OECD REVIEW OF CZECH PENSION SYSTEM: CUI BONO?

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Abstract
The OECD has reviewed the Czech pension system on request of the Czech government, using its specific taxonomy of "pension tiers" that is (shall be) descriptive (not prescriptive) and consistent over a range of countries; The first two OECD tiers are mandatory: a redistributive public tier and an insurance public and/or private tier. The team agrees to the simplification of the benefit formula of the Czech public old-age pension; the basic pension benefit may be adjusted to achieve (political) redistributive objectives. The team dramatically recommends reducing drastically the minimum number of years required to be eligible to both the basic pension and the earnings-related component at the statutory retirement age. The social assistance benefit level shall be indexed to nominal wage growth. A higher social assistance benefit level shall be introduced for people reaching the statutory retirement age. The third pension tier in the OECD taxonomy are all "voluntary pension arrangements" including occupational pension schemes. In Czechia, the occupational pension schemes are practically prohibited due to former ultra-liberal governments. The OECD Review recommends introducing them in a UK or US manner or upgrade the Czech third pillar to the same extent. The OECD thus ignores the specific role of the personal pension schemes worldwide and tries to push through a large neo-liberal reform of the Czech ineffective third pension pillar. We may only decide to choose between the occupational and personal coats of the same neo-liberal solutions which are classified as "soft compulsion" arrangements by disinterested experts. The OECD approach is here very "prescriptive", it demands a substantial "diversification" of funds into ineffective "voluntary pension arrangements".

Keywords
Czech pension system; pension reform; public pensions; occupational pensions; personal pension savings; neo-liberal welfare regime

JEL classification
H55; J32; G51; P51; I38.

1 Introduction

In 2018 our government made a relatively general commitment to a pension reform: the universal old-age security ought to be defined, the equivalence principle strengthened, and people should be motivated to use the subsidized individual old-age products. The intragovernmental conflict led to the request for an OECD review of the Czech pension system.

2 Literature review

OECD (2020) provides an assessment of the Czech "retirement income provision from an international perspective and focuses on the capacity of the pension system to deliver adequate retirement income in a financially sustainable way. The review highlights OECD best practices for the design of pensions by covering all components of pension systems: safety nets, public pay-as-you-go schemes and private funded plans". The OECD review of the Czech pensions is basically structured according to the OECD specific taxonomy of pension "tiers": chapter 1 deals with Czech public mandatory earnings-related pensions, chapter 2 is assessing the financial impacts of aging, chapter 3 reviews "first layer of social protection for older people" and chapter 4 deals with "voluntary funded pension arrangements". The OECD pension system typology aims for a global classification of pension plans that is descriptive and consistent over a range of countries with different retirement-income systems; this typology consists of two mandatory "tiers": an adequacy part and an earnings-related part. Voluntary provision, be it individual or employer-provided, makes up a third tier – see Fig. 1.

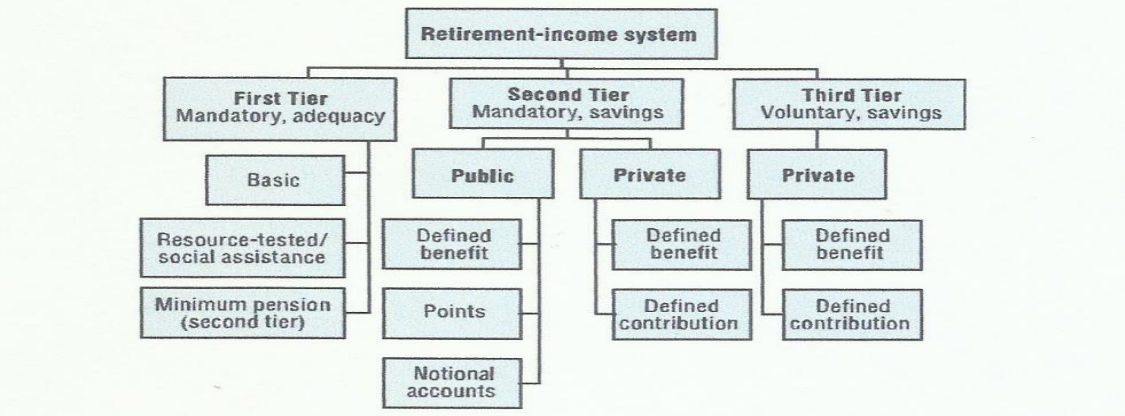


Fig. 1. OECD Taxonomy: Different types of retirement-income provision (Source: OECD, 2017)

Chapter 1 of the OECD review focuses on the main component of the Czech (old-age) pension system which is characterized by the OECD as a public mandatory earnings-related (defined benefit) pension scheme. The chapter also provides an overview of the demographic and labour market trends in Czechia, as well as pension reforms undertaken over the last three decades, including the reforms done after the Constitutional Court interference in 2011 into the thresholds used in the progressive reference-wage formula (reducing accruals for higher wages) which were in violation of the constitutionally guaranteed right to adequate income replacement. Current pension outcomes are also presented. The chapter describes the rules of the current pension system and assesses its capacity to deliver good pensions in a financially sustainable way.

The first mentioned main weakness of the Czech pension system is, according to the OECD review, the relatively low average income of older people relative to that of the total population, despite high contribution rates. Fig. 2 documents this assessment by the comparison with other OECD countries. The Review does not explain this result and in the next paragraph it states that the "relative old-age income poverty rate, measured as the share of people over 65 with equivalised income below half median, is relatively low in international comparison, equal to 7.4% in 2017" (OECD, 2020).

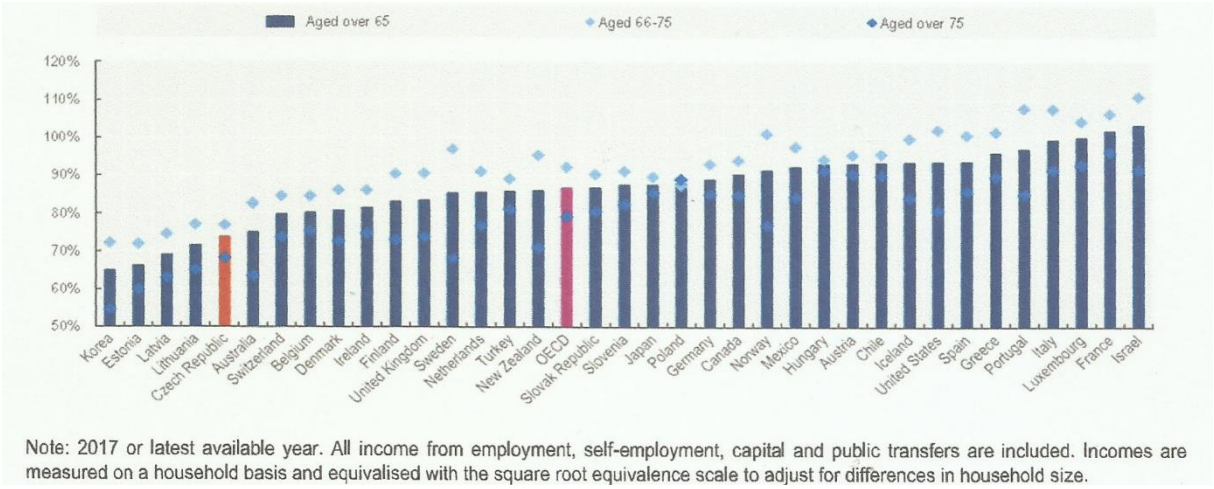


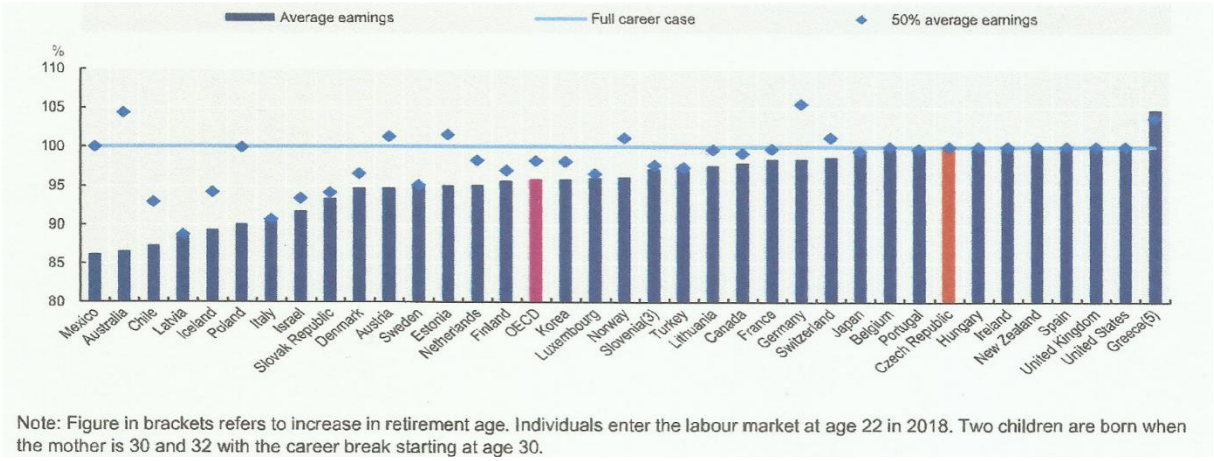
Fig. 2. Disposable incomes of people aged over 65, percentage of total population incomes (Source: OECD, 2020)

The second mentioned main weakness of the Czech pension system is the very complex build-up of pension entitlements, "making it difficult for contributors to understand their accrued rights (and anticipate their future pension level) and for the administration to manage the system" (OECD, 2020). That is a common knowledge in Czechia, at least since the above-mentioned ruling of the Czech Constitutional Court. "The way to calculate pensions should be simplified so as to identify entitlements when they accrue, enable workers to better anticipate their retirement income and make the management of the system easier and more precise" (OECD, 2020).

According to the third main weakness of the Czech pension system, ageing pressures will lead to financial imbalances driven by higher pension spending.

The fourth main weakness is, according to the OECD review, the fact that funded private pensions play a limited role, which allegedly "prevents reaping the benefits of a diversified structure. … voluntary private pensions should be better designed to boost their capacity to complement public pensions" (OECD, 2020).

The OECD Review also pays attention to pension entitlements for the time spent on childcare; the Czech law validates these periods for children up to four years of age (and excludes them from the reference wage). Fig. 3 "shows the impact of career breaks due to childcare on pension benefits under the assumptions of the OECD pension model. More precisely, it compares pension benefits for women who stop working during five years from age 30 to care for their two children born when the mother was aged 30 and 32 (at age 35 they are assumed to resume full-time work until the normal retirement age) compared with the full-career case. In the Czech Republic, due to generous childcare credits, such a career break has no impact on future pensions whatever the earnings level. By contrast, this career break generates a loss of 4% on pensions on average across OECD countries for average-wage workers. In countries with funded DC systems, with a one-to-one relationship between actual contributions and pensions, such as Mexico, Australia and Chile, the losses from childcare are much larger, resulting in more than 12% lower pensions at the average-wage level" (OECD, 2020).



Note: Figure in brackets refers to increase in retirement age. Individuals enter the labour market at age 22 in 2018. Two children are born when the mother is 30 and 32 with the career break starting at age 30.

Fig. 3. The effect of a childcare career break on pension entitlements for women (Source: OECD, 2020)

According to the OECD, Czechia is "an outlier with the longest period to be eligible for earnings-related pensions … Mexico comes second with "only" 24 years required. On average among OECD countries, it is equal to nine years. In many countries, it is less than one year" (OECD, 2020). Fig. 4 demonstrates this (alleged) extremeness.

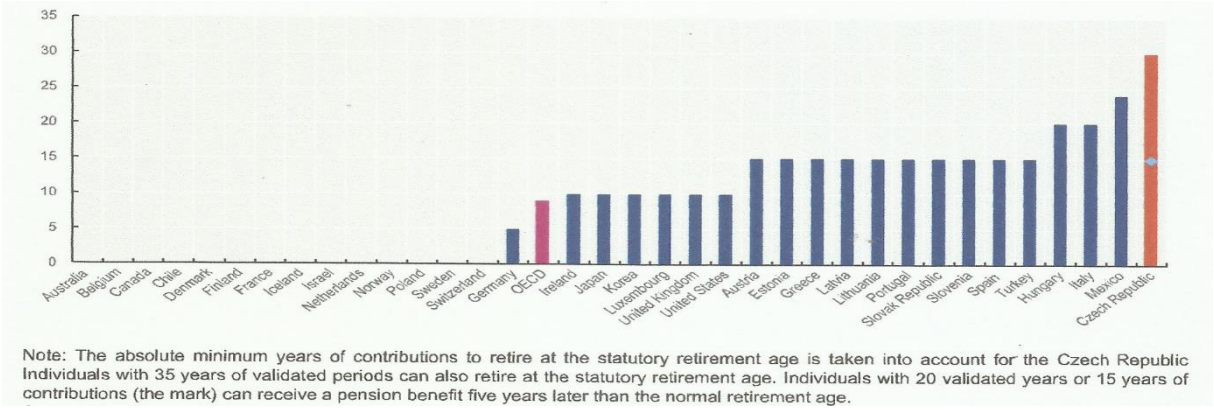


Fig. 4. The minimum years of coverage required is extremely high in Czechia (Source: OECD, 2020)

The OECD key recommendation No. 1 is "drastically reduce the minimum number of years required to be eligible to both the basic pension and the earnings-related component at the statutory retirement age, and make the basic pension benefit proportional to the validated contribution period; move towards ensuring that the first year of contribution generates entitlements" (OECD, 2020). Afterwards the Ministry of Labour and Social Affairs reduced the basic number of years required to be eligible to the old-age pension from 35 to 25 years in its pension reform proposal.

The OECD key recommendation No. 2 is to "simplify the benefit formula such that entitlements earned for each contribution period are clearly identified … and people can better anticipate their future pension level. This can be done by calculating earnings-related entitlements using a constant effective accrual rate across earnings levels (up to a ceiling) while adjusting the basic pension benefit to achieve redistributive objectives" (OECD, 2020). "Proposals by the Fair Pension Commission in January 2020 (triple the basic pension level and constant effective accrual rate of 0.39%) would greatly simplify and go a long way in mimicking the current pension formula … at retirement … The Commission proposals imply a high level of basic pension and a low level of accruals in international comparison, consistent with maintaining high progressivity… Other components of the Commission proposals add some new complexity: complex options to grant new pension credits, additional bonuses for childcare and long (more than 41-year) careers" (Boulhol and Geppert, 2020).

Next OECD key recommendations are: Implement the legislated increases in the retirement ages and their convergence between men and women and link the unified retirement age to gains in life expectancy, for example to transmit two-thirds of increases of life expectancy at older ages to the statutory retirement age. Raise the minimum early retirement age and adjust early retirement ages to life expectancy as well. Eliminate age-specific credits for unemployment periods" (OECD, 2020).

The Pension Review also recommends to "raise the contribution base of the self-employed from its current level of 50% to 75% of profits to better harmonise contributions and entitlements between employees and the self-employed with similar earnings" and to "Avoid encouraging self-employment through lower contributions, which generate lower pension entitlements. If there is a political choice to support self-employment, make any subsidy explicit by financing the contribution gaps compared with employees having similar income through general taxes" (OECD, 2020).

The final key recommendation to Czech public pensions is to "Consider shifting part of the financing (of at least some redistributive components) to taxes to boost pensions for people earning more than the average wage" (OECD, 2020).

Chapter 3 of the OECD review focuses on the "first layer of old-age social protection" in Czechia, which „consists of first-tier benefits from the contributory pension scheme and several non-contributory safety-net benefits". Currently, "about 2 million people aged 65+ receive contributory old-age or survivor pensions (or both) … In addition, 465 000 safety-net benefits support people aged 65+, some of whom receive several benefits. Among these schemes, health-related benefits are predominant while social assistance plays a minor role. … A low level of income inequality and a high coverage rate from contributory pensions are the main drivers of this pattern. … the legal living minimum is about 10% of the … average wage. This is one of the lowest levels in the OECD and equal to about half of the OECD average" (OECD, 2020), see Fig. 5. The social assistance benefit level shall be indexed to nominal wage growth. Social assistance ("living minimum") at 10% of gross average earnings … might not effectively prevent old-age poverty in Czechia. The OECD recommendation is to increase the benefit level at least for people older than the statutory retirement age (Boulhol and Geppert, 2020).

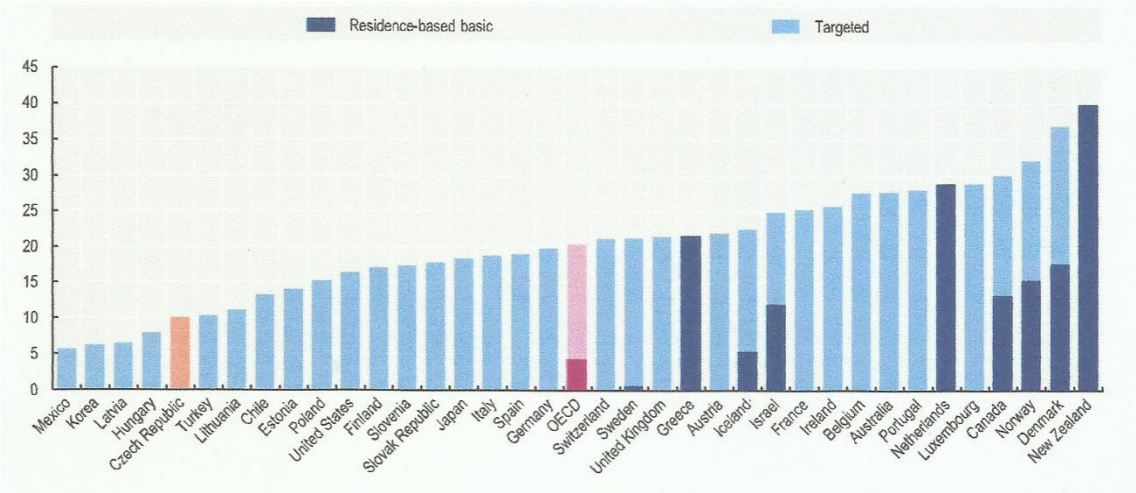


Fig. 5. Non-contributory first-tier benefit level [% of gross average earnings], 2018 (Source: OECD, 2020)

Chapter 4 of the OECD review examines the Czech voluntary funded pension system (since its creation in 1994) and evaluates it against "OECD international best practices". The Czech "third pension pillar" has large coverage of the population but small contributions, the state provides significant financial incentives. Low performance of the pension funds stems from conservative investment strategies due to the annual non-negative return guarantee – according to the OECD review. Participants mostly withdraw lump sums (instead of regular payments).

"The Czech market of pension management companies is moderately concentrated. Since 2015, eight pension management companies are active in the supplementary pension schemes. … At the end of 2019, the pension management companies were managing assets in 36 pension funds, of which 28 participating funds and eight transformed funds. In addition, the two largest companies managed 45% of the assets for 46% of the participants. The Herfindahl-Hirschman Index (HHI), which measures the market concentration of a certain industry, stood at 0.16 when calculating it based on both assets and members, indicating a moderate concentration in the market … Three of the pension management companies are subsidiaries of banks and use the banks' network for the distribution of their funds. The other pension management companies

are subsidiaries of insurance companies and investment funds and rely more on intermediaries, which can charge a commission of up to 7% of the national average salary for each new contract. This commission cannot be charged to the participant and is paid by the pension management company from the total fees paid by participants. However, intermediaries have an incentive to sell other types of products, given that only pension plans have a cap on commissions. The three pension management companies that are subsidiaries of banks hold 48% of participants, suggesting that it may be easier for these companies to attract clients" (OECD, 2020).

According to the OECD Review Czech pension management companies usually charge the maximum allowed by law with few exceptions. "Pension management companies have increasing profits due to higher fee income. They generated a net after-tax profit of CZK 1.9 billion in 2019 … This represented 87% of operating expenses and 18% of total equity. The main income item for pension management companies is income from fees paid by participants. This income has grown constantly over the period 2013-19, and in particular in 2016 (+19%), due to the increase in the statutory limits on fees for the management and appreciation of assets… Fees charged by pension management companies to members of DC plans are middle-ranged in international comparison" (OECD, 2020). Czech pension companies also pay management fees to their sister companies within their financial groups.

The first key recommendation to the Czech voluntary funded pensions is to strengthen the role of these pensions in the overall pension system by "introducing a new, occupational pension scheme, or by improving the design of the existing supplementary pension schemes… The Czech Republic is the sole OECD country where the funded pension system only consists of a voluntary personal pension scheme. All the other countries have several pension schemes, sometimes combining mandatory and voluntary, occupational and personal plans. This allows pure voluntary personal schemes to have rules that are more lenient with respect to participation, contributions and withdrawals. The Czech Republic lacks this intermediate layer between public pensions and voluntary personal pensions. One option could be to introduce a voluntary occupational pension scheme, where employers could elect to establish a plan for their employees, and employees could choose whether to join that plan. This would help increasing the role of employers in retirement income provision. Alternatively, the Czech authorities could build on the strength of the current supplementary pension scheme and improve it" (OECD, 2020).

The OECD experts think that our third pension pillar might play a role similar to the occupational pension pillars in Western countries. To achieve it they formulated these (further) key recommendations:

• "Improve the performance of pension funds by encouraging or nudging participants to switch to participating funds as they have more flexibility to pursue growth investment strategies because they do not have to provide an annual non-negative return guarantee, and by promoting the access to an appropriate default investment strategy.

• Better align fees charged to participants with the costs incurred by the pension management companies by analysing the cost of investing in different asset classes and applying a regressive scale for management fees to pass on economies of scale to participants as assets under management grow.

• Encourage participants to contribute more by redesigning some elements of state financial incentives, setting up a mechanism where contributions increase automatically up to a pre-set maximum, promoting employer contributions, and providing information about expected benefits from the entire pension system.

• Lengthen contribution periods by increasing the minimum saving period to withdraw retirement benefits and keep the state financial incentives.

• Consider introducing automatic enrolment into an occupational pension plan or a participating fund, with appropriate default contribution rates and investment strategies.

• Extend the take-up of products providing lifelong retirement income by discouraging the lump sum pay-out option and increasing the attractiveness of life annuities through additional product features (e.g. guaranteed period, survivor option, or profit sharing)" (OECD, 2020).

3 Methodology and data

The comparative analysis of the whole pension systems is useful for any evaluation of a national pension system, and this holds especially for the Czech pensions which are remote to any simple model. A scientific analysis should not ignore the different welfare regimes developed by Esping-Andersen (1990); it is useful to add the neo-liberal welfare regime and we get the typology in Fig. 6.

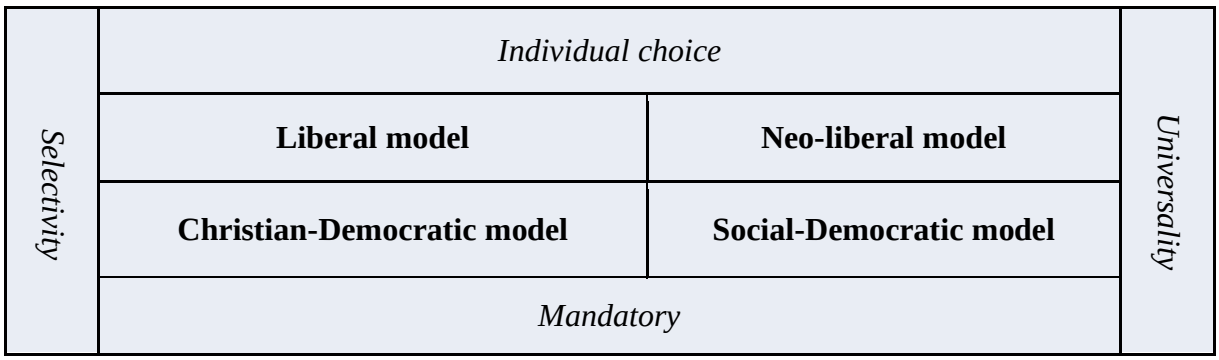


Fig. 6. Basic welfare regimes (Source: own elaboration, inspiration: Bovenberg and Ewijk, 2012)

According to European Parliamentary Research Service there are three pension pillars: public, occupational and personal – see Fig. 7. 'First pillar' (public) pensions: … administered by the state and usually financed from social insurance contributions and/or general tax revenues on a PAYG basis. In central and eastern European Member States in particular, statutory mandatory funded individual plans, (pillar 1bis pensions), have been introduced alongside pillar 1. 'Second pillar' (occupational) pensions: Private supplementary plans linked to an employment relationship. Contributions are made by employers and/or employees … These plans may be mandatory or quasi-mandatory and commonly established via employment contracts or by social partners in sector or profession based collective agreements… 'Third pillar' (personal) pensions: … private voluntary supplementary plans in which contributions are invested in an individual account managed by a pension fund or financial institution. They may be tax-incentivised" (Eatock, 2015).

We have also to mention the World Bank "multi-pillar model" which separately includes a non-contributory "zero pillar" (basic or social pension, at least social assistance (universal or means tested). Pillar 1 is a public mandatory and contributory system linked to earnings, pillar 2 are

mandated occupational or personal pension plans, pillar 3 contains voluntary occupational and personal pension plans and the (new) pillar 4 includes access to informal support (family) other formal social programs (health care), and other individual financial and nonfinancial assets incl. homeownership (Holzmann and Hinz, 2005).

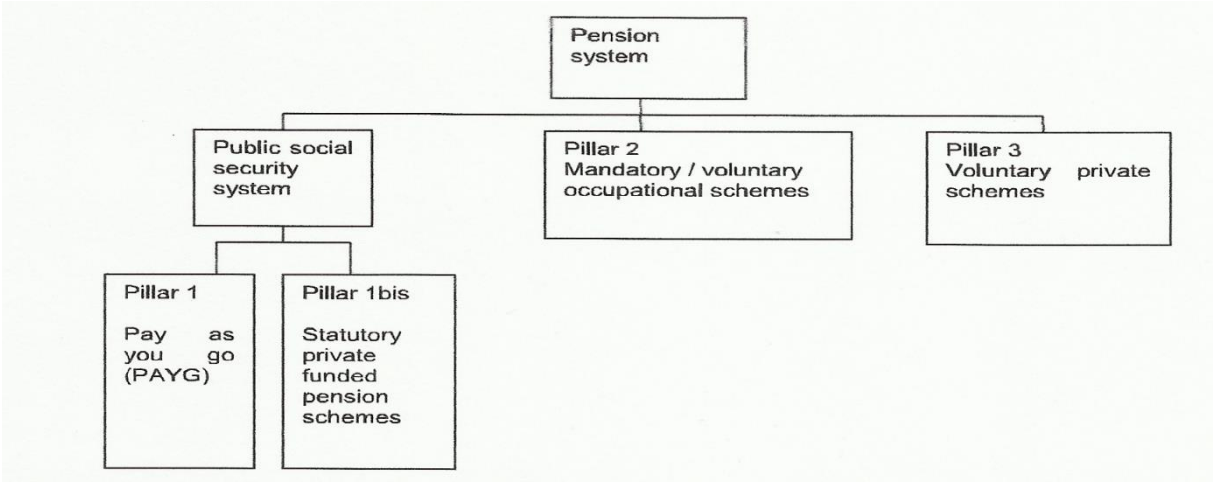


Fig. 7. EU classification of pension systems (Source: Eatock, 2015)

The OECD Review analyses many interesting data, e.g., the relative level of the Czech general assistance benefit: it is about 10% of the 2019 average wage. This is one of the lowest levels in the OECD countries and equal to about half of the OECD average. The data in our Fig. 4 generate a great misunderstanding: in standard cases the elderly have more than 35 validated years at the statutory retirement age – in this sense there is no need to realize the OECD key recommendation No. 1 ("drastically reduce the minimum number of years required to be eligible to both the basic pension and the earnings-related component at the statutory retirement age"); another question is if (and how) these "components" are to be proportionally reduced in extreme/rare cases with less than 30-35 validated years. Also, we should differentiate between the (future) basic/flat pension and the earnings-related pension. UK data in the Fig. 4 (10 years) represent a partial truth only: the elderly get full basic pension after 35 years of (paid) national insurance contributions; we might follow them. The (pure) earnings-related pension should have a quite different design e.g., according to the OECD recommendation.

The OECD Review ignores private insurance products even though life insurance companies are the most important providers of personal pension products worldwide and in Czechia these products get fiscal support. And on the contrary, there are no "pension companies" serving the standard voluntary personal pension pillar abroad. The Bauspar savings and Bauspar savings banks are another special case, with fiscal support as well.

The OECD methodology and data have influenced the recommendations of the review of the Czech pension system.

4 Empirical results

The OECD Review confirms the proposed amalgamation of the hitherto accrual pension rate 1.5% and the reduction coefficient 26% for average wages between the threshold of 44% of national average wage and the 400% ceiling: 1.5% * 26% = 0.39%.

"The new pension system would largely provide similar pension benefits for those earning more than 44% of the national average wage… The level of the basic component and the accrual rate is such that, for someone with a 41-year career, the pension benefit is the same in the current and proposed system. For those earning less than 44% of the average wage, benefits would go up since the basic component is increased. These will be largely people working part-time given that the minimum wage is 40% of the average wage, only slightly less than the current threshold" (OECD, 2020); confer Fig. 8. "The Commission proposals imply a high level of basic pension and a low level of accruals in international comparison, consistent with maintaining high progressivity. With constant spending, progressivity can be increased (reduced) through a higher (lower) basic pension and a lower (higher) constant accrual rate. Other components of the Commission proposals add some new complexity: complex options to grant new pension credits, additional bonuses for childcare and long (more than 41-year) careers" (Boulhol and Geppert, 2020). Simple technical solution needs to respect actual higher average career (44-45, not 41 years) and leads to a flat-rate old-age pension of 32% NAE.

Disability and survivor pensions should also undergo a similar reform of the parameters. An adequate solution for the disability pension is to have 3 basic disability pensions (17.33%, 24.67%, 32% NAE) and 3 earnings-related accrual rates (0.13%, 0.26%, 0.39%), both depending on the disability level.

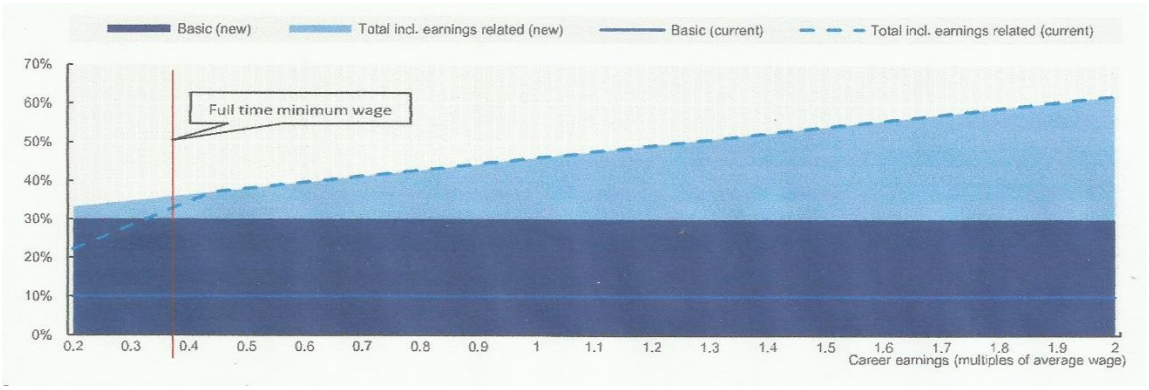


Fig. 8. Reform proposal by the Czech Commission on Fair Pensions: career of 41 years (Source: OECD, 2020)

A similar reform of the survivor pensions may lead to these simple parameters: basic pension of 20% NAE and accrual rate 20% from the real or potential old-age or disability pension of the deceased.

The ruling governments may be expected to revise the pension parameters and constructs, preferably alongside "their" welfare regimes. For these purposes the indexation of benefits may be used as well, as is the case e.g., in the United Kingdom. The basic/flat pensions may be defined in absolute terms.

The personal pensions may/should be reformed also according to the welfare regimes in question. A fair solution would not be a transition to a one-sided neo-liberal solution with a maximum use of behavioural economics to get the citizens "voluntarily" into the private pension pillar. Typical personal pension pillars do not work in this way, the OECD reviewers know it ("pure voluntary personal schemes … have rules that are more lenient with respect to participation, contributions and withdrawals" see higher). And in the next sentence they even recognize that generally there is an "intermediate layer between public pensions and voluntary personal pensions". That is true but it also contradicts the OECD pension taxonomy! In reality

they submit a new, "better done" former (1993) Czech "second" pension pillar (according to the WB taxonomy). The basic conceptual OECD problem is the amalgamation of the occupational and personal pensions in common pension "tiers". It is also a practical problem; the occupational pillars and personal pillars play very different roles in the pension security. In Czechia, occupational pension insurance is de facto prohibited by the law regulating this insurance, by means of which an EU directive aimed at creating a single market for funded occupational pensions within the EU was (formally) implemented. We need to lift the ban on occupational pensions, but not necessarily to expand them more than e.g., in Austria.

The main purpose of purchasing Czech supplementary pension insurance does not involve individual security in old age. The purpose is to divest excess liquidity and the tax optimisation. The construct of supplementary pension insurance was also of fundamental significance to many participants: it was a simple bank savings product with a high degree of state support in the form of state contributions (originally up to 50%!) with a guaranteed non-negative nominal yield. The fiscal illusion that the state support is free also played a significant role. „…the third pillar is not really a pension scheme. It is akin to a tax-advantaged savings account. The system should not be presented to the public as a source of meaningful future replacement income" (World Bank, 2017). „Personal pensions have relatively wide take-up in only a few Member States (over 60% coverage in Czechia, over 30% in … Germany) while in most Member States take-up is moderate and fragmented, and in some, nearly non-existent" (EC, 2017). „Pillar 3 (voluntary retirement savings) should not receive …subsidies, which are regressive and also have not been shown to have any significant effect on private saving" (Willmore, 2000).

The vision of the OECD experts about the need to develop state support for the 3rd pension pillar in Czechia was derived from an international comparison of state support for private pension schemes, compiled by the OECD (2018). According to this comparison, Czechia is "only" above average in its fiscal stimulation for the main private pension plans; this is given by the processing method: the OECD study ranked supplementary pension savings paid by participants as the main Czech private pension plan; the calculation presupposes savings at the amount of 5% of the gross wage throughout the entire active life. In reality, the participants' average saving is at the level of a mere 2.3% of wages which means a state contribution at the amount of 24.3% of the participants' contributions. As such, the state support for higher contributions on the part of the participants, as modelled by the OECD, is relatively low here. Moreover, a typical Czech client in 2018 had only saved for 8 years; the OECD presupposes the payment of contributions for a period of 45 years. The OECD calculation is marked as Czechia (OECD) in Fig. 9, while the real value of the fiscal stimulation is marked as Czechia (Author): 65.1% of the employer's contribution – the highest value among all the countries. Almost all other countries have occupational pensions, which are of considerably greater significance than personal pensions, as their main pension plan; in Czechia, the occupational pensions have merely been "substituted" by the employers' contributions to the personal pensions.

The OECD recommendations for the reform of the 3rd pension pillar unilaterally prefer the neo-liberal pension policy which would lead to its transformation into a so-called 2nd pension pillar according to the World Bank typology. The interest of Czech pension companies in such reform is understandable, but it is at odds with the standard task of the 3rd pension pillar in the OECD countries. The role of any occupational pension funds should be derived from the interests of the trade unions and the employers. There is a certain "pension gap" in Czechia but public

policy may also focus on the social-democratic policy: to strengthen the social pension insurance. Voluntary supplementary pension insurance of this type could also be considered.

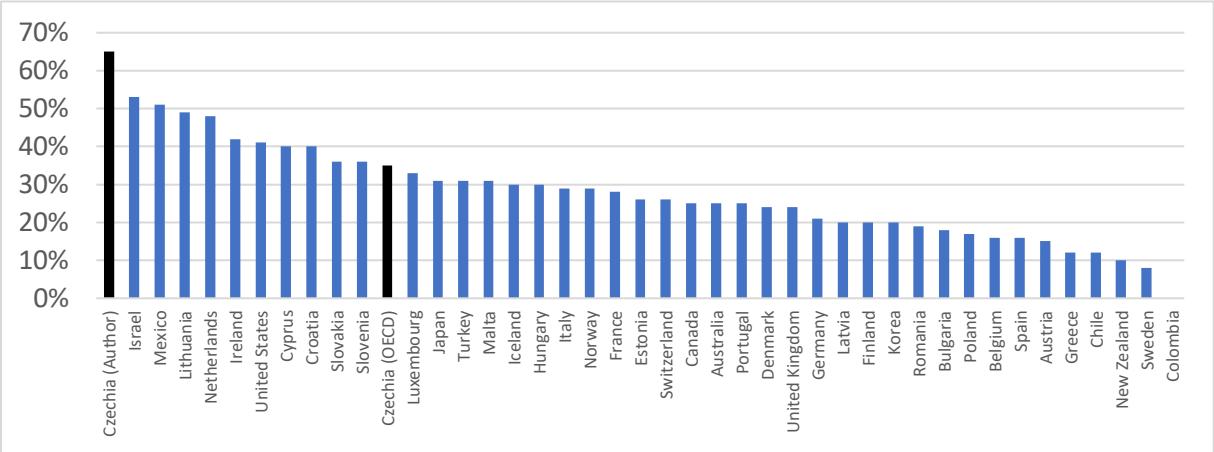


Fig. 9: Financial incentives of the main private pension plans in 2018: % of the pension contributions of an average earner (Source: OECD, 2018; author)

5 Conclusion

The OECD Review has confirmed the suitability of dividing the Czech public pension pillar into two tiers. A "technical" pension reform, not revising the high progressivity of the public pensions, would transform the hitherto basic component into the biggest pension tier at the level of 32% of national average earnings, providing some two thirds of pension income for retirees with average earnings. Czechia needs such a reform to make the public pensions understandable for the population and its retirement planning. Some additional proposals of the Fair Pension Commission add some new complexity to this technical reform, at the expense of the level of the basic pension (additional bonuses for childcare and for "long" /more than 41-year/ careers). The OECD Review assesses the Czech childcare pension credits as generous, and it concludes that a childcare career break has no impact on pension entitlements for women.

The technical pension reform reveals the supplementary role of earnings-related component of the hitherto Czech "pension insurance". The accrual pension rate 1.5% shall be multiplied by the hitherto "reduction coefficient" 26%: 1.5% * 26% = 0.39%.

The technical reform must include the disability and survivor pensions as well, the application of the same rules generates no additional problems. Next pension reforms may follow, considering the social policy of the governments. The 4 welfare regimes are at their disposal.

We strongly oppose the OECD key recommendation No. 1: to reduce drastically the minimum number of years to be required to be eligible to both public pensions. The next social insurance pension may generate the entitlement from the first year of contribution, but the basic pension may continue with carrier of 35 years needed to get the full pension.

The Czech 3rd pension pillar requires fundamental reform simply because essentially it does not perform its general basic function: securing the elderly. The third pillar has practically no significance for most people throughout the world. The real purpose of this Czech pillar is to divest excess liquidity and the tax optimisation. The Czech special "pension companies" are

superfluous. The OECD recommends an expansion of neo-liberal elements. The amalgamation of the occupational and personal pensions in common OECD pension “tiers” neglects their different roles in the OECD countries and in the welfare regimes as well.

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References

[1] Boulhol, H. and Ch. Geppert, 2020. Public pensions. OECD Pension Review: Czech Republic, Chapters 1 & 3. Presentation at the Fair Pension Commission meeting, Prague, 27 November 2020

[2] Bovenberg, L. and C. van Ewijk, 2011. The Future of Multi-Pillar Pension Systems. Netspar Discussion Paper No. 09/2011-079. https://ssrn.com/abstract=1935307

[3] Eatock, D., 2015. European Union pension systems. Adequate and sustainable? European Parliamentary Research Service. PE 571.327 EN. Briefing November 2015. http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/571327/EPRS_BRI(2015)571327_EN.pdf

[4] EC, 2017. Commission Staff Working Document accompanying the Proposal for a Regulation of the European Parliament and of the Council on a pan-European Personal Pension Product (PEPP). Brussels. https://data.consilium.europa.eu/doc/document/ST-10654-2017-ADD-1/en/pdf

[5] Esping-Andersen, G., 1990. *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press & Princeton: Princeton University Press

[6] Holzmann, R. and R. Hinz (eds.), 2005. *Old-Age Income Support in the Twenty-first Century: An International Perspective on Pension Systems and Reform*. Washington: The World Bank

[7] OECD, 2017. *Pensions at a Glance 2017: OECD and G20 Indicators*, Paris: OECD Publishing. http://dx.doi.org/10.1787/pension_glance-2017-en

[8] OECD, 2018. OECD Pensions Outlook 2018. Paris: OECD Publishing. https://doi.org/10.1787/pens_outlook-2018-en

[9] OECD, 2020. OECD Reviews of Pension Systems: Czech Republic. Paris: OECD Publishing. https://doi.org/10.1787/e6387738-en

[10] World Bank, 2017. Capital Market Assessment / Market Development Options: Czech Republic. Washington: The World Bank. https://www.mfcr.cz/cs/soukromy-sektor/kapitalovy-trh/podnikani-na-kapitalovem-trhu/2017/zprava-svetove-banky-o-kapitalovem-trhu-29766

[11] Willmore, L. (2000). Three Pillars of Pensions? A Proposal to End Mandatory Contributions. United Nations DESA Discussion Paper No. 13. https://www.un.org/esa/desa/papers/2000/esa00dp13.pdf