.3	3.3	323.2	0.0	27.2

Source: own research

The correlation relationship between the variables was calculated according to Speaman's correlation coefficient (ρ). The calculation was verified at the significance level $\alpha = 0.01$ (Correlation is significant at the 0.01 level) and $\alpha = 0.05$. The Spearman coefficient has the advantage that it is a nonparametric coefficient, does not assume a normal distribution, is not dependent on the linearity of the relationship between two variables and is not distorted by possible outliers (Hendl, 2015).

The correlation coefficients ρ between the input and output parameters are given in the correlation matrix (see Table 3). A very strong correlation ($\rho = 0.741$) was detected between inputs X1 (number of employees per bed) and X2 (number of employees in direct care per bed), i.e. that as the number of employees in houses for elderly per bed grows, so does the number of employees in direct care per bed and vice versa. In 95% of the samples, the correlation coefficient for these two inputs will be in the interval <0.689; 0.788>. There is also a very strong correlation ($\rho = 0.774$) between input X3 (wage costs per bed) and output Y1 (income from subsidies per bed), ie. that with the growth of income from subsidies, wage costs also increase and, conversely, the 95% confidence interval is CI <0.725; 0.813>. A moderate correlation ($\rho = 0.433$) was detected between X3 (wage costs per bed) and Y2 (revenues from own services per bed), 95% confidence interval is CI <0.350; 0.512>. The correlation analysis further indicated a negative moderately strong correlation ($\rho = -0.478$) between inputs X1 (number of employees per bed) and X3 (wage costs per bed), i.e. that with the increase in the number of employees per bed, the wage costs per bed decrease and, conversely, the 95% confidence interval CI <-0.478; -0.315>. Furthermore, a low negative correlation was detected between output Y2 and input X1 and input X2, as well as between output Y3 and input X1 and input X2.

Table 3 - Corelations matrix Spearman's rho ρ (n=522)

			X1	X2	X3	Y1	Y2	Y3
X1	ρ		1.000					
	CI	*lower*	1.000					
		upper	1.000					
X2	ρ		**0.741****	1.000				
	CI	*lower*	0.689	1.000				
		upper	0.788	1.000				
X3	ρ		-0.401**	-0.216**	1.000			
	CI	*lower*	-0.478	-0.305	1.000			
		upper	-0.315	-0.132	1.000			
Y1	ρ		-0.270**	-0.115**	**0.774****	1.000		
	CI	*lower*	0.002	0.001	0.725	0.000		
		upper	0.047	0.047	0.813	0.000		
Y2	ρ		-0.216**	-0.229**	0.433**	0.048	1.000	
	CI	*lower*	-0.302	-0.319	0.350	-0.045	1.000	
		upper	-0.129	-0.143	0.512	0.148	1.000	
Y3	ρ		-0.183**	-0.145**	0.101*	0.019	0.014	1.000
	CI	*lower*	-0.272	-0.231	0.008	-0.076	-0.073	1.000
		upper	-0.093	-0.056	0.187	0.115	0.101	1.000

CI Confidence Interval 95 %, ** Correlation is significant at the 0.01 level, *. Correlation is significant at the 0.05 level.

3.3 Input-oriented DEA model

The essence of estimating the allocative efficiency of primary DEA models lies in the division of researched objects into efficient and inefficient according to the size of consumed resources (inputs) and the amount of production (outputs). The solution of DEA models defines the empirical production function. The DEA model compares the units with respect to the best units in a given set and thus derives the relative efficiency of these units. DEA models are based on the premise that for a given problem there is a production possibility set formed by all possible combinations of inputs and outputs. The DEA method makes it possible to evaluate a set of DMUs through input-oriented models and output-oriented models. The advantage of estimating efficiency according to the DEA model is that they allow the inclusion in the model of nominal, relative, technical and financial inputs and outputs, weights of individual parameters are calculated by the model for each unit, unlike Stochastic Frontier Analysis (Borge, Haraldsvik, 2009; Kumbhakar et al., 2015).

For the needs of the evaluation of nursing homes, an input-oriented CCR model (according to Charnes, Cooper & Rhodes) with constant returns to scale (CRS) and an input-oriented BCC model (according to Banker, Charnes & Cooper) with variable returns to scale (VRS). Input-oriented models are based on the minimization assumption, where the value of the inputs is reduce while maintaining the value of the outputs (Fried et al., 2008; Zhu, Cook, 2013).

The calculation of efficiency according to the CCR model, is realized using the Charnes-Cooper transformation, and is converted from a linear polynomial programming task to a standard programming task and formulated according to the notation (1):

max

$$z = \sum_{r=1}^{s} \mu_r \gamma_{ro} \tag{1}$$

subject to

$$\sum_{r=1}^{s} \mu_r \gamma_{rj} - \sum_{i=1}^{m} v_i x_{ij} \leq 0$$

$$\sum_{i=1}^{m} v_i x_{io} = 1$$

$$\mu_r, v_i \geq \varepsilon > 0$$

The efficiency calculation according to the BCC model has, in addition one variable, which corresponds to the constraint of convexity, and is not constrained by the conditions of non-negativity. Mathematical notation (2):

max

$$z = \sum_{r=1}^{s} u_r \gamma_{ro} - u_o, \tag{2}$$

subject to

$$\sum_{r=1}^{s} u_r y_{rj} - \sum_{i=1}^{m} v_i x_{ij} - u_o \leq 0, \qquad j = 1, \ldots, n,$$

$$\sum_{i=1}^{m} v_i x_{io} = 1,$$

$$v_i \geq \varepsilon,\ u_r \geq \varepsilon, u_o \text{ free}$$

The efficiency coefficient g for both of the above models is determined by the ratio of the weighted sum of inputs to the weighted sum of outputs, but weights are sought such that the value of the coefficient g is greater than or equal to one. For the effective unit *Uq*, the coefficient z = 1 and for the inefficient unit $z < 1$ (Cooper, Seiford, Tone, 2007; Cooper, Seiford, Zhu, 2011).

The degree of allocative efficiency, which is calculated according to the CCR and BCC models, is the basis for the calculation of the so-called scale efficiency (SE) according to relation (3). Cooper et al. (2007) define efficiency from scale as the ratio of the efficiency of a production unit obtained by the CCR θ_CCR ^ * model and the BCC θ_BCC ^ * model, where the SE rate of the production unit in input-oriented models is greater than or equal to one.

$$\text{SE} = \frac{\theta^*_{CCR}}{\theta^*_{BCC}} \tag{3}$$

The decomposition of allocative efficiency (4) makes it possible to express the so-called pure efficiency (VRS) and scale efficiency (SE).

$$\text{CCR } \theta^*_{CCR} = \theta^*_{BCC} \times SE \tag{4}$$

4 Results

4.1 Allocative efficiency of nursing homes according to individual regions

The degree of efficiency of financing long-term care of 522 nursing homes according to the input-oriented DEA model and its components is shown in Table 4. Table 4 contains the number of effective and average efficiency for all nursing homes in the region, in terms of the overall efficiency of IO CRS, pure efficiency of IO VRS and scale efficiency of IO SE in the region. The total results for all DMUs are shown in the last line of the table.

In the Czech Republic in 2019, the best results of the allocative efficiency of long-term care were detected in the R7 Liberec Region, where 53% of 17 DMUs were effective and the average efficiency of DMUs in the region was CRS = 0.969, VRS = 0.987 and SE = 0.981. The worst results of DMUs efficiency are concentrated in the R2 Central Bohemian Region, where 73 DMUs operate, only 16.4% of effective DMUs were detected and the average efficiency was CRS = 0.784, VRS = 0.818 and SE = 0.961. It can be well seen from Table 4 that the lower average efficiency at the level of 80 % and less is also achieved by three other regions R1 The Capital City of Prague, R5 Karlovy Vary Region and R8 Hradec Kralove Region.

Table 4 - Results of the efficiency of financing long-term care in 2019 by region

DMUs II. Regions	DMUs I.	IO CRS		IO VRS		IO SE	
		g=1	Mean	g=1	Mean	g=1	Mean
R1 Cap. City of Prague	61	12	0.804	17	0.834	16	0.967
R2 Central Bohemian	73	12	0.784	21	0.818	13	0.961
R3 South Bohemian	34	11	0.918	15	0.955	11	0.962
R4 Plzen	21	9	0.908	10	0.924	9	0.981
R5 Karlovy Vary	17	5	0.828	13	0.950	5	0.876
R6 Usti	40	10	0.883	19	0.932	10	0.948
R7 Liberec	17	9	0.969	14	0.987	9	0.981
R8 Hradec Kralove	35	7	0.842	14	0.920	8	0.915
R9 Pardubice	24	5	0.856	10	0.905	5	0.946
R10 Vysocina	23	9	0.941	12	0.960	9	0.980
R11 South Moravian	42	10	0.892	15	0.911	10	0.981
R12 Olomouc	34	6	0.895	16	0.949	6	0.943
R13 Zlin	32	9	0.919	17	0.962	9	0.955
R14 Moravian-Silesian	69	15	0.893	21	0.910	17	0.982
Total	522	129	0.881	214	0.923	137	0.956

In terms of 100% efficiency (z = 1), the number of DMUs is as follows: 129 DMUs in the IO CRS model (25 % of 522); 137 DMUs in the IO SE model (26 % of 522); 214 DMUs of IO VRS (41 % of 522).

In terms of the average value of the efficiency rate in nominal and percentage terms, the results are as follows:

- in model IO CRS (Mean: z=0.88; 88 %),
- in model IO VRS (Mean: z=0.92; 92 %),
- in model IO SE (Mean: z=0.96; 96 %).

4.2 Influence of pure efficiency and scale efficiency on overall efficiency score

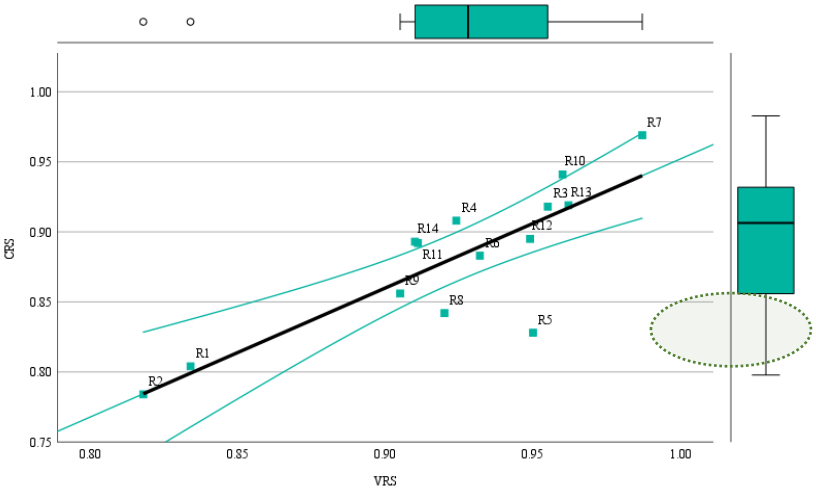
The average value of the IO CRS efficiency score for DMUs of individual regions is more significantly affected by one of the components (VRS, SE). IO CRS is more significantly

affected by the result of IO VRS at nursing homes in the following regions: R8 Hradec Kralove Region, R5 Karlovy Vary Region.

The above mentioned results (see Table 4) are confirmed by graphs of regression lines (Figure 2, Figure 3), which show the relationship between the average results of calculations of the total allocative efficiency of IO CRS and IO VRS, IO CRS and IO SE for individual regions of the Czech Republic. However, no correlation was confirmed between the results of IO VRS and IO SE ($\rho = 0.012$), and therefore the regression relationship between the above variables was not modeled.

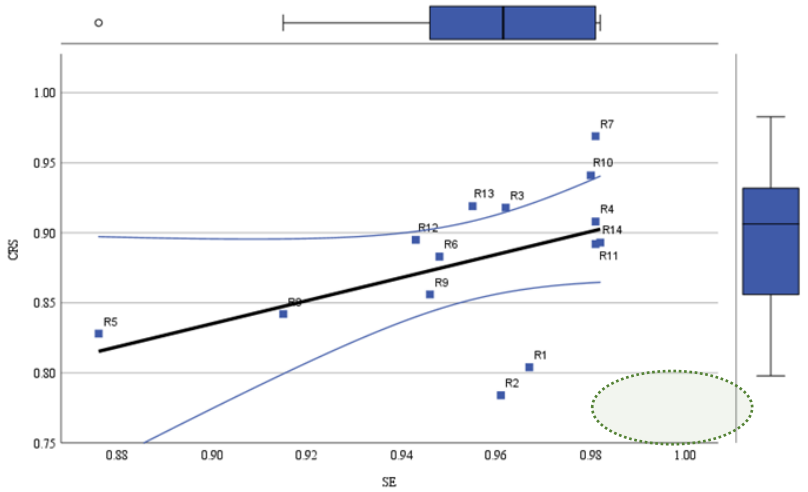
A significant positive correlation ($\rho = 0.883$, $\alpha = 0.001$) was detected between the results of the overall efficiency of IO CRS and the pure efficiency of IO VRS, as evidenced by the regression line and equation. This means that as the IO CRS value increases, the IO VRS value increases and vice versa. On both sides of the regression line, there are curves defining the boundaries of the diameter of the intersection of the IO CRS and IO VRS values, above and below the regression line. Very inefficient both components (CRS and VRS) beyond the average have two regions – R1 The Capital City of Prague and R2 Central Bohemian Region.

Figure 2 - Regression relationship between CRS and VRS efficiency index results



IO CRS is more significantly affected by the result of IO SE at nursing homes in the following regions: R1 - The Capital City of Prague and R2 Central Bohemian Region. Also, a significant positive correlation ($\rho = 0.0482$, $\alpha = 0.001$) was detected between the results of the overall efficiency of IO CRS and the scale efficiency of IO SE, as proved by the regression line and equation. This means that as the value of IO CRS increases, the value of IO SE and vice versa. On both sides of the regression line are curves defining the boundaries of the diameter of the intersection of the values of IO CRS and IO SE, above and below the regression line. Very inefficient both components (CRS and SE) beyond the limit of the average have one region – R5 Karlovy Vary Region.

Figure 3 - Regression relationship between CRS and SE efficiency index results



4.3 Efficiency results by types of legal form of nursing homes

The basic comparison of efficiency results is shown in Table 5 and Fig 4, namely the average values of efficiency of CRO IO, VRS IO and IO SE according to legal forms.

Table 5 - Overall average results compared to average results by legal form

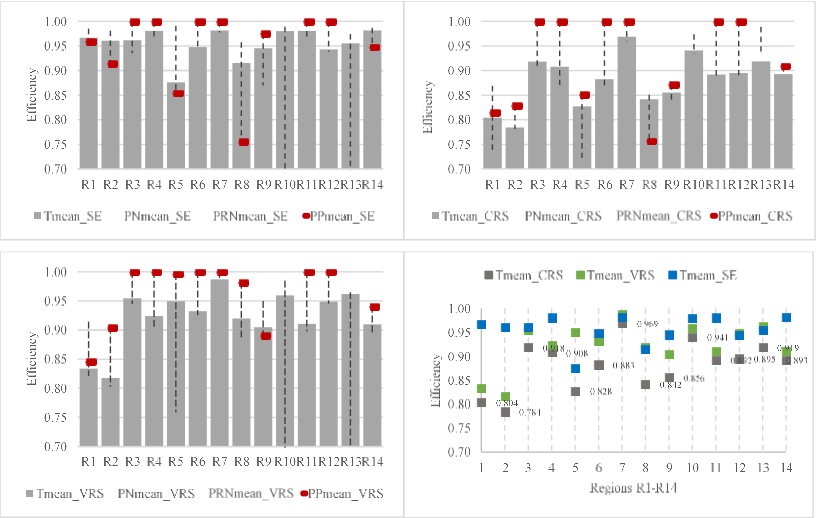
Regions	CRS mean				VRS mean				SE mean			
	T	PN	PRN	PP	**T_**	PN	PRN	PP	**T**	PN	PRN	PP
R1	0.804	0.869	0.731	0.815	0.834	0.913	0.822	0.846	0.967	0.948	0.985	0.959
R2	0.784	0.781	0.795	0.829	0.818	0.804	0.806	0.905	0.961	0.968	0.981	0.915
R3	0.918	0.910	0.916	1.000	0.955	0.946	0.980	1.000	0.962	0.960	0.935	1.000
R4	0.908	0.871	0.952	1.000	0.924	0.906	0.960	1.000	0.981	0.969	0.996	1.000
R5	0.828	0.839	0.723	0.852	0.950	0.988	0.760	0.997	0.876	0.850	0.991	0.855
R6	0.883	0.872	0.864	1.000	0.932	0.929	0.927	1.000	0.948	0.942	0.966	1.000
R7	0.969	0.959	1.000	1.000	0.987	0.986	1.000	1.000	0.981	0.978	1.000	1.000
R8	0.842	0.851	0.851	0.757	0.920	0.920	0.888	0.982	0.915	0.933	0.958	0.756
R9	0.856	0.863	0.833	0.872	0.905	0.901	0.949	0.890	0.946	0.950	0.870	0.975
R10	0.941	0.934	0.974	x	0.960	0.954	0.984	x	0.980	0.977	0.989	x
R11	0.892	0.888	0.909	1.000	0.911	0.899	0.953	1.000	0.981	0.987	0.961	1.000
R12	0.895	0.892	0.891	1.000	0.949	0.947	0.950	1.000	0.943	0.942	0.938	1.000
R13	0.919	0.939	0.989	x	0.962	0.964	0.955	x	0.955	0.974	0.918	x
R14	0.893	0.891	0.893	0.909	0.910	0.918	0.894	0.940	0.982	0.983	0.987	0.948
T mean	**0.881**	**0.883**	**0.880**	**0.920**	**0.923**	**0.927**	**0.916**	**0.963**	**0.956**	**0.954**	**0.963**	**0.951**

x – there are no nursing homes a private profit institution in this region

- In all models (IO CRS, IO VRS and IO SE), nursing homes of the public non-profit (PN) type achieve values comparable to the overall average (IO CRS, IO VRS and IO SE).
- In all models (IO CRS, IO VRS and IO SE), nursing homes of the private non-profit (PRN) type achieve values comparable to the overall average (IO CRS, IO VRS and IO SE).

- Nursing homes of the private profit (PP) type achieve higher average values in two models (IO CRS and IO VRS) and thus better than the values of averages for the whole basic set. The IO SE model is comparable to the whole set.

Figure 4 - Average results of DMUs efficiency according to legal forms



5 Discussion and conclusion

The key sources of financing of long-term care in the conditions of nursing homes in the Czech Republic include revenues from public budgets at all levels of public administration, especially the central level (from the state budget). The relative indicator - income from subsidies per bed shows that for nursing homes of the public / private non-profit institution type, subsidies make up on average 42 and 39 % of the total income of nursing homes converted to one bed. It is therefore the second highest source of income for these institutions.

The highest income is collected by nursing homes from payments from clients for services provided, however, 50 % of the volume of payments from clients represents the care allowance provided by the state to persons with reduced self-sufficiency. On average, nursing homes of the non-profit type collect income from public sources in the amount of 60 % of the total volume of income for the services provided. In contrast, in the case of nursing homes of the private profit institution type, the direct subsidy makes up on average only 15 % of all income per bed. The key source of financing for private profit institutions is income from clients, including the above-mentioned care allowance. On average, therefore, nursing homes of the profit type collect income from public sources in the amount of 35 % of the total volume of income.

It is also interesting that nursing homes of a private profit institution show one third lower costs per bed than nursing homes of the public / private non-profit institution type. In contrast, the results of estimating allocative efficiency according to the input-oriented DEA model show that nursing homes private profit institution, although numerically only 12 % of the total number of 522 nursing homes in the Czech Republic, have the best score. In the context of the above, it is

possible to consider a lower quality of care provided by nursing homes of the private profit institution, similar to the suggestions of previous research by Luasa et al. (2018).

For the evaluation of the allocative efficiency of 522 nursing homes in the Czech Republic broken down by regions (R1-R14), an input-oriented model is chosen. Critically, it is possible to look at the conclusions of authors who used also input-oriented models for their evaluation (Dulal, 2018; Wichmann et al., 2018; Zhang et al. (2019), and subsequently recommend nursing homes to increase efficiencies reduced inputs, both personnel and personnel costs. A similar recommendation would mean a significant reduction in the quality of social care for nursing homes in the Czech Republic, especially in the conditions of private profit providers.

The results of allocative efficiency are examined for sets of nursing homes operating in a specific region. There are a total of 14 of these regions in the Czech Republic. The biggest regions of nursing homes, and therefore also the number of beds, have the largest regions in terms of population - Central Bohemian, Moravian-Silesian and The Capital City of Prague. An exception is the South Moravian region, which has the lowest offer of long-term care for the elderly aged 65+, as also confirmed by a study by the Ministry of Labor and Social Affairs of the Czech Republic (2019). The results of allocative efficiency are monitored from the perspective of three models. The first model examines the overall allocative efficiency (CRS), the full (100%) efficiency reaches 25 % of nursing homes and the average efficiency is 0.881 (in percentage terms, i.e. 88 %). The other two models examined are components of overall allocative efficiency, namely pure efficiency (VRS) and scale efficiency (SE). In the pure efficiency model, 41 % of homes are fully efficient and the average efficiency is 0.923 (i.e. 92 %). From the point of view of the third model of scale efficiency, 26 % of nursing homes are fully effective and the average efficiency is 0.956 (i.e. 96 %). The relatively high number of fully efficient units and the relatively high average efficiency in all models suggest that the potential for improving the efficiency of nursing homes in the mode of selected inputs and outputs is in the range of 4-12 %. For comparison, the results of a study by Borge, Haraldsvik (2009) estimate that the potential for increasing the efficiency of residential social services for the elderly in Norway is 10 %, but in outpatient and outreach services the potential for improvement is much higher, namely up to 25 %. In contrast, Luasa et al. (2018) estimate that the potential for increasing the efficiency of Irish nursing homes is in the range of 27-61 %. In general, it should be noted that the results of individual studies are significantly influenced by the selection of inputs and outputs, the number of units of the evaluated set and the type of evaluation model. These determinants suggest that the scores achieved in the individual countries cannot be compared without the results of the comparison being affected by errors.

The breakdown of the overall efficiency at the level of average results for 14 regions shows that the worse results of the overall efficiency are affected either by one of the components (VRS, SE) or by both components in a balanced way. In the case of the four regions that show the worst average efficiency score, the regression analysis confirms that for two regions, R1 The Capital City of Prague, R2 Central Bohemian, worse results are affected by pure efficiency results, in the Central Bohemian region, worse results are affected almost equally by both components, and in the case of R5 Karlovy Vary, worse overall efficiency results are affected by worse scale efficiency results. The set H1 “Worse efficiency results of nursing homes in the region affect the results of pure efficiency, which are worse than the scale efficiency results”, it is not possible to unambiguously confirm or refute.

The composition of nursing homes in the Czech Republic and individual regions in terms of their type is significantly uneven in the Czech Republic. Numerically dominant are the nursing homes of the public non-profit type, which account for 67 % of the total number of nursing homes, followed by nursing homes private non-profit of 21 % and the remaining 12 % of the private profit institution. The highest number of private profit nursing homes operates in the territory of

The Capital City of Prague, Karlovy Vary and Central Bohemian. Contrary, in the Vysocina and Zlin regions there are no nursing homes of the private profit institution type. Nursing homes a private profit institution were found to have the best efficiency scores. Especially in the case of overall efficiency and pure efficiency, nursing homes achieve better results compared to the average of the whole file.

Contrary, in the case of nursing homes a private non-profit institution, it has been shown that they achieve slightly worse results in terms of pure efficiency compared to the average of the whole group. It can be stated that the average score of allocative efficiency for all nursing homes in the region is influenced by the composition of types of nursing homes. The determined H2 "The average efficiency value of the basic set and the sample sets do not differ" was refuted in the two cases mentioned above.

From the evaluation of allocative efficiency, which means efficiency of income of social care nursing homes in the conditions of the Czech Republic, it is possible to indirectly deduce connections that may have implications for improving not only efficiency but also the quality of social care provided to seniors. First of all, it is a detected significant positive correlation between income from subsidies per bed and wage expenditures per bed. Secondly, it is the best efficiency score for nursing homes private profit institution. For input-oriented models, inefficient units are advised to reduce the value of inputs, and therefore it can be considered, that reducing the number of professional staff will lead to improved efficiency, but at the same time to a deterioration in the quality of provided care. In contrast, increasing revenue from subsidies should increase wage expenditures and consequently improve the quality of care.

Acknowledgements

This paper was supported by project SGS No. SP2021/67, International Evaluation of the Performance of Health and Social Services with a Focus on the Application of Multicriteria Methods, Faculty of Economics, VSB – Technical University of Ostrava.

References

[1] Arltová M, Smrčka L, Vrabcová J, Schönfeld J. The Ageing of the Population in Developed Countries – the Economic Consequences in the Czech Republic. Economics and Sociology. 2016, 9; 2:197-219.

[2] Aspalter CH. The Ewalfare State in Emerging-Market Economies. With Case Studies from Latin America, Eastern-Central Europe, and Asia. 2003. [cited 2021 January 10] Available from: http:///C:/Users/Acer/Downloads/SSRN-id2665500.pdf

[3] Björkgren AM, Häkkinen U, Linna M. Measuring Efficiency of Long-Term Care Units in Finland. Health Care Management Science. 2001; 4: 193-200.

[4] Bogetoft P, Otto L. Benchmarking with DEA, SFA, and R. 1st ed. New York: Springer Science+Business Media; 2011.

[5] Borge EL, Haraldsvik, M. Efficiency potential and determinants of efficiency: an analysis of the care for the elderly sector in Norway. International Tax and Public Finance. 2009; 19(4): 468-486. DOI: 10.1007/s10797-009-9110-7.

[6] Cooper WW, Seiford ML, Tone K. Data Envelopment Analysis. A Comprehensive Text with Models, Applications, References and DEA-Solver Software. New York: Springer; 2007.

[7] Cooper, WW, Seiford, ML, Zhu, J. Handbook on Data Envelopment Analysis. 2nd ed. New York: Springer; 2011.

[8] CZSO, (2019). Czech Statistical Office. Neuspokojené žádosti o umístění ve vybraných zařízeních sociálních služeb. 2019 [cited 2021 February 10] Available from: https://www.czso.cz/csu/czso/ceska-republika-od-roku-1989-v-cislech-2018#13

[9] Dulal R. Technical efficiency of nursing homes: do five-star quality ratings matter? Health Care Management Science. 2018; 21: 393-400.

[10] Emrouznejad A, Yang G. A survey and analysis of the first 40 years of scholarly literature in DEA: 1978–2016. Socio-Economic Planning Sciences. 2018; 61(1): 1-5. http://dx.doi.org/10.1016/j.seps.2017.01.008

[11] Fizel JL, Nunnikhoven ST. The efficiency of nursing home chains. Applied Economics. 1993; 25: 49–55.

[12] Fried OH, Lovell KC, Schmidt SS. Efficiency and productivity. The measurement of productive efficiency and productivity growth. 2008 DOI:10.1093/acprof:oso/9780195183528.001.0001

[13] Garavaglia G, Lettieri E, Agasisti T. et al. Efficiency and quality of care in nursing homes: an Italian case study. 2011; 14: 22-35.

[14] Greve B. Welfare and the Welfare State. Present and future. New York: Routledge; 2015.

[15] Hendl J. Přehled statistických metod. Praha: Portál; 2015.

[16] Horecký J, Průša L. Současná struktura služeb dlouhodobé péče a prognóza potřebnosti sociálních služeb 2019-2050. 2019. [cited 2021 March 3] Available from: https://www.apsscr.cz/files/files/A4_STRUKTURA%20DLOUHODOBE%20PECE(1).pdf

[17] Kim HB, Lim W. Long-term care insurance, informal care, and medical expenditures. Journal of Public Economics. 2015; 125: 128-142.

[18] Kumbhakar SC, Wan HJ, Horncastle AP. A Practitioner's Guide to Stochastic Frontier Analysis Using Stata. New York: Cambridge University Press; 2015.

[19] Lin JR, Chen CY, Peng TK. Study of the Relevance of the Quality of Care, Operating Efficiency and Inefficiency Quality Competition of Senior Care Facilities. International Journal of Environmental Research and Public Health. 2017; 14 (1047): 1-18.

[20] Luasa NS, Dineen D, Zieba M. Technical and scale efficiency in public and private Irish nursing homes - a bootstrap DEA approach. Health Care Management Science. 2018; 21: 326-347. DOI: 10.1007/s10729-016-9389-8.

[21] Martin C, Jérôme T. Cost (In)Efficiency and Institutional Pressures in Nursing Home Chains. European Accounting Review. 2016; 25(4): 687-718. https://doi.org/10.1080/09638180.2016.1169937.

[22] Min CG, Park L, Scott D. Evaluating Technical Efficiency of Nursing Care Data Envelopment Analysis and Multilevel Modelling. West J Nurs Res. 2016; 38(11):1489-1508. https://doi: 10.1177/0193945916650199.

[23] Min A, Scott LD, Park C, Vincent C, Ryan CJ. Organizational Factors Associated with Technical Efficiency of Nursing Care in US Intensive Care Units. Journal of Nursing Care Quality. 2019; 34(3): 242-249.

[24] Ministry of Labour and Social Affairs of the Czech Republic. 2019. Analýza financování sociálních služeb. Internal material from the Ministry of Labour and Social Affairs of the Czech Republic.

[25] OECD. Economics Surveys, Czech Republic. 2018 [cited 2021 February 15] Available from: https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-czech-republic_19990561

[26] Pestieau P, Lefebvre M. The Welfare State in Europe. Economic and Social Perspectives. Oxford: Oxford University Press; 2018.

[27] Sirovátka T, Válková J. Understanding Care Policies in Changing Times: Experiences and Lesson from Czech Republic and Norway. Brno: Centre for the Study of Democracy and Culture, Masaryk University; 2017.

[28] Social Services Act, Act No. 108/2006 Coll. [cited 2021 January 8] Available from: http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=74443.

[29] Stiglitz JE, Rosengard JK. Economics of the public sector. Fourth edition. New York: W. W. Norton & Company; 2015.

[30] Taylor-Gooby P. The new welfare state settlement in Europe. European Societies. 2008; 10(1): 3-24.

[31] Tran KH, Nguyen L, Gray T, Comas A. Systematic Literature Review of Efficiency Measurement in Nursing Homes. International Journal of Environmental Research and Public Health. 2019; 16(12). https://doi:10.3390/ijerph16122186.

[32] Wichmann AB, Adang MME, Vissers CPK, Szczerbińska K, Kylänen M, Payne S. et al. Technical-efficiency analysis of end-of-life care in long-term care facilities within Europe: A cross-sectional study of deceased residents in 6 EU countries (PACE). PLOS ONE. 2018; 13(9):1-12.

[33] Zhang L, Zeng Y, Fang Y. Evaluating the technical efficiency of care among long-term care facilities in Xiamen, China: based on data envelopment Analysis and Tobit model. BMC Public Health. 2019; 19(1230): 1-9.

[34] Zhu J, Cook DW. Modelling Performance Measurement. Applications and Implementation Issues in DEA. New York: Springer; 2013.

Contact information

doc. Ing. Iveta Vrabková, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: iveta.vrabkova@vsb.cz

Ing. Ivana Vaňková, Ph.D.
VSB - Technical University of Ostrava, Faculty of Economics, Department of Public Economics
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
E-mail: ivana.vankova@vsb.cz

Regional and legal aspects of transport services in the Czech Republic, with special regard to peripheral regions

René Wokoun, Petr Čechák, Pavel Mates

Abstract: The transport accessibility is the significant factor in the effort for the balanced development of the regions and preservation of the internal cohesion of the Czech Republic, the real form of which is the result of a number of components, often staying against each other in the conflict positions, economic, political, legal, population and others.
The analysis of the transport accessibility of larger settlement centers, which are municipalities with extended powers (ORP) and regional cities, was done during the solving the project, within which this article was created. The transport accessibility of the ORP was expressed cartographically through the number of public transport connections during working days (Wednesday was chosen) and during non-working days, respectively free days (Saturday was chosen). The results obtained here were, of course, influenced by the fact that at the time of this analysis, the restrictions related to the fight against COVID-19.

Keywords: Transport services, transport, legal aspects, regional aspects, Czech Republic

JEL Classification: K19, R50, H70, H73

1 Introduction

The transport accessibility is the significant factor in the effort for the balanced development of the regions and preservation of the internal cohesion of the Czech Republic, the real form of which is the result of a number of components, often staying against each other in the conflict positions, economic, political, legal, population and others ones.

When so-called inner peripheries were established in the territory of today's Czech Republic during the period before November 1989, the deterioration of living conditions was associated with a declining state of the infrastructure, limited supply of the shops and services and even only very limited public cultural and social life.[41] The limited scope of the public transport played its role there, which provided primarily only the possibility of way from and to work. At the same time, the limited scope of the public transport did not allow or made it very difficult to travel for missing services, shops or culture beyond the territory of the peripheral areas. Even visiting a doctor, dealing with official matters or buying consumer goods outside the place of residence were associated with considerable time requirements for the inhabitants of these areas, and daily commuting to school or work by public transport for some groups of the population was "greater than usual ballast".[42] The insufficient volume of the public transport thus contributed to the fact that the peripheral areas were considered largely to be the trap, wherefrom especially younger people tried to move to the areas with more favorable living conditions.

[41]MUSIL, J. Urbanizace českých zemí a socialismus (Urbanization of the Czech Lands and Socialism). In: HORSKÁ, P., MAUR, E. and MUSIL, J. *Zrod velkoměsta: urbanizace českých zemí a Evropa (The Birth of the Big City: Urbanization of the Czech Lands and the Europe)*. 1st edition Praha (Prague): Paseka, 2002, p. 272

[42] See to the topic Musil, J. Urbanizace českých zemí a socialismus (Urbanization of the Czech Lands and Socialism), p. 272

As it turns out, these problems can be reproduced or even reproduced in the current, although completely in different, political and economic conditions.[43] The extent to which living conditions actually worsen in peripheral areas in fact depends significantly on the political decisions and the willingness to invest the resources into maintenance of infrastructure and the provision of the public services, including public transport.[44] Not only in purely peripheral and economically declining areas but also in general in rural areas not adjacent directly to larger agglomeration and economic centers, there is a need to find a reasonable balance between the two approaches, which should be balanced rather rationally than one of them should prevail clearly. It deals with a conflict between the requirement to guarantee the same level of services (or ensuring the highest possible standard of the services in the largest possible area) and economic rationality, which arises in the sphere of standards of transport services of the peripheral areas and rural areas farther from the larger centers quite lawfully.[45] Lower population density is typical logically for the rural areas. Especially where it would also deal with the areas with a relatively more fragmented settlement structure (a larger number of smaller settlements separated from each other), the question of public transport congestion and thus economic efficiency arises logically. The costs are high for it and it is necessary then to cover them partly from the public budgets. At the same time, the costs are high and there is little to be covered from the public budgets, because only a small share of the costs for ensuring the service can be covered from the selected fare under these conditions, with regard to the low occupancy.[46]

---

[43] It is also possible to point out the fact that peripheralization led to a deterioration of the living conditions, for example in the territory of the former GDR after year 1990. Naumann and ReichertSchick note the impact of peripheralization on the decline of the infrastructure and the extent of the provided services in the case of the Eucker-Randow region at Germany's north-eastern border, and also the sharp reduction in the extent of the public transport that happened there was one of the factors worsening significantly living conditions in the region (cited by Bernard J. and col.: Nic se tady neděje: Životní podmínky na periferním venkově. Publishing Slon, 2019, p. 34-35)

[44] If, under the conditions of Czechoslovakia before 1989, sufficient investments were made into technical infrastructure and civic amenities in the peripheral areas and a sufficient volume of the public transport was ensured too (this fact would also correspond to the principle of balancing the economic level of the individual areas of the socialist state and living standards of their inhabitants that should apply at least under the official proclamations), the lack of work opportunities and, also partly, the decline in economic activity in the peripheral areas did not have to lead to such a significant deterioration in living conditions. The investments and funds were, however, at that time, concentrated primarily into other areas that were to be developed as a priority (for the territory of today's Czech Republic, it was based on the Concept of the Development of the Settlement and Urbanization of the Czechoslovak Republic approved by Government Resolution No. 4/1976), and there were insufficient funds for investments outside the center of gravity for the intended further development.

[45] Bernard J. and col.: Nic se tady neděje: Životní podmínky na periferním venkově (Nothing is Happening Here: Living Conditions in the Peripheral Countryside). Sociologické nakladatelství (Sociological Publishing), 2018, p. 62

[46] To some aspects rather in relation to the outer peripheries see for example Jeřábek, M.; Dokoupil, J.; Havlíček, T. České pohraničí – bariéra nebo prostor zprostředkování (Czech Border - Barrier or Space for Mediation)? Praha (Prague): Academia, 2004; Böhm, H.; Dokoupil, J., Jeřábek, M. Crossing the Borders. Studies in the cross-border cooperation within the Danube Region. Case Study The Euroregion Šumava-BayerischerWald/UntererInn-Mühlviertel..Budapest: Central European Service fo rCross-Border Initiatives, 2016, and Jeřábek, M. and col. České pohraničí – Od periferní národní pozice ke stabilnímu prvku evropské integrace (Czech Border - From a Peripheral National Position to a Stable Element of European

At the same time, the mutual relationship between public transport and individual car transport plays a crucial role in providing transport services of the peripheral and rural areas, both in relation to the question of the necessary scope of providing public transport as a service and the costs for its ensuring.

In the case described above, the insufficient volume of the public transport in the peripheral areas of our state before 1989 forced the inhabitants of these areas to buy cars and secure transport by using them, however it was more expensive for them, the financial resources of the inhabitants of these areas were limited and there was a lack of the cars on the market.[47] After year 1989, the degree of motorization was roughly doubled and the wide possibility of using individual passenger transport influences strongly the patterns of behavior of the rural population.[48] With regard to the advantages from the user's point of view[49], individual car transport represents today a real competition of public transport. This fact reduces to some extent the need to ensure transport services of the area by public transport, without coming to an end entirely the need to provide public transport in the rural areas. The need for "competition" with individual car transport can reduce then at the same time the economic rationality of the public transport (and increase the costs for its ensuring), when it influences the real occupancy of public transport connections and the economic efficiency of their operation logically.[50] Under the low economic rationality of the excessive increase of the volume of the public transport in sparsely populated areas, as this increase would probably run into the problem of low occupancy of public transport connections[51], the logical question arises how to ensure relatively the most possible high level of

---

Integration). Studie Národohospodářského ústavu Josefa Hlávky (Study of the National Economy Institute of Josef Hlávka), 1/2021. Jeřábek, M.; Dokoupil, J.; Havlíček, T. České pohraničí – bariéra nebo prostor zprostředkování (Czech Border - Barrier or Space for Mediation)? Praha (Prague), Academia, 2004.

[47] Musil, J. Urbanizace českých zemí a socialismus (Urbanization of the Czech Lands and Socialism), p. 271

[48] Bernard J. and col.: Nic se tady neděje (Nothing is Happening Here), p. 62

[49] Although it is usually associated with higher costs compared to the public transport, it allows greater time flexibility and is more convenient, especially in the rural areas with a sparse frequency of public transport lines (typically this is the case, for example, when shopping, when it is common, that it should deal with the purchase for many days for the whole family, and the public transport stop is not directly at the house where the purchase is to be transported.

[50] It also brings with it the impossibility of projecting the costs for operating public transport in the fare in a large extent, because it could lead to a further reduction of the attractiveness of the public transport compared to the individual car transport and further reduce the real occupancy of public transport connections, that is necessary to keep them, at least to a certain extent, usually in the public interest, at least as the alternative to individual car transport (with the effort for higher degree of using public transport, for example its greater environmental friendliness in comparison with the massive use of individual car transport can play a role there).

[51] In the course of solving the project, within of which this article was created, the managed interviews with mayors in the selected model areas also took place. Information obtained from these interviews if they concerned the transport services, could be used as a reflection of the real relations and behavior of people in the rural areas.. This information confirms simultaneously misgivings about the low economic rationality of an excessive increase of the scope of public transport. For example, the mayor of one municipality in the Pardubice Region stated during the interview that there was a clear demand from the inhabitants of the municipality to increase the volume of the public transport. Therefore, the municipality ordered one additional bus line, which is used regularly, in reality, only by one inhabitant of the municipality. This example cannot be generalized fully and the experience of the mayors of other municipalities may differ

the transport services, respectively the level of the services, in peripheral and generally rural areas father from larger centers, that should be ensured by the transport services (and especially public transport), with the maitenance of the economic rationality.

2 Material and Methods

2.1 Legal regulation and conception documents

From the point of view of the researched problem, the fundamental importance belongs to the concept of transport services. According to section 2 of the Act on Public Services in Passenger Transport and on Amendments to Other Acts (Act No. 194/2010) (hereinafter the Public Transport Act), the transport services are defined as "provision of the transport for all days of the week, primarily to the schools and school facilities, to the public authorities, to the employment, to the medical facilities providing basic health care and to the satisfaction of cultural, recreational and social needs, including transport back, contributing to the sustainable development of the territorial district".[52] From the point of view of legal regulation, the provision of transport services is thus considered to be one of the tools of the regional development, when its conceptual feature is that it serves for the sustainable development.

The Public Services Act deals only with the issue of ensuring the transport services by public transport[53] and in this sense also uses the term "provision of transport services" as a legislative abbreviation. However, individual car transport is also taken into account when providing the transport services. This fact is also reflected in the fact that in the conceptual material *Transport Policy of the Czech Republic for the Period 2021 - 2027 With a View to 2050*[54] distinguishes four

---

in this respect. However, this example was used here to illustrate the problem that may arise in the case of increasing the volume of the public transport in terms of its economic rationality.

[52] This legal definition should then be used wherever special laws and other regulations refer to the transport services, without determining its content in any way. This is the case, for example, the Act on Regions (Act No. 129/2000 Coll.), which entrusts generally in its section 35 to the regional council to determine the scope of the transport services within the independent competence or in its section 50 of the Act on Municipalities (Act No. 128/2000 Coll.), according to which the subject of the activity of the union of the municipalities may be the introduction, expansion and improvement of the system of public passenger transport for ensuring the transport services of the given territory of this union. Another example of a general regulation is the Decree of the Ministry for Regional Development No. 501/2006 Coll. on general requirements for usage of lands, which stipulates that the provision of transport services should be taken into account when making-decision on the location of buildings. An exception in this respect is rather the Education Act (Act No. 561/2004 Coll.), whose sections 178-179 requires for the regions to provide transport to and from the catchment school, respectively kindergarten within the transport services on their territories, if the distance of the catchment school from the pupil's place of permanent residence exceeds 4 km..

[53] The Act was adopted as a tool of the adaptation of the Czech law to Regulation (EC) No. 1370/2007 of the European Parliament and of the Council on public passenger transport services by rail and by road and repealing Council Regulations (EEC) No. 1191/69 and No. 1107/70, whose purpose, under the Article 1 of the Regulation, is to define how the competent authorities of the Member States may, in accordance with the rules of Community law, intervene in the public passenger transport sector, for the purpuse to ensure the provision of the services of general interest which are, inter alia, more frequent, safer, better in the quality or cheaper than services that individual market mechanisms could offer.

[54] www.mdcr.cz/Dokumenty/Strategie/Dopravni-politika-CR-pro-obdobi-2014-2020-s-vyhled

levels of the transport service in the Czech Republic by public transport. In the first two levels, public transport is only a supplement to individual car transport. These two lower levels will also apply especially in the areas with lower population density (which will affect at least a large part of peripheral and father-off rural areas). In level No. 1, the basic transport service is provided by individual car transport. In this case, we can speak about some kind of self-service, because it lacks an important defining feature, namely its provision by public services.[55] Public transport is focused on satisfying on, as a general rule, the narrowly specifically defined needs of the inhabitants (commuting to the schools, to the health care or to the authorities). At level 2, the public transport ensures already wider range of population needs, "but for the economic reasons, it cannot provide the necessary standards in terms of quantity". The independence on the individual car transport is assumed in this division only in levels No. 3 and 4. At level 3, individual car transport and public transport are understood as mutually full-fledged alternatives. That one at level 4 is even the basis of the transport service system, which ensures all the needs of the population throughout the day and throughout the week, and, conversely, the individual transport becomes a complement to the public transport.

The transport policy of the Czech Republic counts with the fact that the 1st level of the transport services provided by the public transport should be reduced in the future, the 3rd level should prevail in the most areas,[56] and the 2nd level should be maintained in sparsely populated areas. In these areas, with regard to economic rationality, the character of public transport should be preserved only as a supplement to individual car transport, despite the fact that the Transport Policy of the Czech Republic also admits that at level 2 of the transport services provided by public transport, the groups of those people, who do not have their own car, are disadvanteged (especially women, children and the elderly), and the insufficient scope of the public transport and poor interconnection ultimately "contribute to the outflow of the population from the peripheral areas to larger agglomerations and have a significant negative impact on the demographic development in these areas".

2.2 Analysis of the transport services of larcer centers

The analysis of the transport accessibility of larger settlement centers, which are municipalities with extended powers (ORP) and regional cities, was done during the solving the project, within which this article was created.[57] The transport accessibility of the ORP was expressed cartographically through the number of public transport connections during working days (Wednesday was chosen) and during non-working days, respectively free days (Saturday was chosen). The results obtained here were, of course, influenced by the fact that at the time of this analysis, the restrictions related to the fight against COVID-19 disease (public transport frequency analysis in November 2020) were in force, and smaller movement of the inhabitants

[55] For example KOVALČÍKOVÁ, D, ŠTANDERA, J. Zákon o veřejných službách v přepravě cestujících a o změně dalších zákonů, Komentář (Act on Public Services in Passenger Transport and on Amendments to Other Acts, Commentary), cited by ASPI.

[56] 4th level should apply particularly to larger cities, where, especially in their historic cores, the priority of public transport can help to solve the problem with the lack of parking space, prevent the formation of convoys, etc.

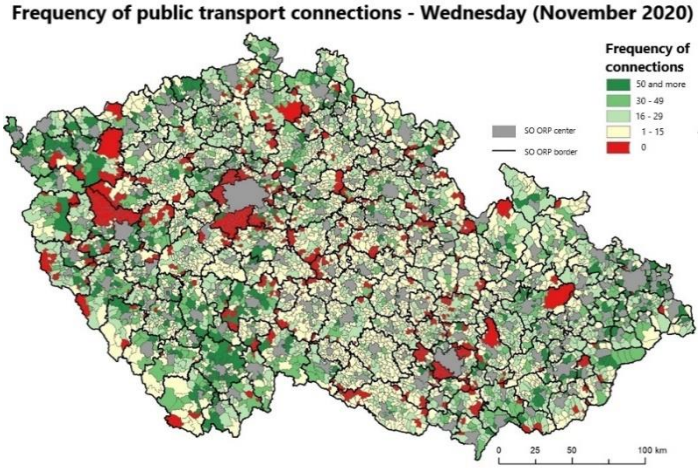
[57] The reason for this analysis was, due to the fact, that the solved project is focused on the peripheral areas, the transport accessibility of these settlement centers means good or poor accessibility of public and private services for the residents of the peripheral areas - whether it deals with health care sector (specialized medical facilities), education (secondary, higher and university education), services from the banking and insurance sector, accessibility of the business network (specialized shops, shopping centers), culture and sports, availability of the transport services (long-distance bus connections, high-speed railway, or fly connection).

during this period was reflected also to the reduction of the transport services provided by the public transport. This fact is also reflected in the maps, which were created based on the results of the analysis. It is necessary to take into account the existence of a certain "distortion", if it deals with the extent of the public transport captured in the maps, in areas around Prague or other large agglomeration centers (eg. Brno or Pilsen) when trying to interpret these maps.[58]

Frequency of public transport connections - Wednesday (November 2020)

The map 1 shows the problematic accessibility of the municipalities with respect to the central, respectively marginal position of ORP within the catchment area (SO) ORP and position of the municipalities of main and secondary roads, respectivelly railway tracks. In the case of the eccentric position of the ORP within SO ORP, the states occur for the farthest municipalities, respectively for the municipalities out of the main roads and railway tracks, when no line of public transport goes to the municipality or only minimum number of the lines (1-4) goes to them even during the work days.

Map 1: Frequency of public transport connections – Wednesday (November 2020)
Source: Project TA ČR number TL03000527 „Internal and external peripheries in the regional development of the Czech Republic – from genetic determination to territorial cohesion“, 2020-2023.

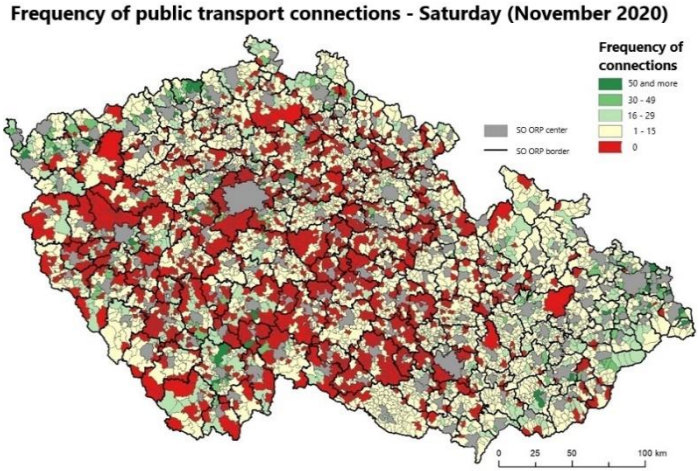


[58] The project, within which the analyzes were processed, is focused on the peripheral areas of our state, and with regard to this fact, the extent of public transport to the ORP in the administrative district of this ORP was determined within the analyzes. The existence and sufficient capacity of this transport is relevant particularly in rural areas away from other large aglomeration centers. However, in the areas with the immediate proximity of large agglomeration centers, the same function, as in the rural areas is usually performed by the transport accessibility of the relevant ODP, ie. the access to services, opportunities for shopping, etc., is fulfilled also by the transport services of these large agglomeration centers, even in relation to the territory not falling within their administrative district as ORP.

Frequency of public transport connections - Saturday (November 2020)

However, a significantly worse situation occurs on Saturday, when the number of municipalities without a connection or with only a minimum connection increases enormously. In the above cases of analyzes of the transport accessibility of SO ORP centers by public transport, it is not possible to define unambiguously the peripheral areas that have a location at the internal (interregional) and external (state) borders. However, data were obtained during the pandemic situation (Covid - 19) as of November 2020. Therefore, especially for the number of public transport lines on Saturdays, this may not be long-term relevant information – Map. 2.

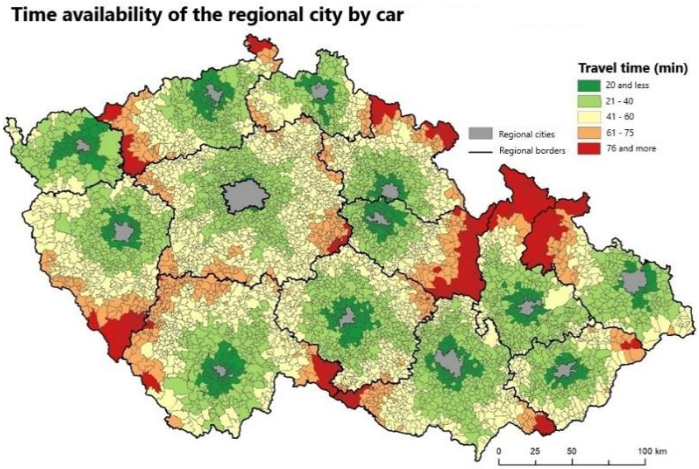
Map 2: Frequency of public transport connections – Saturday (November 2020)
Source: Project TA ČR number TL03000527 „Internal and external peripheries in the regional development of the Czech Republic – from genetic determination to territorial cohesion ", 2020-2023.



Time availability of the regional city by car

The transport accessibility of the regional cities was expressed by their time availability by car, while the accessibility of the regional cities from municipalities according to administrative jurisdiction was analyzed (availability of the regional administrative office and its departments) and the accessibility of the nearest regional cities (availability of the centers with higher services). There can be also see the problematic accessibility of municipalities with respect to the central, respectivelly marginal location of the regional city within the region + location of municipalities on the main or secondary roads. The map shows the location of the peripheral areas on the interregional borders, while the number of the municipalities with a peripheral location is increasing in the large regions, respectively regions with an elongated shape of the territory - especially the southern border of the Pilsen region, the western border of the Ústí nad Labem region, the eastern border of the Pardubice region, the northern border of the Hradec Králové and Olomouc regions and the northwestern border of the Moravian-Silesian region. The analyzed data can be considered relevant from a long-term perspective. Map. 3.

Map 3: Time availability of the regional city by car
Source: Project TA ČR number TL03000527 „Internal and external peripheries in the regional development of the Czech Republic – from genetic determination to territorial cohesion “, 2020-2023.



3 Results and Discussion

The scope of the transport services according to section 3 of the Public Services Act is determined in the independent competence of the municipality and the region. The municipalities and regions also ensure the transport services (the only exception is given in its provision of trains by national transport by transport, which has a supra-regional or international character). The fact that the municipalities and regions determine the scope of the transport services in their independent competence, ie. within the exercise of the right to self-government of municipalities, gives the state only a very limited space for the possible ingerencido of this decision. Especially in the case of the areas with low population density, the question of setting the standards of transport services provided by the public transport arises. These standards should define the scope of the transport services in terms of the frequency of the lines (and, where appropriate, also their capacity) and the maximum permissible walking distance to public transport stops. The need for such standards is currently reflected in the transport service plans of some, but not all, regions. The approaches of the individual regions to set these standards differ from each other, which, in addition to the objective factors influencing the need for the scope of the transport services, also reflects the fact that setting these standards is essentially a political decision of individual regions.

When determining the scope of the transport services by public transport, the requirement of economic rationality also appears, both in the form of the requirement for municipalities to participate financially in providing the transport services in an above-standard scope,[59] as well

[59] It can be referred there, for example, to the transport service plan of the Liberec region (accessible is here: https://silnicni-hospodarstvi.kraj-lbc.cz/Dokumenty-odboru-dopravy/plan-dopravni-obsluznosti-lk) or in the effort to set the standards of the transport services from the part of the Central Bohemian Region towards the municipalities in its territory (see to it for

as in the various scope of the transport services in the individual parts of the territory of the region. The areas with lower level of the economic activity and population density, and thus especially in peripheral and rural areas, will be on the worse level logically.[60]

In connection with the fact that peripheral areas are typically located along the regional borders and sufficient transport services of these areas, including public transport, can be understood as a condition for their development, the question of ensuring transport services by public transport across the regional border also arises.[61] That one is unsured currently on the basis of the agreements on the interregional cooperation in providing transport services between the individual regions.[62] The contracts are concluded in the independent competence of the regions and are not identical in content, but they have[63] certain common features, which follows from their purpose, which is the interest in the development of that part of the territory adjacent to the common border between the regions.[64]

---

example: https://www.idnes.cz/ekonomika/doprava/standardy-dopravni-obsluznosti-stredocesky-kraj.A210616_094327_eko-doprava_cfr).

[60] The current plan of the transport services in the Central Bohemian Region does not regulate explicitly the scope of transport services provided by public transport. The previous plan of the transport services for the years 2016-2020 set this scope, but at the same time stipulated that it is given for each municipality (guaranteed by the region) "only with justifiable demand in the time distribution of the operating day according to transport needs and local conditions" (see https://www.kr-stredocesky.cz/web/doprava/dopravni-plan). This formulation can be difficult probably to interpret otherwise than in relation to the fact that while areas at the "inner" regional border with the Capital City of Prague show a high degree of economic activity and the need for high public transport capacity, areas at the "outer" regional border are characterized, according to current Development Strategy of the Territory of the Region, by so-called “inner periphery“ (strategy is accessible from: https://www.databaze-strategie.cz/cz/sck/strategie/strategie-rozvoje-uzemniho-obvodu-stredoceskeho-kraje-2019-2024?typ=download).

[61] The current development strategy of the Central Bohemian Region states in this context, for example, that "connecting the inner periphery with the centers in the neighboring regions is often more important for these areas, because it will enable increased availability of job opportunities and education". However, the same thing, at least when it deals with the job opportunities, also applies in the case of the so-called external peripheries on the borders of the regions with the neighboring states.

[62] The largest number of these contracts was concluded in the years 2018-2020 by the Central Bohemian Region, which concluded them with all neighboring regions. Concluded conctracts are available at: https://smlouvy.gov.cz/vyhledavani.

[63] Pursuant to Section 3, Paragraph 2 of the Public Services Act, regions may also provide transport services on the territory of another region, with the consent of that region. The Czech legal system does not regulate more detailed regulation to it. The contracts thus differ, inter alia, in their designation, some of them are designated as public coordination agreements, ie. pursuant to Section 160 (4), others are designated only as agreements pursuant to Section 24 of the Regional Act. A closer analysis of this issue goes beyond the purpose of this article, but it must be mentioned that the public contracts may be concluded by territorial self-governing units only if it is set by law, and no special law gives them such authority (see efor example POTĚŠIL, L. HEJČ, D., RIGEL, F., MAREK, D. Správní řád. Komentář (Administrative Procedure. Comment), Praha (Prague): Publishing C. H. Beck, 2020, p. 784-785.

[64] Based on these agreements, the interregional lines are included into the integrated transport systems of both regions and both regions undertake to provide transport services to the other party by a carrier with which they have a public service contract in transport also for the other

With regard to the fact that the provision of the transport services in their territorial district and across the regional border is provided by the regions in their independent competence, the determination of the extent to which they will provide it is based on their political decision.[65] Financial coverage is thus the important limit in this decision-making. Since 2005, when the financing of the transport services was transferred to the independent competence of the regions, its provision depends on the financial resources available to the region for this purpose, which can be always basically an argument why a certain location was not included in the order, optionally the range of the transport services by public transport is limited significantly there. Even with a high degree of motorisation, it seems necessary (or perhaps desirable) to have the minimum standards of the transport services provided by public transport, which would also apply to peripheral and sparsely populated areas, in order to eliminate at least the disadvantage of non-car owners.[66] The transfer of the determination of the scope of the transport services (and optionally its provision) by public transport into the transferred competence of the regions could be one of the possible solutions, thereby the state obtain the possibility to intervene in it. However, such an interference into the regions' right to self-government would be difficult to enforce politically. With the political will to take this step, an agreement between the state and the relevant region on what standard of the transport should be provided in a given area (or an unsurpassable standard could be set by law) would seem much more feasible, while the provision of the transport services in sparsely populated areas could be subsidized by the state.

It seems appropriate to seek further solutions to provide functions that would otherwise be provided by public transport, given the impossibility of relying only on individual car transport in peripheral and sparsely populated areas and the necessarily limited scope of the public transport for the economic reasons. The Transport policy of the Czech Republic sets in general the goal for optimalization of the needs for mobility (not to waste with traffic), when the limitation of a very need to use the transport should be counted, in particular, as a reduction of the negative impacts of the transport on the environment. It can be achieved it even in sparsely populated areas, for example, by subsidizing the permanent shops and service establishments, or optionally with the help of the mobile shops and service establishments that will go around the individual settlements (this solution could also be cost-effective, with regards to the savings that this optimization of the need for mobility could bring in the sphere of the subsidies for public transport). However, as the suitable complementary solution, it seems to be desirable the support and help in the organization of a carpooling system during using privately owned cars and also ensuring the transport services aimed as the social services adressed to the concrete groups of people (for example taking people from the individual municipalities in a sparsely populated area

region and they should compensate mutually the resulting financial costs. Contracts are determined generally as frameworked, so determining on which tracks respectively lines this transport shall be provided, is specified in them only exceptionally, it shall happen usually on the basis of a specific order of each region, which shall determine where the transport service will be provided.

[65] The provision of the transport services by public transport is imposed by the Public Services Act authoritatively by the statement “regions… provide transport services…”, but at the same time the legal system lacks the tools, how to force them to do it if they do not do it in reality.

[66] It has been already stated above that the Transport Policy of the Czech Republic draws attention to the disadvantages of these persons in the areas where the 2nd level of the transport services is through public transport, while acknowledging that this disadvantage has significant negative impact on the demographic development in these areas.

for a specific service that they cannot draw directly at their place of residence, such as medical treatment).[67]

5 Conclusion

The nature of the public transport as a positive element enables to reduce regional disparities, provided that the function is defined properly and the nature of this transport is determined, and thus contribute to the cohesion of the territory. Within the Czech Republic, the solution of the problem of the transport services is hampered by multi-directional spatial relations of the individual municipalities and regions and a settlement structure with a large number of the small settlements.

However, with regard to the current situation in the Czech Republic, it can be stated that transport accessibility is ensured for all regions, but not in sufficient quality. This is one of the reasons for the unequal position between the regions, because the quality of transport accessibility is one of the aspects of the regional competitiveness.

The analyzes done by the research team of the project (TA CR number TL03000527 "Internal and external peripheries in the regional development of the Czech Republic - from genetic determination to territorial cohesion", 2020-2023) show that according to the analysis of the transport accessibility, in comparison with the Czech and Moravian regions, the transport accessibility becomes better in the Moravian regions, and thus the transport accessibility of the centers generates fewer spatial peripheries, with the exception of the northern to northwestern area of the Olomouc region.

We consider as essential that the regional borders concentrate hard-to-reach, far-off municipalities, and thus a higher proportion of spatial peripheries, with the exception of the regional borders of the Ústí Region, the regional borders of the Hradec Králové and Pardubice regions and the internal borders of Moravia in general. Differences can also be noticed at the state borders, where the worse situation is at the borders on the former "Iron Curtain", and parts of the Czech-Polish border significantly far-off from the regional centers. In essence, this is a systemic problem that should be solved centrally and at the regional level.

When ensuring the transport services in the peripheral areas, it is necessary to look for a compromise between the requirement of economic rationality and the effort to achieve the same (or at least still acceptable) level of the services on the territory of whole state. Although it will continue probably to be based on individual car transport in the future, it is necessary, so that certain minimum standards of the transport services were defined provided by public transport. In addition, however, it seems effective in these areas to choose other ways of achieving the level of services that transport services (and in particular public transport) should provide.

Acknowledgement

This paper was elaborated as part of the Technology Agency of the Czech Republic, TL03000527, Internal and external peripheries in the regional development of the Czech Republic - from genetic determination to territorial cohesion.

[67] The voluntary associations of municipalities could play an active role there. They could fulfill mainly an organizational function in the carpooling system, when, for example, the co-driver would get in the car to the car owner during the journey to the destination, for example also in another municipality on the way to the destination. In the case of ensuring transport services as a social service, the voluntary association of the municipalities could also be the customer.

References

[1] BERNARD J. a kol. Nic se tady neděje: Životní podmínky na periferním venkově (Nothingis Happening Here: Living Conditions in the Peripheral Countryside). Sociologické nakladatelství (SociologicalPublishing), 2018.

[2] BÖHM, H.; DOKOUPIL, J., JEŘÁBEK, M. CrossingtheBorders. Studies in thecross-border cooperationwithin the Danube Region. Case Study The Euroregion Šumava-BayerischerWald/UntererInn-Mühlviertel..Budapest: CentralEuropeanServiceforCross-BorderInitiatives, 2016.

[3] CZECH BORDER - Barrier or Space for Mediation)? Praha (Prague): Academia, 2004.

[4] JEŘÁBEK, M. a kol. České pohraničí – Od periferní národní pozice ke stabilnímu prvku evropské integrace (Czech Border - From a Peripheral National Position to a Stable Element of European Integration). Studie Národohospodářského ústavu Josefa Hlávky (Study oftheNationalEconomy Institute of Josef Hlávka), 1/2021.

[5] JEŘÁBEK, M., DOKOUPIL, J., HAVLÍČEK, T. České pohraničí – bariéra nebo prostor zprostředkování (Czech Border – Barrieror Spacefor Mediation)? Praha (Prague), Academia, 2004.

[6] KOVALČÍKOVÁ, D., ŠTANDERA, J. Zákon o veřejných službách v přepravě cestujících a o změně dalších zákonů, Komentář (Act on Public Services in Passenger Transport and on Amendments to OtherActs, Commentary), cited by ASPI.

[7] MUSIL, J. Urbanizace českých zemí a socialismus (Urbanizationof the Czech Lands and Socialism). In: Horská, P., Maur, E. and Musil, J. Zrod velkoměsta: urbanizace českých zemí a Evropa (The Birtho fthe Big City: Urbanizationof the Czech Lands and theEurope). 1st edition Praha (Prague): Paseka, 2002.

[8] POTĚŠIL, L., HEJČ, D., RIGEL, F., MAREK, D. Správní řád. Komentář (Administrative Procedure. Comment), Praha (Prague): Publishing C. H. Beck, 2020.

Contact information

prof. RNDr. René Wokoun, CSc.
University of Finance and Administration, Faculty of Law and Public Administration, Department of Administrative Law and Public Administration
Estonská 500, 101 00 Praha 10, Czech Republic
E-mail: rene@wokoun.cz

JUDr. Petr Čechák, Ph.D.
University of Finance and Administration, Faculty of Law and Public Administration, Department of Administrative Law and Public Administration
Estonská 500, 101 00 Praha 10, Czech Republic
E-mail: petr.cechak@mail.vsfs.cz

doc. JUDr. Pavel Mates, CSc.
University of Finance and Administration, Faculty of Law and Public Administration, Department of Administrative Law and Public Administration
Estonská 500, 101 00 Praha 10, Czech Republic
E-mail: pmates@mail.vsfs.cz

Analysis of the budget potential of local authorities: on the example of the Kharkiv region

Valeriya Yesina, Olha Rudachenko, Natalya Bibik, Maksym Kolinko

Abstract: In the context of European integration processes, the issues of developing the budget potential of local authorities are becoming crucial. In order to increase the efficiency of territorial development, to implement rational financing of projects at the local level, to guarantee the purposeful financing of local initiatives, the decentralization reform has been developed and is being actively implemented in Ukraine. The reform provides for the delegation of a number of powers, including financial, and part of the state budget revenues to the local communities in order to increase the efficiency of territorial development, community autonomy of territorial associations, increase the level of administrative and organizational support at the local level. The article systematizes the theoretical and methodological aspects of the study of the budget potential of local government. The rating of eight territorial communities of the Kharkiv region was carried out on the basis of determining the integrated indicator of budget potential, using the method of forming capable territorial communities, approved by the Cabinet of Ministers of Ukraine. The main directions of local authorities budgetary potential development are highlighted.

Keywords: Budget potential, financial capacity, local government, territorial community

JEL Classification: H20, H61, E49

1 Introduction

The financial management system plays a very important role not only at the state level, but also at the local level. Finance is part of economic relations and at the same time the main mechanism for implementing the main directions of state, regional and local policy of the country socio-economic development.

Receiving income from various sources is an essential condition for the economic development of territories, as ensuring economic growth in the tactical and strategic perspective requires the investment of a significant amount of financial resources. At the beginning of 2014, Ukraine gradually began the process of increasing the own revenues of local governments and funds transferred from the state budget. Due to the increase in the revenue side of local governments, the expenditure side has started to increase as well, which undoubtedly showed the positive trends of the decentralization process in Ukraine.

The main purpose of financial decentralization in Ukraine is to ensure the financial capacity of territorial communities, which according to the Law of Ukraine "On Voluntary Association of Territorial Communities" and the Perspective Plan for the formation of community territories merged, creating a united territorial community [2]. It is the process of financial decentralization that has become a powerful stimulus for creating conditions for the development of the budget potential of territorial communities by providing local authorities with financial autonomy based on the principles of independence, efficiency, publicity and transparency.

Based on the understanding of the meaning of the term "potential" (set of opportunities, degree of capacity, etc.), it is proven to talk about budget potential as budget capacity, about some conditionally achievable amount of revenue to fulfill legislative powers. Thus, the budget potential is a part of the financial potential of the community, which is the total amount of

financial resources (money) that can be attracted from existing sources to the community budget over time and in the current economic conditions.

2 Material and Methods

Financial decentralization has made local budgets independent from the state budget and has created opportunities for planning the development of territories, opportunities for the implementation of real projects. Local budgets, including budgets of territorial communities (TC), are independent, they are not included in the State Budget of Ukraine and other local budgets. At the legislative level, the state ensures full budgetary independence and financial independence of local budgets. The budget of the territorial community is a plan for the formation (income) and use of financial resources (expenditures) to ensure the tasks and functions performed by local authorities during the budget period.

Territorial community budget revenues are tax, non-tax and other revenues on a non-refundable basis, the collection of which is provided by the legislation of Ukraine (including transfers, fees for administrative services, own revenues of budgetary institutions) [1, 6].

Budget revenues are classified as follows [1]:

1) tax revenues;
2) non-tax revenues;
3) income from capital transactions;
4) transfers

Tax revenues include national taxes and fees and local taxes and fees. Non-tax revenues are: 1) income from property and business activities; administrative fees and charges, income from non-commercial economic activity; other non-tax revenues. Income from capital transactions is income from the sale of capital assets (fixed assets, state reserves and reserves, land). Transfers - funds received from other public authorities, local governments, other states or international organizations on a gratuitous and non-refundable basis.

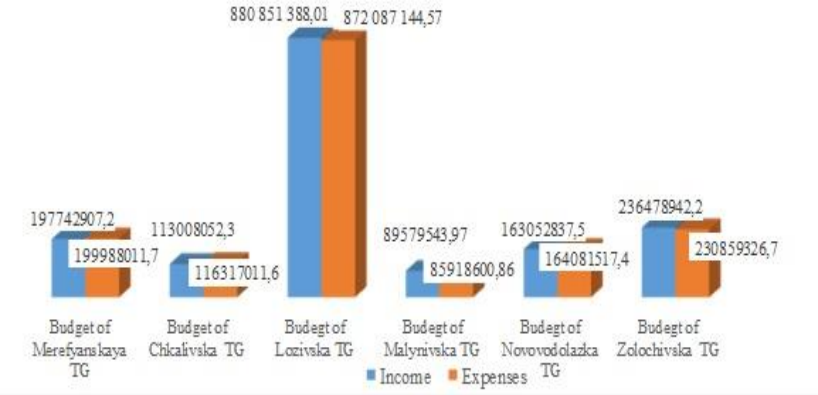
Budget expenditures - funds directed to the implementation of programs and activities provided for in the relevant budget.

The comparison of the budget for 2019 on the example of the following TCs of the Kharkiv region [3] is presented further:

- Merefyanskaya TC, the area of which is 167.8 km2 and the population as of January 1, 2019 is 25.1 thousand people;
- Malynivska TC, the area of which is 122.5 km2 and the population as of January 1, 2019 is 8.3 thousand people;
- Novovodolazka TC, the area of which is 351.6 km2 and the population as of January 1, 2019 is 16.4 thousand people;
- Chkalivska TC, the area of which is 387 km2 and the population as of January 1, 2019 is 12.2 thousand people;
- Zolochivska TC, the area of which is 917 km2 and the population as of January 1, 2019 is 24.6 thousand people;
- Lozivska TC, the area of which is 1102.40 km2 and the population as of January 1, 2019 is 79.1 thousand people .

Figure 1 presents a comparison of budget revenues and expenditures for 2019 presented above in the TC of the Kharkiv region.

Figure 1 - Revenues and expenditures of TC Kharkiv region for 2019, UAH
Source: Created by authors according to official statistic information



As for the budgets of Merefyanskaya, Chkalivska and Novovodolazka TCs, in 2019 the budget of these TCs had significant losses. Figure 1 clearly shows a significant exaggeration of their expenditure. Thus, it is proposed to consider in more detail the main components of the expenditure part of these TCs for 2019, table 1.

Table 1 - Analysis of TC expenditures of the Kharkiv region for 2019, UAH

Indexes	Merefyanskaya TC	Chkalivska TC	Lozivska TC	Malynivska TC	Novovodolazka TC	Zolochivska TC
National functions	41677551,61	24939868,73	80005596,28	24970028	26144084,8	45456947,94
Public order, security and the judiciary	94500	0	0	39996,1	49708,8	75036
Economic activity	30382734,02	13101571	76 989 485,42	21653123	27955610,3	28952761,47
Environmental protection	85260	194900	5 015 525,60	45000	232902	1265530,56
Utilities	28539654,42	6863130,03	28 930 889,07	6102568	26927405,5	15349320,17
Health care	0	1771602,92	114096 3 15,77	915485,9	1110652,76	2721090,78
Mental and physical development	6580871,22	4747280,33	43679 893,34	1683572	6921418,12	9151212,63
Education	87599269,42	61516480,26	292 824319,73	30022168	69781176	121609811,2
Social protection and social security	5028170,96	3182178,3	230 545119,36	486660	4958559,13	6277615,9
Total lending	0	0	300 000,00	0	0	0
Internal lending	0	0	300 000,00	0	0	0

Source: Created by authors according to official statistic information

The analysis showed that in all studied TC the largest part of expenditures is occupied by expenditures on education. So, for example, in Lozivska TC they made 292824319,73 UAH. In second place were expenditures related to national functions. For example, in Lozivska TC they amounted to UAH 80005596.28. Analysis of the expenditure part for each individual TC showed that most of the expenditures are directed to the maintenance of government agencies. However, the TC has broad powers and responsibilities to finance community expenditures. In general, the community spends money on the repair and construction of roads, administrative service centers, medical and obstetric centers and clinics, schools and kindergartens, water supply and sewerage, street lighting and more. That is, for everything that allows you to quickly demonstrate the positive changes from the creation of TC. Currently, a significant number of social infrastructure facilities are being transferred to the balance of TC, and the burden on the expenditure part is also important.

Below is an analysis of the revenues of the studied TCs of the Kharkiv region for 2019 (Table 2).

Table 2 - Analysis of revenues of TC Kharkiv region for 2019, UAH [3]

Indexes	Merefyanskaya TC	Chkalivska TC	Lozivska TC	Malynivska TC	Novovodolazka TC	Zolochivska TC
Tax revenues	77174467,99	55811530,21	354769022,02	46703614	94352661,6	104994257,8
Non-tax revenues	13050535,95	5579585,39	33961990,58	2465468	4898315,27	8813083,7
Income from capital transactions	883879,06	0	2620005,49	0	28337	420341,95
Official transfers	106520225,2	51616936,69	489050369,92	404104621	63767523,7	122251258,7
Trust funds	113799	0	450 000	0	0	0

Source: Created by authors according to official statistic information

Most of the income, almost 80% is official transfers. It demonstrates that budget decentralization measures have had a rather positive impact on the budget potential of TCs. However, the independence of local governments, which is one of the main ideas of budget decentralization, is determined not only by the amount of financial resources, but also the reason for their increase. However, TCs should keep in mind that transfers and other financial assistance from central authorities are temporary solution provided by the government. Therefore, TC should rely on its own capabilities in the accumulation of tax and non-tax revenues.

2.1 Model and Data

The purpose of this research is to analyze the budget potential of territorial communities of the Kharkiv region. The analysis is conducted using official statistics on revenues and expenditures of local budgets. Also, the rating of eight territorial communities of the Kharkiv region according to the integrated indicator of budget potential using the Methodology of formation of able territorial communities was carried out.
The article uses general and special methods of scientific research: analysis and generalization; dialectical methods and evolutionary laws, system analysis, comparison and synthesis, mathematical statistics and graphical method.

3 Results and Discussion

A detailed analysis of the budget potential of the community makes it possible to determine its financial capacity in accordance with the requirements of the "Methodology for the formation of

affluent territorial communities", which includes 16 main points [5]. It should be noted that the formation of capable territorial communities and the development of their budget potential is carried out considering the following criteria:

- the ability of local governments to address public issues that fall within their competence to meet the needs of the population of the relevant administrative-territorial units;
- historical, geographical, socio-economic, natural, ecological, ethnic, cultural features of the development of the respective administrative-territorial units;
- development of the infrastructure of the relevant administrative-territorial units;
- financial support of the relevant administrative-territorial units;
- labor migration;
- results of preliminary assessment of the level of capacity of affluent territorial communities;
- optimal networks of social infrastructure and accessibility of public services in relevant areas.

The formation of capable territorial communities is carried out in the following sequence: 1) identification of potential administrative centers of capable territorial communities and their accessibility zones; 2) determination of the list of territorial communities that are part of the capable territorial communities; 3) assessment of the level of capability.

The assessment of the level of capability is carried out on the basis of criteria that characterize the main socio-economic indicators that affect the development of the relevant capable territorial community [6]. These include: the population living permanently in the territory of the capable territorial community; the number of students receiving education in general secondary education institutions located on the territory of a capable territorial community; the area of the territory of the capable territorial community; index of tax capacity of the budget of the capable territorial community; the share of local taxes and fees in the budget revenues of the capable territorial community.

The estimated level of capability of territorial communities is determined on the basis of the sum of numerical values of the criteria for assessing the level of capability:

- low level of capability - from 1.5 to 2.1;
- average level of capability - from 2.2 to 3.8;
- high level of capability - from 3.9 to 5.

In the case of joining a capable territorial community of one or more territorial communities located in the adjacent area, the boundaries of the area in which the administrative center of the formed capable territorial community is located are subject to expansion [7].

More powerful are those communities that are constantly increasing their own incomes, using all the reserves, as well as attracting investment resources. It is also important to implement a quality personnel policy, as it is professionals who allow communities to both mobilize additional funds and ensure their effective use.

In general, the assessment of budget potential and financial capacity is based on the results of monitoring the implementation of local budgets on four main indicators:

- own income per 1 inhabitant;
- level of budget subsidies (share of basic / reverse subsidies in revenues);
- the share of expenditures for the maintenance of the management staff in the TC's own resources (excluding transfers from the state budget);
- capital expenditures per 1 inhabitant.

Below is an analysis of some indicators of the implementation of local budgets of the TC of the Kharkiv region for 2019 and their overall rating. The indicators, which were used for rating and financial capacity, included:

- Indicator 1 - income of the general fund per 1 inhabitant (excluding transfers) (UAH);
- Indicator 2 - expenditures of the general fund per 1 inhabitant (UAH);
- Indicator 3 - expenditures for the maintenance of the management staff per 1 inhabitant (UAH);
- Indicator 4 - capital expenditures per 1 inhabitant (UAH);
- Indicator 5 - level of budget subsidies (share of basic / reverse subsidies in revenues) (%);
- Indicator 6 - the share of expenditures for the maintenance of the management staff in the revenues of the general fund (excluding transfers) (%);
- Indicator 7 - the share of wages in expenditures of the general fund (%);
- Indicator 8 - share of capital expenditures in the total amount of expenditures (general and special funds), (%).

The indicators of TC of the Kharkiv region for 2019 are presented in Fig.2-9.

Figure 2 - Indicator 1 - income of the general fund per 1 inhabitant (excluding transfers), UAH

Source: Created by authors according to official statistic information

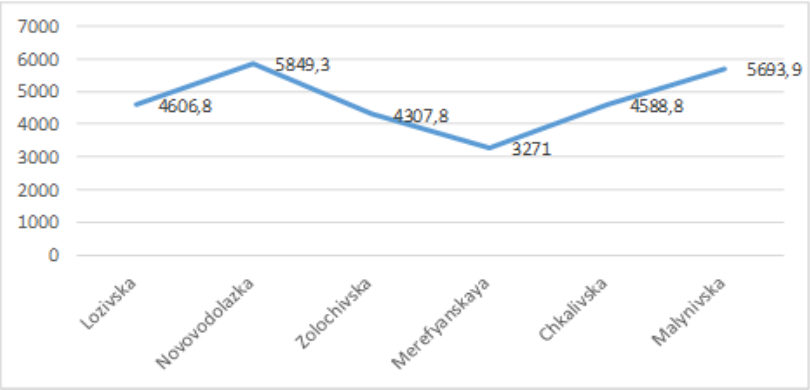


Figure 3 - Indicator 2 - expenditures of the general fund per 1 inhabitant, UAH
Source: Created by authors according to official statistic information

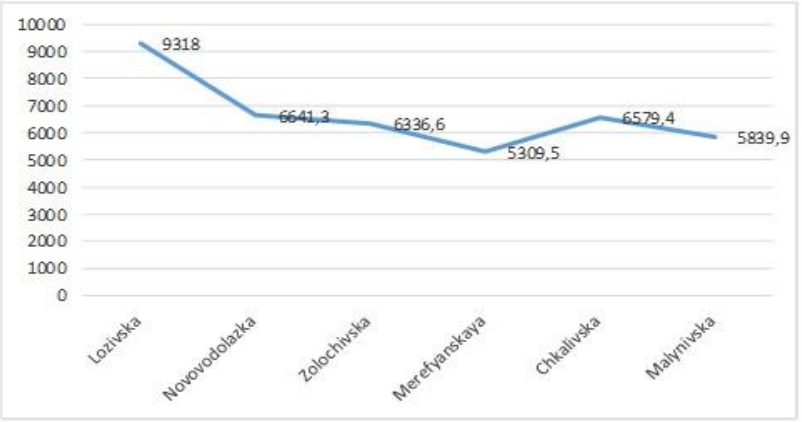


Figure 4 - Indicator 3 - expenses for the maintenance of the management staff per 1 inhabitant, UAH
Source: Created by authors according to official statistic information

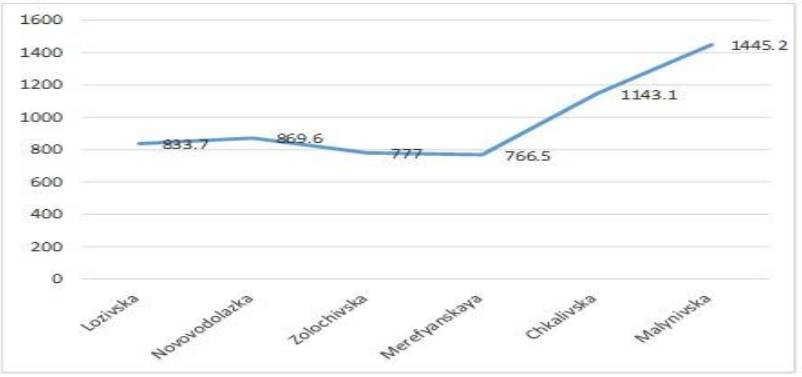


Figure 5 - Indicator 4 - capital expenditures per 1 inhabitant, UAH
Source: Created by authors according to official statistic information

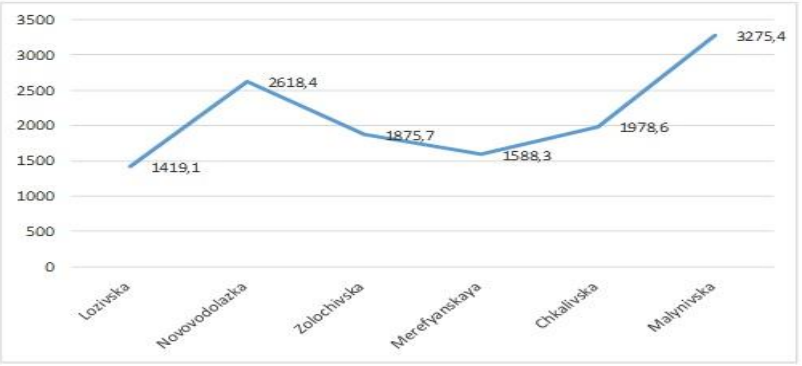


Figure 6 - Indicator 5 - the level of budget subsidies, %
Source: Created by authors according to official statistic information

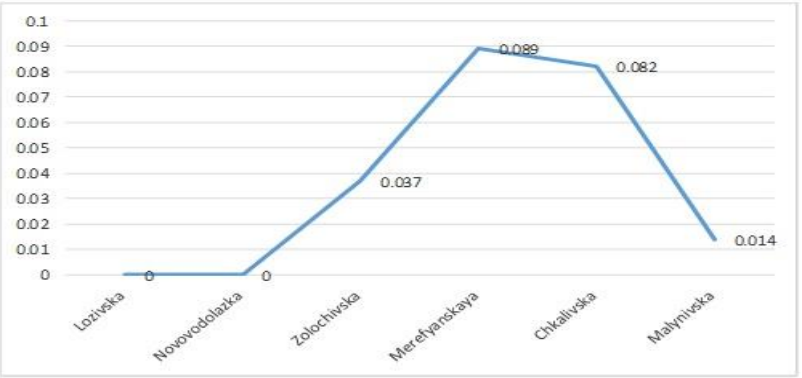


Figure 7 - Indicator 6 - the share of expenditures for the maintenance of the management staff in the revenues of the general fund (excluding transfers), %
Source: Created by authors according to official statistic information

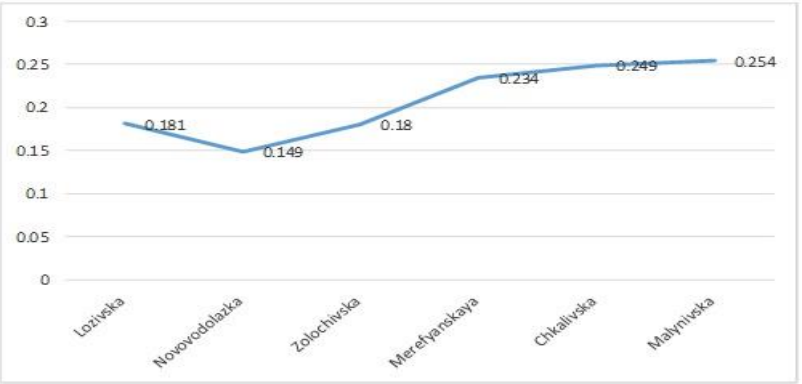


Figure 8 - Indicator 7 - the share of wages in expenditures of the general fund, %
Source: Created by authors according to official statistic information

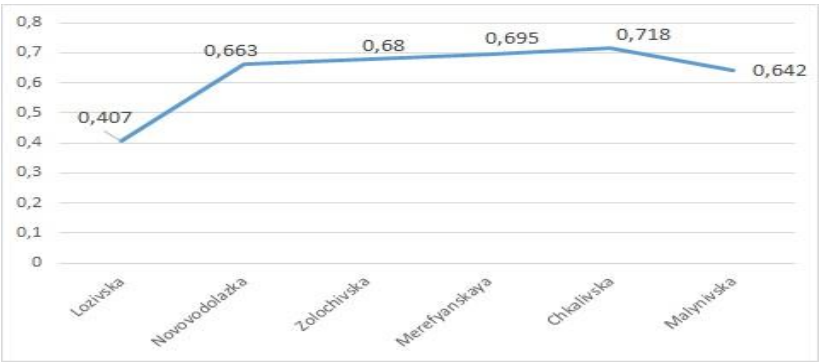
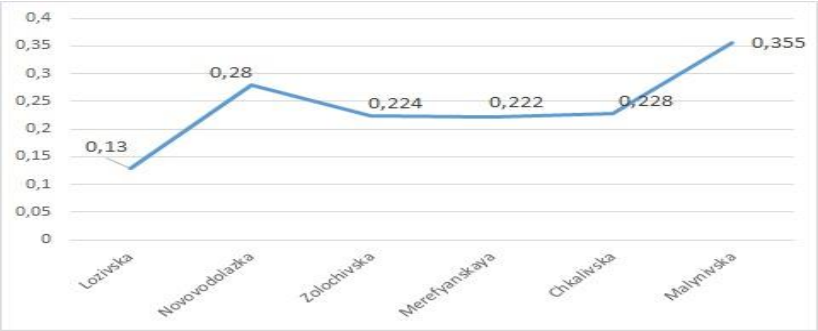


Figure 9 - Indicator 8 - the share of capital expenditures in total expenditures (general and special funds), %
Source: Created by authors according to official statistic information



For each indicator was created a rating of TGs of the Kharkiv region and 6 TGs were selected for the research. Rating constructed by ranking i.e the location of the collected data in the sequence of decreasing values of indicators (the highest figure assigned rank №1, lowest – rank № *max*).

Based on the 8 indicators presented in the figures above in table 3, a matrix of ratings of TCs of the Kharkiv region for 2019 is formed.

Table 3 - Matrix of ratings of TC of the Kharkiv region separately on eight indicators of 2019

Name of TC	Rating according to indicator							
	1	2	3	4	5	6	7	8
Lozivska	17	10	15	9	9	15	8	12
Novovodolazka	13	33	63	7	12	19	22	7
Zolochivska	40	43	53	15	30	36	29	16
Merefyanskaya	75	82	50	20	49	72	34	18
Chkalivska	44	42	103	27	53	76	55	25
Malynivska	53	142	223	22	51	108	38	11

Source: Created by authors according to official statistic information

Thus, on the basis of these indicators in table 3 formed the overall rating of financial capacity of the studied TCs:

- Novovodolazka takes - 7th place;
- Lozivska takes - 9th place;
- Zolochivska takes - 20th place;
- Malynivska takes - 42nd place;
- Chkalivska takes - 43rd place;
- Merefyanskaya ranks 52nd.

Thus, the formed tool for determining the budget potential of the territorial community should help local authorities to assess and form capable territorial communities.

4 Conclusion

The community must be able to provide each resident with appropriate public services in accordance with defined criteria.

Based on the performed calculations and analysis of the rating identified the main factors in the development of budgetary potential, namely - the achievement of the financial capability of TC include:

- sufficient level of own revenues to TC budgets;
- the possibility of using the needs of local loans;
- optimization of intergovernmental transfers;
- formation of TC budget indicators at the allowable level of budget risk, calculated on the basis of empirical data;
- the presence of institutions that provide public control over the efficiency of spending TC finances.

The main directions of local government budgetary potential are:

1. Receiving funds within the framework of cooperation with international and domestic organizations and institutions that take care of the problems of ensuring sustainable regional development (State Fund for Regional Development and others).

2. Attracting funds from private investors in the implementation of public-private partnership programs for the implementation of social projects in the field of medicine, education and culture.

3. Receiving and targeting use of subventions from the state budget - requires careful justification with the necessary documentation, but the rational use of funds received will lead to their systematic allocation.

4. Determinizing of uniform rental rates for all village and settlement councils of TC - will lead to an increase in rental income, but further increase in rental rates is possible only in the case of high inflation.

5. Revisioning of the system of local taxes with the simultaneous strengthening of control over the targeted use of funds received - such actions are unpopular, so raising taxes is possible only in a critical situation.

Acknowledgements

This paper was created within the project: 53-72/19 – Formation of organizational and economic mechanism of governance budget management of territorial communities in decentralization conditions. This is the joint project of the Ministry of Education and Science of Ukraine and O. M. Beketov National University of Urban Economy in Kharkiv.

References

[1] Budget Code of Ukraine. [online]. [cit.2021-04-01]. Available from https://zakon.rada.gov.ua/laws/show/2456-17#Text.

[2] Law of Ukraine On the Voluntary Establishment of Territorial Communities [online]. [cit.2021-04-01]. Available from https://zakon.rada.gov.ua/laws/show/157-19#Text

[3] State web portal of the budget for citizens. [online]. [cit.2021-04-01]. Available from https://openbudget.gov.ua

[4] Decentralization provides opportunities. [online]. [cit.2021-04-01]. Available from https://decentralization.gov.ua

[5] Resolution of the Cabinet of Ministers of Ukraine of April 8, 2015 № 214 "On approval of the Methodology for the formation of affluent territorial communities" [online]. [cit.2021-04-01]. Available from https://zakon.rada.gov.ua/laws/show/214-2015-п

[6] Rudachenko O., Bibik N., Yesina V. (2019) Theoretical and methodological principles of financial state management system development in Ukraine. Proceedings of the 13 th International Scientific Conference Public Economics and Administration 2019. Ostrava: VSB. Technical University of Ostrava, 2019. pp. 343-351. [online]. [cit.2021-04-01]. Available from https://dokumenty.vsb.cz/docs/files/cs/7537439c-c83f-482c-a6a2-6442d8a0cc3a

[7] Бібік Н. В., Єсіна В. О., Рудаченко О. О. (2020). Інформаційно-аналітичні засади управління бюджетуванням в об'єднаних територіальних громадах. *Бізнес Інформ*. №9. С. 107–116. [online]. [cit.2021-04-01]. Available from https://www.business-inform.net/article/?year=2020&abstract=2020_9_0_107_116

Contact information

Yesina Valeriya, PhD.
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Economics
17, Marshala Bazhanova St., 61002 Kharkiv, Ukraine
E-mail: vayesina@gmail.com

Olha Rudachenko, PhD.
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Entrepreneurship & Business Administration
17, Marshala Bazhanova St., 61002 Kharkiv, Ukraine
E-mail: polkin87@ukr.net

Natalya Bibik, PhD.
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Entrepreneurship & Business Administration
17, Marshala Bazhanova St., 61002 Kharkiv, Ukraine
E-mail: nvbibik@gmail.com

Maksym Kolinko, Ph.D. student
O. M. Beketov National University of Urban Economy in Kharkiv, Faculty of Economics and Management, Department of Management and Public Administration
17, Marshala Bazhanova St., 61002 Kharkiv, Ukraine
E-mail: mkolinko@ukr.net

Tax Solidarity for the Development of a Self-Governing Region in the Conditions of the Slovak Republic

Elena Žárska

Abstract: The aim of the paper is to declare that the model of financing self-governing regions is based on solidarity with less developed regions, which leads to higher budgets of tax revenues, which could be a motivation for higher capital expenditures to eliminate regional differences. Two hypotheses were formulated for this: 1. The distribution criteria and the adjustment coefficient for tax revenue is in solidarity with the less developed regions. 2. Higher tax revenues motivate towards higher investment activity. The research was carried out using the following indicators: tax strength, self-sufficiency rate, capital expenditures and debt burden of all 8 self-governing regions of the Slovak Republic for the period 2005 to 2019. Methods of processing from various databases were data analysis and comparison. The results are presented in tabular, graphical and map views using the QGIS program. Hypothesis 1 was confirmed, hypothesis 2 was not confirmed. The Banská Bystrica Region (less developed) has the highest value of tax power, but the highest investment activity is in the Trenčín Region (developed) and the Prešov Region (less developed). While the Trenčín Region uses grants, Prešov increases its debt. From the level of self-governing regions as public administration bodies, it can be hypothetically stated that the analysis did not show the leveling of regional differences. The state also uses other tools and measures, but these have not been analyzed.

Keywords: Regional self-government, tax revenues, capital expenditures

JEL Clasification: G38, H74, R58

1 Introduction

Self-governing regions of the Slovak Republic (higher territorial units) have been on the scene for 20 years and the model of their financing has been valid for 15 years. The first four years were financed from the so-called „Comprehensive Financial Plan of Territorial Self-Government“, which corresponded to the period when competence decentralization took place - municipalities operating since 1991 and self-governing regions created on 1 January 2002 [Act no. 302/2001]. Until now, these transferred competencies have been financed by transfers / subsidies from the state budget (self-governing regions provide secondary education, social care, regional roads and transport, healthcare). Own or original competencies are financed from taxes [Halásková, M., Halásková,R.,2018]. The aim of the paper is to demonstrate the solidarity of the model of financing original competencies based on the analysis of tax revenues and to find out whether higher tax revenues are a motivation for higher investment activity in order to possibly eliminate regional differences [Michálek, 2013]. Two hypotheses were set for the goal.

In 2005, two taxes were added to the budgets of self-governing regions: the share of personal income tax revenue and the motor vehicle tax [Horváth, Cíbik ,Švikruha,2018]. Since 2016, the motor vehicle tax has been revenue of the state budget. The most important and largest income is revenue from personal income tax. A model based on 6 criteria was adopted for the distribution among self-governing regions, and the resulting value was multiplied by the compensation coefficient which was to compensate and eliminate differences among regions. The model was thus set on the principle of solidarity - the state distributes the tax revenue not according to the permanent residence of the taxpayer - a natural person, but by spilling from richer regions to poorer ones. Furthermore, peculiarities of individual regions (e.g. length of roads, density and area of the region) and the range of provided competencies derived from the number of specific population groups to which they were provided (secondary schools, seniors) are respected. This

is ensured by the individual criteria. As a result, higher tax revenues per capita went to less developed regions than to more developed ones. Whether this higher yield motivated less developed regions also to higher investment activity in the form of capital expenditures in order to eliminate regional differences is the subject of research [Kutscherauer,2010; Gonos ,Nemec, 2015].

2 Material and Methods

Based on the data of the final accounts of 8 self-governing regions of the Slovak Republic for the years 2005 to 2019, data on population statistics and other data from the Ministry of Finance for the personal income tax revenue (*daň z príjmu fyzických osôb* - DPFO) distribution model [Act no. 564/2004, Act no. 583/2004, Regulation no. 668/2004] several evaluation indicators were used for the analysis [Žárska a kol., 2007]:

a) Tax strength = tax revenue + non-tax revenue per capita
b) Self-sufficiency rate = own revenue (tax and non-tax revenue) on total revenue
c) Investment activity = capital expenditure per capita
d) Indebtedness = amount of debt per capita

The basic research methods were data analysis and comparison of the 5 indicators. The data were obtained from several statistical databases - the final accounts of the regions and the Slovak Statistical Office database DATAcube. The results are presented in tabular, graphical and map views using the QGIS program.

The distribution of tax revenue is carried out by a model based on 6 criteria, which are shown for illustration and argumentation in Table 1. The weight of individual criteria is: number of inhabitants with permanent residence (15%), number of inhabitants ages 15-18 (15%), number of inhabitants age 62+ (32%), reverse population density (9%), length of roads of categories II and III owned by the region (20%), area (9%).

What is more, Table 2 shows the values of the compensation coefficient, and it should be noted that its value did not change between 2008 and 2014 but the coefficient was adjusted from 2015, as the motor vehicle tax began to be collected centrally. As a result, self-governing regions with higher yields now have a higher coefficient.

Table 1 - Baseline statistical data and the share of regional self-governments from DPFO revenue as of 31 Feb. 2018

Region	Number of inhabitants ages 15-18	number of inhabitants age 62+	Population per km2	Cat. II and III roads (km)	Area (km2)	Reverse population density
Bratislava	18 189	133 649	317	510,05	2 053	0,00322
Trnava	19 900	113 621	136	1 585,218	4 148	0,0074
Trenčín	20 687	125 407	130	1 479,754	4 502	0,00764
Nitra	24 356	144 520	107	2 034,895	6 344	0,00931
Žilina	29 203	128 308	101	1 407,201	6 809	0,00986
Banská Bystrica	25 352	132 732	69	2 440,523	9 455	0,01449
Prešov	39 546	139 281	92	2 435,937	8 973	0,01092
Košice	35 936	143 943	118	1 935,181	6 755	0,00847

Source: Východiskové štatistické údaje a rozpočtované podiely obcí a VÚC na výnose z dani z príjmu FO. Ministry of Finance of the Slovak Republic. Online: http://www1.mfsr.sk/Default.aspx?CatID=10509

The coefficient of horizontal compensation of a higher territorial unit serves to avoid a targeted reduction in the amount of taxes, in order to compensate for differences at the expense of richer municipalities. This solidarity coefficient therefore serves to reduce financial disparities among regions.

Table 2 – Coefficient of horizontal compensation

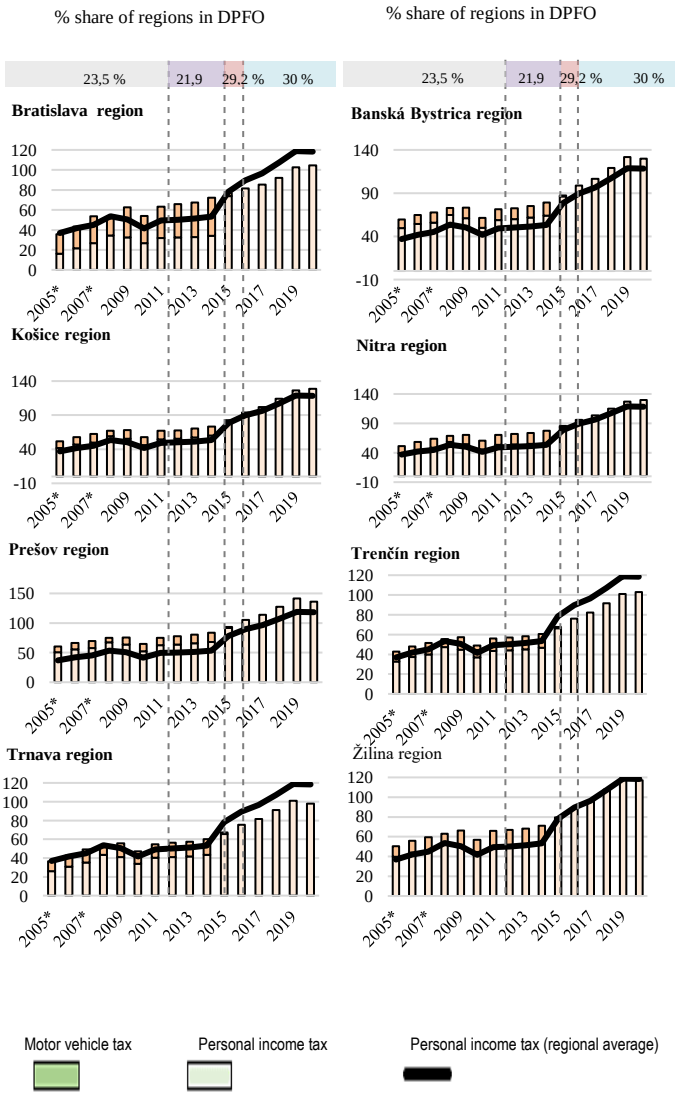
Region	2005	2006	2007	**2008-2014**	2015	2016	2017	2018 - 2019
Bratislava	0,6388	0,7592	0,8796	**0,9518**	1,39838	1,34979	1,30120	1,25261
Trnava	0,8522	0,9015	0,9507	**0,9803**	1,01229	1,01676	1,02123	1,02570
Trenčín	1,0095	1,0063	1,0032	**1,0013**	0,97369	0,97819	0,98268	0,98718
Nitra	0,9637	0,9758	0,9879	**0,9952**	0,99921	1,00268	1,00815	1,01263
Žilina	1,0892	1,0595	1,0297	**1,0119**	0,9998	1,00427	1,00874	1,01322
Banská Bystrica	1,1273	1,0849	1,0424	**1,0170**	0,93111	0,93554	0,92998	0,94442
Prešov	1,1129	1,0753	1,0376	**1,0151**	0,93001	0,93445	0,92890	0,94334
Košice	1,0186	1,0124	1,0062	**1,0025**	0,92437	0,92882	0,93327	0,93772

Source: Regulation of the Government of the Slovak Republic no. 668/2004

3 Results and Discussion

The distribution of DPFO on the basis of the set model and until 2015 also the motor vehicle tax brought the development shown in Figure 1. The percentage of tax revenue for self-governing regions has changed over the years - since 2016 it has been 30% and the rest 70% goes to municipalities [Vojtasová, 2021. It can be observed that the regions of Bratislava, Trenčín, Trnava are below the average level, and thus spill over their yield and are in solidarity with the self-governing regions of Banská Bystrica, Nitra, Prešov, Košice. Developments in the Žilina region copy the Slovak average. Banská Bystrica gains the most as a region, which is also due to the criteria - area, low density, length of roads, but the coefficient of horizontal compensation certainly has its influence.

Figure 1 - Development and composition of tax revenue in the Slovak regions for the years 2005 – 2009 (in mil. €)

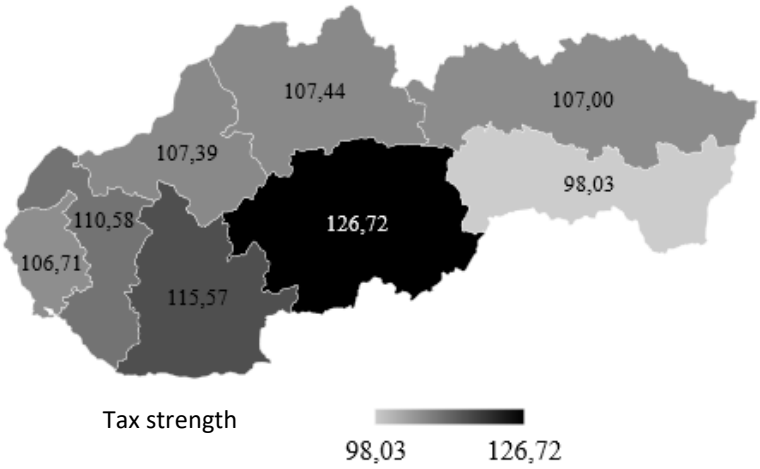


(SR = approved budget), *Values converted from SK to € at the rate of 1 € = 30.1260 SK.
Source: final accounts of regions, own calculations.

How does this translate into tax strength? Why are in particular tax revenues being examined? The income structure of self-governing regions shows a large dependence of regional incomes on tax revenues [Pertrušková, Mihóková, 2014]. In 2005, tax revenues accounted for an average of 49% of total regional revenues, in 2010 it was 44%, in 2015 the share increased to 53% and in 2019 to 59%. The decline in the share of tax revenues in 2010 was caused by the financial crisis and the drop in personal income tax. A partial solution to the financial problems of the regions associated with the crisis brought the possibility of drawing EU funds under operational programmes, but also taking loans [Žárska, 2013].

Tax revenue per capita is commonly referred to as tax strength. This indicator measures tax profitability. Tax revenues are important means for the region, because the region independently decides how to spend them and finances its original competencies with them. The higher the value of the resulting indicator, the higher the tax autonomy of the region [Cabaleiro, Buch,Vaamonde, 2012]. The average value of tax revenues in the regions in the first year under investigation reached € 71.79 per capita. The tax strength of the regions in 2010 averaged € 83.37. The average value in 2010 was € 118.50. In 2019, the average revenue was € 174.80 per capita. Despite the fact that in 2016 the state also collected a tax on motor vehicles, it also changed the compensation coefficient in favor of the regions that had the highest numbers of taxpayers for motor vehicles. The regions of Banská Bystrica (€ 126.72) and Nitra (115, 57 €) continued to have the highest revenue. The lowest value was reached by the Košice region (€ 98.03).

Figure 2 – Average of the indicator of tax strength in the regions of the Slovak Republic for the whole period of 2005 - 2019 (in €)



Source: Final accounts of regions, Slovak Statistical Office - database DATAcube, processed by Vojtasová, 2021

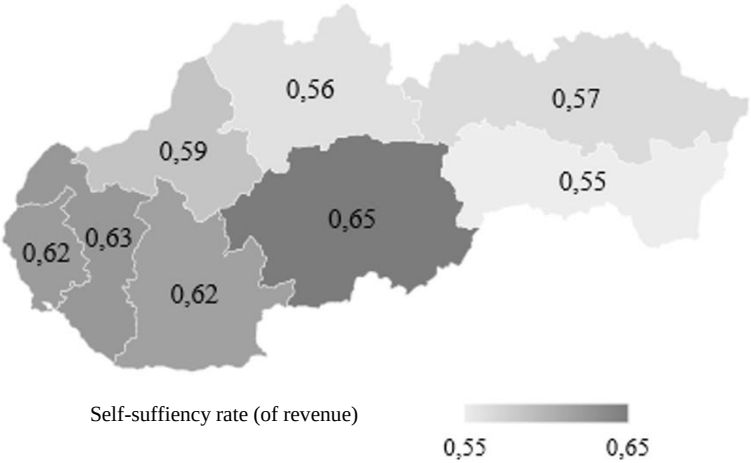
The results confirmed the following observations: on one hand, the impact of the financing model based on the distribution of personal income tax according to the 6 criteria was confirmed, which was to ensure the coverage of the transferred competencies and the introduction of the compensation coefficient [Tunega, 2019]. The influence of the coefficient with respect to the

results of the Košice region cannot be unambiguously confirmed or excluded on the basis of the analysis. Further analysis documenting the correlation of the individual criteria would be needed. However, the analysis confirmed the first hypothesis regarding solidarity with less developed regions.

Tax revenues, which are decisive for the financial autonomy of the region, have grown during the entire monitored period of 15 years. This could have motivated the regions to create reserves for investment activities [Fabianová, 2010]. Tax revenues are also an essential component of the degree of self-sufficiency in revenue generation. The degree of self-sufficiency in revenue consists of tax revenue and non-tax revenue. Together they form the region's own revenue. Non-tax revenues were very low and affected overall values (Figure 3). The Banská Bystrica region had the highest value of 0.65, which was affected by the highest tax revenue.

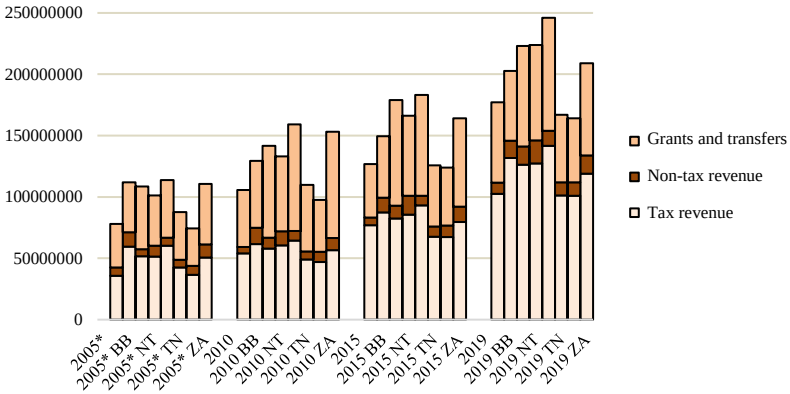
The dependence of regional budgets on the state budget increases with the volume of transfers to transferred competencies. In 2005, transfers accounted for an average of 43% of total revenues in the regions, in 2010 this share increased to 49% and in 2015 and 2019 there was a decrease to the level of 40% and 34% (Figure 4). These specific years were chosen intentionally - year 2005 (first year of the new model), year 2010 (financial crisis), year 2015 (5-year interval), year 2019 (latest available data from final accounts).

Figure 3 - Average of the indicator of the self-sufficiency rate of revenue in the Slovak regions for the enire period of 2005 – 2019



Source: Final accounts of the regions, processeed by Vojtasová, 2021

Figure 4 - Structure of total revenues in the Slovak regions in 2005, 2010, 2015, 2019 (in mil. €)
*Values converted from SK to € at the rate of 1 € = 30.1260 SK.



Total revenue is still growing. The highest level of revenue among the regions in all monitored years was reached by the Prešov region which is also the largest region in terms of population (Table 1). Its revenue for 2019 reached the level of 246 mil. €. On the contrary, the lowest level of revenue in each monitored year was reached by the Trnava region which is also the smallest regions in terms of population. Its total revenue for 2019 reached 164 mil. €.

The assumption of motivation towards higher investment activity to erase regional differences is the basis of the analysis of the development of capital expenditures. Sources of capital expenditures can include: own capital income, current budget surpluses, domestic and foreign (EU) grants, loans and business activities of the region. Regions also use a reserve fund for capital expenditures, which they create from the budget surplus, resp. unspent funds from previous year. The years 2015 to 2019 were economically successful and revenues from personal income tax were also higher than planned. This allowed the regions to create reserves for investment activities. Figures 5 and 6 show how capital income and expenditures developed over the whole period under investigation.

Figure 5 - Average capital income per capita in the Slovak regions for the whole period 2005 - 2019 (in €)
Source: final accounts of regions, Slovak Statistical Office - database DATAcube, processed by Vojtasová, 2021.

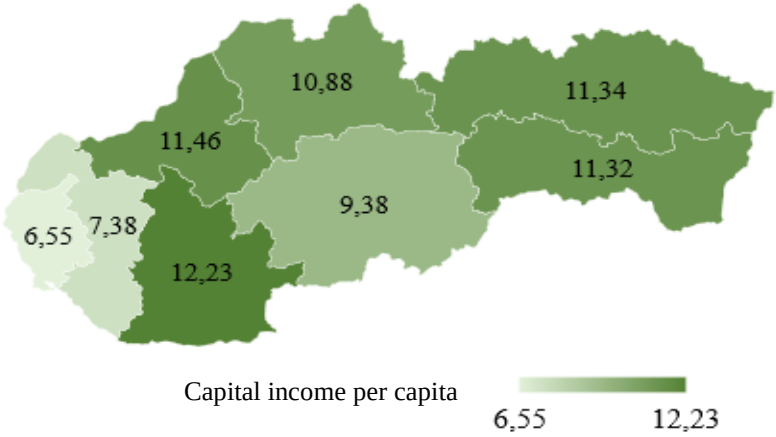
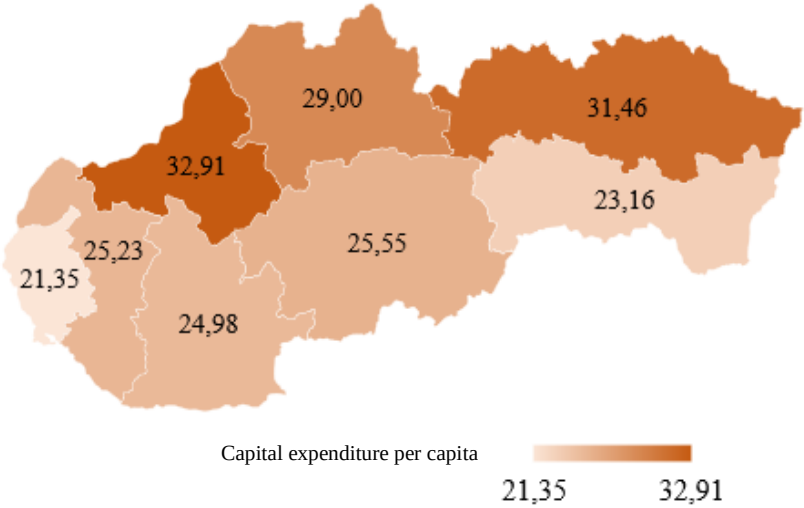


Figure 6 – Average capital expenditures per capita in the Slovak regions for the entire period 2005 - 2019 (in €)
Source: final accounts of regions, Slovak Statistical Office - database DATAcube, processed by Vojtasová, 2021.

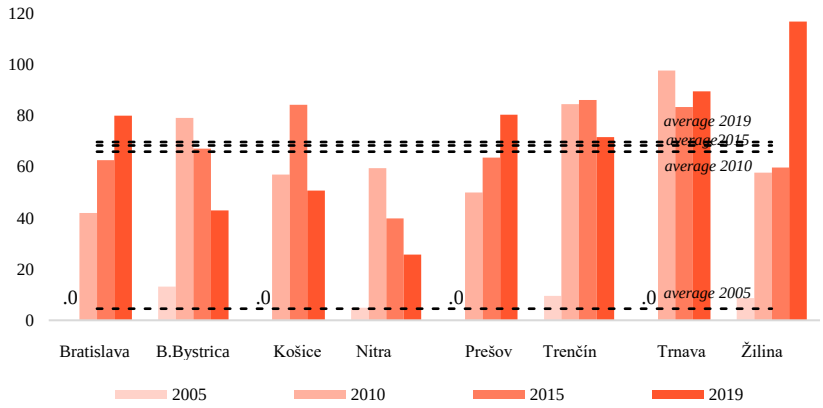


On average, in 2005 the regions' capital income per capita amounted to € 7.60; in 2010 € 11.73; in 2015 € 10.69 and finally in 2019 the highest value of € 12.13. The development for the entire monitored period 2005 - 2019 (Figure 5) documents the capital income of regions per capita in the average value of € 10.07. Only three regions during the whole monitored period reached a below-average level of capital income per capita, namely: Bratislava, Trnava and Banská Bystrica regions.

Capital expenditures intended mainly for financing investment plans and for asset appreciation were the highest in 2005 and 2010 in the Žilina Region. This amounted to 18% (€ 21 million) and 19% (€ 31 million) of the region's total expenditures. In 2015, the Košice region reached the highest share of 15% (€ 25 million). In 2019, the highest share of capital expenditures from total expenditures was achieved only by the Prešov Region with a share of 20% (€ 47 million). Figure 6 shows that the Trenčín, Prešov and Žilina regions were above the average (€ 26.70) during the entire monitored period 2005 - 2019. One can observe that from a longer period perspective the three regions show the highest capital expenditures. Other regions reached a below the average level. The Bratislava region had the lowest value in the amount of € 21.35 of capital expenditures per capita.

This begs a question: from what sources were these expenses covered - from own, grants or loans? The answer to the question is provided by the last indicator - debt per capita (Figure 7). At the beginning of the period under investigation (i.e. 2005), the Bratislava, Košice, Prešov and Trnava regions did not use any repayable sources of financing. In the remaining regions, the amount of debt per capita reached the value of € 4.9 to € 13.1. In 2010, the impact of the financial crisis is noticeable, and thus the related decline in tax revenues, which was offset by regions, especially from other than own sources. Relatively high amounts of debt per capita are in the Trnava region (€ 97.69), the Trenčín region (€ 84.58) and the Banská Bystrica region (€ 79.09). In 2015, the Nitra region achieved significantly the lowest debt per capita of € 39.89. This was due to the positive growth of the Slovak economy and the strong drawdown of EU funds for the 2007-2013 programming period. Other regions achieved debt per capita above € 60. Even in 2019, the Nitra region maintained its place with the lowest debt per capita (€ 25.75) among all regions. It was followed by the Banská Bystrica region (€ 42.99) and the Košice region (€ 50.68). Other regions in this year reached a level of debt per capita above € 70, while the highest value (€ 116.78 per capita) was recorded in the Žilina region.

Figure 7 – Debt per capita in the Slovak regions in 2005, 2010, 2015 and 2019 (in €)



Source: final accounts of regions, Slovak Statistical Office - database DATAcube, own calculations.

The results of the analysis have not confirmed the 2nd hypothesis, because the Banská Bystrica region showed the highest tax revenues during the entire period, but its investment activity was not the highest. To some extent, this has also led to lower use of loans and probably grants too. The Prešov and Trenčín regions have had the highest use of grants, and the Žilina region and the Trnava region use loans more than the other regions - thus increasing their indebtedness.

4 Conclusion

The financing of self-governing regions shows a strong dependence on the state budget, while the highest income originates from tax revenues distributed to the regions by a model with a balancing effect. Higher tax revenues go to less developed regions, but do not cause higher investment activity for their development. Capital expenditures per capita are higher in regions that do not have higher tax revenues. It cannot be stated from the level of the region that regional differences are being eliminated. The second hypothesis was not confirmed. The investment activity of regions, which receive higher tax revenues on the basis of the compensation coefficient, is lower. However, other funds also go to the regions through local governments and state institutions [Papcúnová, Hudáková, Štubňová, Urbaníková, 2020]. Their impact on the elimination of regional differences was not the aim of the paper. However, the region as a self-governing body is only one of the actors in the development of the territory and focuses primarily on the provision of public services [Dooren, Bouckert, Halligan, 2010]. The important, resp. the decisive actor is the state which has other mechanisms and tools to address the differences [Žárska, Rafaj, 2017]. Investigating the impact of other public actors (state, municipalities) is the subject of further research.

Acknowledgements

The paper was created within the VEGA grant no. 1/0683/21 "Generational exchange and provision of public services and administration", research period 2021-2023.

References

[1] CABALEIRO R. – BUCH, E. – VAAMONDE, A. (2012).Developing a Method to Assessing the Municipal Financial Health. [online]. USA: SAGE journals, [2012-07-05]. 24 s. Dostupné na: <http://arp.sagepub.com/content/early/2012/07/03/0275074012451523>

[2] DOOREN, W., BOUCKAERT, G., HALLIGAN, J. (2010). *Performance Management in the Public Sector*. New York: Routledge.

[3] FABIANOVÁ, K. (2010) Finančná samostatnosť vyšších územných celkov na Slovensku. *Národná a regionálna ekonomika VIII.: zborník príspevkov z medzinárodnej konferencie.* [online]. Košice: Ekonomická fakulta Technickej univerzity v Košiciach, 2010. 234 s. ISBN 978-80-553-0517-2.

[4] GONOS, J. – NEMEC, J. (2015). *Vývoj regionálnych disparít krajov Slovenskej republiky*. Zborník vedeckých prác katedry ekonómie a ekonomiky ANNO 2015. [online]. Prešov: Prešovská univerzita v Prešove, 2015. 152 s. ISBN 978-80-555-1351-5. Dostupné na: http://www.pulib.sk/web/kniznica/elpub/dokument/Kotulic22

[5] HALÁSKOVÁ, M., HALÁSKOVÁ, R. (2018). Public Administration and Services in Relation to Fiscal Decentralisation and Good Governance. In *12th International*

Conference Public Administration 2018. Conference Proceedings. Pardubice: University of Pardubice, pp. 60-71. ISBN 978-80-7560-161-2.

[6] HORVÁTH, P. – CÍBIK, L. – ŠVIKRUHA, M. (2018) Finančná závislosť územnej samosprávy na Slovensku. *Scientific papers of the University of Pardubice. Series D, Faculty of Economics and Administration. 42/2018. [online].* Pardubice: Univerzita Pardubice, 2018. 13 s. *ISSN 1211-555X*. Dostupné na: https://www.academia.edu/38323802/FINAN%C4%8CN%C3%81_Z%C3%81VISLOS%C5%A4_%C3%9AZEMNEJ_SAMOSPR%C3%81VY_NA_SLOVENSKU_FINANCIAL_DEPENDENCY_OF_TERRITORIAL_SELF_GOVERNMENT_IN_SLOVAKIA

[7] KUTSCHERAUER, A. et al. (2010). Regional disparities in regional development of the Czech Republic. Disparities in country regional development - concept, theory, identification and assessment [online]. [cit.2015-03-15]. Available: http://disparity.vsb.cz/edice_cd/cd11_regdis_mono_angl/pdf/Regional%20disparities.pdf

[8] MICHÁLEK, A. (2013). Indikátory identifikácie a merania regionálnych disparít (niekoľko poznámok k výberu indikátorov). *Geografický časopis, roč. 65, č. 4.* [online]. Bratislava: Geografický ústav SAV, 2013. 20 s. ISSN 0016-7193. Dostupné na: https://www.sav.sk/journals/uploads/03101237Mich%C3%A1lek.pdf

[9] Nariadenie Vlády SR č. 668/2004 Z. z. o rozdeľovaní výnosu dane z príjmov územnej samospráve.

[10] PAPCÚNOVÁ, V., HUDÁKOVÁ J., ŠTUBŇOVÁ, M., URBANÍKOVÁ M. (2020). Revenues of Municipalities as a Tool of Local Self-Government Development (Comparative Study). *Administrative Sciences. Vol. 10, No.4*, pp. 1-23 DOI 10.3390/admsci10040101.ISSN 2076-3387.

[11] PETRUŠKOVÁ, A. – MIHÓKOVÁ, L. (2014). Analýza finančnej autonómie územných jednotiek NUTS 3 v SR. *Sociálno-ekonomická revue, roč. 12, č. 3.* [online]. Trenčín: FTSEV Trenčianska univerzita A. Dubčeka v Trenčíne, 2014. 120 s. ISSN 1336-3727. Dostupné na: http://fsev.tnuni.sk/fileadmin/veda_a_vyskum/SER/2014/Socialno_ekonomicka_revue_volume_3_2014.pdf

[12] Štatistický úrad SR: databáza DATAcube.

[13] TUNEGA, M. (2019). *Analýza finančnej stability vyšších územných celkov v SR za rok 2018.* [online]. Bratislava: INEKO, [2019-10-17]. 15 s. Dostupné na: https://www.ineko.sk/clanky/publikacie.

[14] VOJTASOVÁ, M. (2021). Bonita samosprávny. Ekonomická univerzita Bratislava. Národohospodárska fakulta. Katedra verejnej správy a regionálneho rozvoja: diplomová práca 81 s.

[15] Zákon NR SR č. 302/2001 Z .z. o samospráve vyšších územných celkov v znení neskorších predpisov.

[16] Zákon č. 564/2004 Z. z. o rozpočtovom určení výnosu dane z príjmov územnej samospráve a o zmene a doplnení niektorých zákonov.

[17] Zákon č. 583/2004 Z .z. o rozpočtových pravidlách územnej samosprávy a o zmene a doplnení niektorých zákonov.

[18] Záverečné účty samosprávnych krajov SR za roky 2015 – 2019.

[19] ŽÁRSKA,E. A KOL. (2007). Komunálna ekonomika a politika. Bratislava: Ekonóm. 192 s. ISBN 978-80-225-2293-9.

[20] ŽÁRSKA, E. (2013). Municipalities` financial innovation on the financial crisis (?). In *Theoretical and practical aspects of public finance 2013 : proceedings of the 18th international conference, Prague, april 2013*. - Prague : Wolters Kluwer, 2013. ISBN 978-80-7478-387-6, s. 246-255. KEGA 009EU-4/2011.

[21] ŽÁRSKA, E., RAFAJ, O. (2017). Rozvoj miest a jeho financovanie. In: *Scientific papers of the university of Pardubice*. Pardubice: University Of Pardubice, 2017, roč.24, č.3, s. 257 – 267. ISSN 1211-555X.

Contact information

prof. Ing. Elena Žárska, CSc.
University of Economics in Bratislava, Faculty of National Economy, Department of Public Administration and Regional Development
Dolmozemská cesta 1, 835 52 Bratislava, Slovak Republic
E-mail: elena.zarska@euba.sk

Author: Collective of authors

Department, Faculty: Department of Public Economics, Faculty of Economics, VSB – Technical University of Ostrava

Editor: Ivana Vaňková

Title: Proceedings of the 14th International Scientific Conference Public Economics and Administration 2021

Place, year, edition: Ostrava, Czech Republic, 2021, 1st edition

Number of pages: 490

Published: VSB - Technical University of Ostrava, 17. listopadu 2172/15, 708 00 Ostrava-Poruba, Czech Republic

Printed: ZEMAN ART s.r.o., Samaritánská 3192/12, 700 30 Ostrava-Zábřeh

Number of copies: 40

NOT FOR SALE

ISBN 978-80-248-4580-7

ISBN 978-80-248-4581-4 (On-line)

ISSN 1805-9104