

Behavioural and Empirical Topics for Discussion on Economic Science Paradigms

Behaviorální a empirické náměty do diskuse o paradigmatech ekonomické vědy

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Abstract

The authors of the article point out that the theory of economics has failed to yield a solid theoretical background in such critical situations of the current financial and economic crisis. Theorists cannot look to controversial mathematical modelling for help, especially in regulatory projects. The challenge for today's theoretical economists is to find a new concept for today's global era in the sense of behavioural and empiric attitudes. The criticism of fair insurance premium is included.

Keywords

paradigm of economics, financial and economic crisis, controversial regulatory projects, ethics of economic interaction, malfunction of mathematical models, behavioural and empiric attitude, unchained randomness, criticism of fair insurance premium

Abstrakt

Autoři článku poukazují na to, že teorii ekonomiky se nepodařilo přinést solidní teoretický základ v kritických situacích současné finanční a hospodářské krize. Teoretici nemohou hledat pomoc v kontroverzním matematickém modelování, a to zejména u regulačních projektů. Výzvou pro dnešní teoretiky v oblasti ekonomie je najít nový koncept pro dnešní globální éru ve smyslu behaviorálních a empirických přístupů. Článek obsahuje kritiku teorie spravedlivé pojistky.

Klíčová slova

paradigma ekonomie, finanční a hospodářská krize, kontroverzní regulační projekty, etika hospodářské interakce, selhání matematických modelů, behaviorální a empirický přístup, nespoutaná nahodilost, kritika teorie spravedlivé pojistky

JEL Codes

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Introduction

It was demonstrated in the course of the financial and economic crisis of the past decade that affected both the global economy as well as most national economies that economic paradigms applicable so far evidently fail. If the problem is inspected from extreme angles of the historical spectrum of opinion trends, we must state that both Liberal and Keynesian approaches to economic policy failed to indicate in time and later to identify the

occurrence of significant imbalances, i.e. to prevent the gradual growth of critical events or at least to mitigate their destructive force. It is thus apparent that the contemporary economic science currently does not provide the necessary set of theoretical instruments that would make it possible to identify and cognitively embrace the complexity of the complicated economic world with considerable random elements. In reality, the existing global world, which is subject to unprecedented changes from the perspective of dynamics, is well ahead compared to the production of theoretical and methodological paradigms of social sciences, particularly of economic sciences. We believe this fact is one of the key reasons for the existing socioeconomic problems.

At the same time, paradoxically, theoretical economists started to consider their discipline as a privileged one within the social sciences in the past decades, as the most formalized one of the social sciences. There have been some opinions that economics may be viewed as imperial science (for discussion on this topic, see Stigler 1984, for example). There was a major shift towards higher formalization and mathematization of economics, particularly in the 1990s; such approaches were to ensure higher level of scientism, rigorousness (maximization or optimization), and consequently higher effectiveness of normative prediction. P. A. Samuelson is believed to be the main representative and guru of this movement.

However, mathematizing economists unfortunately demanded mathematics, as a non-dialectic social science discipline¹, to function within the social science in a manner that is not immanent by nature. After all, advocates of this opinion trend evidently failed in such tasks as the application of the apparatus of model algorithms to economic reality. However, we do not mean to dispute the fundamental role of mathematics within the modern type of thinking: model formalization may significantly assist in suitably structuring economic problems under review and create adequate logical framework for such problems, under which it is possible to qualitatively interpret the quantitative results correctly.

However, from the perspective of the authors of this article, the fact that the economists of this opinion trend absolutely disregarded ethical dimension of economics in their respective mathematical models is extremely important. This has resulted in the currently pathetically low level of ethics of economic interactions, with negative selection and moral hazard currently being some of the most pressing practical problems. The lowered bar of ethics then creates ideological room for increasing regulation in terms of the fundamental idea of Friedman (1993) that "freedom is a tenable objective only for responsible individuals". According to some theoreticians, the financial crisis was caused by uncontrolled hunger for profit maximization, considerably exceeding the "critical frame of mind of capitalism" by J. Schumpeter (1987). From this point of view, one of the most important tasks theoretical economists are faced with is to reinstate the ethical dimension within economic categories and strengthen the methodological foundation thereof.

1 *Mathematics does not comply with the dialectic requirement for each event to also comprise its own opposite: mathematical definitions that contain a statement "it is valid if and only if" rule out any existence of opposites.*

This paper aspires to draw attention to some current aspects of new views of the cognition methods of the present complex world in terms of potential solutions for the modification of economic paradigms as well as to some current problems of human decision-making under uncertainty, thereby contributing to the general discussion concerning the need for conjunction of the mainstream economics with soft², cognitive sciences.

1 Solutions to the Latest Economic Problems Lack Theoretical Foundation

In spite of the relatively long period of time since the emergence of the latest global financial and economic crisis, economists have yet to reach consensus on the causes for its emergence and development, on the method of therapy, and even on the theoretical implications for the economic science paradigms, and particularly on practical consequences for the future economic policy. Certainly, one of the reasons for this is, among others, the fact that the last crisis brought some absolutely new specific features (run of banks on banks, role of innovative structured instruments, failures of rating agencies), whereas the recession was also “different” (extremely low interest rates, nonfunctional credit market, nonfunctional standard monetary stabilization of aggregate demand). We have not been able to scientifically absorb these new aspects and the question remains, whether the theory would ever be able to do so. The changes of the socioeconomic environment induced by the crisis even erode the globalization trend, which seemed unambiguous until recently; current symptoms at least suggest its fragmentation.

A separate chapter of the current era is the development of the financial market, which had originally been intended as the servicing system for the real economy; however, this market was dominant within the global economy at the time the financial crisis emerged, posing immediate threat to the real economy due to its high level of autonomy and virtual nature; moreover, the market has lost its ability to restore balance after deflections due to the high level of autonomy and virtual nature.

The financial and economic crisis later transformed into fatal debt crisis in Europe. This partly results from the selected curative actions, with subsequent need for consolidation, and partly from the selected model of economic and social system in the European Union. The EU invests significant financial funds in ensuring the cohesiveness of individual member states; however, the Union as a whole is becoming increasingly heterogeneous – the heterogeneity of the Northern and Southern branches of the euro area is extremely dramatic. Outlooks of solution are rather pessimistic; according to the outlook of the rating agency Fitch, published in *Finanční noviny* (2013) last year, Europe is already over the worst part of the debt crisis; however, this is in contrast with the existing trends, which suggest (provided they continue) that the euro area will still be the slowest growing economy in the world, in spite of the remarkable performance of the German export superpower. Full recovery of the integrated unit a whole is likely to take most of the next decade. With regard to the euro area, the first decade of the new millennium was char-

2 *The sociologist N. W. Storer (1967) believes the key criterion for classifying scientific disciplines as hard and soft discipline is the tightness of their most important findings. The terms hard and soft sciences are commonly used in sociology, but, above all, they have been adopted by the general scientific methodology.*

acterized by weak economic activity and thus ever increasing government expenditure compared to revenue; therefore, the fall into the debt trap is a logical implication of such significantly controversial trends.

The long-term recession results from the fact that affected economies are currently in a vicious circle: the banking crisis cannot be resolved fiscally, because the public finance has also been affected by the crisis; the crisis of the public finance could be resolved through fiscal restriction; however, this would only lead to deeper recession; monetary expansion would be a solution to the recession; however, it cannot be implemented due to the banking crisis, and so on. The cocktail prepared by combining the banking crisis, public finance crisis, and commercial/monetary imbalance, still represents systemic risk for the entire economic and thus financial system, which cannot be resolved by traditional monetary and fiscal policy instruments. Particularly the high indebtedness level continues to be an impediment to restoring demand. In terms of the monetary policy for this year, the American FED has already declared its restriction by ending the controversial quantitative easing instrument, as the American economy is recovering more strongly. The ECB has different problems, as it is facing a serious dilemma for this year: whether its monetary policy should impair the Southern or the Northern branch of the euro area more.

The prior period of mass overconsumption in core global and European economies, with resulting imbalance of such degree that it was not possible to remedy it in any way other than by undergoing massive financial and economic crisis, was ideologically supported by the ideas of a welfare state, prioritizing short-term goals as if motivated by Keynes' bon mot "in the long run we are all dead"; consequently, the rising indebtedness level of economic entities was viewed more or less positively and this established the beginning of the later public finance crisis, associated with the rampant welfare state.

In this context, the EU's efforts aimed at paternalistic central control with significant bureaucratic elements, nearing the mere limits of state interventionism policy, seem to be inadequately costly. Some outputs of the European Union in this regard seem to be awkward, to say the least. In the strongly heterogeneous environment of the European integration unit, moreover with different interests of individual states even within the Northern and Southern branches, a controversial banking union project is being promoted (Daňhel 2013), with a view to unite the financial market supervision mechanism and the resolution mechanism for resolving banks' problems, including a single deposit insurance scheme. Instead, the strongly heterogeneous environment of the euro area, with predominant divergence trends, is in need of heterogeneous approach to regulation within individual member states.

Negative economic effects of the current global world escalate on the political level; with absence of adequate recommendations by economic theory, bureaucratic machinery seeks to impose higher level of state administration intervention in the life of the society, particularly in economic issues. The increasing difference in the income polarity, coupled with the consolidation that impairs social conciliation, radicalize a part of the political spectrum and, to some extent, dispute the democratic social model, also eroding the ideas of international and cross-sectoral integration. The fatigue from the relatively long period of the crisis further increases competition and intensifies income polarity, resulting

in social conflicts that are currently very common in core global and European economies as well.

In an environment of reduced possibility to apply instruments derived from expertly researched conservative economic prediction, the activity of politicians in the direction of non-systemic discretion interventions in the economy and subsequent expansion of regulation, in fear of chaos and failure to manage the complexity of the states of the world. In this regard, E. Kislingerová (2013) refers to the generally increasing aversion of societies in developed economies toward financiers, particularly bankers, who are described as some of the key culprits of the crisis by politicians and thus “punished” through higher regulation. Specific signs, often in the form of legal norms, frequently go against the business itself in many regards; we refer to the introduction of the controversial bank tax, inadequately increasing consumer protection elements, antidiscrimination measures in the insurance sector that contradict one of the principle of commercial insurance, etc. This leads to a practically insolvable antagonism: regulation measures motivated by client’s safety, exceeding any reasonable limits, ultimately increase the prices of financial services for clients, leading to their reduced effectiveness and thus having an absolutely opposite result to the desired one.

2 New Perspectives of Cognizing Economic States of the World and Decision-making under Uncertainty

The negatives described above mainly result from the validity of a universal axiom that the external world is unpredictable and from the illusion of our conviction that we understand economic events; this idea is then confronted with the fact that impending states of the world are increasingly more complicated and random. In this regard, methodologists refer to one important aspect: Some historically proven definitions of economic categories no longer fully describe the majority aspects of the defined terms under absolutely new conditions in the new environment; the terms “economic crisis” and “recession” represent a good example. Their latest “different” form evidently results from the failure of human cognitive abilities; consequently, their new comprehensive definition should perhaps exceed the economic science dimension, it should become a category of general methodology of science. The definition should reflect the fact that the passage of economic states of the world through the crisis is associated with a new quality of spontaneous solution of imbalances through autonomic fragmentation of the economic and financial system, allowing it to rise from the ashes and debris of the previous organization.

However, such knowledge must clearly be approached through other means than those taken by the economic science so far, including the abandonment of economists’ conviction about the privileged role of the economic science within the social sciences. P. Robejšek, a philosopher, economists, and political scientist, believes that it will be necessary to focus more on soft, cognitive sciences in this regard in the future, which have been predominantly rejected by the official orthodox economics so far; it has taken the opinions of empiricists and cognitive scientists with great reservations, if not with aver-

sion, thereby also contributing to the current unsatisfactory state of the social sciences.³ The authors of this article believe that the fluid economic categories of the current complex global world must be revised through the prism of “unchained” randomness, for the omnipresent implications of which we should be better prepared mentally.

It is symptomatic for the current economic science that – in seeking new paradigms that reflect the current complex global environment – the biggest contributions have recently come from representatives of psychological and empirical approaches to economics, particularly to decision-making of economic entities. Their outputs, including research results, corroborate that economic science insufficiently describes real states of the world – even those that unambiguously fall within its research repertoire; in particular, we refer to the actual behavior of economic entities on markets. In this regard, the works of N. Taleb and D. Kahneman, extraordinary personalities of modern nonconventional thinking, represent a significant and inspiring contribution to economic science. Above all, the aforementioned representatives of empirical and heuristic approaches that mostly apply instruments of soft scientific disciplines are very well aware of the basic fact that economic states of the world are unpredictable by nature; in their concept, social sciences, markets, politics, as well as the society as a whole are fundamentally unpredictable – all this in spite of tenacious efforts of economists, forecasters, mathematicians, statisticians, and other academicians and theoreticians.

The thesis regarding the need for conscious humility in absorbing the criticism of human cognition, emphatically declared by empiricists and representatives of behaviorism, is well noticeable in the following example: in the Taleb's “library of Umberto Eco”, read books are far less valuable than unread ones. The way the interpretation of (anti)library should change in this regard, we should also try to absolutely change our approaches to cognition, which obviously applies – to the maximum extent possible – to economic science. The current hectic world, its volatility, occurrence of events corresponding to Taleb's untamed, unchained randomness – all this results from incorrect understanding of probability judgments derived from our own knowledge from books we have already read, taken too seriously. Taleb (2011, p. 21) concludes altogether unambiguously: Just as we need to stand library logic on its head, we will work on standing knowledge itself on its head.

However, even more serious is the persisting effect of the already mentioned shift of economic theory, experienced in the past decades, in the direction of higher formalization and mathematization of economic sciences and, in addition to the ethical dimension, the

3 During a seminar, held at the University of Economics in Prague on 27 March 2012, on the topic of “Vicious circle of the European integration”, P. Robejšek referred to the failure of political power, as well as academic elites and to their contribution to existing economic problems. He gives the following causes for the situation: economics has been deafened by politics; idea that mathematics and other exact sciences are better than other disciplines; human technocracy is mere romantic illusion; anything that is mathematized and works in equations faces the limits of human abilities; and technical and technological progress faces limited potential of users. The IT elite or other discoverers no longer have sufficient audience that would be able to capitalize on the increasingly fragile progress.

idea of mastering the phenomenon of risk within economic interactions⁴. We believe the present image of the economic states of the world, including the ethical dimension, rather authentically reflects the ineffectiveness of general mathematization of economic theory and excessive emphasis on model formalization, particularly for the purpose of prediction. The intensive implementation of mathematical principles, currently into the market regulation models, with a view to maintain moderate market volatility and higher stability, has relied on the “risk based approach” concept in the past two decades, based on the (utopian) thesis regarding the possibility of managing the significant impact of randomness on economic states of the world. Robust database of historical data and extensive portfolio of sophisticated models were to serve as proper instruments.

However was the basis of this approach refuted by the latest financial and economic crisis, regulatory models for key financial market segments, moreover mutually inconsistent, continue to work with the premise about potential quantification and subsequent mitigation of risks on the basis of historical data. Kahneman uses relevant arguments to dispute the fundamental idea behind the risk based approach, i.e. that risk is objective.

According to representatives of heuristics, the concept of “risk” was invented by men so that they could more easily cope mentally with dangers and uncertainties that represent integral parts of life. Similar skeptical and anti-mathematical methodological concepts are also used by Taleb⁵ to embrace the term “risk”. Moreover, in spite of the omnipresent randomness in all human activities and forms, the occurrence of events with Gaussian prior probabilities is quite rare in economics. The present, enormously complex global economic world is rather characterized by occurrence of highly unlikely, unpredictable events of all types, which are not applied by mathematical model formalization due to their low probability; therefore, their implications are not envisaged at all.

4 In (2012), L. Pfeifer draws attention to a serious political aspect of the problem: “It results from the efforts aimed at using mathematical methods, for the purpose of which it was necessary to confine reality within mathematical models, specifically through unrealistic premises, such as the economic human, optimal level of information, perfect competition model, or focus on statistical economic balance. The acceptance of such unrealistic premises had several major economic and political implications... The acceptance of the said premises, and consequently of the idea of mathematization of economics, also considerably implicates the possibility to predict future economic developments. However, if people adopt the ability to predict the future, not only will they exceed the limits of their own understanding, but it also gives a strong argument to the advocates of central planning” (p. 19). P. Kohout in an interview for *Parlamentnilisty.cz* of 6 January 2014: “I have never overly trusted econometrics and prognostic models; however, recent findings have led me to categorically reject these things. Economic predictions cannot even be made for the next year.”

5 It is an expression of position on one of the most fundamental problems of the general methodology of sciences that has not been addressed systematically: relationship of dialectics as qualitative interpretation of the states of the world and mathematics as their quantitative interpretation. In this regard, mathematicians are ahead of methodologists; renowned economic journals and magazines still prefer the publication of articles by mathematizing economists – the scientific level of articles is thus derived from the number of formulas, tables, and charts; papers that only rely on empirics are somewhat handicapped in the eyes of publishes, regardless of their cognitive value.

Orthodox economics only perceives men as *homo economicus*, optimizing their economic utility. By this approach, economics has strived to become part of hard scientific disciplines. However, the assumption of rational choice under any circumstances currently seems as the principal limit to cognition under this trend⁶. In terms of the standard preference theory, economists considered, and some still consider, the heuristic approach to individual choice dependent on the context, under which a decision is made, as clear violation of the coherence doctrine, disputing the fundamental premise of the existing preference theory.

In this regard, especially Kahneman argues with the traditional economics about the decision-making nature, particularly in case of decision-making under uncertainty. Cognitive psychologists focused on examining situations, in which people are not endowed with rational probability thinking and optimal behavior. They discovered rules that even contradict human rationality, so-called heuristics, which considerably eroded the assumption of orthodox theory about the qualities of *homo economicus*, i.e. the premise that economic entities are always rational. However, the present situation regarding economic states of the world does not overly suggest justification of assumptions of high rationality and consistence of orthodox economic theory. Kahneman provides specific examples of choices made by people that dramatically vary from the orthodox rules of rationality.

The prospect theory of Kahneman and Tversky is crucial for the decision-making of economic entities under uncertainty. It is derived from the Bernoulli's psychological approach to assessing risky decision-making situations. Prior to Bernoulli, people believed that decision-making alternatives were assessed based on mathematical "expected mean value of payoff in random experiment". D. Bernoulli demonstrated on the basis of his famous St. Petersburg paradox (people who are presented with a risky game with infinite mean amount of payoff, are only willing to pay small amounts on such game) that people do not abide by the mean value of payoffs in their decision-making when faced with a problem with random variable. Therefore, rigorous scientific disciplines will not provide much assistance to economic entities with regard to decisions relating to uncertain situations with results generated through random mechanism. People are poorly equipped for this type of prediction; moreover, the decision-making components include elements of soft scientific disciplines, such as psychology, sociology, etc. It is apparent from the aforementioned that each person usually has a very clear-cut individual relation to situations with random results as well as his/her own individual utility function.

3 Dilemmas of Decision-making Problems Associated with Insurance Markets and Contribution of Empiricists and Representatives of Heuristic to Insurance Theory

It is possible to objectively apply the dilemmas resulting from the above mentioned discussion to decision-making problems relating to a special financial market segment, the

6 In this context, L. Mlčoch refers to the work of A. Bašta, who formulated the concept of internal model of the decision maker's world in the 1960s; the model complies, to a significant extent, with the principles of behavioral economics and conclusions of empiricists and prof. Mlčoch (2010) believes it is a much more interesting genotype compared to the *homo economicus*.

objective of which is to financially eliminate economic consequences of randomness, i.e. to examples of decision-making situations relating to commercial insurance. By its nature, the business segment works with randomness. If we stated that decision-making problems with prior probabilities are rare in economics, then there is no other economic sector other than the commercial insurance sector, where the connection of business results and randomness would be so crystal-clear.

Arrangement of insurance as financial solution to consequences of randomness is irrational from the mathematical perspective, with negative "mean value of payoffs" (in addition to indemnification of damages, an insurance company must cover its administrative costs and generate profit for shareholders); in spite of this, economic entities take out insurance. Therefore, the motivation for arranging insurance is closely related with subjective human qualities: preferences and aversions (risk aversion) – i.e. with the domain of soft scientific disciplines.

Most decision-making situations relating to insurance (a problem of a potential client – whether he/she would take out insurance against certain risks; a problem of an insurance company in setting the correct price – insurance premium – for the provided coverage of negative consequences of such risks) represent the type of decision-making problems with ambiguous results. Experimental identification of individual risk preferences or aversions suggests that the majority of human population shows risk aversion. The utility function of Bernoulli thus explained why – in simple terms – poor people purchase insurance coverage and why wealthier people sell such coverage to them; Bernoulli's analysis of approach to risk in terms of property preferences is still applicable 300 years later, only being practically improved in the modern area by the prospect theory of Kahneman and Tversky. Risk aversion relies on the verified fact that, in general, people tend to prefer small losses, which are known in advance, to a chance of unknown (in terms of their scope), but much greater losses – incidental damage.

The generator of random events currently leads to significant changes in the nature of insurable risks and resulting damages (e.g. flood risks in Central Europe, hurricanes in the US) and emergence of absolutely new risks (e.g. SARS disease, mega-terrorism, computer piracy, environmental risks). The term "unknown unknowns" has been used in the insurance industry for these newly emerging risks, some of which are ultimately in the form of risks that have been insured so far (explosion and fire following an act of terrorism). Insurers fear such events the most, because they have never occurred and no prior probabilities exist that could be used in mathematical models, on condition we admit they actually work. Unknown unknowns represent the future states of the world and, so far, no actuary has been able to take previous conditions, under which past claims occurred, and predict the future.

We have already mentioned the fact that, with the exception of life insurance, the Gaussian, arranged randomness is relatively rare in the insurance business. To demonstrate: The effects of "sterilized" randomness could include motor vehicle accident insurance, where the interval of potential financial indemnification is limited by the purchase price of a vehicle and there are probabilities regarding the amount of individual damages pursuant to the statistical distribution of frequencies; this area could perhaps include accident insur-

ance as well. On the other hand, insurance coverage against potential fatal consequences of, for example, natural disasters or third-party liability (damage caused by earthquakes or liability of a motor vehicle for initiating railway accident due to driver's fault at a railroad crossing), show signs of an unlimited interval of damage (in respect of its maximum).

The result of insurance for both the insurer and the client in these insurance segments with high variability of claims depends on the generator of events of "unchained" Taleb's randomness. In the utility theory of the current official microeconomics, a postulate of the so-called fair insurance premium is formulated, defined as the amount of insurance premium identical with the expected loss and certain income equals to expected income – i.e. an insured entity is guaranteed the same income, irrespectively of whether the loss is incurred or not. Sections about fair and maximum insurance premium, in terms of mathematical elegance, tend to be included in sections about decision-making under risk in macroeconomics textbooks. However, we did not find any warning in this regard that the majority of nonlife business shows signs of decision-making under uncertainty, i.e. that postulates about fair and maximum insurance coverage only apply to marginal part of the issue, with tamed, sterilized randomness, expressed through probability, and that this postulate does not apply to the majority and, in particular, more important part of the insurance business. It will be no easy task for the advocates of this theory to refute Taleb's arguments and to construct fair insurance coverage by definition, e.g. against the consequences of, for example, a hurricane – such as future modification of Hurricane Sandy.

However, the consequences of unchained randomness of Taleb, demonstrated by enormous increase in financial losses during catastrophic events, and thereby the determination of the correct insurance premium amount start to hit the barrier of the commercial operation of insurance. The combination of disaster damage to ever increasing property values and fragility of technological progress (e.g. tsunami in the Fukushima Nuclear Power Plant) brings another important dilemma: whether commercial insurance should continue in its historical mission and seek financial elimination of the consequences relating to unchained randomness or even accept "new challenges" in addressing financial consequences relating to new types of damage to environment or cyber hazards, etc., with any and all implications for assessing correct insurance premium amounts; the second alternative is to stick to its historic "core business" or even limit the insurance coverage mount of risks that have been insured so far. In this regard, the lower propensity of commercial insurance companies with traditional structure of insurance product portfolio to sudden default, even in lower amplitudes of the economic cycle, is a significant historical experience. In spite of this fact, government regulators currently prefer pressures on reinforcing the stability of the commercial insurance sector, as part of the financial market balance, as a result of continuing sentiment aimed at preventing excessive volatility or even default of financial markets. However, this necessarily takes place to the detriment of the mission of insurance and insurance business.

The regulatory project Solvency II, which relies on mathematical modeling and the first pillar of which sets down acceptable ratio of nonlife underwriting risks for insurance and capital resources and is to distinguish insurance companies according to the risk level of products offered by them, ultimately leads to the fact that insurance companies only offer limited indemnification for catastrophic events. This leads to "sterilization" of randomness

for such construction of insurance coverage and simplifies the calculation of the correct insurance premium amount. However, the fact that the amount of damage in excess of the indemnification limit is not systematically addressed is a serious negative aspect. This considerably limits the effectiveness of insurance as traditional instrument for eliminating financial consequences of randomness – e.g. in case of natural disasters.

After the crisis-related psychosis subsides, the insurance theory will be faced with a task of finding balanced position between the original mission and objective of the insurance business and the potential of the commercial insurance industry, operating in assessing the correct insurance premium amount on the principle of equivalency between revenue and expenditure. However, the capital adequacy analysis under the first pillar relies on the research of the past. In case we admit it actually works in principle, then solely on condition the future continues to evolve under the same conditions. And this is the key problem of all similar regulatory models. No one has been able to take previous conditions and predict the future. Regulatory instruments that are devised with the sole purpose of ensuring that institutions overcome crises only work well during “normal” times, free of any major economic shocks. However, in Taleb’s style, we must acknowledge a real possibility of economic states of the world that are absolutely beyond the framework of predictability, and thereby the mathematically perceived certainty; consequently, if we fail to sufficiently sterilize randomness, e.g. by an indemnification limit, it is perhaps an unsolvable problem to construct scalar representing “nonlife underwriting risks” by an insurance company. Although the Solvency II project implementation has been repeatedly postponed, it is still planned to be applied in practice, in spite of the aforementioned clear illogicalities. The point of its implementation is no longer discussed and enthusiastic regulators continue in the preparation of other extensive directives.

Conclusions

A Hayekian question of whether it is not necessary to start all over in the scientific economy, from elementary philosophical and methodological categories, springing from the most fundamental and undisputable axiom of Descartes: “I think, therefore I am”, reemerges in connection with the issues relating to the determination of the current states of the world and reduced applicability of existing economic paradigms.

The current global era of the world economy is associated with continuing instability and volatility of markets, particularly of financial markets, low level of ethics in economic interactions, and low support of theory in solving pressing problems of economic states of the world. The absence of any clear theoretical concept for today’s complex global economic world increases the room for improvisation of politicians, who prefer short-term, pragmatic, and often also non-fundamental and paternalistic solutions based on interventionism, particularly extensive regulation. Political representations (whether right-wing or left-wing) do not have any conceptual solutions for some critical problems of negative selection and moral hazard.

The hectic present of the global economy clearly evidences the ineffectiveness of “exact” approaches to controlling or even eliminating risks; there is simply no “insurance policy” against uncertainty and instability of the economic states of the world. The truth and ap-

plicability of the basic methodological ambivalences relating to unpredictability of the external world has been repeatedly confirmed, similarly as the very limited potential of men to make prediction, as well as the already mentioned basic methodological contradiction relating to exact approaches to examining future states of the world. These dilemmas are clear when it comes to decision-making problems of a specific financial market sector, such as the commercial insurance industry. In terms of behavioral and empirical approaches, problematic factors include, but are not limited to the following: official and strongly controversial microeconomic doctrine of the so-called fair policy; regulation of commercial insurance companies through a requirement imposed under the Solvency II project, the implementation of which relies on a speculative term "insurer's nonlife underwriting risk" within a controversial mathematical model. With regard to these problematic areas, we believe that the approach of Taleb and Kahneman refute the fair insurance coverage doctrine for the majority of commercial insurance companies' nonlife business. We believe that Taleb's publications should be on the mandatory reading lists for government supervisors and regulators.

It generally applies to any theory that, even if it is accepted by the majority, the practical application thereof is always delayed; mental inertia of top professionals also contributes to this phenomenon. Theoreticians and research workers still believe the assumptions of economics as an imperial science and opinions of potential higher formalization of economic science, whereas the idea schemes by Taleb and Kahneman are accepted with reservations and often with prejudicial unwillingness. However, it has been more and more apparent that, without transforming our attitude to learning about economic states of the world, particularly humbleness to unchained randomness, which is the decisive factor of political and economic developments, we will not make much progress to principal solutions to prevailing problems. It is necessary to fully realize that we can only manage what we can control.

In order to find solution to problems that are historically unprecedented, to search for new paradigms of economic science, it will be necessary to apply new methods of cognition that will have to be approached differently than in the past, including the abandonment of economists' conviction about the privileged role of the economic science within the social sciences. In the future, it will be necessary to focus more on soft, cognitive sciences in this regard in the future, which have been predominantly rejected by the official orthodox economics so far; it has taken the opinions of empiricists and cognitive scientists with great reservations, if not with aversion, thereby also contributing to the current state of the social sciences. The fluid economic categories will have to be revised through the prism of "unchained" randomness, for the implications of which we should be better prepared mentally to ensure that economic science is cognitive enough and thus enables the positive coping with economic states of the world better.

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