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EDITORIAL

Vážení čtenáři,

závěr roku bývá často spojován se sklizní výsledků práce. Totéž platí i pro podzimní semestr 2019 Vysoké školy regionálního rozvoje a Bankovní institut – AMBIS, kde jedna ze sklizní má podobu odborné konference, na níž jsou prezentovány výsledky dlouhodobější vědecké činnosti. Konkrétně se jedná o III. ročník cyklu Fiskální dialog, který proběhl dne 22. 11. 2019 se zaměřením na téma „Místní veřejné finance a finanční management: Evropská perspektiva." A jak se již stává tradicí, některá z vystoupení se přeměnila i na články, zasluhující si zveřejnění v našem časopise se sociálně-ekonomickou a humanitní tématikou.

Ve druhém čísle tohoto ročníku SEHS je výše uvedená konference zatím reprezentována třemi statěmi, zaměřenými na témata jako Analýza rizik – příležitost nebo hrozba finančnímu managementu místní samosprávy (autoři M. J. Půček a M. Plaček), Daňová autonomie samosprávních jednotek na Slovensku (autor L. Maličká) a na obecnější téma Věk odchodu do důchodu a důsledky pro veřejné finance (autoři J. Šetek, J. Alina a D. Bajer). Klíčová vystoupení zahraničních účastníků budou zveřejněna v prvním čísle 10. ročníku SEHS.

Časopis SEHS je samozřejmě otevřen i odborným statím vznikajícím mimo konference Vysoké školy regionálního rozvoje a Bankovní institut - AMBIS. V aktuálním čísle jde o článek zaměřený na téma Diverzita sociálních podniků – případ České republiky (autorka L. Hrůzová) a články s názvem Rovnovážné a mezní stavy v bezpečnosti, v technice i společenských vědách část I. a II. (autoři I. Matoušková a R. Rak).

Milí čtenáři,

rád bych Vám popřál vše nejlepší do nového roku, mnoho úspěchů v profesním i osobním životě.

Doc. Ing. František Pavelka, CSc.
šéfredaktor

Dear Readers,

The end of the year is often associated with reaping the fruits of one's labour. This is also true for the winter semester 2019 at The College of Regional Development and Banking Institute – Ambis, a.s., where it also takes on the form of a specialized conference at which the results of the university's long-term scientific activity are presented. Specifically, we are talking about the 3rd edition of the Fiscal Dialogue conference, which was held on 22 November 2019. This year's topic was "Local Public Finance and Financial Management: EU challenges". And in line with the established tradition, some presentations were transferred into articles which are definitely worthy of being published in our journal focused on socio-economic and humanities topics.

In the 2nd volume of this year'a SEHS, the aforementioned conference is so far represented by 3 papers on topics of Risk Analysis – Opportunity or Threat to Financial Management of Municipalities (by authors M. J. Půček and M. Plaček), Tax Autonomy of Self-Governing Units in Slovakia (by author L. Maličká), and more generally on Retirement Age in the Context of Public Finance Implications (by authors J. Šetek, J. Alina and D. Bajer). Keynote presentations by foreign participants will be published in SEHS 1/10.

SEHS is naturally also open to specialized papers originating outside The College of Regional Development and Banking Institute – Ambis, a.s. conference. In the present edition, it is a paper entitled The Diversity of the Field of Social Enterprises – The Case of the Czech Republic (by author L. Hrůzová) and papers Equilibrium and limit states in security, technology and social science part I. and II. (by authors I. Matoušková and R. Rak).

Dear Readers,

Let me wish you all the best and a succesful and happy new year 2020, both in your professional and private life.

Doc. Ing. František Pavelka, CSc.
Editor-in-Chief

RISK ANALYSIS - OPPORTUNITY OR THREAT TO FINANCIAL MANAGEMENT OF MUNICIPALITIES

ANALÝZA RIZIK – PŘÍLEŽITOST NEBO HROZBA FINANČNÍMU MANAGEMENTU MÍSTNÍ SAMOSPRÁVY

Milan Jan Půček
Michal Plaček

ABSTRACT

The topic of the article is the issue of risk regarding municipalities. For the purpose of this article, we understand the risk as a risk of occurrence, which may adversely affect the achievement of the stated objectives. The basic objective of the municipality is to nurture the development of its territory, the quality of life of its inhabitants and the quality of public services provided. The article sets out three goals, such as to evaluate whether a large number of small municipalities in the Czech Republic shall be understood as a risk or as an opportunity. In the Czech Republic, 77% of municipalities have under 1,000 inhabitants, the average population of the municipality in the Czech Republic is 1,695, which is the smallest of the CEE countries. A large number of municipalities up to 1,000 inhabitants can be considered as a risk factor, primarily from the point of view of financial management of municipalities. At the same time, this can be seen as an opportunity for local co-operation, pooled purchases, or alternative public service provision. The second objective was to analyse the ways of providing public services by municipalities. The third objective was to process a case study – the risk analysis of the city of Ústí nad Labem and compare the results with the city of Pardubice.

Key words: *risk, risk analysis, municipality*

JEL classification: H83, H70

1 INTRODUCTION

In the Czech Republic, as of 1 January 2018, there were a total of 6,258 municipalities, of which 605 were cities. The Czech Republic is characterized by its fragmented settlement structure and a large number of small municipalities. 77% of municipalities have below 1,000 inhabitants. A large number of municipalities up to 1,000 inhabitants can be considered as a risk factor, primarily from the point of view of the financial management of municipalities. With small municipalities, it is quite difficult to use economies of scale (for literature research and results in the Czech Republic see, for example, Matějová et al., 2014) – an opportunity for them can be an alternative provision of public services. In accordance with the legislation in the Czech Republic (in particular the Municipalities Act), each one can be characterized by four marks (see, for example, Koudelka, 2003): (1) territories, which is one of the key features of the municipality, being the "spatial or basic" basis of the municipality, (2) the inhabitants being the "personnel" base of the municipality, (3) its own property and the privilege to manage it according to its budget being the economic base of the municipality and (4) the privilege of acting in legal relations in its own name (the municipality is a legal entity, as a public corporation) being the legal basis of the municipality. These four characteristics can be used simultaneously as individual areas of municipal risk; it is one of the possible views on risk classification. The risks of municipalities can also be divided into five areas (1) financial (related to the way of financing, resources, repayment of subsidies, indebtedness, but also to waste, financial impacts of corruption and fraud); (2) organizational - sometimes also called personnel (e.g. employee turnover, key employee illnesses, ineffective employees, but also poor cooperation with the region, partners, poor management of the municipality and so on); (3) legal (especially legislation, but also errors in municipal ordinances, errors in contracts and the like); (4) technical (e.g. condition of buildings, equipment, technical infrastructure, etc.); (5) material (migration, aging, inadequate requirements of citizens, etc. - it is related to the development of the municipality and its socio-economic characteristics, but also to security, territorial and environmental risks).

In this article, we understand risk (MMR, 2012) as a risk of an event that may negatively affect the achievement of the set goals. The basic objective of the muni-

cipality is to take care of the development of its territory, the quality of life of its inhabitants and the quality of provided public services. We understand risk as a future event that has a random character. This means that it may or may not occur and may or may not have a negative impact, while being neither impossible nor certain. We associate risk with negative effects, adverse impacts and losses.

The aim of the article and its ongoing research is to identify and analyze new knowledge in relation to the topic of research, i.e. an analysis of municipal risk. Specifically, (1) to compare the average population of the municipality within the CEE countries and evaluate whether this situation can be understood in the Czech Republic as a risk or opportunity for small municipalities. (2) To analyze possible ways of providing public services by municipalities. (3) To prepare a case study – a risk analysis of the city of Ústí nad Labem and to compare the "big" risks with the risk analysis of the city of Pardubice.

2 THEORETICAL BASES, DATA AND METHODS

A mix of positive (non-normative) methodology and normative methodology was used in the research to achieve the stated objectives (Ochrana, 2009). Firstly, the positive methodology was used in particular in the study of available literature and other sources, in the analysis and description of problems, in the analysis of domestic and foreign experience where the basic criterion question in this kind of analysis is: "What is the state of the research problem (in our case, in relation to the stated research objectives)? What actually happened in relation to the problem?". Understanding this problem or condition, and in particular its causes, is crucial in this research phase. This is a proper definition of the problem under investigation. The next step is an effort to define the optimal or best solution to the problem with respect to the selected criteria. The next step is to ask normative questions: "What can be considered the best possible solution in relation to the problem under investigation? What final target status would be appropriate in our conditions?".

A number of generally scientific methods have been used in this mix. They are dominated by the method of analysis, which was used in researching literature and other available sources and data (for example, the database of the Ministry of Finance - MONITOR, database of the Czech Statistical Office, etc.), internal

documents obtained in the case study. Ústí nad Labem participated as a senior consultant responsible for risk analysis. The research also carried out qualitative research in the form of structured interviews, using the method of comparison (approach to risk management risk analysis of the city of Ústí nad Labem and the city of Pardubice).

The research also uses a case study method that is commonly used in social sciences (see, for example, Yin, 2009; Stake, 1995). A case study can help us to understand other (similar) cases by examining a single case (see, for example, Hendl, 2005). In the risk assessment of Ústí nad Labem and the city of Pardubice, two critical risk assessments were utilized using the expected probability of occurrence and impact. The resulting risk value was then calculated by:

$$V = P \cdot D \quad (1)$$

where V = resultant value of the significance of the risk,
P = expected probability of occurrence,
D = expected impact on the city budget.

The expected probability of occurrence and expected impact was determined by the processor's expert estimation based on the analysis of the data and the results of the structured talks. The proposed evaluation was submitted to the panel of experts who confirmed or changed the evaluation. The values were set on a scale of 1 to 5, when 1 represented very little impact (or very low probability of occurrence) and 5 very large impact (or very high probability of occurrence). The value of risk significance varies between 1 and 25. Attention will be paid in particular to the risks with a value of 10 and higher, which we take as meaning "large" for this research. The large risks of Ústí nad Labem will be compared with the results of the city of Pardubice.

The authors relied mainly on the concept of new public management (NPM) in the framework of the research carried out. NPM defines a different conceptual approach to managing public resources and public administrations (see, for example, Barzelay, 2001) and it can also be applied to the issue of municipal risk management. NPM, among other things, uses proven managerial tools from the for-profit sector which may include, inter alia, risk analysis. The fundamentals of the NPM concept have been influenced by a number of avenues and movements,

such as the theory of transaction costs, the theory of public choice, the theory of principal-agent and the like (Nemec et al., 2011, pp. 140–159). The leading creators of the NPM concept include Pollit (1990) and Walsh (1995).

3 RESULTS AND DISCUSSIONS

3.1 A LARGE NUMBER OF SMALL MUNICIPALITIES IN THE CZECH REPUBLIC – AN OPPORTUNITY OR A THREAT?

The municipality by law ensures the versatile development of its territory. The smaller the municipality in terms of population, the more difficult it is to ensure the quality of life of its inhabitants. The population of the municipality is thus one of the risk factors of municipalities in the Czech Republic. The very smallest (up to 200 inhabitants) make up a very large number of municipalities, 1,432 (23%), but contain only 1.7% of the population (CSU, 2018). In these smallest municipalities, the mayor is usually a person who maintains another profession at the same time. The municipality has no employees or not a sufficient amount of them for the performance of all activities of the municipality. Municipalities up to 100 inhabitants are then 77% and 17% of the population lives in them. The average population in one municipality as on 1 January 2018 was 1,695. In view of the fact that much of the tax revenues are derived from the population, it is indeed difficult to ensure quality of life, given the relatively small population in small municipalities.

For comparison, the situation in TEN CEE countries has been listed. The table shows the population, size, number of municipalities, average area of one municipality in km2, and the average population of the municipality. The data are from the year 2012. The countries are in the table in order of the average population of the municipality.

Tab. 1 » The average population of the municipality in CEE countries.

Country	Population (in millions)	Surface area (km^2)	Number of municipalitie	Average municipal area (km^2)	CEE country ranking	Average population of the municipality	CEE country ranking
Lithuania	3,05	65,300	60	1 088.3	1	50,833	1
Bulgaria	7,37	111,002	264	420.5	3	27,917	2
Latvia	2,07	64,589	119	542.8	2	17,395	3
Poland	38,53	312,685	2,479	126.1	5	15,543	4
Slovenia	2,05	20,273	211	96.1	6	9,716	5
Romania	21,41	238,391	3,181	74.9	7	6,731	6
Estonia	1,34	45,227	226	200.1	4	5,929	7
Hungary	9,99	93,029	3,175	29.3	8	3,146	8
Slovakia	5,39	49,034	3,028	16.2	9	1,780	9
Czech Republic	10,49	78,868	6,253	12.6	10	1,695	10

Source: authors according to CEMR (2013) p. 8

The table shows that the largest average population is in Lithuania (almost 51 thousand), with the last rows of the table occupied by Hungary, Slovakia and the Czech Republic (in last place with an average municipal population of 1,695. When compared with neighbouring Poland, Poland has about a 10x larger average size of municipalities in addition to the average population of the municipality. When compared with other countries, the situation in the Czech Republic is even more evident.

It is difficult to ensure the quality of life of inhabitants in small municipalities. Many countries (for example, Lithuania) have dealt with the financing situation of small municipalities by an extensive merger of municipalities. For example, Klimovský (2010, 2011, 2014) describes the experience and merger issues in EU

countries. The advantages and disadvantages of merging under the conditions of the Czech Republic have been discussed, for example, by Kameníčková (2003) or Illner (2006). Studies of the OECD (2016, p. 40) have highlighted the problem of the large number of municipalities in the Czech Republic. This administration considers cooperation among municipalities in the Czech Republic in the provision of services as non-systematic and it often depends on personal relations. The OECD considers the best way to achieve a more focused supply of services is the merging of municipalities. In the OECD report of 2018, it was recommended to build support for community mergers; it was also recommended to improve cooperation between municipalities in order to exploit economies of scale and improve service coordination (OECD, 2018, p. 3). Despite all the recommendations and examples from other countries, the topic of merging municipalities in the Czech Republic is politically and socially toxic, mainly because of the violent merging in the 1970s and 1980s and the associated poor experience where merging benefited the "centre" municipalities and led to the collapse of affiliated/satellite municipalities. Any effort by the state to motivate the municipalities to merge is also considered undemocratic.

While the financing issues of small municipalities can be considered a very significant risk for small municipalities, the possibility of cooperation between municipalities (and cooperation based on alternative public service procedures) can be understood as a great opportunity for small municipalities.

3.2 . ANALYSIS OF THE WAYS OF PROVIDING SERVICES BY MUNICIPALITIES

If a municipality provides public services in an inappropriate way in terms of their legal form, it increases its legal as well as financial risks. The analysis of the legal environment in the Czech Republic and the possibility of providing public services implies that each municipality can provide services for its inhabitants in different ways, or by different means. The result of the analysis is shown in the following table. These options also differ in the level of risk they are associated with. However, this level depends on local conditions. Thus, the municipality can provide public services directly (by the municipal authority, the organizational unit of the municipality, another municipal authority) or indirectly, where

much more is possible. If the services are provided indirectly, a large part of the municipalities' risks is transferred to a non-profit organization or a company that provides the public service to the municipality. However, new risks arise, in particular, from the selection of the service provider (including errors in contracts), the public contract or the grant or contribution provided.

Tab. 2 » Analysis of the main possibilities for public service provision by municipalities.

Directly/ indirectly	Provider	Legal regulation	Relationship to the municipality	Application examples--Public services
Directly from the municipality	Municipal Office	The Municipalities Act, the Administrative Code and other laws	The municipality provides directly through its office	-Transferred performance of State Administration (Registry Office, Building Office, etc.) -Securing the tasks of self-government
	Municipality's organisational component	Sections 24–26. 250/2000	The municipality establishes a founding document, has no legal personality	services of a social character, library or cultural facilities, etc.
	Other authority of the municipality	Special law	Authority of the municipality	the city police, the commission
Indirectly-non-profit organizations	Contributory organization	Sections 27–37 250/2000	The municipality establishes a founding document	primary schools, nursery schools,
	Union/Collection of municipalities	Sections 49–53 128/2000	Several municipalities establish an entity by contract	microregion, voluntary union of municipalities

Tab. 1 » continues on the next page (p. 13)

Directly/ indirectly	Provider	Legal regulation	Relationship to the municipality	Application examples--Public services
Indirectly-profitable organizations with a part by the municipality	Limited liability company or joint-stock company	Commercial Code	The municipality may establish a founding document (by itself) or a social contract (with others)	asset management, technical services, waste collection, etc.
	Cooperative	Commercial Code	Municipality is a member of the cooperative	housing matters of the municipality
Indirectly-purchase of services	Various possibilities of service providers (usually selected on the basis of a public competition). The relationship with the municipality is defined on the basis of contract. There are also risks related to the selection of the provider – usually the risks associated with the public procurement.			
Indirectly – subsidies granted	In the conditions of the Czech Republic, for example, subsidies provided to non-profit organisations providing social services, but may also be subsidies to associations (e.g. sports, culture or youth work) and the like.			
Indirectly-Alternative options	These are different options for alternative provision – combined purchases (for example, multiple municipalities compete jointly for energy), various forms between municipal cooperation to provide public services (e.g. through a voluntary union of municipalities) and the like.			

Source: authors

A very common way of providing public services in the Czech Republic is to provide them through an established contributory organization - mainly primary schools and kindergartens, but also various forms of "communal" services such as municipal cleaning, mowing grass, garbage collection and the like. Very often municipalities also provide public services through a company or non-profit organization which is usually selected on the basis of a public tender. Municipalities also have other alternative options when providing public services. There are different options for alternative provision - pooled purchases (for example, multiple municipalities compete together for energy), different forms of municipal cooperation to provide public services (for example through a voluntary union of municipalities) and the like. Again, it is necessary to carefully identify, assess (analyze), manage and monitor risks according to local conditions.

3.3 CASE STUDY – RISK ANALYSIS OF ÚSTÍ NAD LABEM

One of the objectives of the research and this article was to prepare a case study of a chosen city that would include a risk analysis. The authors of the article chose the city of Ústí nad Labem, where one of the authors participated in the creation of a risk analysis. The city of Ústí nad Labem is a statutory city with 93,000 inhabitants. It is also a regional capital. The following tables show the results of a case study on risk analysis in the city of Ústí nad Labem. The procedure and methodology for calculating the evaluation was presented in Chapter 2.

The following table identifies and assesses financial risks. Seventeen financial risks were identified, evaluated and ranked in the table according to the highest risk value. Four of the risks obtained values of 10 or higher. Three obtained a value of 12, i.e. "insufficient funds for investment", "the unwillingness of the state to contribute financially to solving the problems of the city and the region" and "restrictive economic policy of the state - reducing investment in the city", with one having a value of 10 for "insufficient funds for normal operation". If we compare these values with the risk analysis of a comparable city (Pardubice was selected), Pardubice had three financial risks with a value of more than 10 (Půček, 2018): "insufficient funds for investments (having a value of 12 like Ústí nad Labem) , also at 12 was "returning subsidies for sustainability of projects or unacceptable expenditure of projects in implementation" (in Ústí, this risk was identified as well and was ranked 8-10 and had a significance of 8, i.e. 2 points less), with the third risk worth 10 being "insufficient funds for normal operation" (in Ústí nad Labem it was evaluated the same way - see the table below). In addition, Pardubice identified 14 financial risks and one risk in Ústí nad Labem with a value of 12 ("The unwillingness of the state to contribute financially to solving problems of the city and region"); a similarly formulated risk was not identified in Pardubice. It can be concluded that the representatives of Pardubice rely more on themselves than on the state. As for the city of Ústí nad Labem, it should be noted that the Ústí nad Labem Region is one of the economically affected (negatively) regions where there is higher unemployment than in other regions with considerable problems within socially excluded localities in Ústí nad Labem.

Tab. 3 » Risk Analysis: Financial risks of the city of Ústí nad Labem.

Order	Identified risk	Guest		
		P	D	V
1-3	Lack of funds for investment (and large repairs), incl. for co-financing with European subsidies	4	3	12
1-3	State unwillingness to contribute financially to solving the problems of the city and region	3	4	12
1-3	Restrictive state of economic policy – limiting investment in the city and region in the context of reducing the state budget deficit	3	4	12
4	Lack of resources for normal operation	2	5	10
5-7	Lack of funds for investment, repairs and operation of regional facilities in the city	3	3	9
5-7	Financial implications for the city due to errors of the Regional Council Office	3	3	9
5-7	Increased city expenditure or impairment of property caused by inefficiency, ineffectiveness or bad economies	3	3	9
8-10	Significant tax revenue fall	2	4	8
8-10	Significant repayment of subsidies (sanctions) in the context of project sustainability or ineligible expenditure of projects during implementation	2	4	8
8-10	Over-indebtedness (exceeding the debt service indicator)	2	4	8
11-14	The unwillingness of the citizens to pay fees or paying for services, a large volume of bad debts	2	3	6
11-14	Sharp increase in prices of purchased commodities or services	2	3	6
11-14	Increased city spending or impairment of assets caused by corruption or fraud	2	3	6
11-14	Change in university funding – support for major research universities – lack of funding for the local university	2	3	6
15	City Insolvency	1	5	5
16-17	Removal of emergency conditions not covered by insurance	2	2	4
16-17	Compensation not covered by insurance	2	2	4

Source: Authors, according to the documents from Ústí nad Labem

The following table identifies and assesses organizational risks. 10 organizational risks have been identified and evaluated and are listed in the table by the highest risk value. A value of more than 10 was obtained just once "Insufficient preparedness of the city to use cohesion policy instruments" (a value of 12). For comparison, the City of Pardubice identified and evaluated 7 risks in this area (Půček, 2018) with one over 10 similarly to Ústí nad Labem with a value of 12.

Tab. 4 » Risk Analysis: Organisational risks of the city of Ústí nad Labem.

Order	Identified risk	Guest		
		P	D	V
1	Insufficient readiness of the city to use cohesion policy instruments	3	4	12
2-5	Poor city management (wrong decisions)	3	3	9
2-5	Insufficient coordination of EU-level development projects – State-region – city, which will have negative impacts on the city	3	3	9
2-5	Uncontrolled expansion of the city, which will subsequently increase the operating costs of the city or deteriorate the availability of services or cause traffic collapse	3	3	9
2-5	Non-elimination of problems in spatial planning, unprofessional or purpose changes to the zoning plan	3	3	9
6-9	Poor management of city districts (wrong decisions)	3	2	6
6-9	Poor management of the city's organizations and companies (erroneous decisions)	3	2	6
6-9	Poor cooperation with city districts	3	2	6
6-9	Bad Partnerships (region, university, NNO, etc.)	3	2	6
10	Personnel risks – employees (turnover, incompetence, non-motivation,...)	2	2	4

Source: Authors, according to the documents from Ústí nad Labem

The following table identifies and assesses legal risks. Four legal risks have been identified and evaluated and ranked in the table by the highest risk value. Values higher than 10 were obtained by 2 risks, namely "Legislative change that will significantly reduce incomes or increase spending" and "Legislative change that will deteriorate the quality of life in the city or the public services provided". Both have

a value of 12. For comparison, the City of Pardubice assessed the risks similarly.

Tab. 5 » Risk Analysis: Legal risks of the city of Ústí nad Labem.

Order	Identified risk	Guest		
		P	D	V
1	Changing legislation that will significantly reduce revenue or increase spending	3	4	12
1-2	Change of legislation that will worsen the quality of life in the city or the public service provided	3	4	12
3	Inappropriate change in the principles of territorial development of the region or territorial development policy CR	2	4	8
4	Error in legal acts of the city or in contracts, lost legal disputes	2	3	6

Source: Authors, according to the documents from Ústí nad Labem

The following table identifies and assesses technical risks. Four technical risks have been identified and evaluated and ranked in the table by the highest risk value. A value higher than 10 was obtained by 1 risk "Risks arising from old ecological burdens" which was 12. For comparison, the City of Pardubice evaluated 7 risks. Risks with the highest observed value (over 10) included the risk "Risks from old ecological burdens" (the same as Ústí nad Labem at 12) and the risk "Failure in heat supply" (with value 10, as in the table below, a similar risk was not identified in Ústí).

Tab. 6 » Risk Analysis: Technical risks of the city of Ústí nad Labem.

Order	Identified risk	Guest		
		P	D	V
1	Risks arising from old ecological burdens	3	4	12
2-3	Poor state of transport infrastructure (e.g. deterioration of road conditions under regional administration) and other infrastructure in the municipal area and associated accidents, failures, blackouts, etc.	3	3	9
2-3	Poor state of buildings within the properties of the city and its organizations and companies and associated failures, accidents etc. (Safety factors)	3	3	9
4	Obsolete material-technical equipment of the city and its organizations and companies	3	2	6

Source: Authors, according to the documents from Ústí nad Labem

The following table identifies and assesses material risks for Ústí nad Labem. 17 material risks were identified and evaluated and are ranked from the highest risk value. Values higher than 10 were obtained by 2 risks with "Floods" having the highest value of all (16) and "inappropriate behaviour of private entities outside the region" (12). This risk is specific to Ústí nad Labem due to the higher number of socially excluded localities. For comparison, the city of Pardubice had just 12 risks evaluated. No identified risk was higher than 10 in the assessment.

Tab. 7» Risk Analysis: Organisational risks of the city of Ústí nad Labem.

Order	Identified risk	Guest		
		P	D	V
1	Floods	4	4	16
2	The growth of the spatial concentration socially excluded as a result of State policy, improperly set legislation or inappropriate behaviour of private entities outside the region	4	3	12
3-7	Other natural hazards-raindrops, thunderstorms, landslides and other natural hazards	3	3	9
3-7	Air degradation	3	3	9
3-7	The continuation of the economic recession – high unemployment – smaller bathability of the population, reduction of spending on culture and sport with a negative impact on the functioning of cultural and sporting organisations in the city	3	3	9
3-7	Demographic characteristics (population ageing) increased pressure on the network of social services equipment (and their financing), the continued outflow of young and educated	3	3	9
3-7	Disproportionately increasing demands of citizens, entrepreneurs, employers, partners towards the city	3	3	9
8-11	The decline of industrial, progressive industries, from which the main employers in the city (e.g. chemical industry) are recruited and the associated risk of increasing unemployment	2	4	8
8-11	Social problems and loss of prestige resulting from possible departures of significant institutions	2	4	8

Tab. 7 » continues on the next page (p. 19)

Tab. 7» Risk Analysis: Organisational risks of the city of Ústí nad Labem.

Order	Identified risk	Guest		
		P	D	V
8-11	Industrial and similar accidents, large fires, mass accidents, etc. Within or near the city	2	4	8
8-11	Other risks defined in the context of the crisis management of the city	2	4	8
12-13	Significant deterioration of other environmental compartments	2	3	6
12-13	Traffic collapse as a result of the unbuilt D8 motorway	3	2	6
14-15	Terrorist attack, looting and similar risks	1	5	5
14-15	Major epidemics, pandemics and similar situations in the city	1	5	5
16-17	Theft of property, cash, vandalism and the like	2	2	4
16-17	Significant damage to the reputation (image) of the city, eg. From the media side	2	2	4

Source: Authors, according to the documents from Ústí nad Labem

Overall, Ústí nad Labem identified and evaluated 52 risks (Pardubice 44), of which 10 were assessed as large (Pardubice 8). The highest risk value in both cities was reached by the "flood" risk which was rated in Ústí nad Labem at 16. This was significantly reflected in the bad experience with floods in Ústí nad Labem (2013, 2002, but also 1939, 1920, 1890, 1876 or the largest in 1845).

4 CONCLUSION

The research dealt with the issue of risks in relation to the issue of municipalities. The comparison of the average population of the municipality within the CEE countries shows that the Czech Republic has the lowest average number of inhabitants in its municipalities. The basic objective of the municipality is to take care of the development of its territory, the quality of life of its inhabitants and the quality of provided public services. It is difficult for small municipalities to achieve this basic objective, inter alia because it is difficult to achieve economies of scale. With regard to the fact that we perceive risk as a danger of the occurren-

ce of an event that may negatively affect the achievement of the set goals and the large number of small municipalities in the Czech Republic can be understood as a significant risk factor in terms of their financing. At the same time, this creates a great potential (opportunity) for inter-municipal cooperation and for alternative public service delivery practices.

The second objective of the article analyzed possible ways of providing public services by municipalities. The analysis of the legal environment in the Czech Republic and the possibility of providing public services implies that each municipality can provide services for its inhabitants through various procedures, directly (especially the municipal office) or indirectly. These options also differ in the level of risk they are associated with. Very often municipalities also provide public services through a company or non-profit organization. Municipalities also have alternative options when providing public services. There are different options for alternative provision - bundled purchases, different forms of municipal cooperation to provide public services and the like. Again, it is necessary to carefully identify, assess (analyze), manage and monitor risks according to local conditions.

The third objective of the research was to prepare a case study of the risk analysis of the city of Ústí nad Labem. Overall, Ústí nad Labem identified and evaluated 52 risks, of which 10 were assessed as high (with a value of 10 and higher). The highest risk was related to floods (16). For comparison, the City of Pardubice identified and evaluated 44 risks. The comparison of these two comparable cities in the Czech Republic shows that the risk analysis in Ústí nad Labem significantly reflected the bad experience with floods. Furthermore, it is important to note that the Ústí nad Labem Region is one of the economically (negatively) affected regions where there is higher unemployment and considerable problems with socially excluded localities.

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THE DIVERSITY OF THE FIELD OF SOCIAL ENTERPRISES – THE CASE OF THE CZECH REPUBLIC

DIVERZITA SOCIÁLNÍCH PODNIKŮ – PŘÍPAD ČESKÉ REPUBLIKY

Lucia Hrůzová

ABSTRACT

Social enterprises have been experiencing a worldwide boom in the last decades. The mix of aspects of the nonprofit and for-profit world that is essential to social enterprises creates a unique space for them to address the targeted social issues. However, their broad concept embraces a range of organizations that can fulfil diverse roles and operate in different fields. The Czech Republic is one of the countries where social enterprises have only recently started to develop. Moreover, there is still a lack of knowledge of what the field of Czech social enterprises encompasses. The aim of this article is, therefore, to shed light on the current state of the field. The description of the current social enterprise environment supplemented by the data of Czech social enterprises collected through the various databases will be put in the context to the findings of the relevant foreign literature and compared.

Keywords: *social enterprises, Czech Republic, hybrid organizations, business organizations, nonprofit organizations*

JEL Classification: JEL_L31, JEL_L38

INTRODUCTION

In recent years, social enterprises and the social economy have become an increasing phenomenon for tackling social issues across countries. Their position is also supported by the statistics. Currently, the social economy sector provides paid employment for 6.3% of the working population in the EU-28 (Monzon and Chaves, 2017). Their uniqueness lies in their hybrid form that combines aspects typical of different sectors. By combining the features of public, private and non-profit spheres, the premise of hybrids is to deliver better performance, leading to customer/stakeholder satisfaction (Brown et al., 2003) and achieving a goal that no actor could accomplish on his own (Hodge and Greve, 2005). Their essential attributes are recognized among authors - social enterprises are designed to pursue a social mission that is performed through business strategies that generate incomes (Defourny and Nyssens, 2010, Powell and Osborne 2018). The purpose of these organizations is to fulfil their social, community or environmental mission while doing business activities and generating revenues. The commercial activities enable them to gain new financial sources to sustain their goal in the long-term (Smith et al., 2013).

Social enterprises can take various forms and emerge to deal with specific social issues. Their diversity also across countries has its roots in the historical development each country undertook and in different social issues that countries had to face (Kerlin, 2010). The diversity makes it difficult to describe and conceptualize this phenomenon. The current state of research, therefore, justifies further focus on this field (Saebi et al., 2019). Additionally, though the issue has become a popular subject of research, there is still a lack of knowledge on how social enterprises operate in Eastern Europe. In the case of the Czech Republic, the social enterprises started to appear only recently. Their relatively short history is also linked with low public recognition. There is also no official database covering the list of social enterprises; it is, therefore, challenging to quantify the position of social enterprises in the Czech economy, not what role they play in the Czech society.

The objective of this paper is to fill the gap of lacking knowledge on social enterprise in the Czech environment. In order to do so, the roots of social enter-

prises in the Czech Republic will be described, and the collected data of social enterprise will be analyzed to map the field of social enterprises. Afterwards, the findings will be put in the context of the findings of the relevant foreign literature and compared.

The paper is organized as follows: At the beginning, the historical roots of social enterprises will be briefly described. Second, the background of social entrepreneurship in the Czech Republic will be introduced. Subsequently, the sample and method used will be described and applied to analyze the current state of Czech social enterprises. Finally, the findings will be put in the context of the research conducted in the Czech environment and compared to international practice.

1 CONCEPT OF SOCIAL ENTERPRISES

Nowadays, there is still no unified concept of social enterprises among researches (Young and Lecy, 2014). Though it is recognized that social enterprises exist to pursue a social mission and for that purpose, they operate on the market. However, this definition is rather vague. As the authors point out, there is no agreement on how social purpose is defined and to what extent social enterprises should pursue it in order to be classified as social enterprise. On the other hand, there is also no agreement on how much they should be able to earn on the market to sustain their mission. The challenge of conceptualization lies further in a significant variety among social enterprises. They may operate in various forms; as nonprofit organizations, social businesses, social cooperatives, or intersectoral partnerships (Jenner, 2016). Moreover, the form may differ among countries. It is partially explained by the legal and institutional arrangements unique for each region, bearing the cultural, economic social and historic specifics (Matei and Matei, 2015).

Kerlin (2010) describes the reasons why the social economy and social enterprises emerged in the 1980s and 1990s around the world. Their appearance was caused by the withdrawing role of the state in public services and social issues. The magnitude and the process differed among countries. In the United States, increasing public debt resulted in the cut of public funding towards nonprofit organizations. The absence of resources motivated nonprofit organizations to seek ways to earn their incomes and be less dependent on public funding.

Moving from the dependence on public subsidies, the nonprofit was forced to secure financial sustainability through resource diversification (Makýšová and Vaceková, 2017). One of the ways was to adopt earned income approaches to deliver services for commercial revenues (Teasdale, 2012).

Western European countries were dealing with the pressure on reducing public costs due to the government deficits that resulted in decreasing volume of services provided by the welfare state. The policy strategies were ineffective in solving issues of persistent structural unemployment and increasing social exclusion of a specific group of people from the labour market and the society as well (Battilana et al., 2015). Mainly, they were low-qualified, long-term unemployed or dealt with other social problems that made them difficult to employ (Defourny and Nyssens, 2010). The question arose, whether nonprofit organizations could in their pure form, address these issues more effectively. Therefore, work integrational social enterprises focusing on employing disadvantaged people started to emerge. In Central and Eastern Europe, the state withdrawal was the reason for the transformation from the communist regime into the democratic regime. The return to the market economy was followed by high unemployment. The situation could not be relieved by civil society activities since their existence was minimal due to the totalitarian regime (Kerlin, 2010; Rakić et al., 2017).

The historical development is still reflected in the field of social enterprises. In the United States, social enterprises are established for various reasons and perform different activities (Kerlin, 2010). In the Southern and Western European countries, social enterprises are primarily linked to employing people who could not easily find a job on the market (Defourny and Nyssens 2010), since the market economy cannot secure employment for these people (Baglioni 2017). They focus on employing individuals from a diverse spectrum of disadvantaged populations, such as homeless people (Teasdale, 2012), long-term unemployed (Evers, 2005; Sanchis-Palacio et al., 2013; Battilana et al., 2015), individual suffering with health or mental disabilities, immigrants (Battilana et al., 2012), or prisoners. Also, a high share of social enterprises provides social services that have proved to be "beyond bureaucratic, ineffective and wasteful" government (Dees, 2007, p. 25). To do so, they often use new technologies or come up with an innovative way

of service provision (Zimmer and Obuch, 2017). However, that is mainly true in the US context (Defourny and Nyssens, 2010).

Though the social enterprises are seen as a hybrid between the nonprofit and for-profit world, the international experience shows that they can also emerge as the "public-sector spinoffs" (Defourny and Nyssens, 2017, p. 2474). With the introduction of new Public Management reform, it was attempted to reduce the costs of public service provision and (or) to achieve higher efficiency in public sectors by implementing the instruments associated with the private sector in the process by externalisation of the public service provision (Powell et al., 2019). It was assumed that those private and nonprofit organizations would be able to provide social services with higher quality and lower expenses. Therefore, contracting services out would lead to a decrease in public expenditures (Testi et al., 2017) and would create innovation in the provision and delivery of services. Some local public bodies took the lead by setting up and controlling their social enterprises seeking local development and answering local social needs. Since the organizations could produce their revenues, they were also linked with potential to reduce public expenditures (Defourny and Nyssens, 2017).

2 THE BACKGORUND OF SOCIAL ENTERPRISES IN THE CZECH REPUBLIC

The concept of social enterprises is a relatively new phenomenon in the Czech Republic as it entered the public sphere only after 2000, but it builds on a long tradition of solidarity within the community. The first co-operative was established at the end of the 19th century and based on mutual support among members. Afterwards, a number of co-operatives developed in various business fields, also in the period between the First and Second World War when they reached their peak. The tradition of the social economy was interrupted by totalitarian regimes in the country during WWII and after 1948, when the Communist regime took over. The situation changed after the country returned to the market economy and democratic regime in 1989. The new situation created a space for rebirth of the civil society that is currently one of the key actors in the social economy (Dohnalová et al., 2016).

Several events in the last decades influenced the rise of social enterprises in

the Czech Republic (Vaceková et al., 2015; Dohnalová et al., 2018). In 2002, the International Conference on Problems of Propagation of Social Economy took place in the Czech Republic. One of the outputs at the conference was the adoption of the "Prague Declaration", which contained the summary of social economy features. Afterwards, the interest in the international experience with social enterprises began to spread and accelerated after the accession to the EU in 2004, primarily due to the newly established access to financial support from the EU grants. Since social enterprises lacked the initial capital, foreign funds were crucial in their development (Pelucha et al., 2017).

Besides the financial support for social enterprises, the financial contribution from the EU funds helped to establish the initiatives shielding the field of social enterprises at the national and regional levels. In 2009, the Thematic Network for the Development of Social Economy at (TESSEA) emerged connecting social entrepreneurs and creating space for discussions between the public representatives, social entrepreneurs and experts in the field (Dohnalová et al., 2018). TESSEA aimed to formulate principles and standards of social enterprises, because the concept was not defined then, nor any legislation regulating social enterprises existed. Two years after the establishment, TESSEA formulated the definition of the term social economy and social entrepreneurship and the principles of how social enterprise should be approached. The principles cover three dimensions of the social enterprise operation – social, economic and environmental covering also regional aspects (Table 1). The concept corresponds to the European Commission's standards (Dohnalová and Průša, 2011). This classification was used by the Ministry of Labour and Social Affairs for the processing of calls for social economy and subsequently used by the bank in a pilot programme of microloans for social enterprises (Dohnalová et al., 2018).

Tab. 1 » Features of social enterprises and work integration social enterprises

1.Social benefit	2.Economic benefit	3.Environmental and local benefit
a) Performance of an activity benefiting society or a specific group of (disadvantaged) people. b) and members participate in the enterprise's strategic decision-making.	a) Any profits used preferentially to develop the social enterprise and/or to achieve publicly beneficial goals. b) Independence (autonomy) from external founders in decision-making and management. c) At least a minimum proportion of total revenues and growth thereof accounted for by revenues from sales of goods and services. d) Ability to manage economic risks. e) Asset lock. f) Performance of systematic economic activity. g) Trend towards paid work.	a) Preferential satisfaction of the local community's needs and local demand. b) Preferential use of local resources. c) Consideration for environmental aspects of both production and consumption. d) Social enterprise co-operates with local actors.

Source: OECD (2016)
**Characteristics that are highlighted are required.*
*** In case of WISE, social benefit principle (emphasis on the development of work competences of disadvantaged people) is added, while 2f and 2g principles are omitted.*

Currently, no legal framework regulating social enterprises exists. Although the draft has been in preparation for almost ten years, it is yet to be approved. Czech social enterprises operate as business companies or nonprofit organizations. In 2014, a new legal form was defined. A social cooperative is described as a subject that systematically performs publicly beneficial activities to support working and social integration of disadvantaged people into society, prioritising the local needs and the use of local resources based on the location and scope of the social cooperative. Up to the present time, this legal form is the only legally acknowledged form of social entrepreneurship.

3 SAMPLE AND METHODS

For the analysis purpose, the data of Czech social enterprises were collected. Since

no official register of social enterprises exists, several databases were searched to prepare the list. The directory of social enterprises operating under the Ministry of Labour and Social Affairs is currently the biggest database of social enterprises operating in the Czech Republic. The list was created based on the telephone survey in 2012 and is regularly updated. Currently, there are 240 social enterprises registered. However, the registration is optional and, therefore, it does not include all of the existing social enterprises in the Czech Republic. The list was further extended by social enterprises receiving a subsidy from the EU funds for the development of already existed social enterprises or for emerging new social enterprises. Organizations found through Bisnode MagnusWeb further enlarged the list. The database provides access to data on economic subjects operating in the Czech Republic. The sample includes social enterprises that are either members of the Chamber of Social Enterprises (Komora sociálních podniků) or SINEC (Klastr sociálních podniků a inovací). The first is an association of social enterprises in the South Moravian Region while the later unites social enterprises in the Moravian-Silesian Region. Finally, the list was enlarged by social enterprises found via Google. A total of 566 social enterprises were identified.

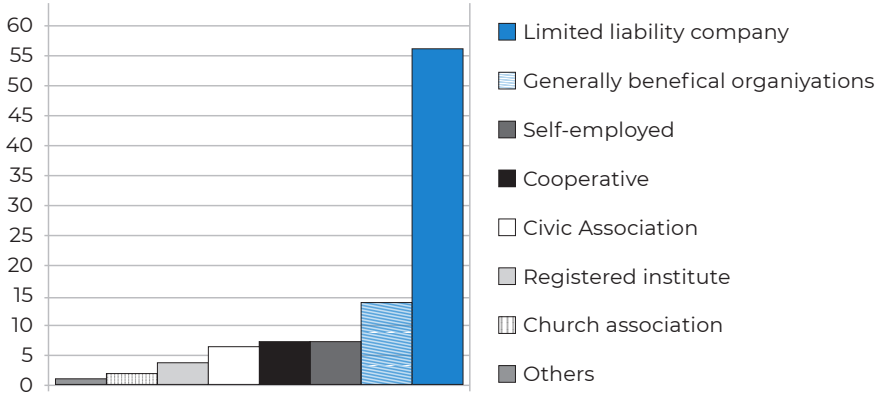
For each social enterprise, we looked up further data: the legal form; the geographic location; occupation and in case of WISE, the information about whom they employ. The information was obtained from the Business Register and its websites. However, through the process of data collection, no further information was found about 48 social enterprises due to their non-existent websites. Therefore, they were excluded from the sample. Moreover, fourteen social enterprises were no longer operating on the market and were also excluded. The final sample contains 504 social enterprises.

In order to identify the current state of social entrepreneurship in the Czech Republic, the description and statistical method were used to describe and explain the current state of the Czech social enterprises. The outcomes from the primary research were supplemented by the findings of previous analyses of Czech social entrepreneurship. Afterwards, the method of synthesis was applied. The findings were put in the context of the findings of international research.

4 RESULTS

The typology of social enterprises based on their legal form (Figure 1) indicates most of them operate as a business company (64%), rather than a nonprofit organization (28%). The nonprofit form limits the economic principle of social entrepreneurship, since the profit can be generated primarily through the secondary (supplementary) operations (Dohnalová et al., 2018). Therefore, some nonprofit organizations established a limited liability company (18% of all limited liability companies in the sample) to undertake commercial activities. Further, they also increase their chances for getting a loan from a bank when running a business company. The data also indicate that a pattern of extending the capacity of the third sector organizations exists, but it is a marginal issue. The remaining social enterprises operate under the status of as a self-employed individual (8%). The legal form is not recognized by the EU legislation as a form of social enterprise and can be classified as a grey zone in the field of social entrepreneurship (Fraňková, 2019). Nevertheless, it is recognized in the Czech context, as is evidenced by the number of social enterprises organized in this form that were supported through public funding.

Figure 1» The share of social enterprises based on their legal form.



Source: Author, based on the data retrieved from the Czech Statistical Office (https://apl.czso.cz/irsw/)

By observing the activities social enterprises pursue, it is evident that they operate in diverse fields (Table 2). Most of them operate in food production, cleaning services and catering or employing disadvantaged people in their restaurants. A large share of social enterprises (79.4 %) performs various types of economic activities in diverse industries (e.g. gardening services and catering). One of the possible explanations could be that they try to find the best suitable workplace for each individual with specific needs. Alternatively, they try to diversify their activities to be more sustainable. But in contrast to international practice, only a small proportion of them provides social services (5.6 %).

Tab. 2» The share of social enterprises based on their core activities.

Activities of Czech social enterprises	Number of SEs	Share
Food production and sales of food production	77	15.4%
Cleaning services	75	15.0%
Catering, jobs at cafés and restaurants	73	14.6%
Sales	67	13.4%
Maintenance, gardening	64	12.8%
Office work	38	7.6%
Education and retraining	36	7.2%
Others	33	6.6%
Production of decorative objects (glass, pottery...)	29	5.8%
Social services	28	5.6%
Woodwork	28	5.6%
Construction work	25	5.0%
Packaging production and services	25	5.0%
Small industrial production	25	5.0%
Textile production, shoes production	24	4.8%

Source: Author, based on the information retrieved from the social enterprises´ websites

In the sample, seven existing social enterprises were identified that were established by one or more municipalities. Their main purpose is to provide jobs for long-term unemployed individuals. Their main field of the activity was providing maintenance and gardening services and disposal of waste.

The data confirm that the majority of social enterprises provide jobs for individuals that are somehow disadvantaged (95%). The state corresponds to the European practice. Most of them (Table 3) employ people with disabilities (67%). A relatively high share of WISEs also focus on long-term unemployed individuals (31.4 %). Other specific groups of people who either suffer from social exclusion or are threatened by social exclusion are hired by less than 10% of the social enterprises. The dominant focus of WISEs on these two groups is possibly linked to the systematic public support (Fraňková, 2019). By providing a job either for individuals with disabilities or for people who are long-term unemployed, an organization is eligible for receiving subsidy.

Tab. 3» The share of social enterprises employing the specific disadvantaged group.

Individuals with disabilities	66.9%	Homeless individuals	5.3%
Long-term unemployed	31.4%	50+	4.8%
Ethnical minorities	8.6%	Individuals with addictional experience	4.2%
Individuals taking care of a person dependent on their care	7.4%	Individuals with a criminal record	7.2%
Youngsters in need	7.4%	Others	3.4%

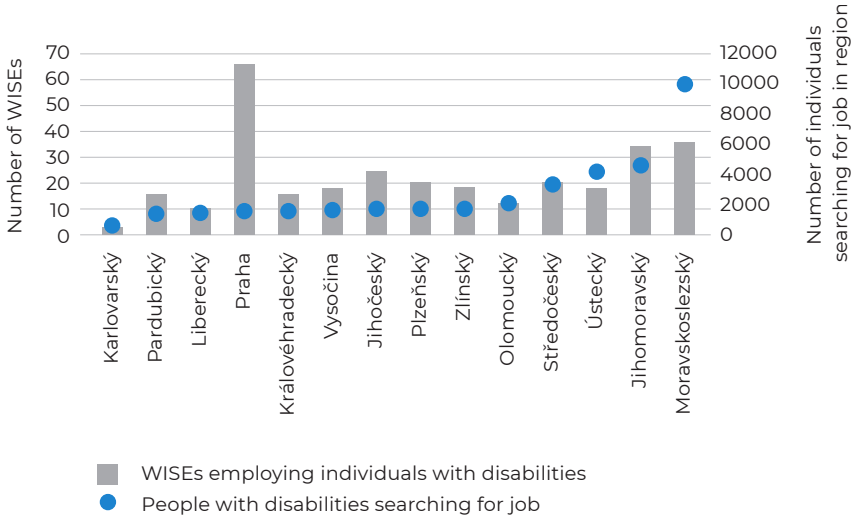
Source: Author, based on the information retrieved from the social enterprises´ websites

A third of WISEs employ more than one targeted group. Fraňková (2019) explains that targeting various disadvantaged groups may increase chances for social enterprises to be applicable for multiple grant programme or subsidies from the state.

Figures 2 and 3 depict the number of social enterprises employing individuals with disabilities (Figure 2) and long-term unemployed individuals (Figure 3) and the number of individuals from these groups that are searching for a job. The

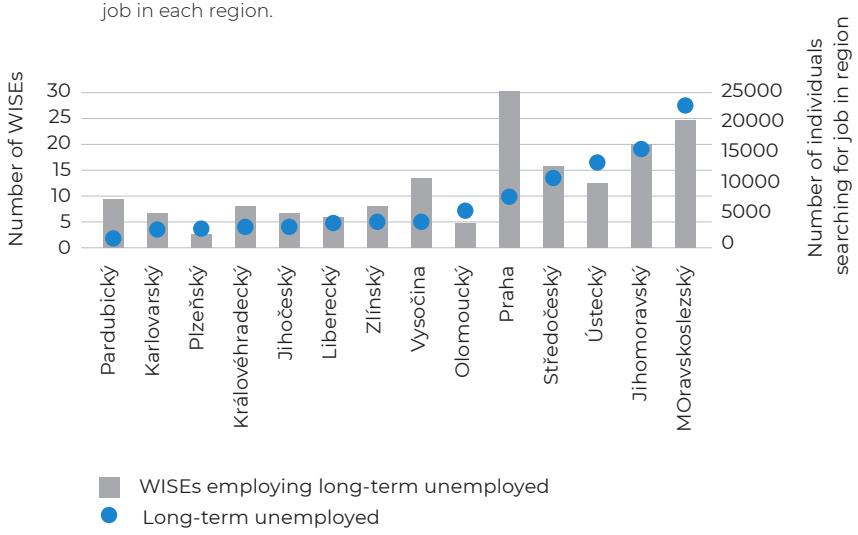
figures were constructed to monitor whether the existence of social enterprises reflects the unemployment situation of these two groups in each region. The data show that a stronger link can be detected between the number of existing social enterprises employing long-term unemployed and the number of long-term unemployed searching for a job. In case of the WISEs employing individuals with disabilities and the number of unemployed in this group, almost no relationship could be found. However, in both cases, the Prague region proves to be on outlier since a significantly higher number of WISEs are currently operating in this region compared to other regions. The highest number of WISEs can be linked to the funding programme towards supporting social enterprises in the Prague region. This additional source of finance could be act as an incentive for their existence.

Figure 2» The number of social enterprises employing people with disabilities in each region and the number of unemployed suffering with health disabilities searching for a job.



Source: Author, based on the information retrieved from the social enterprises´ websites and the Czech Statistical Office (https://vdb.czso.cz/vdbvo2/faces/cs/index.jsf?page=statistiky&katalog=30853)

Figure 3» The number of social enterprises employing long-term unemployed individuals in each region and the number of long-term unemployed individuals searching for a job in each region.



Source: Author, based on the information retrieved from the social enterprises´ websites and the Czech Statistical Office (https://vdb.czso.cz/vdbvo2/faces/cs/index.jsf?page=statistiky&katalog=30853)

DISCUSSION AND CONCLUSION

The description of the Czech practice towards social enterprises and the data show a certain resemblance to and differences from international practice. As the current state shows, the field of social enterprises is rather diverse (Jenner, 2016). They operate as different forms as business companies, nonprofit organization or as self-employed individuals. Besides, the blurring of sectoral boundaries (Billis, 2010) could be detected in the ownership structure, since some business companies were set up by nonprofit organizations and by municipalities (Defourny and Nyssens, 2017). The business activities enable nonprofit organizations to spread their revenue options and decrease their dependence on donations and public funding (Dohnalová et al., 2018).

Further, as in the case of Western and Southern European countries (Defourny and Nyssens 2010, Battilana et al., 2015), Czech social enterprises focus predominantly on employing individuals that are somehow disadvantaged. Most

of them, however, provide jobs primarily for individuals with disabilities and in some cases for long-term unemployed persons. The narrow focus could be linked to the systematic financial support from public funding directed towards contracting people with health issues. In that case, an employer is eligible to receive a direct financial contribution in the form of income tax reduction and in the form of contribution for creating a position for a person with disabilities and for covering costs related to providing the workplace (Tax Act 586/1992, Employment Act 435/2004). Further, the legislation orders an employer with more than 25 employees to hire at least 4% of individuals with health issues of the overall number of employees. If they do not employ them, they are obliged to buy products and services from disabled producers or from companies that provide jobs for individuals suffering from health disabilities. Those employees must comprise a minimum of 50% of all employees (Employment Act 435/2004). This obligation provides opportunities for WISEs that fulfil these criteria to have regular customers, and therefore, a regular revenue.

However, the current state shows that a part of social enterprises is not capable of generating enough own revenue to sustain their activities. Based on the survey of the Ministry of Labour and Social Affairs that mapped the state of social enterprises that received subsidies in one of the programmes, it was found that 41% of the respondents stopped operating after the grant programme ended (MLSA, 2018). They stated that the principal reason was their inability to be competitive on the market without public funds. The data from currently operating social enterprises indicate that the majority of them create jobs for the disadvantaged groups in the industries related to low production costs (cleaning services, gardening and maintenance) and the relative certainty of stable revenues. Since a large share of the existing social enterprises has been operating on the market for a few years already, it may indicate that it is a way for social enterprises to sustain their operations. The problem of sustaining the mission could be the reason why some social enterprises employ more than one disadvantaged group (to be eligible for various public subsidies and grant calls), or why they operate in various fields. However, it does not create a space for introducing innovation as is the case in Western countries (Phillips et al., 2015; Pelucha et al., 2017).

The prevailing high dependence on public grants could be the reason of the

current change in public support towards social enterprises. Instead of applying for financial subsidies, social enterprises can now apply for loans. The transformation of financial support could create a transitional period for them to obtain credit in the financial markets, which may not be available at an early stage of their existence since their business plan and lack of experience could be considered risky (Pelucha et al., 2017; Fraňková, 2019). Though some banks provide loans to social enterprises, this practice is still rather rare. The opportunity to obtain a financial credit could be an incentive for implementing new innovative business plans.

In addition to the transformation of public subsidies to loans, efforts to promote social entrepreneurship are still unsystematic on the part of the public sector. International practise shows that the emergence of social enterprises was accompanied by public support (Defourny and Nyssens, 2010; Testi et al., 2017). However, that is not evident in the Czech case. The situation indicates that the issue of social entrepreneurship is not a priority topic for public authorities. The lack of political interest could be the reason of the non-existent legal framework for social enterprises that has been in the preparation phase for a long time now.

The absence of the legislation, however, limits their development (Wildmannová, 2018) because it is expected that the framework will be used as a base for suggesting the plan for the systematic support for social enterprises. A further barrier is, according to Fraňková (2019), the current state of public procurement. In the process of selecting the candidates for service provision through a responsible public procurement process, social enterprises could be given advantage and be selected even if their service delivery would not be performed with the lowest costs. There is quite a share of social enterprises providing cleaning services, catering, gardening and maintenance services. These services are already contracted out by public institutions. Though there are some examples of public institutions that support social enterprises through responsible public procurement, these are still an exception. Fraňková (2019) points out that in the majority of the public procurement processes the criterion of the cost minimization still dominates.

CONCLUSIONS

Social enterprises emerged during a relatively short period to provide new ways of solving diverse issues. From the perspective of nonprofit organizations, social enterprises promise the chance of generating alternative revenues through providing services on the market and, consequently, to decrease their dependence on public funding. For the public entities, the appearance of social enterprises could create opportunities for outsourcing and contracting out specific services initially provided by the state. The premise was to make the public sector functioning more effective. For the individuals, social enterprises could broaden the options of the social service provision or could provide them with new job opportunities, especially for those who could not find a job in the labour market. Since the focus and the character of the subjects covered in the social enterprises' field is rather diverse, there is still a considerable potential and justification for further research. The paper focused on analysing the field of social entrepreneurship in the Czech Republic by describing the roots of the social entrepreneurship and the current practice on the dataset of 504 social enterprises.

Similarly to international practice, they started to emerge after the withdrawal of the state. Most of them focus primarily on providing jobs for individuals disadvantaged on the labour market due to their reduced productivity or due to specific requirements on the working environment or the need to adapt the working hours and the workload. The data show that Czech social enterprises are not currently active in introducing social innovations. In addition, they often do not provide social services. Therefore, they do not substitute the role of the state in the service provision.

It turns out that the majority of social enterprises provide the same operations as business organizations (e.g. cleaning facilities, catering or maintenance). However, they incorporate disadvantaged employees into their production process. The practice also indicates that the blurring of the sectoral boundaries appears in many forms. From one perspective, the transformation of pure nonprofit organizations to social enterprises can be detected. Some social enterprises also emerge as spinoffs of public entities.

The lack of a legal framework and public support is one of the most commonly

mentioned barriers to the development of social entrepreneurship (Pelucha et al., 2017; Wildmannová, 2018). Since no systematic national public support accompanied their emergence, it could be the reason behind the lacking innovation. The missing capital and the challenge of sustaining their operation may discourage individuals from coming with new social innovation ideas and from trying to transform them to a new social business. A diverse portfolio of financial support could create a space for social innovations.

The paper introduced the social enterprise field in the Czech environment. However, there is still an extensive gap in what needs to be known about social enterprises. The unique combination of both the nonprofit and for-profit world in social enterprises' operations can be accompanied with newly arising challenges. One of the critical issues linked to their hybrid nature is that while they create social value, there is a pressure on maintaining the financial health of the enterprise (Battilana et al., 2012). That may result in restricting how and to what extent the organization would focus on its social mission. Previous research suggests that to sustain the existence of a social enterprise, one of two rationalities tends to dominate their functioning. While concentrating on commercial activities to ensure financial sustainability, social enterprises can decrease the level of operations directed at solving the social issue. Gradually, it may result in a mission drift (Teasdale, 2012). On the other hand, focusing predominantly on a social mission, the organization may not have enough space to sustain itself financially, which may lead to bankruptcy (Scott and Teasdale, 2012; Bruneel et al., 2016). Since there is a relatively low support from the public authorities that would help them to handle the challenges of competing rationalities and since no legislation regulating social enterprises exists, this could be one of the reasons why the number of social enterprises in the Czech Republic remains low.

Even though the number of Czech social enterprises is still low, the data show that their emergence has an increasing trend. It proves that the issue should be further analyzed. Further analysis should focus on whether the public policy should pay attention to the support of social enterprises and if so, how to boost their development. In addition, research should seek answers to how social enterprises could themselves ensure long-term operation with or without the help of public institutions.

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ROVNOVÁŽNÉ A MEZNÍ STAVY V BEZPEČNOSTI, V TECHNICE I SPOLEČENSKÝCH VĚDÁCH ČÁST I.

EQUILIBRIUM AND LIMIT STATES IN SECURITY, TECHNOLOGY AND SOCIAL SCIENCE PART I.

Roman Rak
Ingrid Matoušková

ABSTRAKT

Pro potřeby analýzy rizik a zajišťování bezpečnosti jsou definovány základní termíny jako je jev, událost, děj, stav, situace. K dalším významným pojmům patří pojmy rovnováha, rovnovážný stav, rovnovážná poloha, rovnováha sil a stabilita (nestabilita, labilita). S těmito termíny se můžeme setkat jak v bezpečnosti, tak i v technických, ale i ekonomických a společenských vědách. Tento příspěvek obecně vymezuje a vysvětluje tyto klíčové pojmy napříč různými vědními obory či obory lidské činnosti.

Klíčová slova: *rovnováha, rovnovážný stav, rovnovážná poloha, rovnováha sil a stabilita*

JEL klasifikace: C18, C62, O22

ABSTRACT

Basic terms such as phenomenon, event, state, situation are defined for risk analysis and security needs. Other important terms include, equilibrium and stability (instability, lability). These terms can be found in both security and technical sciences as well as economic and social sciences. This paper generally defines and explains these key concepts across different disciplines or fields of human activity.

Keywords: *equilibrium, equilibrium, equilibrium position, balance of forces and stability*

JEL Classification: C18, C62, O22

ÚVOD

V různých oborech lidské činnosti stále více řešíme bezpečnost, bezpečí. Součástí každého profesionálně vedeného projektu, rozsáhlejších lidských činností je analýza rizik, při které hledáme podstatné hrozby, ohrožení, které by mohly mít reálné negativní dopady. Pakliže tyto hrozby známe, a dokážeme je dobře specifikovat, existují pak první předpoklady, abychom se na ně včas, přiměřeným a dostatečným způsobem dokázali připravit. Jednou takovou významnou (měkkou) hrozbou, je jakákoliv nestabilita v prostředí. Toto prostředí může mít charakter přírodní, technický (technologický), ekonomický, sociální, politický, náboženský diplomatický, personální atd. Předložený příspěvek naznačuje, jak lze obecně na různé stabilní či nestabilní stavy nahlížet v teoretické i praktické rovině. Každá nestabilita v podstatě, při splnění určitých základních podmínek, se může i neočekávaně, radikálně, náhle změnit v různé nouzové stavy, havarijní či krizové situace, v katastrofy apod., které mohou mít své dopady i v sociální, ekonomické a politické rovině, pokud množství postižených subjektů je přiměřeně velké, nebo hrozby mají reálný původ (důvod) s velkými dopady.

Žijeme ve světě, který se neustále rozvíjí. V oblastech lidského poznání, vědy, techniky, ekonomiky i ve společnosti. Současný rozvoj je ale plný napětí a konfliktů, ve všech zmíněných oblastech. Stranou nezůstává oblast ekonomická, sociální či politická, které jsou často příčinou i „konzumentem" různých negativních dopadů, včetně dopadů do bezpečnosti, do bezpečí (Felcan, 2016), (Rak, Kolitschová, 2019). Nezanedbatelným faktem při řízení rizik, bezpečnosti, je i lidský potenciál, kvalitní řízení týmů odborníků (Pavlica et al, 2015).

Život nás učí i nutí určovat každodenní hrozby v rozmanitých oblastech lid-

ských činností, stanovovat a oceňovat rizika a ty následně různými způsoby a technikami řídit, aby nedocházelo k ohrožení chráněných aktiv, škodám či újmám.

Aby výše uvedený proces byl efektivní, je nutné pochopit podstatu, vlastnosti, chování či zákonitosti dílčích objektů a procesů, které vstupují do různých vazeb a interakcí, které následně ovlivňují a determinují chování velkých celků či systémů (Rak, Kopencová, 2019).

Reálně i podvědomě rozdělujeme vědu i veškeré procesy či dění do čtyř základních oblastí: přírodovědných, technických, ekonomických a sociálně společenských, ale též je možné i jiné dělení např. dělení GAČR, které zahrnuje pět oborů, např. i samostatně lékařství. Současná doba nás stále více a více nutí, abychom se na náš svět dívali „spojitě“, prizmatem všech čtyř oblastí, protože jedině tak můžeme dlouhodobě garantovat tzv. „udržitelný rozvoj“, který má i své bezpečnostní aspekty.

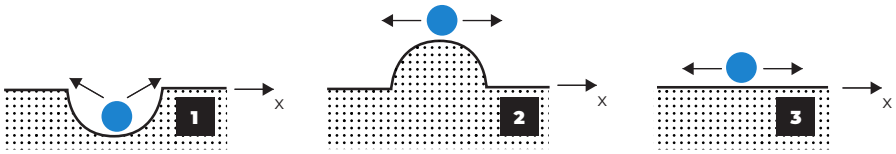
K významným pojmům patří pojmy rovnováha, rovnovážný stav, rovnovážná poloha, rovnováha sil a stabilita (nestabilita, labilita). Tyto pojmy určují, zda se různé entity budou dále zdárně, kontinuálně vyvíjet, nebo zda bude docházet k různým krizím, mimořádným stavům, stagnacím apod., se všemi jejich vyplývajícími vlastnostmi, důsledky (Roubal, 2019). Kromě toho, že potřebujeme poznat vlastnosti, vztahy a chování jednotlivých objektů či procesů, abychom je mohli pochopit a následně řídit, musíme chápat jejich rovnovážné a mezní stavy, které vždy určují kritické hranice následného rozvoje mimořádných, nechtěných událostí.

Jedním ze základních cílů článku mimo výše uvedené je vymezit a vysvětlit klíčové pojmy (rovnováha, rovnovážný stav, rovnovážná poloha, rovnováha sil a stabilita - nestabilita, labilita) napříč různými vědními obory či obory lidské činnosti vzhledem k tomu, že již nějakou dobu můžeme sledovat jejich nejednotný výklad jak u odborných článků, tak v článcích ve veřejných médiích.

1 ROVNOVÁHA, ROVNOVÁŽNÝ STAV, ROVNOVÁŽNÁ POLOHA, STABILITA (BALANCE, EQUILIBRIUM STATE, EQUILIBRIUM POSITION, STABILITY)

Je obecně známo, že pokud se objekty, systémy či procesy, události, děje nacházejí v rovnováze, rovnovážném stavu, rovnovážné poloze a mají schopnost stability, jsou v určitém smyslu v průběhu času bezpečné, tj. nebývají s nimi žádné neočekávané bezpečnostní incidenty, události, děje; chovají se tak, jak jsme předpokládali (navrhovali, projektovali, vyráběli, testovali apod.). Teprve po ztrátě rovnováhy, rovnovážného stavu, rovnovážné polohy a následně stability dochází k bezpečnostním událostem, incidentům, při kterých dochází ke škodám či újmám. Rovnovážný stav a stabilita jsou proto další důležité charakteristické vlastnosti objektů, systémů či procesů, které rozhodují o jejich chování z hlediska bezpečnosti. Pojmy rovnováha, rovnovážný stav, rovnovážná poloha, rovnováha sil a stabilita nejsou obecně definovány, ale zpravidla jejich definice jsou účelově zaměřené do určitých profesních oblastí. Synonymem slova stabilita jsou stabilnost, ustálenost, rovnovážnost, rovnováha nebo stálost, stálost vlastností, trvalost, pevnost. Rovnováha znamená obecně „být v souladu“, „být vzájemně vyrovnaný“. Antonymem stability je labilita.

Obr. 1» Názorné zobrazení rovnovážných poloh v mechanice těles.



Stálá rovnovážná poloha | Vratká rovnovážná poloha | Volná rovnovážná poloha

Zdroj: Vlastní autorská tvorba.

1.1 ROVNOVÁHA (BALANCE, EQUILIBRIUM)

Rovnováha je obecně stav systému, kdy je působení všemi směry vzájemně vyrovnáno. Pojem rovnováha může mít více významů.

S pojmem **rovnováhou sil** se setkáváme v různých oblastech, jako je vojenství, ekonomika, podnikání, sport apod. Pod silami si můžeme představit síly přírodní, fyzikální, vojenské, politické, společenské, náboženské, nepřátelské, kriminální (živly) apod.

Pod rovnováhou sil rozumíme vyváženost, která obecně vede ke stabilitě. Všechny síly jsou vyvážené, tj. žádná síla „nepřevládá nad ostatními silami".

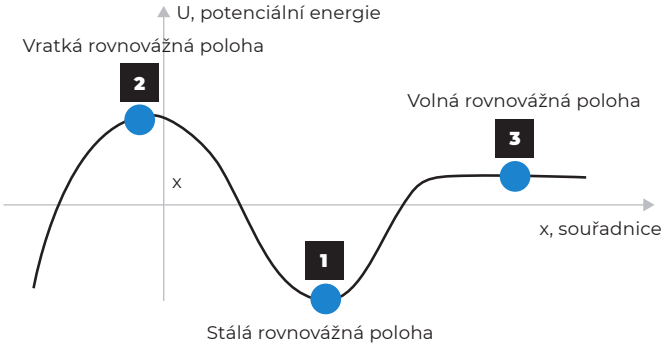
1.2 ROVNOVÁŽNÁ POLOHA (EQUILIBRIUM POSITION)

Ve fyzice (mechanice) je **rovnovážná poloha** definována jako poloha tuhého tělesa, při níž je výslednice všech sil působících na těleso nulová a výsledný moment všech sil je také nulový. Rovnovážná poloha je poloha, která je výsledkem rovnováhy sil.

Platí i naopak:

Rovnováha sil je stav, kdy na těleso působí více sil, ale jejich výslednice je nulová, a výsledný moment sil vzniklý složením všech momentů sil je rovněž nulový.

Obr. 2» Závislost potenciální energie U na souřadnici x kuličky při jejím přechodu z rovnovážné polohy vratké do stabilní a dále pak do volné rovnovážné polohy.



Zdroj: Vlastní autorská tvorba.

Rozlišujeme (v mechanice) tři základní rovnovážné polohy:

- **Stálá rovnovážná poloha** (též stabilní rovnovážná poloha) je poloha, pro kterou platí, že po vychýlení z této polohy se těleso vrací zpět, tzn., vychýlení se postupně zmenšuje. Potenciální energie tělesa ve stálé rov-

novážné poloze je nejmenší, při vychýlení se zvětšuje.
Příkladem může být kulička nacházející se v důlku. Při vychýlení se kulička bude vracet zpět do výchozí pozice. Při vychýlení se zvyšuje potenciální energie kuličky.

- **Vratká rovnovážná poloha** (též labilní rovnovážná poloha) je poloha, pro kterou platí, že po vychýlení z této polohy se těleso nevrací zpět, ale výchylka se dále zvětšuje. Vychýlením z vratké polohy se potenciální energie tělesa zmenšuje.
  Příkladem může být kulička nacházející se na vrcholu kopce. Při vychýlení ze své pozice se kulička bude vždy kutálet dolů a sama se nevrátí na výchozí pozici. Při vychýlení se snižuje potenciální energie kuličky.
- **Volná rovnovážná poloha** (též indiferentní rovnovážná poloha) je poloha, pro kterou platí, že vychýlením tělesa se výslednice sil ani výsledný moment síly působících na těleso nemění. Po vychýlení tělesa se vzdálenost od nové polohy nemění (nezmenšuje se ani se nezvětšuje). Při vychýlení tělesa zůstává potenciální energie konstantní.
  Příkladem může být kulička nacházející se na vodorovné rovině. Posuneme-li kuličku na jiné místo, zůstane tam stát a nebude se od původní polohy ani vzdalovat, ani se k ní nebude vracet. Potenciální energie zůstává konstantní.

1.3 ROVNOVÁŽNÝ STAV (EQUILIBRIUM STATE)

V termodynamice je rovnovážný stav definován jako takový stav termodynamického systému, kde neprobíhají žádné toky extenzivních veličin (tepla, hmoty, energie apod.). Intenzivní veličiny často bývají v tomto případě v celém systému stejné.

Jeden z postulátů termodynamiky uvádí, že každý systém dosáhne rovnovážného stavu. **Každý systém, který se nachází do určitého okamžiku v neměnných vnějších podmínkách, přejde samovolně po určité době do rovnovážného stavu. V tomto stavu setrvá, pokud zůstanou vnější podmínky zachovány.**

Výše uvedené tvrzení je obecné, platí jak pro přírodní, tak pro společenské, politické atd. rovnovážné stavy, které jsou charakteristické pro objekty, systémy

a procesy. V procesu každého vývoje, evoluce atd. dochází pravidelně, v různě dlouhých časových úsecích ke změnám rovnovážných stavů, ke ztrátě stability a následně k vytvoření nového rovnovážného stavu. Ze společenského, lidského, či bezpečnostního hlediska je vždy otázka, zda nový, rovnovážný stav je pro nás žádoucí („musí nám nutně vyhořet dům, abychom si postavili nový?"). V některých (mnoha!) případech bezpečnostního charakteru je zpravidla nežádoucí, aby došlo ke ztrátě stability současného objektu, systému či procesu.

Každý stav, každý rovnovážný stav můžeme charakterizovat pomocí pro něj charakteristických, významných parametrů, veličin. Jakákoliv změna parametru, který je pro rovnovážný stav (objektu, systému či procesu) významný, může narušit rovnovážný stav a vést ke ztrátě stability.

Ztráta stability rovnovážných stavů je přirozeným jevem, který je součástí antagonistického světa, evolučního i revolučního vývoje. Tendenci ztráty stability rovnovážných stavů je sice možné subjekty pomocí určitých opatření do značné míry snížit preventivními nástroji, v převážné většině případů není možné ztrátě stability zabránit (Šimák, 2015).

Ztrátu stability rovnovážného stavu je možné podle jejího průběhu dělit na dva základní druhy (Šimák, 2015):

- měkká ztráta stability;
- tvrdá ztráta stability.

Touto problematikou se zabývá zejména matematická „teorie katastrof", kterou v minulém století rozpracovali ruský matematik Vladimir Igorevich Arnold (1937-2010) a francouzský matematik a filosof René Frédéric Thom (1923-2002) a zejména Sir Erik Christopher Zeeman (1925-2016).

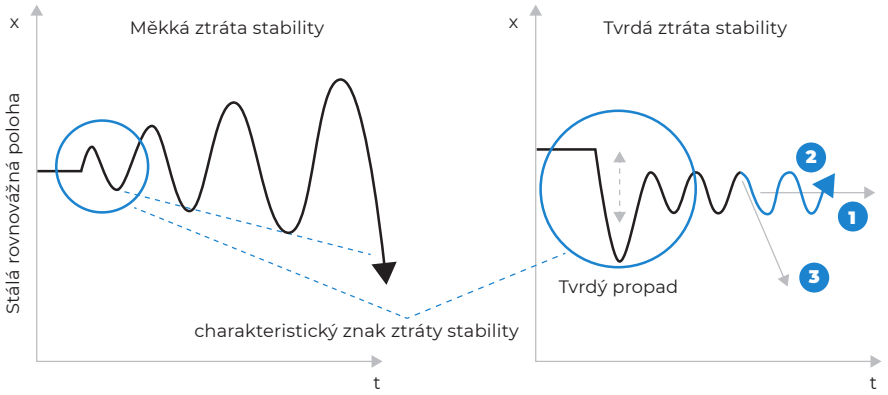
Měkká ztráta stability (Soft loss of stability)

V případě měkké ztráty stability se ustáleným režimem systému stává oscilující periodický režim, který se ve svém počátku málo liší od rovnovážného stavu. První symptomy narušení stability nemusejí být zpočátku vůbec pozorovatelné, vznikají pomalu, postupně. Postupná změna parametrů ale v konečném důsledku může způsobit ztrátu stability systému (Šimák, 2015).

Tvrdá ztráta stability (Hard loss of stability)

Náhodné nebo záměrně okamžité a zásadní změny parametrů a jejich projevy narušení funkčnosti systému natolik, že se úplně naruší stabilita, se nazývá tvrdá ztráta stability systému. Systém opouští rovnovážný stav skokem a přechází na jiný režim vývoje. Může to být jiný stabilní stacionární režim, stabilní oscilace kolem rovnovážného stavu ale též složitější nerovnoměrný pohyb (Šimák, 2015).

Obr. 3» Srovnání měkké a tvrdé ztráty stability v čase.



Zdroj: Vlastní autorská tvorba.

2 STABILITA (STABILITY)

Ve fyzice (mechanice) je **stabilita** definována jako rozdíl potenciální energie tělesa mezi vratkou a stálou rovnovážnou polohou, neboli to je množství práce, které je třeba vykonat, aby se těleso ze stálé rovnovážné polohy dostalo do vratké rovnovážné polohy.

Stabilita tělesa závisí přímo úměrně na hmotnosti tělesa, nepřímo úměrně na výšce těžiště ve stálé poloze a přímo úměrně na výšce těžiště ve vratké poloze.

V ostatních fyzikálních oborech (jako je optika, chemie, fyzika, elektrotechnika atd.), je stabilita definována jako **schopnost udržování určitých vlastností beze změny v čase**, v humanitních oborech, jako je lingvistika, politika apod. jde o **stálost vazeb v čase, které udržují systém ve své celistvosti**.

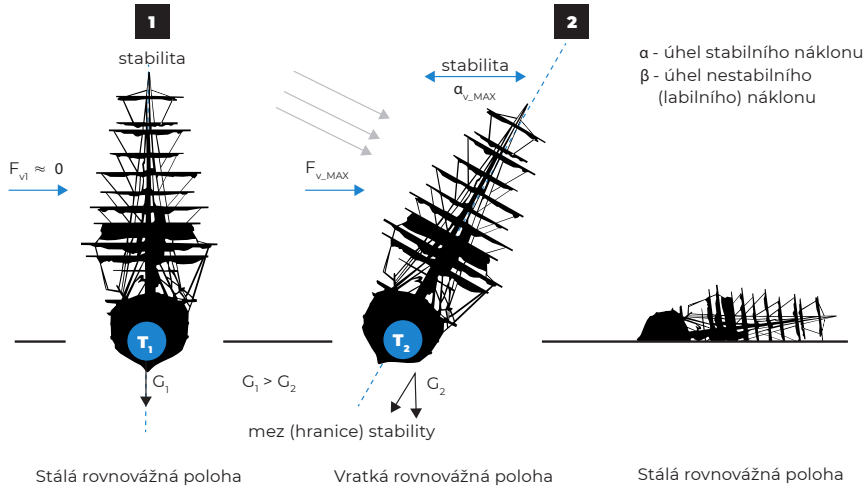
V technickém prostředí je stabilita obvykle definována i jako schopnost zotavit se z poruch, nerovnovážných stavů, tj. vrátit se do stavu rovnovážného pro daný objekt, proces nebo systém.

Příklad:

Stabilitou letadla se rozumí schopnost letadla zachovávat režim letu, do kterého jej pilot uvedl. Pokud by letoun neměl schopnost stability, v určitých režimech letu by se nenechal pilotovat a došlo by k bezpečnostní události – ke zřícení letadla.

V praxi hovoříme o stabilitě mechanických soustav, chemických či termodynamických dějů, geologické stabilitě podloží, stabilitě měny, společenské, politické, ekonomické stabilitě, stabilitě našich finančních příjmů, stabilitě zdravotního stavu apod.

Obr. 4» Ztráta stability plachetnice jako příklad působení významných vnějších faktorů na rovnovážný stav, rovnovážnou polohu..



Zdroj: Vlastní autorská tvorba.

Příklad:

Stabilitu si můžeme vysvětlit na příkladu plachetnice, na kterou fouká boční vítr o síle Fv. Významnými parametry pro ztrátu stability plachetnice jsou síly bočního větru, položení těžiště plachetnice T (konstrukční řešení, upevnění nákladu), schopnost kapitána a posádky manévrovat s lodí.

Do určité maximální síly větru Fv_MAX se stěžeň naklání o úhel α. Jestliže je

náklad plachetnice v podpalubí nedostatečně připevněn, náklonem plachetnice se bude pohybovat a tím se změní i těžiště plachetnice do polohy T2. Pokud je tento úhel α < αMAX, a síla větru se sníží, náklon stožáru plachetnice se bude sám, automaticky vracet do původní, svislé, rovnovážné polohy. Pokud se síla větru bude ale zvětšovat nad hranici Fv_MAX, dojde k nestabilitě plachetnice a ta se převrátí na bok. Z této nové rovnovážné polohy se již sama nevrátí do původní svislé stabilní polohy plachetnice. Kapitán, aby se loď nepřevrátila, musí realizovat tato opatření: nejtěžší náklad umisťovat co nejhlouběji do podpalubí, ten dobře, upevňovat; v případě silného bočního větru lodí manévrovat tak, aby byl eliminován boční vítr a ten změnou polohy lodi foukal co nejvíce zezadu; nebo podkasat (svinout) plachtoví. Silný boční vítr je vždy zásadní změnou vnějšího prostředí plachetnice.

Stabilita objektu, systému nebo procesu závisí na mnoha jejich specifických vlastnostech, jako jsou odolnost, imunita, pružnost, výdrž, trvanlivost apod. vůči určitým (normálním i vysloveně negativním) jevům, událostem, působícím silám, obecně působícím faktorům. Zároveň stabilita může silně záviset na charakteru (velikosti, směru, dynamičnosti, intenzitě, specifičnosti apod.) působících faktorů na sledované objekty, systémy či procesy. Stabilita je relativní, pružná rovnováha, odolnost vůči určitému vychýlení od rovnovážného stavu, rovnovážné polohy.

Každá stabilita má v reálném světě svou určitou mez, hranici, dobu trvání, kdy objekty, systémy či procesy přestávají být stabilní a začnou být labilní (nestabilní), se všemi jejich negativními, bezpečnostními aspekty a jejich dopady.

Stabilita může být velmi relativní pojem – některé objekty, systémy či procesy se nemění během života jednoho lidského jedince, jiné objekty se stávají nestabilními (labilní) během zlomku vteřiny.

V procesu analýzy hrozeb, zranitelnosti, rizik, bezpečnosti se často zabýváme analýzou vlastností, charakteristik objektů, systémů či procesů, které jsou předmětem našeho zájmu. Z tohoto důvodu je nutné pozornost věnovat všemu, ve všech souvislostech, co má vliv na jejich stabilitu/labilitu. Naším cílem je obvykle zachovat co největší stabilitu, abychom se vyhnuli i potenciálním bezpečnostním jevům, událostem, rozporům, konfliktům, krizím apod.

Stabilitu (lat. *stabilis* – stálý, trvalý, pevný) můžeme obecně charakterizovat jako vlastnost, schopnost objektu, systému nebo procesu automaticky si udržovat v čase své stálé, základní charakteristiky, významné parametry, určující rovno-

vážný stav, rovnovážnou polohu nebo rovnováhu, celistvost, strukturu, funkčnost, komplexnost či jiné další významné vlastnosti objektu, systému či procesu nebo při vychýlení se z rovnovážného stavu se v určitém čase automaticky vrátit zpět do původního rovnovážného stavu, polohy či rovnováhy.

ZÁVĚR

Stabilita jako vlastnost procesu, objektu, soustavy, systému, určitého uspořádaného nebo volně sdruženého společenství lidí, instituce, zřízení, státu apod. je klíčovou entitou v bezpečnosti, tj. v procesu zajišťování stavu bezpečí. Mezní stavy jsou stavy v jakékoliv lidské či jiné činnosti nebo aktivitě, které při překročení byť jediného (kritického) parametru, zapříčiní přechod ze stabilního stavu do stavu nestabilního a svým způsobem vyvolají určitou (kritickou) situaci, s často nepředvídanými důsledky. V technických disciplínách obvykle hovoříme o haváriích, v ekonomických směrech o krizích, v globálních teoriích či praxi o katastrofách, v bezpečnosti o bezpečnostních situacích (Kopencová, 2015) apod. Abychom takovým stavům dokázali v praxi zabránit, musíme velmi dobře poznat právě ty kritické parametry či souběhy parametrů, které jsou schopny překonat mezní stav a uvést zájmovou, sledovanou entitu do nestabilního stavu. Potom bychom měli vědět, jak posílit odolnost chráněné entity, aby se stala méně zranitelnou. Ale zejména musíme znát náplň jednotlivých termínů, kterými operujeme v různých vědních odvětvích i v masmediálním kontextu, viz i druhá část článku.

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ROVNOVÁŽNÉ A MEZNÍ STAVY V BEZPEČNOSTI, V TECHNICE I SPOLEČENSKÝCH VĚDÁCH ČÁST II.

EQUILIBRIUM AND LIMIT STATES IN SECURITY, TECHNOLOGY AND SOCIAL SCIENCE PART II.

Roman Rak
Ingrid Matoušková

ABSTRAKT

Pro potřeby analýzy rizik a zajišťování bezpečnosti patří k významným pojmům rovnováha, rovnovážný stav, rovnovážná poloha, rovnováha sil a stabilita (nestabilita, labilita), které jsme uvedli zejména v první části příspěvku. Ve druhé části příspěvku se budeme věnovat stabilitě (ekosystému, sociální, ekonomické …), nestabilitě jako bezpečnostnímu riziku a zejména mezním stavům podle entity, jejich vlastností, a rovněž mezním stavům v psychosociální oblasti.

Klíčová slova: *analýza rizik, stabilita, nestabilita, mezní stavy, lidská psychika*

JEL klasifikace: C18, C62, O22

ABSTRACT

For the purposes of risk analysis and ensuring safety, important terms are equilibrium, equilibrium position, equilibrium of forces and stability (instability, lability), which we mentioned especially in the first part of the paper. In the second part of the paper we will deal with stability (ecosystem, social, economic…), instability as a security risk and especially limit states according to the entity, their properties, as well as limit states in the psychosocial area.

Keywords: *risk analysis, stability, instability, limit states, human psyche*

JEL Classification: C18, C62, O22

ÚVOD

V různých obdobích našeho života se mění politická, ekonomická, sociální situace, se kterou jsme nuceni se neustále vyrovnávat, adaptovat se na ní. Rovněž tak zažíváme i změny v naší psychice, někdo více, někdo méně, deprese je epidemií 21. století. Připomeňme si jen pár problémů současné informační společnosti, v níž údajně žijeme, a které přispívají k tomu, že obecně současná celosvětová situace není zcela zřejmě stabilní. „*Informace se v ní znenáhla vynořují, aby na okamžik zasvítily jako meteor a poté rychle zapadly do všeobecného zapomnění. O tom co bývá jeden den vydáváno za věc světového významu, už druhý den nikdo neví a patrně vědět nechce*“ (Keller, 2019).

Vraťme se však k uvedeným problémům, takže příkladně: boj za svobodu šíření informací, hořící lesy na Sibiři, v Amazonii, v subsaharské Africe (důsledky pro planetu nedozírné), zvládnutí v nedohlednu. Dále můžeme vzpomenout demonstrace za klimatické změny, vývoj světové ekonomiky – pokles tempa růstu, změny na trhu práce zejména postihující mladé lidi, problémy s opatřením si bydlení, pochybnosti o rentabilitě studia, průmysl 4.0, digitalizace, další snížení sociálních jistot, rizika zadlužování, konflikty realistické i neralistické (Coser, 1960) jak v naší společnosti, tak ve světovém měřítku – EU – USA – třetí svět, migrace, uprchlíci atd. mohli bychom pokračovat ještě dále.

Neustálou masáží masmédií si zvykáme na cokoliv, protože jsme učinili zkušenost, že časem problém tak nějak vyšumí sám a přijde něco důležitějšího. Bohužel však problémy, o kterých se již tolik neinformuje, nikam nevyšuměly. A proto naše dva články k zamyšlení, či uvědomění si.

1 STABILITA (STABILITY)

Stabilita sociální – rovnovážný stav sociálního systému, kdy jeho změna má podobu postupné adaptace na změny podmínek a prostředí. Dosažení takového stavu stojí od počátku v centru zájmu sociologie. Teorie sociologie řeší problém sociální stability např. v úvahách o optimálním vztahu činitelů sociální statiky a sociální dynamiky, aplikovaná sociologie chce přispět ke zvýšení sociální stability řešením konkrétních sociálních problémů, popř. inženýrskými zásahy do oblasti sociálních vztahů.

Naléhavost zajištění sociální stability vzniká právě v moderní společnosti, která nahradila tradici, tedy vysoce účinný stabilizující faktor, potřebou neustálé inovace. Jestliže sociální stabilita tradiční společnosti měla obvykle blízko k sociální stagnaci, moderní stability nemá být dosaženo na úkor změny, nýbrž tím, že jsou vytvářeny vhodné podmínky pro regulaci průběhu změn. Otázka sociální stability, která v teoretické rovině nepředstavuje větší problém, patří k nejvážnějším problémům praktické politiky. Zatímco totalitní systémy zajišťují sociální stabilitu umrtvením občanské společnosti, demokratické společnosti vykupují do značné míry svoji sociální stabilitu nadměrným konzumem dostupným většině populace, vedoucím k negativním jevům, jako je třeba i drogová kriminalita apod. (Kopencová, 2015)

1. 2 STABILITA EKOSYSTÉMU (STABILITY OF THE EKOSYSTEM)

Stabilita změně některých jeho vlastností – alespoň na původní vývojovou trajektorii (resilience). Nepůsobí-li rušivý vliv, pak se stabilní ekosystém buď nemění, resp. mění jen velmi málo (konstantnost), nebo jsou jeho změny přibližně pravidelné (cykličnost). Nejtypičtěji se stabilita ekologická projevuje ekologickou rovnováhou (Sociologická encyklopedie, 2018). ekosystému - schopnost ekosystému vyrovnávat změny způsobené vnějšími činiteli a zachovávat své podstatné struktury a funkce. Tato schopnost

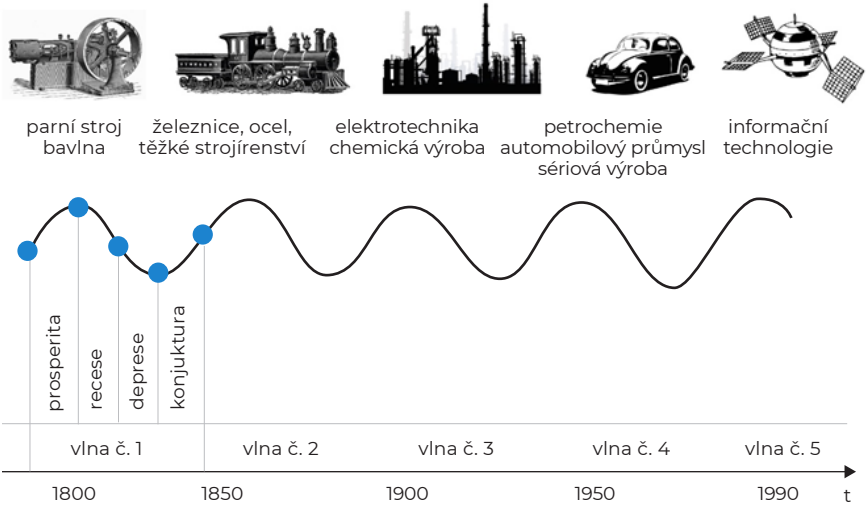
se projevuje buď tím, že změny v ekosystému, vyvolané rušivým vlivem, jsou relativně velmi malé (rezistence), anebo tím, že po odeznění rušivého vlivu se ekosystém buď spontánně vrací do výchozího stavu, nebo – dojde-li k trvalé

1.3 STABILITA EKONOMICKÁ (ECONOMIC STABILITY)

Stabilita ekonomická - stav vyjadřující existenci předpokladů, za nichž po každém vnějším narušení ekonomické rovnováhy dochází k jejímu obnovení buď v původní podobě, anebo

v podobě nové rovnováhy. Jestliže jakékoli velké vychýlení z rovnováhy vyvolá síly, které vrátí systém do rovnovážného stavu, mluví se o globální stabilitě. V případě menších odchylek jde o lokální stabilitu (https://leporelo.info/ekonomicka-stabilita, 2019).

Obr. 1» Světová ekonomika - vývoj v hospodářských cyklech.



Zdroj: Kondratievův cyklus, upraveno, 2019.

Světová ekonomika se vyvíjí v hospodářských cyklech. Pravidelně, periodicky se mění fáze prosperity, recese, deprese a konjuktury. Kondratievův cyklus se mění průměrně v padesátiletých periodách. Podobných cyklů je v ekonomice více, liší se autor od autora zejména v definici, objasňující příčiny prosperity – v posledních 200 letech to byly vynálezy v oblasti techniky, které podnítily poptávku obyvatelstva po novém zboží, jež se vyrábělo ve velkých sériích. Periody stability a lability se cyklicky střídají.

Pod pojmem ekonomické stability chápeme stálý růst reálného hrubého národního produktu, cenovou stabilitu a udržování nezaměstnanosti na úrovni přirozené nezaměstnanosti. To znamená, že produkt by měl růst rovnoměrně a takovým tempem, aby se zajistila cenová stabilita a dostatečná zaměstnanost.

1.4 STABILITA FINANČNÍ (STABILITY FINANCIAL)

Stabilita finanční neboli stabilita finančního systému je stav finančních trhů v ekonom2. sice, který brání vzniku systémového rizika, tj. rizika, že poskytování nezbytných finančních produktů a služeb finančním systémem bude narušeno do té míry, že to může významně ovlivnit hospodářský růst a blahobyt. Vznik možných systémových rizik ve finančním systému je řešen prostřednictvím makroobezřetnostních politik, jejichž cílem je právě zachování finanční stability.

Česká národní banka definuje finanční stabilitu jako situaci, kdy finanční systém plní své funkce bez závažných poruch a nežádoucích důsledků pro současný i budoucí vývoj ekonomiky jako celku a zároveň vykazuje vysokou míru odolnosti vůči šokům (https://referaty.aktuality.sk/ekonomicka-nerovnovaha-a-stabilita/referat-5142, 2019).

2 NESTABILITA JAKO BEZPEČNOSTNÍ HROZBA (INSTABILITY AS A SECURITY RISK)

Každá skutečnost, činnost, děj nebo jev, které probíhají v přírodě, ve společnosti, v ekonomice, v technologických procesech apod. stabilním způsobem, se mohou zpravidla kdykoliv změnou vnějších nebo vnitřních podmínek stát nestabilními (labilním), rizikovými a pro subjekty nekontrolovatelnými s reálnou možností způsobit člověku, skupinám obyvatelstva, institucím, firmám, společnosti či státu škody nebo újmy; ztráty.

Pokud však člověk pochopí příčiny změn v objektech, systémech či probíhajících procesech, pokud je schopný včas odhalit jejich příznaky, může hledat cesty eliminace nebo minimalizace hrozeb (nebezpečí), cesty snižování rizik vzniku bezpečnostních událostí, krizových jevů; eliminovat tyto negativní jevy ještě před jejich působením na objekty, systémy či procesy. Odhalování a průběžné monitorování parametrů, které se stávají krizovými faktory pro danou skutečnost, umožňuje zabránit negativním dopadům a dosáhnout zodpovídající úroveň bezpečnosti (Šimák, 2015, upraveno).

3 MEZNÍ STAVY (BOUNDARY STATES)

Pojem mezní stav je nadoborový pojem, který můžeme aplikovat v různých oborech lidské činnosti (včetně bezpečnosti), na různé entity - na artefakty vytvořené člověkem, nebo na živé či neživé „produkty“ vývoje naší planety Země. Obecně je mezní stav časový okamžik, kdy dochází k zásadnímu narušení entity (objektu, procesu či systému), v důsledku které dochází ke ztrátě původní funkčnosti entity. Mezní stavy jsou aplikovatelné na člověka, společnost, výrobky a produkty, na technické, přírodní či společenské entity, na morálku apod. (Felcan, 2018).

Znalost existence problematiky mezních stavů je velmi významná i v bezpečnosti. V procesech analýzy rizik a při návrhu protiopatření pracujeme s různými entitami (objekty, procesy, systémy). Obvykle při analýzách vycházíme ze standardních, případně přechodových stavů těchto entit, kdy nehrozí žádné reálné hrozby; entity jsou dlouhodobě v rovnovážném, stabilním stavu. Mnohdy si neuvědomujeme mezní stavy analyzovaných entit, které v okamžiku jejich naplnění zcela změní vlastnosti, chování a funkčnost. Nastává situace, kdy nedokážeme zajistit bezpečnost na požadované úrovni, protože se entita zásadním způsobem v důsledku svého mezního stavu změnila; přestala plnit svou původně zamýšlenou funkci, činnost.

3.1 MEZNÍ STAVY PODLE TYPU ENTITY

Mezní stavy, podle typu entity, na níž nastávají, můžeme dělit na (Janíček, 2007, doplněno, rozšířeno):

- **Mezní stavy v technice** nastávají u technických objektů, jsou to tedy mezní stavy technických objektů. Důvody, vyřazení technického objektu z funkce lze členit na technické (příčiny interní; odpovídají technické mezní stavy) a technicko-environmentální (příčiny externí, odpovídají technicko-environmentální stavy).
- **Mezní stavy přírody (též ekologické, environmentální mezní stavy).** Tyto mezní stavy nastávají u přírodních objektů. Ekologické mezní stavy mohou nastávat na různě velkých lokalitách. Mohou mít charakter lokální, velkoplošný či globální. Mohou být způsobeny nevhodnými zásahy člověka do přírody (např. melioračními, chemizací – hnojením, přípravky proti nežádoucí flóře a fauně, stavebními úpravami – přehrady, dálni-

ce, toxickými skládkami), nevhodným působením technických objektů na přírodu (exhalace, znečišťování ovzduší, půdy a vod. Příčinou může být i samostatná příroda – tornáda, zemětřesení, tsunami, záplavy; vesmír – srážky s vesmírnými tělesy atd.

- **Mezní stavy jedince.** Objektem je v tomto případě člověk, kterého můžeme charakterizovat jeho materiálním tělem, psychickými procesy a interakcemi se svým okolím, tedy s lidmi, jimi vytvořenými artefakty, přírodou a vesmírem. Osobnostní mezní stavy můžeme členit podle příčin, které je způsobují, a to:
  - **v člověku samotném** – patří sem například zdravotní mezní stavy, jež souvisejí s tělesnými a duševními nemocemi; etické mezní stavy, které souvisí s jednáním člověka - interakcemi k ostatním lidem, psychické mezní stavy různé typy krizí, stres, bournout syndrom, atd.;
  - **v okolí příslušného člověka** – sem patří mezní stavy související s těmito faktory např. pracovní proces, neshody, konflikty v zaměstnání, rodině, společenských či politických organizacích, sportovních, zájmových klubech atd.
- **Mezní stavy ekonomické.** V prostředí ekonomiky je možné nalézt celou řadu entit (objektů, procesů, systémů) které za specifických podmínek dosahují svých mezních stavů; ve větší či menší míře ohrožujících ekonomickou bezpečnost (jedinců, institucí, firem, bank, pojišťoven, leasingových společností, jednotlivých průmyslových odvětví, trhů, až po bezpečnost státu, státních útvarů či společenství). Ke sledovaným systémovým veličinám ekonomického (parametrům) charakteru patří např. ukazatele, jako jsou výšky dluhů, půjček, úvěrů, hypoték, kredibilita, schopnost splácet úvěry, inflace, nezaměstnanost, kupní síla obyvatelstva, kurzy lokálních a světových měn, produktivita apod. Mezními ekonomickými stavy jsou pak např. platební neschopnost, sekundární platební neschopnost, osobní, firemní, státní bankrot, vymáhání dluhů apod.
- **Mezní stavy společenské, profesionální (společenské, profesionální mezní stavy).**
  K nejrozšířenějšímu společenskému meznímu stavu patří revoluce. Jsou to kvalitativní mezní stavy charakterizované tím, že určitý společenský

řád nemůže (nechce) dále plnit svou funkci. Podnět k revoluci obvykle nepřichází „ze shora“, od vládnoucích, mocenských skupin, které se jej snaží udržet. Zdrojem revoluce je dlouhodobá nespokojenost velké části obyvatelstva. Podnět přichází „ze zdola“, „utlačovaní“ už nechtějí takto dál pokračovat. Ne ve všech případech musí dojít k revoluci. Nespokojenost se současným stavem v demokratických společnostech ovlivňuje politiku, volby do různých zastupitelských orgánů, stávky na různých úrovních, veřejné protesty atd., což patří k evolučním procesům (nikoliv tedy k revolučním).

- **Mezní stavy morálky** – patří sem především stav morálky a s ní související mezní stavy terorizmu, násilných náboženských expanzí atd.

3.2 ČLENĚNÍ MEZNÍCH STAVŮ PODLE JEJICH VLASTNOSTÍ

Mezních stavů se u různých objektů může celkově vyskytovat velmi mnoho, a proto je můžeme např. dělit (Janíček, 2007):

- Podle charakteru změn stavových veličin
  - **Kvalitativní mezní stavy** – mezní stav nastane tehdy, jestliže hodnota (kvantita) některého ze stavových parametrů se stane pro funkci objektu nepřípustná.
  - **Kvantitativní mezní stavy** – mezní stav nastane tehdy, jestliže se změní kvalita některého ze stavových parametrů tak, že neumožňuje funkci objektu.
- Podle časového průběhu jejich vzniku
  - **Okamžité mezní stavy** – vznik mezního stavu závisí pouze na okamžitých hodnotách stavových parametrů, které určují vznik mezního stavu.
  - **Kumulativní mezní stavy** – vznik mezního stavu závisí na kumulaci (hromadění) změn ve vlastnostech struktury objektu v procesu postupného působení a ovlivňování objektu z jeho okolí. Nezávisí tedy na okamžitých hodnotách parametru tohoto působení a ovlivňování, ale na jejich časovém průběhu.
- Podle možné následnosti mezních stav
  - **Vylučující se (disjunktivní) mezní stavy** – dva mezní stavy jsou ozna-

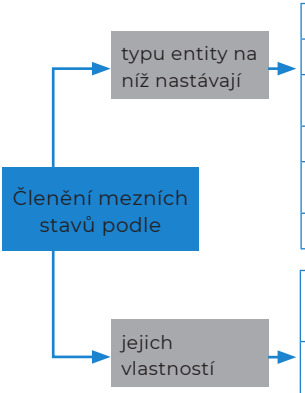
čovány jako „vylučující se“, může-li vzniknout pouze jeden z nich, takže druhý je pak stavem nedosažitelným (tedy nebude následovat);
- **Příčinné (kauzální, následné) mezní stavy** – dva mezní stavy se označují jako kauzální tehdy, jestliže vznik jednoho mezního stavu vytváří podmínky pro možný vznik druhého mezního stavu.

- Podle chování po odstranění aktivace objektu
  - **Vratné mezní stavy** – po odstranění aktivace objektu vyvolávající mezní stav, jeho důsledky odezní.
  - **Nevratné mezní stavy** – následky dosažení mezního stavu zůstávají i po odstranění aktivací na objekt.
- Podle charakteru následků dosažení mezního stavu
  - **Poruchové mezní stavy** – dosažení mezního stavu způsobí poruchu, v důsledku níž sice objekt není schopen plnit svou funkci, ovšem po odstranění poruchy je objekt opět provozuschopný, se svou plnou, původní funkčností.
  - **Bezpečnostní mezní stavy** – souvisejí s bezpečností objektu. Dosažení mezního stavu způsobí destrukci součásti, která je součástí ochranného zařízení před vznikem havarijních stavů. Destrukce této „ochranné součásti“ ochrání objekt před vznikem jiných, mezních stavů.
  - **Havarijní mezní stavy** – souvisejí s havárií objektu. Dosažení mezního stavu vede k destrukci objektu.
- Podle možnosti jejich výskytu
- Podle rozsahu oblasti, v níž nastává mezní stav
- Podle statistického pojetí mezních stavů
  - **Deterministické mezní stavy** – charakteristiky mezních stavů (mezní plochy) i charakteristiky spolehlivosti jsou určeny jednoznačně (kvantifikátor je určen jednou hodnotou).
  - **Deterministické (stochaistické) mezní stavy** – charakteristiky mezních stavů (mezní plochy) i charakteristiky spolehlivosti nejsou určeny jednoznačně (parametr je intervalové číslo).
- Podle počtu mezních parametrů popisujících mezní stav
  - **Jednoparametrické mezní stavy** – mezní podmínka obsahuje pouze jeden mezní parametr. (např. varování o nezaplacení splátky hypotéky

přijde v okamžiku, kdy uplyne doba 10 dní po termínu splátky.)

- **Víceparametrické mezní stavy** – mezní podmínka obsahuje více než jeden mezní parametr (např. voda začíná vřít při 100° C a při tlaku 1 atm).

Obr. 2» Pohled na základní členění mezních stavů v podobě tzv. myšlenkové mapy.



mezní stavy člověka (živé bytosti)	
mezní stavy v technice	
mezní stavy přírody (ekologické mezní stavy)	
mezní stavy ekonomické	
mezní stavy společnosti (společenské mezní stavy)	
mezní stavy morálky	

podle charakteru změn stavových veličin	kvantitativní mezní stavy
	kvalitativní mezní stavy
podle časového průběhu jejich vzniku	okamžité mezní stavy
	kumulativní mezní stavy
podle možné následnosti mezních stavů	vylučující se (disjunktivní) mezní stavy
	příčinné (kauzální, následné) mezní stavy
podle chování po odstranění aktivace objektu	vratné mezní stavy
	nevratné mezní stavy
podle následků dosažení mezního stavu	poruchové mezní stavy
	bezpečnostní mezní stavy
	havarijní mezní stavy
podle možnosti jejich výskytu	potencionální (možné) mezní stavy
	skutečné (reálné) mezní stavy
	teoretické mezní stavy
podle rozsahu oblasti, v níž nastává mezní stav	bodové mezní stavy
	oblastní mezní stavy
	globální mezní stavy
podle statistického pojetí mezních stavů	deterministické mezní stavy
	pravděpodobnostní mezní stavy
podle počtu mezních parametrů popisujících mezní stav	jednoparametrické mezní stavy
	víceparametrické mezní stavy

Zdroj: vlastní úprava, 2019.

4 MEZNÍ STAVY LIDSKÉ PSYCHIKY

Přírodní katastrofy, teroristické útoky, průmyslové havárie, hromadné dopravní nehody, epidemie, požáry značného rozsahu, ale i „pouhé“ fámy, šeptanda, rodinné či osobní tragédie a neštěstí jsou situace či události, v nichž dochází k ohrožení základních potřeb a hodnot lidí.

Pocity vlastní nedostatečné připravenosti zvládnout nároky vzniklé situace vyvolávají v psychice lidí negativní prožitky, ovlivňují jejich jednání a reakce. Aktualizují potřebu bránit se, minimalizovat působení negativních faktorů, zmírnit následky, objevují se tendence k agresivním, panickým či únikovým reakcím.

Předpokladem účinného předcházení vzniku situací ohrožení jejich optimálního řešení (kdy k ohrožení již došlo), a následného vyrovnávání se s následky události či situace v psychice účastníků, je porozumění jejich psychologické podstatě, prožitkům a jednání účastníků těchto situací.

Pro mezní stavy je příznačné, že:

- v důsledku jejich existence dochází k reálnému či potenciálnímu ohrožení základních lidských potřeb a hodnot (k poškození zdraví, ztrátě životů či značným materiálním škodám);
- vznikají převážně neočekávaně;
- intenzitou a rozsahem svého působení překračují běžnou lidskou zkušenost;
- vyvolávají v psychice účastníků extrémní až hraniční psychickou zátěž, která se promítá do jejich prožívání, chování, reakcí (snižuje se schopnost reálného vnímání a hodnocení, vznikají tendence k reaktivnímu chování);
- po jejich ukončení přetrvávají dlouhodobě v psychice všech zúčastněných negativní pocity a stavy (bezmocnosti, ohrožení, ztráty jistoty, bezpečí).

Prožívání a chování účastníků situace ohrožení má svoji specifickou dynamiku a podobu. Ta je podmíněna především:

- charakterem události či situace, vyvolávající pocit ohrožení (její očekávaností, rozsahem, následky);
- množstvím osob přímo či nepřímo ohrožených vzniklou událostí či situ-

ací, jejich chováním a projevy a jejich vzájemnými vazbami mezi účastníky situace (jedná-li se o dav, ad hoc existující skupinu, organizovanou skupinu či jednotlivce);

- informacemi, které jedinec v situaci ohrožení má a z jakých zdrojů (získané bezprostředním vnímáním a prožíváním situace, z ústního podání, z oficiálních zdrojů);
- způsobem, jakým se jev či událost dotýká základních potřeb a hodnot lidí – účastníků této situace a aktuální rolí jedince či skupiny v situaci. Jedná se především o osoby přímo postižené vzniklou situací (oběti), osoby přítomné v situaci (ne přímo postižené) a osoby odstraňující následky vzniklé situace, a to v roli řídící (koordinační) nebo výkonné (záchranáři, členové HZS, policisté, zdravotnický personál). Zvláštní kategorii osob, jichž se situace ohrožení a její důsledky dotýkají „zprostředkovaně", jsou příbuzní obětí (příp. příbuzní osob přítomných v situaci);
- pocitem vlastní připravenosti – nepřipravenosti jedince existující situaci zvládnout;
- intenzitou (stupněm) psychické zátěže, kterou jedinec v situaci ohrožení prožívá (Spurný, Matoušková, 2007).

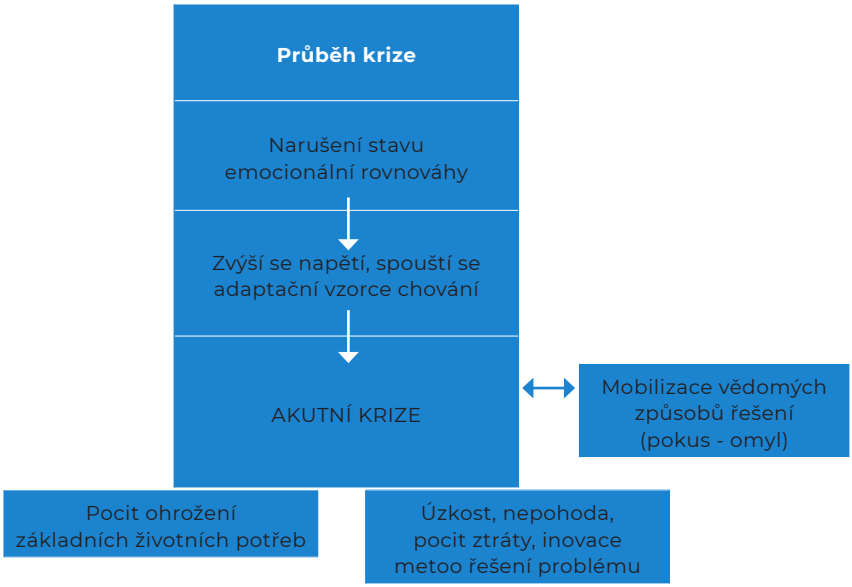
Je nemožné se věnovat všem druhům mezních stavů v lidské psychice, a proto se zaměříme pouze na krize v lidském životě.

V psychosociální oblasti je krize definována jako důsledek střetu s překážkou, kterou nejsme vlastními silami, vlastními vyrovnávacími strategiemi či za pomoci cizích lidí zvládnout v přijatelném čase a navyklým způsobem (Vymětal, 1995). Nicméně můžeme říct, že Krizí je taková situace, kterou za krizi považujeme.

Typy krizí:

- situační – problémové situace zvenčí, akutní epizody;
- přechodové (tranzitorní) – očekávané, vyvolané změnou;
- traumatické – závažné životní události;
- vývojové (vztahové) – nevyřešené vývojové úkoly;
- psychopatologické – související se zvýšenou zranitelností jedince;
- neodkladné krizové stavy – vyvolané psychiatrickým stavem, ztráta kontroly.

Obr. 3» Náhled na průběh krize.



Zdroj: vlastní úprava, 2019.

Narušení emocionální rovnováhy - ojedinělou událostí nebo kumulací menších událostí. Porucha rovnováhy je těžká, časově ohraničená a nezvládnutelná dosavadními regulačními mechanismy.

ZÁVĚR

Stabilita jako vlastnost procesu, objektu, soustavy, systému, určitého uspořádaného nebo volně sdruženého společenství lidí je důležitá jak pro společnost, její bezpečnost i fungování jednotlivých systémů, tak pro každého jedince, pro jeho psychosociální rozvoj. Bohužel žijeme v době, kdy erupce přicházejí z různých oblastí a my, i jako jednotlivci se na ně musíme dnes a denně adaptovat, přizpůsobovat se jim, ačkoliv si to mnohdy ani neuvědomujeme. Nicméně se domníváme, že je potřeba náhledu resp. nadhledu na dané události, které byly uvedeny v obou částech našeho článku a k tomu je potřeba i v poslední době hodně skloňovaného pojmu, a to je „kritické myšlení“. Nehledě na ujednocení pojmů pro daná vědní odvětví, ať již je využívají odborníci či masmédia.

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TAX AUTONOMY OF SELF-GOVERNMENT UNITS IN SLOVAKIA

DAŇOVÁ AUTONOMIE SAMOSPRÁVNÍCH JEDNOTEK NA SLOVENSKU

Lenka Maličká

ABSTRACT

Tax autonomy as a form of financial autonomy is one of the key factors of fiscal decentralization. A precondition of tax autonomy is the ability to acquire tax resources in the territory of the jurisdiction and to use them in accordance with socio-economic targets of the jurisdiction. In Slovakia, following the public sector reform in 2001, two types of self-governments exist. Although self-governing municipalities have existed since the change of the regime (1989), regions were established and have been effective since 2002. The ensuing turbulent period of the Slovak economy included a phase of economic expansion, depression and economic recovery. This had several impacts on the tax autonomy of existing self-governing structures in Slovakia. While the system of shared taxes increased the financial autonomy of both structures, changes in the overall tax system, especially after the financial crisis (2009), dramatically reduced their tax autonomy. A special situation emerged in case of regions, where the taxing power regarding the motor vehicle tax (the only own tax source) was shifted to the central level of government in 2015. The aim of the paper is to measure the tax autonomy of regions and municipalities since 2002 and compare it to their financial autonomy, which takes the form of a formal measurement. Additionally, the impact of certain demographic and macroeconomic variables on tax autonomy of self-government units in Slovakia is examined.

Keywords: *sub-national government, local tax, tax autonomy, financial autonomy, fiscal decentralization*

JEL Classification: H77

1 INTRODUCTION

The notion of tax autonomy is linked to the notion of taxing power of sub-national governments (Blöchliger and Nettley, 2015). Taxing power refers to the ability to set tax rates and tax base autonomously and generate own tax resources. It is obvious that taxing power varies according to the type of tax. Consequently, the tax autonomy of sub-national governments varies. Beside the tax autonomy, the term of financial autonomy (or fiscal autonomy) is widely used. In comparison with tax autonomy, financial autonomy usually covers the extended field of revenue items, including non-tax revenues as well as tax revenues (Maličká, 2019). Thus, tax autonomy relies only on tax revenues. They consist of own tax revenue (local taxes and piggyback taxes) and shared tax revenue. A consecutive representation of the abovementioned types of sub-national tax revenues in tax autonomy indicators offers a critical view on the revenue seeking ability of sub-national governments. As Groenendijk (2011) mentions, despite the trend towards the split of decision-making competencies, the power to tax of sub-national governments is rather limited.

In Slovakia, the term of tax autonomy is frequently used in connection with fiscal decentralization. The fiscal decentralization was implemented in 2005 and brought important changes in sub-national government funding. While before 2005 (2002-2004), regions and municipalities were funded via intensive transfer system, since 2005, a wider legislative framework arranged the revenue side of sub-national budgets. Although the structure of their tax revenue changed, the question of higher tax autonomy remained. This might be due to the excessively strong position of shared tax in the tax revenue structure of sub-national budgets. During the monitored period of 2002-2018, regions faced several changes related to their only own tax revenue, resulting in the loss of their tax autonomy. In terms of tax autonomy according to various indicators, municipalities seem to be passive in raising own tax resources, while, in fact, they have increased the piggyback taxes by 180% since 2004 (BAS, 2018).

The aim of the paper is to point out how sub-national governments (self-government units) in Slovakia exercise their exclusive power to tax and reduce types of taxing powers. Similarly, since 2002, the tax autonomy of regions and municipalities in Slovakia is measured and compared to their financial autonomy. Additi-

onally, determinants of tax autonomy of self-government units are investigated, respecting the potential effect of financial crisis covered in the monitored period of 2002-2018.

The paper is organized in the following manner: After the introduction, the current state is presented. Next, the chapter dealing with methods and data explains the research processing. Results and discussion present the main findings. The paper ends with a conclusion and a list of references.

2 LITERATURE REVIEW

OECD (1999) provides a taxonomy of tax autonomy. Taxing powers are divided into six groups, where the "A" category contains taxes with full tax autonomy of sub-national self-governments over their tax rate, tax base and tax reliefs. Taxes of category "B" and "C" represent taxes, where the supervision of central governments is applicable. Taxes in the "D" category are shared taxes. Taxes in the "E" category are central taxes without any taxing power of sub-national governments. In the OECD Fiscal Decentralisation Database (2019), the tax autonomy indicators for OECD countries are available for years 1995, 2002, 2005, 2008, 2011 and 2014. Correspondingly to this database, the sub-central tax autonomy of OECD countries is repeatedly examined by Blöchliger and King (2006), Blöchliger and Rabesona (2009) or Blöchliger and Nettley (2015). Tax autonomy of local governments in the USA is investigated by Reschovsky (2019). His study contains also the comparison of local tax autonomy in the USA and in OECD countries. The connection between local tax autonomy and local fiscal discipline in Poland is stressed in Bukowska and Siwińska-Gorzelak (2019). According to them, higher local tax autonomy is connected with better fiscal discipline. Sollé-Ollé (2013) provides an analysis of regional tax autonomy in Spain. He looks into why Spanish regions have used their tax autonomy more intensively since 2010 in comparison with the situation before 2010. He sees the problem in an inadequate tax mix, central government obstructionism, soft-budget constraints and revenue largesse. Thöne (2016) discusses the importance of tax autonomy increase in German states. In addition, he believes that strong fiscal equalization is much needed. Fiscal autonomy of sub-national government in Turkey, including tax autonomy, is treated by Eroğlu and Serbes (2018). In their findings they conclude that a low

level of local tax autonomy exists in Turkey, because the only authority in the field of taxes is exercised by the Grand National Assembly (Eroğlu and Serbes, 2018: 93). Kopina and Kopin (2019) stress the local tax autonomy in connection with digital economy using the example of Russian Federation. Sedmihradská and Bakoš (2016) evaluate the municipal tax autonomy in the Czech Republic in relation to tax mimicking. They conclude that Czech municipalities rarely use local tax autonomy due to the potential rise of political costs of increasing the taxes. The problem of the formal character of local financial autonomy in Slovakia is accentuated in Maličká (2019). Here, municipalities are strongly dependent on resources shifted from central government level, because the most voluminous tax revenue (shared tax revenue) has a quasi-grant nature. Methods of financial autonomy measurement are mentioned also in Poliak (2016) or Jílek (2008). Additionally, Jílek (2008) deals with tax autonomy measurement, reflecting on the OECD (1999) taxonomy of tax autonomy. The index of revenue autonomy of local governments in selected European countries is calculated in Slavinskaite and Ginevičius (2016). According to them, tax autonomy is the most important part of the revenue autonomy index. Slack (2017) provides an interesting analysis of local fiscal autonomy of eight cities around the world, including also the tax autonomy aspect.

3 METHODS AND DATA

For the purpose of this paper, tax autonomy is compared to more formal indicators of financial autonomy. Tax autonomy (TA) and financial autonomy (FA) of regional and municipal self-governments are calculated in several manners, reflecting on the degree of taxing power. TA indicators are calculated on the basis of following formulas extracted from several research sources, including Fleurke and Willemse (2006), OECD (2019), Maličká (2019) or Bukowska and Siwińska-Gorzelak (2019):

$$TA_1 = \frac{\text{tax revenue}}{\text{total revenue}}, \qquad (1)$$

$$TA_2 = \frac{\text{own tax revenue}}{\text{total revenue}}, \quad (2)$$

$$TA_3 = \frac{\text{own tax revenue}}{\text{tax revenue}}, \quad (3)$$

Tax revenue of local governments in Slovakia contains shared tax revenue and own tax revenue. In Slovakia, the shared tax is actually the personal income tax. Before 2005, it was the personal income tax and the corporate income tax. The motor vehicle tax was also a shared tax, but it was itemized in the part of taxes on goods and services (own tax). Own tax revenue includes property tax (immovable property tax) and tax on goods and services. And finally, tax penalties are part of own tax revenue. Total local revenue comprises of tax revenue, non-tax revenue, grants and transfers, revenue from transactions with financial actives and refundable financial resources.

FA is calculated on the basis of the following formulas, proposed also in Stegarescu (2005), Fleurke and Willemse (2006), Ribeiro and Jorge (2015) or Maličká (2019):

$$FA_1 = \frac{\text{own revenue}}{\text{total revenue}}, \quad (4)$$

$$FA_2 = \frac{\text{own tax revenue + nontax revenue}}{\text{total revenue}}, \quad (5)$$

Own revenue of local governments is expressed as sum of tax revenue and non-tax revenue. Non-tax revenue comprises of revenue from entrepreneurship and property ownership, administrative fees, fines and penalties, interest payments received and other non-tax revenues.

Data are collected from reports accessible on the web site of the Ministry of

Finance of the Slovak Republic (finance.gov.sk). In fact, two types of reports were treated. First, in the section of National Reporting, final state budgetary accounts were examined since 2002 up to 2011. In this period, budgets of local governments are itemized as part of the final state budgetary account. Secondly, in the section of Public Finance, reports on local government budgets in the 2012-2018 period were used. Since 2012, final local government budgetary accounts have been itemized separately.

To investigate the TA determinants (and for the purpose of comparison also the FA determinants), regression analysis is used. As the effect of crisis on TA (and FA) is evident, the structural break is examined using a Chow test (Chow, 1960). Thus, the augmented regression for the Chow test is provided and sample is split during crisis (dummy variable). The choice of control variables is motivated by the recent empirical evidence. In fact, beside the dummy variable of crisis (1 in the crisis period 2009-2013, otherwise 0), the unemployment rate, GDP per capita and population size are employed. The data of the variables mentioned hereinbefore were collected from the Eurostat database (European Commission, 2019). The unemployment is based on the annual average of percentage of total population. To express the impact of GDP per capita on TA (and FA), the GDP at market prices is divided by the total population as on 1 January, and its standard logarithm is calculated. Population size is measured as total number of inhabitants as on 1 January. Expectations about the Chow test results account for the presence of a structural break caused by the financial crisis. Correspondingly, the expected impact of crisis variable on TA (FA) is negative. In the crisis period, TA (and FA) decrease. The increase of unemployment rate might decrease TA (and FA) by lowering the total receipts from income tax (shared tax) in those indicators, which comprise of the tax revenue and shared tax revenue. According to Sedmihradská and Bakoš (2016: 88), unemployment rate is a proxy of economic situation. The increase of the population size might decrease TA (and FA) due to an increase in demand for redistribution. It is usually provided by the central level of government and requires more resources on the part of central authorities, at the expense of their shift to local governments. On the other hand, in case of TA (FA) indicators based on own resources, this effect might not be evident, because the item of grant, as part of the total local revenue, might decrease. The

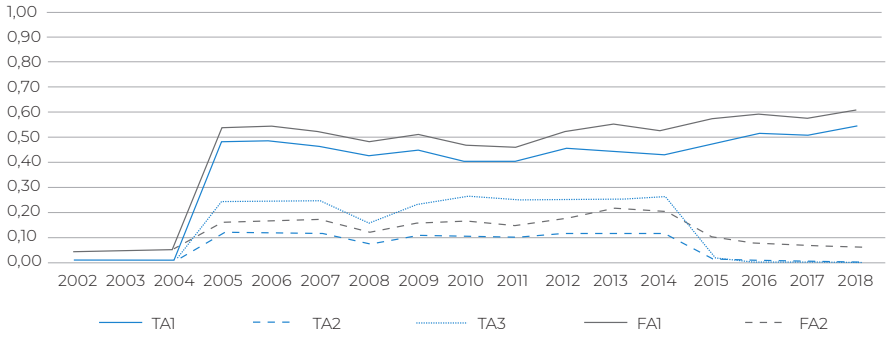
variable of population size is widely employed in this type of research, e.g. in Delgado, Lago-Peñas and Mayor (2015) or Sedmihradská and Bakoš (2016). The increase of the GDP per capita might increase TA (FA), when an increase of all types of tax revenues is expected. However, an opposite effect might be observed in response to the crisis, when arrangements on economic stabilization and redistribution provided by the central government level are required and financed correspondingly, at the expense of local governments.

4 RESULTS AND DISCUSSION

4.1 TAX AUTONOMY OF REGIONS AND MUNICIPALITIES IN 2002-2018

In fact, in 2002-2005, TA of Slovak regions was exactly zero (see Figure 1). In comparison, their FA is a non-zero value and mirrors the amount of non-tax revenue (not grants), which mainly include administrative fees. Since 2005, after the fiscal decentralization, Slovak regions have been operating under the regime of shared tax, so TA1 increased dramatically. Similarly, FA1 increased and the difference between them presents the volume of non-tax revenue. Excluding the effect of shared tax, the TA2 indicator, which comprises only of own tax revenue (motor vehicle tax), also increased. The FA2 indicator behaves in a similar way and the difference between them represents the volume of non-tax revenue. According to TA3 indicator, up to 2014, own tax revenue created approximately 25% of the regions' tax revenue. Since 2015, the motor vehicle tax became a state tax, which led to Slovak regions losing their TA in terms of TA2 and TA3. The increase of TA1 (and FA1) is caused by the increase of receipts from shared tax. A mild decrease of TA2 and TA3 is observed in 2008 with the arrival of financial crisis, while the decrease in TA1 (and FA1) reflects the worsening of economic conditions during the financial crisis.

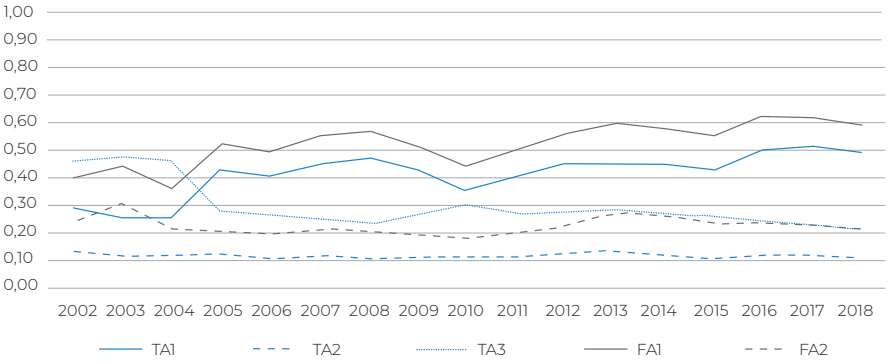
Fig. 1 » TA and FA of regions in 2002-2018



Source: own calculation

In the case of Slovak municipalities (see Figure 2), tendencies in TA and FA are quite similar to those in regions. The TA1 (and FA1) indicator increased significantly after 2005 for the same reason as in the case of regions. The strong influence of shared tax formally increased TA (and FA) and caused their sensitivity to the change in economic circumstances (e.g. 2010 a decrease in receipts of personal income tax was observed in Slovak economy due to financial crisis). The TA2 indicator, reflecting the share of own tax revenue on total municipal revenue, is relatively stable, without any evident deterioration after the 2005 or in 2009. The TA3 indicator reflects the change in the municipal budget funding. Up to 2004, the share of own tax revenue in municipal tax revenue represents approximately 46%. After the fiscal decentralization it decreased dramatically by 20% with a temporary increase in times of crisis due to a decline in shared tax.

Fig. 2 » TA and FA of municipalities in 2002-2018



Source: own calculation

The distribution of data on TA and FA of Slovak regions and municipalities and structure of their total revenues are listed in Appendix.

4.2 TAX AUTONOMY DETERMINANTS

Results of the Chow test show the presence of a structural break in the form of the effect of financial crisis (p-values are lower than 0.05). Thus, the dataset is split (see Table 1, split dummy) and two separate regressions are estimated. One regression is estimated for each type of TA and FA separately for regions and municipalities.

Tab. 1 » Augmented regression for Chow test, sample split during crisis

	Regions					Municipalities				
Dependent variable	TA1	TA2	TA3	FA1	FA2	TA1	TA2	TA3	FA1	FA2
variables										
intercept	11.9	11.4	24.8	10.8	10.2	2.88	-0.88	-6.31	0.52	-3.23
		***	***		***	*	*	**		**
unempl	-0.03	0.01	0.03	-0.02	0.02	-0.01	0.02	0.01	-0.01	0.01
	*				*	***	*	***		
Pop	-2.83	-2.43	-5.35	-2.76	-2.36	-0.65	0.19	1.52	-0.22	0.63
		***	***		***	*	*	**		*
lGDPpc	0.42	0.19	0.43	0.51	0.27	0.13	-0.01	0.19	0.14	-0.01
	***	**	**	***	***	***		***	**	
Split dummy	-31.8	-16.5	-25.0	-45.2	-29.9	-23.4	-5.88	4.37	-37.6	-20.0
	***	***	***	***	***	***	***		***	***
cr_unempl	-0.01	-0.01	-0.01	-0.02	-0.02	-0.06	-0.01	0.02	-0.08	-0.03
					*	***	***	***	***	***
cr_pop	7.72	3.77	5.67	11.0	7.06	4.34	1.16	-0.70	7.57	4.41
	***	***	***	***	***	***	***		***	***
cr_ lGDPpc	-1.04	-0.39	-0.57	-1.49	-0.84	0.05	-0.03	-0.08	-0.28	-0.37
	***	***	***	***	***			**	***	***
adjR2	0.59	0.45	0.50	0.62	0.49	0.74	0.49	0.74	0.76	0.20
Chow test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Note: *** denotes a 1% significance level, ** a 5% and * a 10% significance level. OLS is estimated using the Heteroskedasticity and autocorrelation consistent (HAC) covariance matrix, which deals with the eventual presence of heteroskedasticity and autocorrelation in the model. The cr prefix stands for crisis and refers to the dataset after crisis. Source: own processing*

The results point to certain common findings in the case of regions and in the case of municipalities:

- The relationship between the financial crisis dummy variable and TA (or FA) is negative. In the period of financial crisis, TA (and FA) of both monitored structures, regions and municipalities in Slovakia decreases.
- The impact of unemployment rate on TA1 and FA1 is negative in both samples (regions and municipalities) before the financial crisis. These indicators contain a shared tax revenue and the results emulate the expectation about the inverse relationship between the unemployment rate and tax autonomy defined as TA1 and financial autonomy defined as FA1. The increase of the unemployment rate brings a decrease in personal income tax, which is a shared tax.
- Before the financial crisis, the unemployment rate is more statistically significant in the case of municipalities. This effect might be explained by the dominant share of personal income tax, which is assigned to municipal budgets (currently 70%, with a certain decrease to 65.4% in 2012 because of crisis arrangement provided by central government). This might cause the sensitivity of municipalities to changes in unemployment rate. After the financial crisis, the unemployment rate is not statistically significant in regions.
- The impact of population size on TA and FA in regions and municipalities before the financial crisis is negative in line with the expectation, where the increase population size might decrease TA (and FA) due to an increase in demand for redistribution provided by the central level of government and requires more resources on the part of central authorities, at the expense of their shift to local governments.
- The change in the population size coefficient to a positive one after the financial crisis is to be noted. This result is in accordance with the supposition that the item of grant, as part of total local revenue, might decrease in times of crisis due to a decrease in central government revenue and expenditure. This might increase the TA (and FA) indicator formally.
- The relationship between the GDP per capita and TA (and FA) before the financial crisis is positive, as was expected. The increase of the GDP

per capita might increase TA (and FA), when increase of all types of tax revenues is expected.

- The relationship between the GDP per capita and TA (and FA) after the financial crisis is negative, contrary to results observed before the onset of the financial crisis. A simple explanation, mostly connected with the fiscal decentralization diminishing rate, is provided in literature. The increase of the GDP per capita creates sources needed by central government to restore the economy in the crisis period. In fact, the decrease of the GDP per capita is observed only in 2009.

CONCLUSION

A desirable increase of tax autonomy is usually connected with fiscal decentralization. In Slovakia, certain shifts towards fiscal decentralization were made in the first decade of the 21st century. Administrative decentralization began by establishing the additional element in the public administration structure. Thus, along municipalities, regions have existed since 2002. Since 2005, based on legislative framework, the fiscal decentralization has been implemented. Taxing power was assigned to regions and municipalities (in case of municipalities it represents certain changes, but in fact, they have enjoyed taxing power since 1990) and a fixed system of criteria, affecting the division of shared tax among government levels, was introduced. Hence, the positive effect of fiscal decentralization on financial autonomy, including the tax autonomy, was expected. In times of an economic expansion in Slovakia (2005-2008), the tax autonomy of regions increased. Tax autonomy of municipalities remained unchanged, with the exception of an indicator that includes the shared tax, in receipts sensitive to economic cycle. In period of financial crisis, TA (and FA) of the two monitored structures, regions and municipalities in Slovakia, decreases. The negative effect of financial crisis on TA (and FA) is confirmed also by the regression analysis. In addition, the split of dataset on the basis of the financial crisis variable reveals certain changes in the effect of control variables on TA (and FA). These changes might be explained by the government arrangements adopted to recover the economy after the crisis. Additionally, an arrangement in the field of tax assignment of motor vehicle tax has resulted in the decrease of regions' TA to near zero, when excluding the

shared tax revenue. Currently, in times of slowing down of the Slovak economy, further steps towards centralization might become more real.

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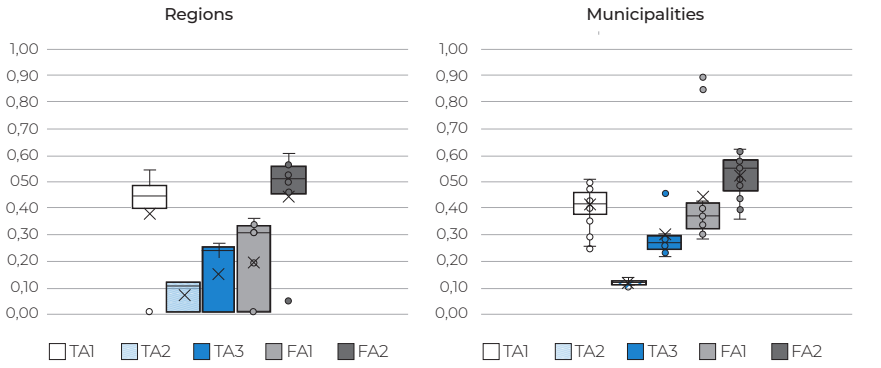
APPENDIX

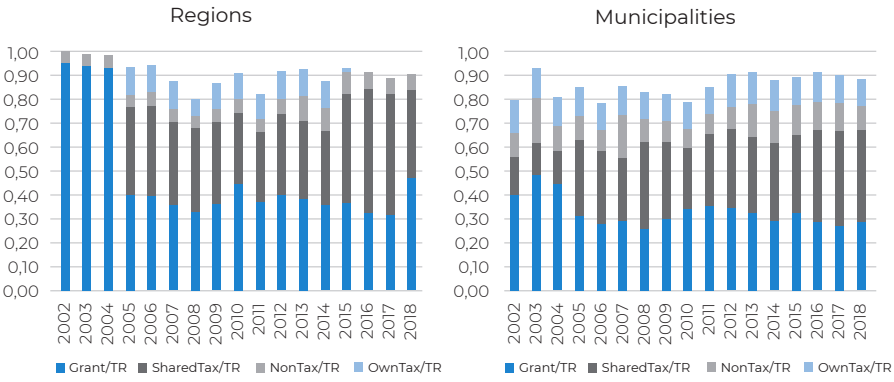
The distribution of data on TA and FA of Slovak regions and municipalities and structure of total revenues.

Appendix 1 » Boxplots of TA and FA of regions and municipalities in Slovakia



Source: own calculation

Appendix 2 » Structure of total revenue of Slovak regions and municipalities in 2002-2018



Source: own calculation

RETIREMENT AGE IN THE CONTEXT OF PUBLIC FINANCE IMPLICATIONS

VĚK ODCHODU DO DŮCHODU A DŮSLEDKY PRO VEŘEJNÉ FINANCE

Jaroslav Šetek
Jiří Alina
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ABSTRACT

The aging of population, which is a pan-European as well as Czech trend, will have a significant impact after 2030, fundamentally affecting public finances. For this reason, a possible extension of the retirement age is also being considered. So far, two alternatives have been presented - retirement age of 65–67 years after 2035 and a maximum age limit of 65 years. The age limit of 65 is unacceptable for some professions due to the accelerated depreciation of human capital. Therefore, economically efficient retirement schemes should be set up for early retirement for professions with significant physical and mental stress, hazards (mining, metallurgy, construction, airmen, rescuers, etc.). At the same time, the onset of the Industry 4.0 era, coupled with extensive technological changes, complicates the forecast for anchoring the retirement age. In particular, the situation requires addressing the current problems that the Czech economy and its pension system struggle with. From an economic point of view, it is a reduction of the retirement age for particularly demanding professions.

This issue concerns the macroeconomic context with appropriate implications for public resources. Therefore, the paper requires an interdisciplinary approach to the processing of social sciences (especially economics, financial theory, social security law, sociology, demography.).

Keywords: *depreciation of human capital, retirement age*

JEL Classification: A12, B41, D00, E00, D24

1 INTRODUCTION

In connection with the concept of human capital, its development, or investment in human resources in relation to the performance or competitiveness of the company, is currently being widely discussed. In essence, human capital, understood as a different equipment of human resources (according to biological and psychological typology of personality, health status, educational attainment, qualifications…), is able to generate income from employment relationships through wages and salaries during working age, possibly through transfers in post-productive - senior age (Biskup & Voříšek, 2005). As with material capital we can also talk about the depreciation of human capital (Becker; 1975, 1997), which is a loss of value of the creative ability of a person (Loužek, 2014). The forms of this depreciation are also physical, moral and pathological (illness, disability…) social events. Moral depreciation being a manifestation of the inability of some social groups (especially low-skilled professions) to adapt resulting from scientific and technological development (Beck, 2007).

The notion of depreciation of human capital is expressed in terms of depreciation, which implies, at a certain level (aspect of time of employment in a particular field, permanent loss of working capacity), a pension entitlement (Novotná & Volek, 2014). The level of wear and tear of human capital accelerates especially under increased physical load, under unfavourable hygienic conditions, under increased stressogenic factors, with increased life threatening risks and higher susceptibility to burnout. In the Czech Republic, this problem affects about 650,000 employees in all sectors of the economy (mostly primary and secondary). It is precisely with the problems of accelerated depreciation of human capital that the Czech Republic's pension system is currently struggling in the context of its employment policy (Pavelka, 2017).

2 METHODS OF PROCESSING

The article is elaborated by an interdisciplinary approach of social sciences (especially economics, financial theory, social security law, sociology and political science). The main input documents are the current legislative standards of the pension system on the example of the Czech Republic, which are the subject of an analysis to determine the possible solutions.

3 RESEARCH RESULTS

3.1. INITIAL PHILOSOPHY

In the European Union, after 2000, the retirement preferences are clearly being abandoned. In the Czech Republic this has already occurred in 1992. At that time, Act No. 235/1992 Coll., on the Abolition of Working Categories and on Some Other Changes in Social Security, abolished, as of 31 December 1992, the classification into three working categories. Employees included in the 1st and 2nd working category were referred to as "preferred category employment". The essence of the preference consisted in different ways of calculating pensions, in the case of employment in the first working category also in setting a lower age limit for entitlement to old-age pension (so-called special retirement age) compared to the general age limit. Occupations with increased physical activity, increased stressogenic factors, increased life threatening risks and higher susceptibility to burnout were put in the preferential categories 1 and 2. They included miners in underground mines, workers in metallurgy, construction, paramedics, airmen, etc. This meant respecting the principle of so-called professional disability and granting entitlement to early retirement after a statutory number of years a person has worked in this category.

The level of depreciation of human capital for retirement can be determined by an imaginary formula which represents the sum of the basic depreciation (given the total length of employment) and the preferred depreciation (as a multiple of the period of employment in difficult conditions). In accordance with the aforementioned legislative standards, only those employees who had been employed in preferential categories before 1993 and who started after 1993 would have to remain in employment up to the statutory retirement age before retirement, which increases with the economic aspects of extending human life (including retirement age) to the age of 65-67 years after 2035.

According to expert analyses it is certain that the age limit is unacceptable for some professions (mining, metallurgy, selected health care categories). This is due to the faster growth rate of the amortization of human capital, i.e. the wear and tear of the human organism due to physical and mental stress, stressogenic

and other factors. Moreover, in other European countries, irrespective of their economic maturity, the retirement age of some professions (especially mining) is between 50-55 years.

3.2. IMPLEMENTED REFORMS AFTER 1993 AND FURTHER NEED FOR NEW LEGISLATIVE ACTION

With the aim of solving the problem of so-called occupational disability in selected professions and partly replacing the "occupation in preferred categories", the following legislative standards for the employment relationships of the military and mining profession have been implemented so far:

- For military service it was Act No. 221/1999 Coll., on Professional Soldiers, and Act No. 361/2003 Coll., on the Service Relationship of Members of the Security Forces.
- Government Decree No. 363/2009 Coll., on Determining Retirement Age and Recalculation of Old-Age Pensions of Certain Miners.

Service conditions of the armed and security forces of the state

In their nature, the service conditions of the military are granted one-time and repeatable (retirement allowances). In particular, retirement allowances are a professional "disability" pension. Their primary function is to compensate for the decline in earnings due to the amortization of human capital as a manifestation of temporary or permanent reductions in post-employment skills. In the Czech Republic, however, they have become the main competitive instrument between service relationships in the armed forces and security forces. In terms of employment policy, they thus ceased to fulfill their regulatory function (Šetek, 2010).

The retirement allowance is a repeatable financial benefit payable to beneficiaries on a monthly basis from the budgets of the Ministries of Defense, of the Interior and of Justice after leaving the service after at least 15 years of service. From the point of view of economic and social aspects, the allowance fulfills several functions - regulatory (especially in the field of employment policy), compensatory, social, etc. In its essence, it is primarily occupational "disability" pension, replacing a permanent reduction in professional qualifications after termination of service. In addition, based on sociological research conducted in the Czech

Republic and abroad, it has been proven that in service conditions, members of staff usually "wear" faster (due to physical stress and stress factors) compared to employment conditions. For this reason, the allowance is intended to motivate members to voluntarily retire from the service when they reach an age which can be regarded as a threshold for remaining in active service. Especially when extending the retirement age, it would be unethical if, for example, a member was released after 30 years of service (roughly 50-55 years of age) without adequate financial compensation for poor health, physical and other service requirements (Šetek, 2010).

From 1 January 2011 to 31 December 2016, the service allowances were subject to flat-rate taxation at a rate of 15%. It is not possible to deny the power of the government to determine, according to the budgetary situation, which revenue it exempts from taxation for what period and which it does not. However, the taxation in that period made the situation considerably chaotic. (Šetek, 2011; 4) This is because they should be subject to taxation provided that with the other (taxable) income the recipient exceeds a certain multiple of the set amount. This could be based, for example, on the minimum wage, the amount of which is set by law based on the performance of the economy (Šetek, 2011; 5). This would respect the depreciation of human capital in military service.

In all NATO countries and the European Union, there is a specific system of pension requirements for members of the armed forces of the state for a specified period of service. At the same time, it is legally ensured that the start of a civilian career as a result of depreciation of human capital during service does not bring about a social decline for the retired people. In terms of length of service, the amount of contribution is of considerable importance. If it is too low, the earning allowance loses its regulatory function and the provision of the service allowance may seem unnecessary. If the amount is set too high, the members are motivated to leave before they reach a reasonable age, thereby violating the principle of a professional "disability" pension (Šetek, 2005).

The period of 15 years of service for granting the allowance is currently the same for members of the military and security forces. The percentage of the average monthly gross salary of members of the security corps is fundamentally different (e.g. 5% in the army after 15 years of service, while in the security corps

it is 20%). On the basis of a comparison of retirement appurtenances according to the above-mentioned laws it is possible to point out inadequacy for members of the security corps. This is due to the incorrect setting of this period, already in the previous legislative amendment (Act No. 186/1992 Coll., on the Service Relationship of Members of the Police of the Czech Republic), which required only 10 years of service to grant the requisition (Šetek, 2010).

3.3. THE NEED FOR REFORM OF MILITARY SERVICE

Act No. 221/1999 Coll., on Professional Soldiers, modifies to a certain extent the cancelled working categories by increasing of the service period for the award of the retirement allowance in some systemized jobs, such as the executive aviator and the service in period of a special nature or special degree of hazard or foreign operations. The service of the executive aviator and of a special nature or special degree of hazard shall be calculated 1.5 times from the retirement allowance and twice in the foreign operations. The maximum retirement allowance for these selected service categories may be up to 60% of the average monthly gross salary (Šetek, 2010).

According to Act No. 361/2003 Coll., on the Service Relationship of the Members of the Security Corps, the increased credit for the long-term period cannot be implemented; therefore some discrimination can be pointed out especially with regards to the service in the Police of the Czech Republic and the Fire Rescue Service. There are also categories that are similar to those in the military (e.g. special intervention units, services in foreign missions, members of bomb disposal units, etc.) and the system of their retirement allowance is the same as for the "administrative" category (Šetek, 2011; 3). As a result of inconsistent service legislation and inefficient personnel policy, there are many systematic positions in the military and security forces in the service relationship. Thus, without any analysis of a systemized position, the service relationship of military personnel, whose purpose does not require it, is inadequate to the depreciation of human capital, which in fact does not occur. This in turn results in an enormous financial burden on personnel mandatory expenditures of the ministries involved (Šetek 2011; 1).

For the above reasons, in addition to the reform of service relationships, a fundamental change in personnel composition is necessary. This would consist in the reduction of some systemized positions in the military service relationship and

the subsequent transfer to civilian service or employment. In the army and security corps, these would be mainly systemized positions that constitute civilian service and employment, especially in logistics, economic and financial security, personnel management, technical support, public relations, etc. (Šetek, 2011; 2).

3.4. THE PROBLEM OF AMORTIZATION OF HUMAN CAPITAL IN THE EMERGENCY MEDICAL SERVICE - THE IDEAL SOLUTION IS TO INCLUDE IT IN THE MILITARY SERVICE

In accordance with Act No. 239/2000 Coll., on the Integrated Rescue System, the Emergency Medical Service is one of the three basic elements of the Integrated Rescue System in the Czech Republic, along with the Fire Rescue Service of the Czech Republic and the Police of the Czech Republic. Unlike the two state-controlled security forces and armed forces, it is operated regionally. This is also probably one of the main reasons why the personnel of the Emergency Medical Service in the performance of an extreme profession (such as police officers, firefighters, soldiers) does not have an institute of service (Šetek 2011; 6).

Since 2011, there has been an interest in these professions to receive pension entitlements for minimum employment with an emergency medical service at least 15 years after the age of 50. This can be considered a combination of employment with emergency medical service. In fact, it seems somewhat complicated and inefficient for the state. Efficiency can be achieved by transferring selected emergency medical professions to military organized service. At the same time, the existing social security system needs to be reformed in order to grant pension payments after 20 years of service under a single law on service in the armed forces, security forces and emergency medical services. This would consequently increase the effective functioning of the integrated rescue system, defense and national security (Šetek, 2011; 7). Armed Forces, Security Corps and Emergency Medical Services should not compete with each other in the labor market. There would be the possibility of a smooth transition of appropriate professions and transfer of experience between service components (Šetek, 2011; 8). A typical example is the possibility of recruiting emergency medical professionals in military medical missions abroad under the auspices of NATO, the United Nations and the Organization for Security and Cooperation in Europe and vice versa (Šetek, 2011; 6).

3.5. MINING PROFESSIONS

With the intention to solve the problem of so-called occupational disability in mining professions and partly to replace "occupation of preferred categories", in 2009 the government stepped in by issuing Regulation No. 363/2009 Coll., on Determining Retirement Age and Recalculation of Old-Age Pensions of Certain Miners who started to work before 1993. According to a decree that came into force on 1 July 2010, the retirement age of miners was reduced to 55 years of age. The condition for granting the aforementioned retirement age was a period of employment in mining with a permanent workplace underground in deep mines before 1 January 1993 at least until 31 December 2008. Therefore, the above-mentioned legislative measure addressed the issue of so-called occupational disability only partially, due to the decline in mining. In accordance with the above-mentioned legislative standards, only miners who had been employed in underground mines before 1993 could retire earlier, and those who started after 1993 would have to remain in employment up to the statutory retirement age, which will increase, especially due to the economic aspects of extending human life (including retirement age), to the age of 65-67 years after 2035.

According to expert analyses, it is certain that the age limit is unacceptable for some professions, including mining. This is due to faster wear of the human body due to physical and psychological stress, stressogenic and other factors. Moreover, in other European countries, irrespective of their economic maturity, the age limits of mining occupations for retirement are in the range of 50-55 years.

3.6. EVALUATION OF RETIREMENT OF PREFERRED PENSION CATEGORIES

"Pension categories were removed from the system not because of the removal of risky work, but because of the change in social conditions. It was no longer a state that employed workers in their businesses and had to take care of them, but enterprises belonging to private sphere."

The opinion of the Chamber of Commerce and the Confederation of Industry

The beginning of the problems can be traced back to extensive structural changes in the Czech economy with appropriate privatization tenders of major compa-

nies in terms of their strategic and social positions with enormous employment in this field. These changes were not linked to appropriate social programs, especially in the event of a downturn, etc. From the viewpoint of strategic importance for the state and social aspects, there can be doubts about the justified effectiveness of privatization of mining companies and metallurgical companies. If the State controlled these companies, then the social security expenditure of the miners for early retirement would not be in any doubt.If the company had already been privatized, the privatization contract should have addressed the obligation of the acquirer to ensure the financing of social programs in the event of early retirement due to a decline in mining or other events.

3.7. POSSIBLE SOLUTIONS

It is certain that the interest in monitoring the accelerated depreciation of human capital and the subsequent early retirement does not exist only in mining and military service. There are a number of professions with the same problem, such as metallurgy, health care workers in hospitals, social workers in residential care facilities, etc. There are a number of options for solving the problems of these working categories:

1. Renewal of pension categories and keeping the issue fully as the responsibility of the state,
2. The employer's obligation to pay increased social insurance contributions to public funds.
3. The employer's obligation to pay increased contributions to private supplementary pension insurance.
4. Allow employers to make contributions - liberal vision.
5. To maintain the same age limit for all groups and for those unable to work in their current job position to establish a retraining program for changing their job position.

The starting document for the above five options would be the National System of Occupations, for the following reasons:

- There is an open and publicly accessible database of information on occupations that occur on the Czech labour market.

- Employers participate in its creation through sector councils as their representative.
- For each occupation, work activities, working conditions, health and qualification requirements, and required competencies are described.
- Occupations are integrated into the system according to field and qualification level.
- Its content makes it one of the most up-to-date and European databases for a wide range of students, employees, the unemployed, labour offices and HR professionals.
- It serves as the main information source for the creation of the National Qualifications Framework.

The first option - returning pension categories and keeping the issue fully as the responsibility of the state seems to be quite ineffective for the state. This stems from the fact that the state is not the owner of all economic entities operating in the Czech economy as a result of extensive structural changes. This would benefit non-state economic entities in particular. As mentioned above, this option is not viable.

The second option - the employer's obligation to pay increased social insurance contributions seems to be the most feasible. Based on the classification of the profession according to the National System of Occupations, the employer (regardless of the state, private entity) would be obliged to pay higher contributions for designated employees. The combination of the amount of contributions and the number of years worked would create a right to a reduced retirement age. Everything is under the control of the state, the employer fully participates in the solution of the problem, moreover, they have an economic motive, especially with the advent of the Industry 4.0 era, when savings of mandatory social insurance expenditures can focus on technology modernization (Džbánková & Sirůček, 2013).

The third option obliging the employer to pay increased contributions to private supplementary pension insurance is also ineffective. This is due to the considerable administrative costs of implementation. In addition, selected employees would be forced to take out an otherwise voluntary supplementary pension sche-

me to which the employer would contribute (on average 4% of gross salary). It cannot be ruled out that employers would reduce wages, especially in periods of stagnation, and inevitably the contributions to supplementary pension insurance would also fall. For employees, this would mean forced participation in the solution of the problem. Thanks to the savings, they could retire early, perhaps five years earlier, and would benefit from the savings. They would also become state insured persons in the health insurance system.

The fourth option - to leave the employer to make contributions (liberal version) would fully result from the corporate culture (corporate social policy) on contractual terms, which would also be an instrument of competition in the labour market. That is to say, it would be entirely in the employer's full discretion whether to provide these benefits or not. The position of the employer on the labour market would also depend on this. It is certain that in times of economic growth they would increase these benefits in order to recruit human resources in the labour market, reduce or cancel them at a time of stagnation. This could also cause significant structural disproportions in employment and performance of economic sectors, which would ultimately undermine the assurance of stable economic growth. This would ultimately jeopardize significant economic interests of the state.

The fifth option - to maintain the same age limit for all groups and for those unable to work in their current job position to set up a retraining program to change their job position, also seems to be ineffective. It would also be a question of who would guarantee and finance the retraining program - employer or state or a combination of both.

3.8. ECONOMIC QUANTIFICATION FOR EARLY RETIREMENT OF INTEREST PROFESSIONS

Assuming that the latter option seems the most feasible one (the employer's obligation to pay increased pension insurance contributions under the social insurance system), this can also be clearly presented by economic quantification. By applying this method, it is possible to quantify the estimation and forecast of pension insurance expenditures related to the implementation of appropriate measures. It is based on funds created in public resources and their use for securing soci-

al interest groups in the national economy.The division of inputs and outputs into the economic analysis is possible from several points of view. The classification of a given input or output is of some importance with regard to economic analysis. The basic division, and most important from the economic analysis point of view, is the distinction of real financial flows in the creation and use of public funds.

It is quite certain that the entitlement to early retirement is for selected professions in mining, metallurgy, and heavy industry (construction, transport, etc.), but selected occupations in social and health services are also considered. For this reason, it is possible to quantify the expenditure corresponding to one month for the creation and drawing of a retirement pension for interest professions. The basic input documents for quantification processing are the following statistical indicators:

- Average life expectancy in the starting year (76.4 years in the first half of 2019) assuming further increase.
- Average wage for the reference year (CZK 34,000 for the first half of 2019).
- The number of workers in particularly difficult jobs in the economy (estimated at 650 000), which is 11% of the economically active population.Average length of employment in strenuous professions within the economy.

In addition, the above indicators for determining the methodology shall be assigned appropriate attributes, containing the following information:

- Ratio of years of service in strenuous professions to one year before the age limit for retirement pension by year of birth (10 years worked for 1 year of early retirement).
- Percentage increase in employer pension contributions (estimated at 3-5%).

Based on the above economic quantification, pension insurance benefits will be divided into individual groups. Thus, it can be assumed that within the early retirement interest group, the financial resources generated and their use on the basis of the insurance fund will be rather homogeneous, while they will remain more or less heterogeneous among the social groups of old-age pension users. This distinction is particularly useful when the benefit of selected groups is monitored.

The importance of differentiating pension expenditure and income is to determine the time periods when these flows occur. From the analytical point of view,

it would be irresponsible not to differentiate the time value of these flows, as they differ considerably in resource intensity, such as their generation (Wawrosz & Valenčik, 2014).

4 CONCLUSION

The introduction of so-called early pensions within the supplementary pension insurance, i.e. in the savings on pension (.the above-mentioned third option), seems to be very popular. However, this concept is not used in practice by employers and their employees, especially in the primary and secondary sectors (mining, metallurgy) and other strenuous professions. In order to arrive at a consensus, it is possible to find an optimum between the state and employers to pay increased social insurance contributions (i.e. the above-mentioned second option) to selected professions in accordance with the classification of the National System of Occupations. In this context, an outline of the methodology of economic quantification for the creation and use of the pension insurance system for interest groups of the population in particularly demanding professions of selected sectors of the economy is also presented.

For service relationships in the armed and security forces of the state, it is entirely appropriate to maintain autonomy within the social security system. However, it would be fully effective if it were based on a single law (e.g. the Retirement Act) with a focus on accepting the amortization of human capital. It can be stated that the ideal model for the creation of one legislative standard would be Act No. 221/1999 Coll., on Professional Soldiers, which largely modifies the cancelled working categories, by increasing the credit for the service period for the award of retirement allowance in certain functions of special danger, physical and psychological load and the like.

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