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Reviewers

Content

Prologue

Dear Colleagues and Friends,

We are presenting to you a reviewed Collection of contributions from the International Research Conference Public Administration 2016. The Faculty of Economics and Administration of the University of Pardubice regularly organizes this Conference. Our Faculty has organized already 11th year of this Conference in year 2016, the year in which our Faculty celebrates 25th anniversary of its existence. Our Faculty alternates with our partner organization Faculty of Economics of the VŠB-Technical University Ostrava in organizing this conference in two-year periods. With regard to high prestige of this event the Conference has been held under the auspices of the Dean of the Faculty of Public Administration and of representatives of Pardubický region and the statutory city Pardubice.

A number of experts from both academic and application sectors always attend this Conference. Over seventy experts from fields such as public administration, social policy, regional development, protection of inhabitants and information technologies for public administration have participated in this Conference in 2016. A number of the participants are international experts who have contributed to our discussions valuable international perspectives and experience.

During this Conference held in an open and friendly atmosphere a lot of space has been available for presentation of up to date research works in fields of public administration, public economy, social and regional policy. The Conference has also provided opportunities for starting new co-operations between academics and professionals from practise and their places of work. These co-operations are aimed at long-term exchange of knowledge and discussions about hot issues going beyond regular national or European dimensions.

The presented Collection of contributions includes fifty high-quality contributions that have undergone a demanding review procedure. The Conference International Research Program Committee have evaluated these contributions, then the Program Committee internally evaluated these contributions and after that respected experts from the academic sphere have executed independent and anonymous reviews of these contributions. Only those contributions that have succeeded in the above-described demanding evaluation process are published in this Collection of contributions you are now holding in your hands.

It is our believe that the submitted results of work of academics and of various research teams shall contribute to expanding available theoretical knowledge and make the practical application of this knowledge in their respective fields more efficient.

Pardubice, December 13, 2016

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Assoc. Prof. Romana Provazníková, PhD.
Chairwoman
Public Administration 2016 Conference Research Committee

</div>

SETTING OF AUDIT PROCEDURES ON THE AUDITING OF THE FINANCIAL STATEMENTS OF THE MUNICIPALITY

Anna Bánociová, Radoslav Tušan

Abstract: *The papers are about setting of audit procedures on the auditing of the financial statements of the municipality. An audit in the Slovak Republic is currently sufficiently regulated, and is conditional upon its own legal norms of national legislation, standards of Slovak Chamber of Auditors and international EU documents. The first part is devoted to the definition of audit, its historical development, notion of audit in the world and in Slovakia as well as the legislative framework of the audit. General audit plan, audit procedures with a description of the main individual parts is filling the second part. Subsequently, another part contains the audit documentation procedure of audit of individual financial statements for the municipality of Hranovnica. Specific audit procedures should be carried out to obtain the sufficient appropriate audit evidence to formulate findings, which are part of the audit documentation, and on the basis of which the auditor formulates his opinion. The final part summarizes the audit findings and recommendations drawn up for the municipality of Hranovnica.*

Keywords: *Auditing, Financial statements, Municipality.*

JEL Classification: *M41, M42, H83.*

Introduction

The municipality is an independent administrative and self-governing territorial unit of the Slovak Republic. It unites persons having their permanent residence. The municipality is a legal person according to law manages its own income and property. For the fundamental role of the municipality in the performance of self-government is considered the care for the needs of its people and all-round development of its territory. The municipality independently manages and realizes all the tasks related to the management of the municipality and its property. During the performance of municipal activities must be followed all governing laws. Compliance is part of the audit of public administration [1]. Control in Slovakia, its competence and status depended and still depend on the economic and political conditions of the constitutional order of society, as well as on the functions of the political and state authorities. System of control since 1990 in Slovak Republic passed a number of organizational and competence adjustments [2].

Despite the fact that audit is considered more like verifying and not control, it is considered as an additional part of control of government entities. Audit helps especially to fulfill the aims, objectives and tasks of government entities, also provides a systematic, disciplined approach to improve the efficiency of financial management. Last but not least, audit verifies and evaluates the risk management system, it identifies and assesses possible risks related to financial management, and it verifies and evaluates the efficiency, economy, expediency, and effectiveness within public

finance management. Audit verifies the accuracy and verifiability of carrying out of financial operations; it verifies and evaluates the reliability of reporting. It also verifies the completeness, correctness and availability of information relating to financial transactions; it verifies and evaluates the level of information, the level of protection of property and the level of prevention of irregularities and fraud. Audit examines and evaluates the functionality and security of information systems as well as the completeness and adequacy of information that includes information system, and also verifies that the measures taken to remedy the shortcomings and making recommendations to improve financial management and risk management [3].

1 Formulation of the issue

1.1 Historical development of audit

The first beginnings of the need to inspect commercial transactions date back 3,000 years BC. In Egypt, when the individual accounting cases were writing down on clay plate. At the same time in Mesopotamia the engraver fulfilled the function of accountant. To manage and control Greek public finances allowed ten public accountants, who were selected by a lot [4]. Cities in northern Italy are considered as forerunners of national control authorities, where verifying took the form of a comprehensive learning. Verification found its place not only in public finances, but this need has intervened also private management. Gradually it began to show that the verification of the accounting transactions must be conducted by a qualified person, so in 1581 in Venice was established professional association of auditors. Verification thus became the fixed component of the Italian economy [4]. British Companies Act from 1884 began creating a modern form of legislation related to the audit. According this, it was appointed one or more shareholders who oversaw the correctness of the balance sheet of the company compiled by director. Shareholders also acquired the right to verify reports and books of companies. Copies of the balance sheet and the accompanying report were distributed to all shareholders and the originals were archived in the register of joint-stock company [4].

A publication "Unified Accounting" (later considered as Memorandum of Auditing of the Balance Sheet) was published in the report of Federal Reserve in 1917, as the first modified the audit in USA. The financial statements were brought to the attention in 1929, when the report of Verification of financial statements dealt with the income statement. US companies with assets of more than 5 million USD and with more than 500 shareholders are also now required to audit their financial statements, by Law on Securities and Exchange Commission from 1934, and also must submit a report to the Securities and Exchange Commission. American Institute of Certified Public Accountants issued generally accepted auditing standards in accordance with which the audit must be conducted in the US [5].

1.2 Development of audit in Slovakia

Auditing activities in Slovakia dates from 1989, when the decree of the Federal Ministry of Finance on the verifiers and their activities took effect, according to which had audited the financial statements for 1989 year. This Decree was replaced by the Act no. 73/1992 Coll. on Auditors and the Slovak Chamber of Auditors (SKAU), adopted by the Slovak National Council. After numerous political and economic changes and understanding the significance of audit activity came into force Act

no. 540/2007 Coll. on Auditors, Audit and Supervision of Auditing [6]. In 2015, the Act no. 423/2015 Coll. on Statutory Audit was adopted [7].

The audit in the Slovak Republic is thus subject to its own legal norms of national legislation, norms adopted by SKAU, international documents and standards adopted by EU [8].

In November 2004, the General Assembly of SKAU declared resolution valid from 2005, according to which, when the audited entity established in the territory of the Slovak Republic must comply with international auditing standards issued by the International Federation of Accountants. Also, auditors must perform their activities in accordance with the Code of Ethics adopted by SKAU, which determines all activities undertaken by auditors [9].

To sum up, the audit is a systematic and objective process of assessment and obtaining evidence containing information on economic events and activities, in order to assess the scope of the conformity between the conditions and the detected information and notify outcome to relevant stakeholders [9].

1.3 Audit of financial statements of public sector entities

All public administration entities (cities, municipalities, and higher territorial units, contributory and budgetary organizations) are required under the Accounting Act no. 431/2002 Coll., to compile the individual financial statements as of 31.12. of the current year, which must be processed until the first of February of the following year [10].

According to the §9 of the Act. No. 369/1990 Coll. on Municipal Organization and §9 of the Act. 302/2001 Coll. on the Self-Government of Higher Territorial Units, the individual financial statements of cities, municipalities and higher territorial units must be verified by the auditor. These public administration entities have also the obligation to issue an annual report which conformity with the individual financial statements of the entity must be verified by the auditor [1], [11].

Audit of the individual financial statements of the entity of public administration differs from the audit of financial statements of the business entity mainly in the framework of financial reporting, regulatory environment of management and operation of the entity, and in the more extensive laws limiting auditors of financial statements [8].

2 Methods

Process of audit of financial statements consists of several phases [8]. These phases we could specify in framework as follows:

- Work carried out before the conclusion of the contract:

  Risk assessment of the contract and response on it.

  Setting up the conditions of the contract.

- Preliminary planning activities:

  Acquaintance with the client's business.

  Acquaintance with the control system.

Acquaintance with the accounting system.

Performing of preliminary analytical activities.

- Setting the audit plan:

Determination of the level of materiality for planning.

Risk assessment.

Planning of audit procedures.

Planning of tests of internal control.

Planning of substantive tests.

Summary and discussion of the audit plan.

- Work carried out during the audit:

Carry out tests of reliability.

Carry out substantive analytical procedures.

Carry out tests of details.

Evaluation of the results of substantive procedures.

- Conclusion and audit report release:

Evaluation of the financial statements.

Evaluation of the follow-up events.

Acquiring of the declaration of the management.

Preparation of summary of conclusions of the audit.

Audit reports.

Because of the wide range of audit procedures and limited range of paper we will focus on the essential stages of establishing of audit procedures.

3 Analysis of the issue

3.1 Contract acceptance

The fundamental objective for the auditor at this stage is to inquire about the terms of the contract and determine whether the audit process will be in accordance with all laws and standards. The auditor evaluates the relevance of his previous experience and skills to audit the individual financial statements. Improper acceptance or rejection of the contract can have serious effects on the course and outcome of the audit and to issue the auditor's report and therefore on its reputation, so the pace of acceptance respectively rejection of the contract is considered as a key [12].

The procedures performed by the auditor in this phase of the audit can be divided into the following segments of audit procedures related to the preliminary risk assessment of the contract, preliminary risk assessment of the client, the existence of unconditional demands for performance of the contract, and evaluation of relevant ethical conditions. Even without the client's requirements, the auditor of the financial statements of the higher territorial unit, municipality or city is obliged to check the use

of repayable sources of financing according to the rules, to check the development and status of debt, to check management and other financial resources, and also to check the compliance of the management of budgets and laws relating to financial regulation for local authorities [8].

3.2 Preparation of the overall strategy and audit plan

Properly planned audit with good strategy the auditor ensures assumptions that the audit will be carried out effectively and in accordance with International Standards on Auditing [5]. During the formation of an audit strategy which shall include the timing of, the substantive scope and method of management audit, the auditor uses such procedures:

- Assessment of important factors that is important to the auditor during audit management, such as the use of internal audit, geographical breakdown of the subject, entity's equity participation in the establishment of the organization.

- Establishing the timetable for the various stages of the audit.

- Determine the specifics of the audit during audit of the subject of state administration, respectively municipalities, and higher territorial units.

- Evaluate the importance of the information gathered during the preliminary activities [8].

3.3 Realization of risk assessment procedures

An important part of the auditor's work, following a thorough knowledge of the entity is to identify and assess the risks of material misstatement that most often arise due to fraud or error in the financial statements [8]. Because the auditor has to properly assess the risks of material misstatement, he must be thoroughly familiar with the subject, its internal control environment and, therefore, perform the following audit procedures:

- Reconnaissance of assets and observation of procedures of entities.

- Analytical procedures for financial and non-financial information.

- Interviews with the relevant persons of the subject [12].

3.4 Auitor's response on assessed risks

The auditor of individual financial statements aims to acquire adequate and sufficient audit evidence regarding the risk of material misstatement, through the implementation of audit procedures [5]. It is a test of the effectiveness of internal controls and use of substantive tests in verifying account balances respectively transactions [12].

3.5 Evaluation of the auditor's evidence, the conclusion of the audit and the auditor's report

Due to the fact that the final opinion on the audit of financial statements of the entity's auditor obtains on the basis audit evidence, their correct evaluation is an important part of the audit. The auditor must evaluate the situation when

inappropriate and insufficient audit evidence was received or assesses the impact of material misstatement [12].

The auditor should continually assess the sufficiency of audit evidence obtained through applied audit procedure. If the auditor concludes that the evidence is insufficient, he must procure a written declaration of the subject to support the confirmations of the findings of facts or to extend the sample of analyzed realities, or to apply a substitute verification procedure [12].

Conclusion of the audit relates summarizing of the findings during the audit, impact assessment of irregularities at the level of materiality, the confirmation of conformity of the relevant reporting framework with the financial statements, and written communications with the management of entity.

The auditor forms his opinion based on an assessment of the facts arising from the findings of the audit. His opinion can be unmodified or modified:

- Unmodified (financial statements are prepared in all material respects in accordance with the applicable reporting framework).

- Modified (conditional opinion, negative or rejection of opinion) [8].

3.6 Verifying the compliance of individual financial statements with individual annual report

Municipalities and higher territorial units, which are required to audit the financial statements, are also required to prepare an annual report. This obligation is regulated by §199 paragraph 1, point c) on Act of Accounting referring to special regulation. Contributory and budgetary organizations established by the municipality, town or higher territorial units are not required to audit the financial statements, hence do not have to compile annual reports [10].

Act on Accounting (§20) generally determines the content of the annual report and requires to provide a true and fair view on subject of accounting. The entity therefore must make an annual report with relevant information available to the recipient of the annual report [10].

The compiler of the annual report must take into account while it's elaborating their specific features, and include required specified three parts by law in the annual report: the financial statements, the auditor's report and the textual part [8].

Verification of conformity of individual financial statements with the annual report is to be completed within one year from the end of the year. Text section focuses on the auditor's summarizes the information about entity and their compliance with the entity's financial statements. The information contained in the text part usually take the assertions form, therefore, auditor is looking for relationship in the verification of the financial statements. If the annual report contains tables or charts, information processed in them shall be audited with the audit of financial statements [12].

4 Discussion

Municipality Hranovnica is subject to statutory audit duties according to the Law on Municipalities. In spite of this fact, we have established the basic audit procedures to audit of financial statements in order to fulfill the main goal of paper.

4.1 Acceptance of contract

In order to accept the contract, upon the initial acquaintance with the municipality, must be answered the questions in Table 1. These qeustions assess the adequacy of acceptance of the contract:

Tab. 1: Risk assessment of accepted contract

	Evaluation of ongoing risk of contract	Yes/No
1.	Has auditor sufficient ability to manage client demands?	Yes
2.	Is accounting of entity conducted in accordance with all legal standards?	Yes
	Evaluation of ongoing risk of client	
3.	Has entity control or decision-making mechanism?	Yes
4.	There are no illegal activities of the management of the entity.	Yes
5.	There are no lawsuits against the client.	Yes
6.	There is no disclosure of petitions and complaints of citizens or of corruption scandals.	Yes
7.	Respects the entity laws regulators?	Yes
	Unconditional requirements for performance of the contract	
8.	Did proclaim leading persons of the entity that are aware of their responsibility for the delivery of all the necessary information for preparing financial statements of the entity?	Yes
9.	Did proclaim leading persons of the entity that are aware of their responsibility for the correct implementation of internal controls?	Yes
10.	Did the management announce that the financial reporting framework is convenient?	Yes
	Assessment of important ethical conditions	
11.	Does the auditor conduct sufficiently appropriate professional activities that meet professional standards?	Yes
12.	Have the auditor professional skills at the level sufficient to bring qualified professional client service?	Yes
13.	The auditor does not perform for the client other services.	Yes
14.	Court does not exist between client and auditor.	Yes
15.	Profit for the auditor for realized audit does not form a significant part of his income.	Yes
16.	The auditor does not belong to the leading persons of the entity.	Yes
17.	Long-term cooperation does not persist between client and auditor.	Yes
18.	No personal or family links exists between the client and the auditor.	Yes
19.	No business connection exists between client and auditor.	Yes
20.	Does not have the auditor a significant direct or indirect interest in the financial situation of the client?	Yes
	May be the contract signed on the audit?	**Yes**

4.2 Preparation of the overall strategy and audit plan

Key issues of audit include verification of accounts and evaluate whether they provide true and fair view of accounting. There also we advise checking the financial records and procedures and verify compliance, laws, procedures and rules established in the legislation. The intention is to test the systems to determine their reliability and effectiveness. Finally, to assess the feasibility and legality of the underlying transactions.

Given that that this is a small entity, we will be in the implementation of appropriate audit procedures during testing types of transactions and events in the audited period, balances at the end of the period, and the presentation and publication, take into account the claims of their completeness (C) existence (E), accuracy (Ac) and appreciation (Ap).

Determining of the materiality level we set out the likely margin of error affecting users of financial statements. (e.g. media, general public, Parliament, the authorities of the Member States, the Commission and other EU institutions). When the level of materiality is lower, the more needs audit testing. The Court of auditors recommends the value of 0.5 to 2%, but it is generally used by 2%, thus this value has been chosen. As the basis for calculating of the absolute value was elected the total property amount, which we consider to be best suited to the nature of the entity [12].

$$\textit{Materiality in EUR = 2\% of total assets} \tag{1}$$

Determination of audit risk (AR) helps us to define the amount of audit work that is necessary to achieve the required assurance for our conclusions. Due to the fact that it is not efficient to collect all audit evidence to determine any differences and to have such 100% sure, we also decided based on the recommendation of the Court of auditors, to set 5% audit risk, which consists of natural (inherent) risk, control risk and detection risk [12].

$$AR = IR \times KR \times DR \tag{2}$$

$$DR = \frac{AR}{(IRxKR)} \tag{3}$$

$$DR = \frac{0,05}{(0,6x0,15)} \tag{4}$$

$$DR = 0,55 \tag{5}$$

Detection risk means that auditor during the audits does not reveal deviations, and for which we determine the overall audit risk (5%), inherent (60%) and control risk (15%). The value of detection risk was calculated at 55%.

4.3 Assessment of procedures and risks evaluation

In the following procedures it comes to recognize risks, works procedures, and the audit findings of intangible assets, tangible assets, financial assets, inventories, receivables, accruals, equity, liabilities, provisions, transfers, revenues and expenses. Considering the limited scale of article we establish procedures for the verification audit only in area of tangible assets.

During verifying of tangible assets (TA) is not necessary to examine its undervaluation, it will be reviewed by other accounts (revenues from activation

or purchase commitments), but it is important to detect following errors which could lead to an overestimation of tangible assets [5]:

- Incorrect overvaluation.

- Undervalued depreciation.

- Undervalued disposals of tangible assets.

- Overvalued additions to tangible assets.

When tangible assets are auditing, it is necessary to establish the existence of significant financial lease contracts and restrictions (easements) on disposal of property. Also, verify the existence, ownership rights (contracts of sale, documents) and property insurance. Summary of findings is in Table 2.

Tab. 2: Auditing procedure of tangible assets

	Auditing procedure	Assertions	Findings
1.	Reported TA items agree with the general ledger.	C, E	Yes
2.	Opening balances of tangible assets ledger are the same as closing balances from the previous year.	C, E, Ac	Yes
3.	Changes in TA from the previous period are explained.	C, Ac	Yes
4.	Register with an initial value of TA, its cost, accumulated depreciation, depreciation and final value of the date of items from the list of assets in use is conducted properly.	C, E, Ac, Ap	Yes
5.	An itemized list of additions at cost to date of putting into use and depreciation groups is free of material misstatement.	C, E, Ac	Yes
6.	An itemized list of TA decreasesis with the residual value, the method of disposal and sale price in the event of a sale of assets is free of material misstatement.	C, E, Ac	Yes
7.	An itemized list of accounts of assets in the acquisition process and advances paid for acquisition of property free is of material misstatement.	C, E, Ac	Yes
8.	Property rights with TA are verified.	E	Yes
9.	Existence of TA is verified.	E	Yes
10.	The cost of purchased tangible assets agrees with supporting documentation.	Ac	Yes
11.	Purchases of tangible assets are properly classified as capital expenditure.	E, Ac	Yes
12.	Disposal of TA has been approved, implemented	C, E, Ac	Yes

	and properly accounted for.		
13.	Documents recording the loss of tangible assets and liquidation reports, issued invoices, records of cash received, minutes of meetings and correspondence management, register of tangible assets are properly maintained.	C, E, Ac	Yes
14.	An itemized inventory list of tangible assets in the acuisition process agrees with the general ledger.	C, E	Yes
15.	Documentation of the existence and valuation of tangible assets is correct.	E, Ap	Yes
16.	TA in testing is not used and may not be put into use or depreciated.	Ac	Yes
	Account balances of tangible assets in the balance sheet gives a true and fair view.		**Yes**

Source: own

It is necessary to verify in the following procedures that:

- Tangible assets purchased by municipality are properly valued at cost for which the assets were acquired and the costs related to their acquisition.

- Tangible assets created by entity are valued at own costs.

- Tangible assets acquired free of charge are valued at fair value.

- Depreciation method of tangible fixed assets is identical to the depreciation plan.

- Change in accumulated depreciation is related to the amount of annual depreciation.

- Differences in accounting are explained by relevant person.

4.4 Evaluating of auditor's evidence, conclusion of the audit and the auditor's report

Hranovnica municipality has a functioning internal control system. The main controller of the municipality carries out continuous control under the Act on Financial Control and Internal Audit. The activity of the municipality is during the year also controlled by the municipal council.

During the audit of the individual financial statements of municipality Hranovnica in 2015 were identified no material deficiencies in the accounting system. The entity complies with the accounting rules and accounting policies and applies them consistently. All financial documents such as general ledger, all statistical reports, the book of incoming invoices, book of sent invoices, lists of each items, cash book, diary and others, fulfill all the formalities in accordance with the Law on Accounting. Accounting is kept accurate, complete and proven in accordance with the laws.

For all items was verified continuity of transfer of closing balances from previous financial year for the initial balances of the period under review. Closing balances

were reviewed physical and book inventory and then compared with the ending balances to the general ledger. Individual transactions were correctly valued, recognized and classified. There were no significant inaccuracies. Changes in individual items compared to last year were sufficiently explained. On the basis of the audit procedures and findings resulting therefrom, it can be stated that the items of tangible assets in the balance sheet provide in every case true and fair view on subject of accounting.

During the audit were not identified any trends suggesting fraud in the entity and also has not identified circumstances or events threatening the ability of an entity to perform continuously its activities.

During the audit, some errors were found which not deemed material, but we recommend municipality to correct them in the foreseeable future:

- For a number of invoices it is not clear who the good or service ordered, we found missing orders, and also lacking the purpose of ordering. Missing signature on receipt by competent persons the goods and services taken over. We also noted the absence of approval from a superior officer for payment of invoices.

Recommendation: to add the purpose of the order to invoices, indicate the person the goods or services ordered, as well as the approval of superiors for the payment of invoices.

- During the audit, we found the missing document - travel costs. Missing document under which it would be possible to define a way of reimbursement of meal allowance, for example. Another missing document was educational course description or invitation on the course.

Recommendation: to add the missing document.

- Missing assignment the budgetary chapter on the cash expenditure receipt when payment of invoices in cash, since the expenditure was charged before posting invoices.

Recommendation: except for incorrect posting there is a problem to determine in advance sufficient cash to be able to cover such unforeseen expenditure; we propose the complete cancel of payments of invoices in cash.

Based on the findings resulting from the audit procedures performed, we concluded that the auditor may issue an unmodified audit report without reservation.

Conclusion

Process of the audit work can be divided into five phases, which consist of acceptance of the contract, formulating of strategy and audit plan, procedures of risk assessment of audit, the auditor's responses to assessed risks, evaluation of evidence, the audit conclusions, and the auditor's report. Each section contains one specific audit procedures to be carried out to obtain the sufficient appropriate audit evidence to formulate findings, which are part of the audit documentation, based on which the auditor formulates its opinion.

Audit of the financial statements of the municipality Hranovnica in 2015 consists of an acquaintance with the functioning of the municipality, its control and accounting system, then, after considering the factors for acceptance, acceptance of a contract. After signing the contract was made a plan and audit strategy comprising calculating audit risk, materiality and audit plan. Subsequently were performed audit procedures to test the fields of intangible assets, tangible assets, financial assets, inventories, receivables, accruals, equity, liabilities, provisions, transfers that resulted in findings confirm true and fair view on the items reported in the balance sheet. Due to the limited extent of the contribution were documented audit procedures in area of tangible assets.

The final part of the paper includes a summary of audit findings and recommendations drawn up for the municipality. During the audit were not disclosed significant irregularities, so the recommendations for municipality dealt with replenishment of missing cash receipt, cancellation of invoices for reimbursement in cash and amendments purpose of the order, the idnetification of person required to present the goods or services ordered, as well as the approval of superiors for the payment of invoices. On the basis of the audit procedures and findings derived from them, the auditor may issue an unmodified audit report without reservation.

Acknowledgment

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THE IMPORTANCE OF FINANCIAL SCIENCE TO THE GENERAL GOVERNMENT BUDGET OF THE SLOVAK REPUBLIC IN THE 21ST CENTURY

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Abstract: *One of the basic economic categories that accompany man from his birth through life to its end, is finance. The team of authors explains the economic and partly political phenomena that have been analyzed and examined by many leading economists of the 20th century and their followers. We are thinking about the historical context of the emergence and development of financial science in terms of the very concept of finance. We believe that it is important to correctly identify and understand current and future economic, political, demographic and social trends that transform the overall character of the global financial system, which includes the European financial system, in response to future needs in the provision of all financial services. Development of the company in the form as it is currently, we see walking through the centuries many important and revolutionary changes which have influenced and shaped the economic, political and cultural principles. Undoubtedly the most important principles and include different forms of existence and functioning of the financial sector. Revolutionary period in which they were born many innovative ideas and solutions to the functioning of the state economy, was a period of transformation of the feudal society to a capitalist society. During this period, gradually they formed also institutes such as the state budget, taxation, government bonds and public debt, but also the public administration.*

Keywords: *Financial science, The role of financial science, Government, The general government budget, Public administration entities.*

JEL Classification: *H0, H1, H7.*

Introduction

1 Science as a form of social consciousness

Science as a set of activities we used to getting to know objective reality and the laws of nature and community functioning. Science, along with ethics, law, religion and ethics in the form of social consciousness, which take us closer to the realization and finding connections and interrelationships in the system [2].

1.1 The financial position of science in social sciences group

„...Takž jest prvním úkolem vědy finanční poznati dané poměry finanční, sebrati a seřaditi material skládajíci se z poznaných skutečností, obecné pojmy abstrakcí stanoviti, úsudky a závěrky činiti a souhrn nabytých poznatků v soustavu uvésti a tak to, co finančního existuje a co kolem sebe vidíme, k jasnému vědeckému vědomí přivésti...“[3]. Disclosure of Financial Science, based on the fact that science is generally divided into natural (empirical), technical (mathematical) and social (arts) is that it is an integral part of the social sciences, which have their special position

in economic sciences and a part of economic sciences is financial science, which was formed in the early 20th century, and historic role in this area was introduced by Rudolf Hilferding, a German Social Democrat, who, in his book Finance Capital (Vienna, 1910), first used the term finance, financial. Financial science, like other scientific disciplines in the past, will continue evolving, which would be accompanied by changes. Financial science as part of Economic Sciences was formed in early 20th century. The most important representative of classical political economy Scotsman Adam Smith (1723-1790), is considered the father of economics but in its essential work Inquiry into the Nature /1776/ and Causes of the Wealth of Nations, he never used the term finance, financial. Throughout that period we meet with terms such as tax, loan, taxation, profit, state budget, money, price, capital, which today are understood as purely financial. Opinions on Adam Smith followed up, for example, by Karl Heinrich Marx (1818-1883) German philosopher, political economist, social scientist, journalist, critic of classical economics. In its basic scientific work of Capital, like other economists he uses the term finance, financial. A very important historical role was played by Rudolf Hilferding (1877-1941), who introduced the name in Union financial capital for co-branding bank, loan and venture capital [4]. In economic science technical term finance was introduced: „Právě jmenované slovo finance jest zplozencem středověké latiny a pochází nepřímo od slova finis, konec, přímo od časoslova finare, to jest zakončiti, vypořádati, platiti; financia (vedle toho též financio a finatio) značilo plat peněžitý a obzvláště peněžité příjmy králův.“ [3]. The introduction of the concept of funding, however, has caused some problem in understanding plus current only professional category of money [5, 6]. Even today, especially with the representatives of practice in the media and in the press we encounter expressions …„ we have a lack of funds, we lack funding, to obtain the necessary funding, we need to save finances”… In all these cases, it is probably the lack of cash money. Finance equated with money has spread especially in recent years under the influence of inconsistent translation of literature in the English language. In English, the term finance = Finance, as well as the concept of money = Money exists only in the singular, they are not propagated as nouns in English. According to some authors, the concept of „ finance” derived from Latin „finer“= pay. In the light of the most used words finance, financial, finatio and finator in old documents of the 13th and 14th centuries in France. But it was always the payment of the debt, penalty, liability or interest on loans. Money is starting a unifying moment as a Category of Finances. Particularly their movement, which forms the general social function. Money as a source of wealth not only fulfills its traditions, especially economic functions, but will also have a certain intermediate expression to the source of power and power alone, which also spawned wealth and, of course, money. [7]

2 Methods

Supporting the processing method is the observation of the issue, which consists of studying and becoming aware of the available literature dedicated to each developmental period. Selection methods we applied in the selection of core circuits and the problems we work pay increased interest. Followed by an analysis of selected economic theories, their main leaders and relevant problems to pay, it is helped to a deeper understanding of the fundamentals of economic phenomena and relations that prevailed at that time. Another important method that we use at work is the

comparison of a comparative analysis, which enables transparent manner comparisons between economic trends, institutions and circumstances of their creation and development. We used it also for the analysis of historical and archival materials. They were also the methods of induction and deduction, especially in the formulation of conclusions. In our contribution we used three phases of empirical cognition - the preparation, implementation and processing. In the preparatory phase, we found that our research will probably be able to solve, if we have enough information, data and knowledge by observing the historical context in relation to future trends in the field. Gradually, we are planning workflow, we have created a way to achieve results. In the implementation phase, we prepared a transparent manner for processing information obtained from the study of domestic and foreign literature. The processing phase consisted of verbally formulated texts and to draw conclusions. In the future, however, we are considering what further learning is necessary for us to specify the acquired knowledge, or in order to extend its applicability to other phenomena or objects.

3 Analysis of the problem

3.1 Financial justification of science, the way forward in the historical context for the general government budget of the Slovak Republic in the 21st century

Efficient public administration should be a matter of course in any mature democratic society. Its representatives (whether elected or appointed) are responsible for the actions of the authorities, organizations and institutions, umbrella management of public affairs, and the success or failure of government policy which is reflected not only in the economic growth of countries or regions, but also in the electoral process, the outcome is a reflection of satisfaction or dissatisfaction of citizens with meeting needs in the general interest [1]. Based on that observation, the authors want to point to highlight the importance, significance, respectively, the financial justification of science, the way forward in the historical context for the general government budget of the Slovak Republic in the 21st century, which can be considered just in a broad historical context as a strategic tool by which state - government manages the national economy as a whole.

3.2 The birth of the modern public administration

In most advanced European countries in the period around 1000 n. l. was the representative of the „administration" the one, who was able to unite under his command a group of gunmen. From historical sources it is known that in the Middle Ages in Europe, there was pervasive state power capable anywhere on its territory to hit against everything that was not in accordance with the interests of theirs [4.5]. Nobility until then checking those who lived on it immediately, thus mainly farmers farming on the land and in varying degrees and urban population, whose autonomy was initially very limited. They only fought alone and manage their wealth, so these activities should not need a monopoly and their „administration" in any way to improve [11]. New prince's elite already had their own people to maintain order, rewarded from their means in the form of contributions of some kind and in cash. They were mercenaries and námedzní /paid/ managers - officials. Power units controlled by chiefs have exhibited almost all features of the modern state with its management. Since the modern state these princely states differed only once. They were to become

private. The situation is the Princely Court in modern society is constantly reproduced in the form of a specific model of power of public administration. The development of medieval towns was carried out with the new access to the report, which was alien to the feudal lords. Urban governance, which saw its greatest development from about the 12th century, differs from a report princes especially that distinguishes public administration and personal power, and according to historical sources having used the concept of abuse of official authority. Medieval France now constitutes a textbook example of centralization of power, when the competition for power has won the company living in Paris, which eventually dominated the rest of France and so the Court, the French kings in the 16th century became a showcase for Europe in those times [11]. The fledgling state already existed, at least in embryonic institutions which were organized and able to collect the necessary human and material resources necessary to deal with large-scale conflict onset of modern times. Those institutions were the army and permanent tax - in France and neighboring countries as a result of the Hundred Years War. The tax, underlying the financing of state power (laid the foundation of public finances), therefore developed rather spasmodic, not based on rational decisions, but according to the needs of the sovereign. Additionally to everything connected with modern society, it is justifying the need for rationality. Under pressure from the state and the royal bureaucracy, cities in Europe have transformed the separate corporations, households, town people on administrative management unit, with elements prevailing over state administration and self-government. Power, economic and social competence gradually assuming special formal organizations of government and so the foundation of modern society - the modern state with its report [6]. Foundations of modern public administration most authors put into the first half of the 17th century. In our conditions, it gives rise in connection with the termination of The 30-year war. [11]

3.3 Public administration of SR as part of European system of National and Regional Accounts 2010

As well as other economic sciences have gradually developed, are developing and will be developing. During this development they arose, creating new economic sciences - at the end of the 19th century, e.g., it constituted economic statistics, in the second half of the 20th century creating econometrics and economic cybernetics. It is well known that in the 20th century physics has seen great development began popping up a new frontier of science, physics - biology (biophysics), physics - chemistry (physical chemistry), physics - Medical (physical medicine), Geology - (geophysics). During the 80s of the 20th century (which is also linked to the end of the Cold War) „let up", because of the reduction in funding research in physics. Many physicists are aware of the fact that economics is a science that deals with human behavior in a world of limited resources and unlimited needs, investigating how different companies are taking scarce resources (land, labor, capital) to meet its needs, have found application in a new interdisciplinary fields economics - Physics. For example, at the end of the 20th century it created econophysics in which physicists suggest a potential take into account the analysis of financial markets through mathematical and physical apparatus and combining suitably methods of physics and macroeconomic modeling. Therefore it is very important to note that financial science as part of economic science, which was formed in the early 20th century, still has not reached some generally accepted concept of division of finances. Authors of numerous

scientific publications indicie their own subjective ideas of structured finance. In our opinion, probably the most objective is based on the breakdown of the financial system in the global economy. The financial system consists of two types of markets and financial relations between them and the market information and market financial assets [9]. The financial system consists of financial market, financial instruments, financial entities, financial services, financial information and financial decisions. Financial market as part of the financial system, along with the market of production factors and market products, constitute the economic system. The economic system is called the national economy, in addition to actors (firms, governments and households) Records of economic sectors.

In the Slovak Republic, following the breakdown of economic sectors of the national economy, is the classification of institutional sectors and sub-sectors in the national accounts according to the European system of national and regional accounts in 2010 as follows:

Tab. 1: Classification of institutional sectors and sub-sectors

S.1	**National economy**
S.11	**Non-financial corporations**
S.11001	Public non-financial corporations
S.11002	Private non-financial corporations
S.11003	Non-financial corporations under foreign control
S.12	**Financial corporations**
S.121	National Bank of Slovakia
S.122	Other financial institutions
S.12201	Other public financial institutions
S.12202	Other private financial institutions
S.12203	Other financial institutions under foreign control
S.123	Other financial intermediaries, except insurance corporations and pension funds
S.12301	Public other financial intermediaries, except insurance corporations and pension funds
S.12302	Private other financial intermediaries, except insurance corporations and pension funds
S.12303	Other financial intermediaries, except insurance corporations and pension funds under foreign control
S.124	Financial auxiliaries
S.12401	Public financial auxiliaries
S.12402	Private financial auxiliaries
S.12403	Financial auxiliaries under foreign control
S.125	Insurance corporations and pension funds
S.12501	Public insurance corporations and pension funds
S.12502	Private insurance corporations and pension funds
S.12503	Insurance corporations and pension funds under foreign control
S.13	**Public administration**
S.1311	Central state administration
S.1312	Regional state administration
S.1313	Local self-government
S.1314	Social security funds
S.14	**Domácnosti**
S.141	Employers

S.142	Self-Employed
S.143	Employees
S.144	Recipients of property and transfer incomes
S.1441	Recipients of property
S.1442	Recipients of pension benefits
S.1443	Recipients of other transfer incomes
S.145	Other households
S.15	**Non-profit institutions serving households**
S.2	**Outland**
S.21	European union
S.211	Member states of European union
S.212	Institutions of European union
S.22	Other countries and international institutions

Source: http://portal.statistics.sk/showdoc.do?docid=1924

Its special position in this structure is held by general government (Central government, State government, local government and social security funds) and public administration has its special position in its budget. From the years 2001 - 2003 are compiled by the moving medium-term budgetary / financial perspective (2002 - 2004, 2003 - 2005, 2004 - 2006, ..., 2017-2019). In 2004, for the first time in Slovakia prepared as the general government budget for the years 2005-2007, subsequently agreed together with the state budget for 2005, said, that the 2005 budget became binding for budgetary management and public administration budget orientation. From 2005 - 2007 the general government budget compiled slidably always for three years - that is, 2005 - 2007, 2006 - 2008, etc. In the financial year 2016 it is ready since August, while the budget calendar year drafts government budget for the years 2017-2019.

4 Discussion

The end of the twentieth century brought changes in the development of European history, society as a whole, as reflected in the economies of individual countries, even those that have undergone a transformation, as well as those that this transformation of the active or Pasove only support or just watch the changes. Europe as a community started expanding, mentioning e.g. the member states of the eastern bloc. The year 2014 was to be identified as the first round – 10th anniversary since the European union expanded from the number of the 15 old countries 10 new member states (Estonia, Latvia, Lithuania, Poland, the Czech republic, Hungary, Slovakia, Slovenia, Malta and Cyprus). Slovakia became a part of this stage in the year 1989 and on1 May 2004 the member of the European union. The European Union has grown in number of inhabitants, as in their expanses, there are also applicants for financial aid and at the same time, contributors to the common budget. The joint budget from its original version has undergone the changes; its contents, structure and scope affects not only the number of its permanent members, potential members (waiting for input), but also global developments. The most significant impact on changing the financing of the European communities assigned to the year 1985, which took the functions of the European commission, under the leadership of Jacques Delors, who made important reforms of the budget and lay the foundations for the introduction of the single currency. As basic element ganges, mark the introduction of British goods in the year 1984, then followed by the adoption of wide-ranging reform of the system of financing

of the budget, which we associate with birth of financial perspective. All these facts should impact on the national economy just through the compilation and subsequent use of the budget of the public administration, which is procedurally linked to the whole area of public finances, which are characterized by a fiscal cash operations. These fiscal cash operations, in most cases, apply as an obligatory way. Paramount position in the area of public finance has a tax law & tax audit. And here emerges in the opinion of the authors of the broad range of questions in relation to the design, compilation, approval and follow-up of the financial process and the entire budget of the public administration, where the development of financial science leaving behind the following tracks. Note one more link, that these questions are connected with theory and also the politics and practice of the subject.

1.This means that, for example, in the theoretical and also practical level we could have a lot to arguments about how we will apply the budget principles or principles and fiscal rules in the budgetary process? Because in the conditions of the Slovak republic are by law governed only the budgetary rules, and even public administration and territorial self-government. Budgetary principles, the principles of the act does not address, the compliance is only the moral aspect.

2. Further, for example, which functions and tasks are in a given budget period highly important, whereas the budget of the public administration as a whole is linked to the EU budget, vertically above but also on the budgets of lower government levels and other actors of the public administration, which are vertical below in relation to the state budget.

3. Who has to have the budget of the public administration more important, the opinion of economists or lawyers? Which is paramount: - the economic or formal - legal aspects of the formation of the budget of the public administration?

4. What subjects should belong to the budget of the public administration? Only those that copy the structure of the Classification of institutional sectors and subsectors in the system of national accounts according to European system of national and regional accounts 2010, or they may be exceptions, this means the company which are typical only for the private sector, for example, and with – in the case of SR for example, the National highway company, and with and the like.

5. How much has an efficiently functioning economy in common, in relation to its own budget, with the public administration of the chapters?

6. Finally, what are the optimal institutional aspects of public administration?

Conclusion

In our contribution, which is based on the project of Historiography financial theories and financial institutions with an emphasis on the constitutional arrangement in the Slovak republic, and prior to its incorporation (2015-2016) we think about ties and relationships of financial science to current issues relating to the budget of the public administration as a whole. Our aim was not to answer all the open issues, but rather to point out that the development of a financial science cannot stop, nor in the 21. century, on the contrary, but also vice versa in the budget of the public administration we find the terms that have been used since the beginning of the 20th century. Also we have witnessed that the global development ever since – after

an entire generation of accompanying economic, political, demographic and social changes, which result in economic ups and downs of the governments, companies and any social groups around the world; innovation, political revolutions, war, social changes. The current period is accompanied by the rapid development of telecommunication technologies, it is the period of the trends of global competition in the provision of financial services. And also we meet just in the provision of these financial services even with many bankruptcies. (The concept of bankruptcy, it is economic in nature and expresses the position of the debtor, who is unable to pay the creditor claims due. The term "bankruptcy" has its origins in the Italian word the phrase "banco-rotto", whose literal translation is broken bench. This term is used for marking buyer, who was unable to pay its debts).We believe that it is important that we are able to correctly identify and understand the current and future economic, political, demographic and social trends that transform the overall nature of the global financial system in response to future needs in the area of financial services. If we understood all the components of the financial system financial markets – money and capital, financial instruments – securities negotiable on the money and capital markets – shares, bills, bonds etc., financial entities (financial institutions – bank and non-bank), within which the dominant position of commercial banks, further this includes, for example, financial companies – consumer, retail, commercial; various financial funds, etc., and financial services – financial term and netermínované contracts, only then we will well control the relationships and ties of the financial system (national and international). And if we have the exact financial information, then we will be able to make the right financial decisions. This is the reason why we should understand the historical context of financial science.

Acknowledgments

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CRISIS MANAGEMENT IN THE AREA OF PUBLIC ADMINISTRATION AND ITS SPECIFICS

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Abstract: *The article is focused on the relationship and especially on the mutually affected methods and procedures used by bodies of the state administration in everyday activities, and methods and procedures applied when solving extraordinary events. Despite the fact that the curent legislation (Act No. 239/2000 Coll., on Integrated Rescue System and No. 240/2000 Coll., on Crisis Management) and the following regulations define competencies and duties of individual subjects integrated in the rescue system more or less clearly, it is important to pay greater attention to the professional preparation of state administration employees. The Act No. 239/2000 Coll., on the Integrated Rescue System defines roles of regional authorities and local authorities with extended competencies which focuse on the collection of significant information, creation of materials and technical conditions necessary for solving extraordinary events and also on the creation of crisis plans. Similarly district commissioners and mayors play mainly a coordination role. When developing individual "models" of extraordinary events, it would be useful to specify their duties. Even university research centers could participate on such a task. It would be also useful to check organizational principals of solving extraordinary events from the functional and systemic point of view at certain spans of time.*

Keywords: *Crisis situation, Extraordinary events and their classification, Standard situations within administration activities, Standard and non-standard management approaches, Prediction of extraordinary events, Methods and procedures of solving extraordinary events in the state administration, Integrated rescue system, Professional preparation of state administration employees.*

JEL Classification: *H79, M10.*

Introduction

The problem of "crisis management"[1], particularly the specifics assessed (and subsequently analysed) from the public administration standpoint, not only represents a very wide problem spectrum, but also a highly sophisticated topical system, the definition of which in the legal sense (i.e. by legal language) is in principle both possible and necessary at the same time. The complexity and breadth of the said topic is both given by the structure of the public administration subjects, and by their mutual relationships and a method of how their sphere of activities is defined, and also by the nature of the "actual" definition of the crisis management itself as method for solving crisis situation and related activities.

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[1] In literature the term "crisis management" is used as an equivalent. Both terms can be considered as synonyms. If we studied the problem of the crisis management not as the method for the resolution of crisis situations, but rather as an arranged set of activities aiming to minimize their occurrence, it would be more suitable to use the term "security management" preferably. Please see Roudný R., Souček R.: Security Management.

The public administration, or more specifically state administration, also include public corpses, the Police of the Czech Republic and Fire Rescue Service, ministries, other central authorities but also local authorities, among which self-administering regions and municipalities with extended powers have an important place in relation to crisis management and resolution of emergency situations. The activities of the public administration bodies are regulated by current legislation and related regulations, therefore it can be said that in an appropriate manner from the common practice perspective. The functions of each of the public administration bodies and general principles of their mutual cooperation while solving the crisis situations arise in principle from their position in the "Integrated Rescue System". Although the existing laws and regulations (Act No. 239/2000 Coll., on Integrated Rescue System and Act No. 240/2000 Coll. on Crisis Management) and related regulations specify more or less clear competencies and duties of entities incorporated in the Integrated rescue System and other potential participants in the resolution and removal of consequences of emergency events, an increased attention in this regard must be paid to professional training of the public administration staff.

Act No. 239/2000 Coll. on Integrated Rescue System characterizes the tasks of regional authorities and bodies of municipalities with extended powers, as well as activities mostly oriented at the collected of significant information, establishment of material and technical conditions for resolution of emergency events and preparation of crisis plans. Similarly, the role of chief executives and mayors is characterizes mostly as a coordination one. However, when elaborating on specific solution *models,* it would be useful to specify their function in more detail. Both research institutions and universities might participate in this. At the same time, it would be useful to asses the organisation principle of procedures for the resolution of emergency events with regard to the functionality and system in some time intervals. Also, it would be appropriate to pay attention to potential shifts in the field of security that are in many aspects the influenced current international situation, but also to an effective utilisation of modern technical means and technologies.

1 Definitions and approaches to problem resolution

If we are to pay attention to the specifics of crisis management in the field of public administration, the specific nature related to the position and character of public administration, not only with regard to resolution of emergency events, but also specifics of its activities under "normal" standard (usual) conditions must be taken into account. If the term "public administration area" is used in this context, this is because the execution of administrative activities by the public administration (usually under standard conditions) goes beyond the system of administrative bodies and institutions as such. Here, the term "public sector" or "public space" may be more appropriate. When performing the "crisis management", i.e. the management functions for the resolution of emergency events,.in many cases the activities of public administration bodies go noticeably beyond this scope, either.[2] Should we accept their division to *instruction-giving* and *care-taking* [1] activities as one of the following breakdowns of public administration activities (or rather their "tasks"), it is obvious that the

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[2] The question is, whether the term "crisis management in public administration" is not more accurate (please see e.g. Rektořík J. et all.: Krizový management veveřejnésprávě (Crisis Management in Public Administration). Ekopress, Praha 2004), or on "performance of the crisis management by public administration".

management (both "crisis" and "standard") are clearly *instruction-giving (authoritarian)* tasks. At the same time, it raises the question what the subject (object) of management with regard to public administration bodies is.

The Act on Municipalities [6], as well as the Act on Regions [7], stipulates (in the opening sections), that both the municipality and region [3] "must take care of the general development of their territory and needs of their citizens." However, this cannot be ensured through putting agendas in place, providing or ensuring "public services", including the best supervision over the compliance with laws alone. The development of a municipality or region (as well as the development of any of the national economy areas or services) assumes active application of management (managerial) methods and techniques, from creating visions and setting strategic goals to controlling activities. Even though, this problem is addressed to some extent in the professional literature, there are still more works dealing with the "management in public administration" rather then "public administration as management" being conceived, not only with regard to the original professional literature, but in the international scale as well. This is also influenced by the approaches addressing the problem of crisis or security management in the area of public administration.

If we look at the management activities of public administration bodies under standard conditions we often encounter suggestions aiming to apply the methods that have been proven and successfully applied in the areas of management in the private sector. In this connection, we must take into account that the position of public administration bodies and institutions performing the management activities is clearly different from the position of management bodies in the private sector. If, by their designation and impact, the management decisions in the private sphere are mostly limited to the relevant business (and only in exceptional cases have a "direct" impact on other entities), management decisions of public administration bodies and institutions usually relate to entities outside the public administration (even though the predominantly follow the "public interest), public sector, they also affect private entities.

Although we have already mentioned that management activities of public administration bodies are, according to the letter of the administrative law, among the instruction-giving (authoritarian) tasks (activities), with the exception of the problem of compliance with the law, the direct ordering competencies of public administration are severely limited in this regard under standard conditions (in a democratic state with rule of law). The reason being, that other than public service entities participate in the performance of specific activities aimed at (general) development of the municipality or region, including those outside territorial competence of the relevant public administration body. Therefore it can be said that under standard circumstances, the public administration bodies when ensuring the development (of the municipality, region or relevant department), are forced to apply mostly not direct (ordering, administrative) methods, but rather indirect, economical and motivational methods. At the same time, the area of the development of the municipality

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[3] The term "region" shall mean the so-called self-administrative regions", i.e. higher territorial self-administrative units" established by Act No. 347/1997 Coll. At the same time, such "regions" are specified in the key acts laying down procedures for the resolution of emergency events, i.e. in Act No. 239/2000 Coll., on Integrated Rescue System and No. 240/2000 Coll., on Crisis Management.

and regions lies at the very heart of the independent sphere of activities of self -administrative bodies of municipalities and regions.

It is these standard methods of management and activities of public administration that represent the main or rather the most extensive scope of activities by public administration bodies. If, as part of the activities that may be identified as managerial, given their nature, the methods of "indirect" management must be predominantly applied (seeking the consensus of interest, economic motivation), in which the experience from the private sector ,may be effectively used (similarly as with the majority of "internal management" of public administration institutions), with regard to the management of agendas and execution of the majority of public administration task in delegated competence, the procedure is usually specified in applicable laws and regulations. For the public administration as a whole, this modus operandi is so common and typical that the literature may include the characteristics, according to which the "public administration involves well-established , routinely repetitive activities within previously given regulators"[3]. The aim of this paper is not to comment on or argue with the characteristics of public administration above, but only to note that the performance of crisis management by the public administration defies the said characteristics to great extent.

So far, we have assessed the position and functions of public administration management activities under standard conditions and the performance of other usual (again standard) administration activities. Here, standardized, highly formalized and predictable (i.e. that may be a priori influenced) prevail to considerable degree. To some extent, this creates assumption to the establishment of some management algorithms that may changed (if applied successfully) in mechanical stereotypes that may affect approaches to resolution of situations that may be identified as "emergencies".

2 Approaches to characteristics and resolution of emergency situations

In the literature, we often encounter an equivalent use of the terms "emergency event" and "crisis situation". We believe that it would be useful to differentiate them: in certain context, the term "crisis situation" may be considered a "broader" one in some sense[4], however in general context, the "emergency event" may be considered a broader one[5]. (Not every "emergency event" must reach the "crisis situation" phase.) When the term "emergency event" is used by us, we use it to refer to non-standard situations, or "crisis situations" respectively, that are not related to the external threat to the state, and these mostly concerned natural disasters or industrial accidents (including the transport ones). Emergency events caused by the failure of elements

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[4] The term "crisis situation" is defined in Act No. 240/2000 Coll. under Section 2 (b) using the term "emergency event". However, the question is whether the state under attack situation, being a "crisis situation" per se, could only be referred to as the "emergency event".

[5] Although, we may find some classification of "emergency events" in the literature "(Please see e.g.. Horák R., Danielová L., Kyselák J., Novák L.: Průvodcekrizovýmplánováním pro veřejnousprávu (Guide to Crisis Planning for Public Administration). Linde, Praha 2011, p. 430), this term is not generally clearly defined. According to the text of the law, the definition given in Act No. 239/2000 Coll. is the definition "for the purposes if this Act". However, it is clear from the classification of "emergency events" in the said publication that the authors use this term in much broader sense.

of the public administration management system may be a special subset. In this sense, our understanding of the said term goes along the lines of the definition of an "emergency event" specified in Act No. 239/2000 Coll. "For the purposes of this Act, an emergency event shall mean harmful effects of elements and phenomena caused by the activities of human beings, forces of nature, and also accidents that put lives, health and property or environment at risk and that require rescue and disposal works to be performed."[8]

In this connection, particularly with regard to the selection of optimal methods and procedures of crisis management, an identification of the emergency event phase when it starts having clearly the character of a crisis situation is absolutely critical. This happens when the scope of emergency event severely extends and if the persons, material values (specifically the "core" infrastructure") are put at increased risk. In the cases above, the emergency event may not be resolved by using standard methods that are available to public administration bodies (higher self-administrative territorial units, municipalities with extended powers), or the means of Integrated Rescue System. In specific case, the crisis situation is determined by declaring the crisis situation by public bodies as specified by the relevant legislation. (For more details please see [5] p. 82nn.)

With regard to the classification of emergency events, we may accept the classification given in the above mentioned work of the collective of authors "Guide to Crisis Planning for Public Administration".[2] The work mostly deals with the division of emergency events by causes that bring them about, or by the environment, in which they occur. Such approach to the classification of emergency event undoubtedly provides good basis for the determination of competencies of each of the public administration organs and institutions and the share of the relevant units of the Integrated Rescue System(Please see Act No. 239/2000 Coll.). At the same time, it may serve (and probably serves) as the basis for the formation of the crisis planning system that may create optimal conditions for the resolution of real situations.

From the perspective of certain methodical approach to the established of long-term prerequisites for a successful strategy of the crisis management, we may also consider another approach to differentiation of the types of emergency events. If we accept the definition of the emergency event specified in Act No. 239/2000 Coll., emergency events may be differentiated by whether or not their result may or may not be "influenced". In the first case, we may effectively "eliminate" their cause and if they occur, we may take measures that will prevent them from reaching the "*crisis* phase (*crisis situation* stage). These types of emergency events include those that are caused by (have their causes in) "human activities". In these cases, a wide range of both technical and technological and organisational procedures and measures can be used. Therefore, thorough monitoring of and supervision over the compliance with technical, technological and also organisational standards and regulations, but also regular evaluation of experience and initiative work regarding their improvement and optimisation are an integral part of the standard activities of public administration bodies and institutions.

The situation with regard to emergency event that originate in what is referred to as "natural disasters" in the definition above is different. In this case we may make a distinction between the events the origins of which (sometimes with a high degree

of probability) may be predicted in principle, and events the predictability of which is excluded. In case of predictable events, material and technical-organisational prerequisites for the implementation of the specific "crisis plan" can be put in place and adjusted accordingly on the basis of he current legislation and related regulations.[6] The analysis of experience acquired in the resolution of cases that have actually occurred. will allow to identify symptoms that preceded the occurrence of the emergency event, or signalled an option or probability of its occurrence. It is their occurrence that allows to put an optimal time schedule for the preparation for their resolution in place, if identified in timely manner.

The legislation and related standards create optimal conditions to prepare and put real measures in place. However, their purposeful application is in the hands of staff members and institution of designated public administration and other bodies (Please see Act No. 239/2000 Coll. on Integrated Rescue System). The quality of the preparation and creation of plans for the resolution of emergency events, as well as the creation of conditions for their implementation, is significantly influenced by organisational principles, working tempo of the relevant administrative bodies, as well as by the quality and professional expertise of their staff members. This will bring us to address the issue of education and professional training of those who are involved in the preparation and implementation of everything which is required for the resolution of "emergencies".

The issues of the *crisis management* or resolution of *emergency events* have been included in the number of training plans to educate the public administration staff members for a relatively extended period of time and there are also may courses specifically focused on this problem. However, the creation of standard university study programs providing instruction to public administration staff members (even though several positive exception exist) is not at the centre of attention. Despite the fact that, as opposed to other activities of public activities, this problem is a very specific one, it would be appropriate and beneficial with regard to the position and function of the public administration, that also staff members of public administration bodies and institutions who are not directly involved in its resolution would become familiarized with the problem (at least on high-level).

The emergency events where the predictability is severely limited or entirely excluded are those that originate in the area of *natural elements*. In this case, we may proceed to prepare measures eliminating and minimising their negative effects on inhabitants, nature and environment and economy as part of the crisis planning. The system of preparation of these measures is given by the legislation and related regulations above. However, these preparations represent more or less critical and principal measures that mostly affect the general rules of procedures of individual administration bodies and institutions. In this case, the legislation regulates the competencies, duties and mutual relationships of bodies and institutions that are incorporated in the Integrated Rescue System. When resolving these emergency events, proven methods and procedures that may be in sense regarded as standard may be applied in many cases. However, it is their *predictability* (with regard to both their character and place and time of occurrence) that provides room for own initiative

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[6] The problem of the creation of crisis plans and crisis management is dealt with in the publication of Roudný R., Souček R.: Security Management. Univerzita Pardubice, Pardubice 2014, ISBN 978-80-7395-864-0.

and in a way for individual activity (within the boundaries given by laws and regulations and general rules).

So far, we have dealt with the "emergency events" that are for the most part caused by "forces of nature", even though in many partially by human activities as well. It is mostly the human activity, including but not limited to planned and intentional activities (as opposed to spontaneous activities), where less standard method and techniques to reduce the probability of their influence to the occurrence of emergency event) may be applied. However. their application is subject to both a thorough analysis of each of the real process and the adequate level of professional competence, high qualification and last bot not least personal characteristics of the relevant staff members.

In the very narrow sense, the problem of crisis management is related to risk management (not exclusively in the cases mentioned). The methods and procedures, applied as standard in the area of risk management, can in principle be applied for the analysis and creation of prerequisites for optimal addressing of emergency situations. The methods of identification of potential risks and creation of conditions for elimination of their occurrence), as they have been created in the methodology of the current "risk management" are, following some modification, applicable to planning and creation of measures for the reduction of probability of the occurrence of emergency events and elimination of negative effects that may be caused by them. In this regard, the facilities (university and research), dealing with the management in public administration or management theory in a narrower sense may make significant contributions.

3 New aspects in the security area

At present, we more frequently see cases (and it cannot be ruled out that this trend will continue) of "emergency situations" that cannot be directly characterised as "threats to public order",or "safety of inhabitants" brought about by external factors (by events outside the territory of the Czech Republic), but are significantly affected by these circumstances. Here, we mostly mean the actions and (so far mostly one-off) activities of social entities, the operations of which we encountered in the previous years, but their intensity and level of potential negative impacts to public order and general security is increasing presently.

The "simulated assault (invasion) of radical islamists" prepared by a group of "radical islamists" of doc. Konvička on August 21, at the Old Town Square in Prague (of which the Prague City Council has been duly informed) may serve as an example.

The question is, whether the resolution, or minimising or eliminating or risks and negative impacts of the social emergency situations, may be entirely left within the competence of "security forces" as part of the current system , or whether other public administration bodies and institutions, including self-governing bodies and institutions, should be involved in their preventive elimination and resolutions of their effects, if they actually occur. The analysis and evaluation (ex post) of the said example of the actions by doc. Konvička group showed certain "unclarities" both with regard to defining the competencies of a public administration body, more specifically

concerning the interpretation of relevant standards and regulations, by which the activities of public administration bodies should be governed in such cases.

By analogy, the problem that may arise in connection with the current development of migration and related events may be a more serious one.. Even though, it is clear that the key factors are beyond the reach of public administration, its share in ensuring the "standard" course of action related the the problem is and will be critical. This will require a careful preparation of both the existing legislative and regulation base, and in-depth and qualified training of staff members who participate and will participate in its adoption. This will clearly involve exact definition of the scope of activities of individual entities, in case of shared competencies and precise definition of how they will mutually cooperate. The analogous type of emergency situations also includes the problem related to the subsequent integration of migrants. Although, central administration institutions play an important role in this regard, also local (municipal), town and region self-administrative bodies and institutions play an important role in practical implementation of the said process. Due to the fact that these are relatively new types of emergency situations and extremely socially sensitive ones too, an increased attention must be paid to their resolution.

In this case, both research and university facilities dealing with the problem of security and issues of management may contribute to the preparation of necessary documents regulating the activities of administration bodies, and preparation of the types (models) of resolution of potential crisis situations.

Conclusion

Due to the relatively extensive basis of the legislation and related standards, some of which have been repeatedly amended and their mutual consistence cannot be confirmed, and also due to certain "new" aspects in the security field, it would be appropriate to proceed with a certain "audit" of laws and regulations dealing with the resolution of emergency situations.

From the theoretical perspective, there is an analogous situation to the area of public administration theory in the field of crisis management and resolution of emergency events. Its is a question of *matching* the terminology used in the given legislation (where a delimiting definition "for the purposes of this act" is often used [7]") with the terminology that would meet the requirements commonly placed on expert terminology (in the field of science and theory). Its successfully resolution would significantly contribute to much reduction of the "variety" of the interpretation and construction of not only some significant terms, but to the unification of the interpretation of some standards and measures as a whole. Although, this issue may at first seem as a "pseudo-problem", the unification of views in this matter is to some extent a precondition to an effective cooperation between the executive public administration bodies and particularly between the research and university facilities dealing with this area. It is the area of mutual cooperation where the adequate uniform terminology would contribute to improve the systematic nature of the approach to the resolution of emergency events, but also to improve the training activities intended to the authorised public administration staff, particularly those whose job description

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[7] In the area of legislation, the key terms are generally defined by the so-called "legal definition", which is different to usual definitions of terms in the field of science.

to great extent includes the problem of creating prerequisites for the resolution is of emergency events.

At the same time, it would be appropriate to pay attention to the improvement of high-quality and qualified training of other (optimally of all) staff member of administration institutions regarding the fundamental principles of identification of symptoms of emergency situations and procedures for their resolution. In this regard, it would be appropriate to pay attention to the members of elected representative self-administrative bodies and also to some basic awareness of citizens.

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[6] Act No. 128/2000 Coll., on Municipalities § 2, section 2

[7] Act No. 129/2000 Coll., on Regions § 2,section 2

[8] Act No. 239/2000 Coll., on Integrated Rescue System, § 2, letter b)

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OPTIONS OF RISK MODELLING IN LIMIT SITUATIONS OF A LEARNING ORGANIZATION

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Abstract: *The paper contains a system definition of a model creation and a modelling of a real system S. As a transformation of the system S to a model M and expressing an appropriate part of the system S as a cybernetic system KS and a corresponding model KM of cybernetic system. The corresponding modelling on models M and KM is specified in the new concept of cyberspace. On models M and KM in this paper we express limit states of the system. We define the limit states of risks and their possible control in the system S. The expression of the system S considering feedbacks leads to cybernetic view on the model. This new systemic view enables to understand the target behaviour while meeting appropriate strategies as self learning organization. A model and modelling of self learning organization can express a new view on limit states of a system and thus expressing risks of the system S and show basic option of modelling risks in possible and anticipated limit situations of system S. In this models M and KM, we define a possible structure of a virtual organization and risk management in limit situations.*

Keywords: *Risk Modelling, System Modelling, Cybernetic System, Self Learning Organization, Information Security, Cyber Security.*

JEL Classification: *C51, D83.*

Introduction

The current world economy [10] is confronted with a number of challenges in the environment characterized by processes: computer science (information and communication technologies – ICT), numerically controlled machines, robots and robotic lines, robots with artificial intelligence, self-learning systems, self-learning organizations, self-learning businesses, the globalization of the world of modern technologies (based on new knowledge of physics, modern mathematical methods, theoretical and practical tools for the creation of models and modelling of complex hierarchically organized systems, theoretical principles of simulation and new use of intelligent simulators) and these processes are also significantly influenced by the dynamics of real systems and introduction of new and promising scientific and technical knowledge from the field of "*the digital world* " into practice; furthermore, with the development of progressive technologies (in this new industrial revolution called the "*technological revolution*" with new technological procedures, understood in the profile of "*process engineering*"), new system knowledge (stemming from the "*theory of systems*" and principles of cybernetics (also stemming from "*theoretical cybernetics*" and in applied areas especially from "*applied cybernetics*" or "*technical cybernetics*"), the means of artificial intelligence, and the new concept of areas characterised by processes ‑ crisis management and the options of models, risk modelling, etc.).

1 Formulation of the Subject Matter

1.1 Options of modelling tasks suitable for reflections on learning organization

In the globalized economic sphere[1], [2], [11], businesses compete for the resources - investments, human capital and technology. The key to success is, apart from the information and data listed at the beginning of this paper, new knowledge and new forms of dissemination that mark a transition towards a knowledge-based economy and society.

Therefore, knowledge [1], [3], [11] is becoming an important source of wealth and may also contribute to the deepening of inequalities among businesses. New knowledge and its successful exploitation as a key source of economic progress mark a period of the development of modern society. This characteristic is reflected in the systematic increase in intangible investments leading to an increase in labour productivity.

In the process of transition to a knowledge-based economy [1], [11], [12], however, the creation and dissemination of knowledge is accelerating greatly and the appearance of related processes is fundamentally changing with a range of implications beyond the purely technical, social and economic framework. New technologies and their successful proliferation have always had a significant impact on the economy and society and will have a significant impact on the world economy and the processes of geopolitical world order.

From a technical perspective [8], [9], [17] of the whole of the very complex matter of ICT in view of modern understanding of "*economic cybernetics*" in the profile of the new field of "*cyber security*", such (mainly informational) technology is considered as crucial which is the source of new technologies and at the same time significantly affects the existing technology, therefore has an impact on other sectors.

The transition to a knowledge-based economy [1], [11], [13], [14] is also associated with significant social impacts. It is therefore a very complex (system-defined) process. It requires new knowledge, changes the working and living conditions, and also affects the inequality between groups of the population. In an economy run by knowledge, a key role is played by the availability of high-quality human capital in these newly designed organizations.

New technologies allow for the shift to a new trajectory of growth only provided that they are accompanied by long-term availability of highly skilled workforce and that the so-called knowledge workers do arise.

The competitiveness of businesses [1], [15] is then systemically characterized as the ability to consistently evince productivity growth, i.e. to achieve higher outputs with limited inputs of labour and capital. Competitiveness is reflected by obtaining, maintaining and increasing market share. This ability depends on the development, technological progress and the improvement of the qualification of the labour force in new organizations. Learning capabilities can be vested in both people and some machines or advanced information systems in organizations. It is the process [15], [16] of the acquisition or change of experience, habits, skills, behaviour, preferences, values or knowledge.

1.2 Modelling options in limit situations of systems

The new concept of safe processes [4], [5], [6], [7] in the management of defined real systems (organizations) represents in particular the definition of an abstract system (identification) as a subset of hierarchically structured subsystems with their environment and located in the space-time conception of phenomena with which this abstract system can exist and by its structure and behaviour, it may be part of the defined environment of this system marked as S (Figure 1). For an illustration of this process, the following picture presents a simplified description of the real system and the possible systemic interpretation of its modelling.

The real environment [4], [5], [6] is defined by the recognisability of the necessary levels for further identification process and modelling – Figure 1. In an appropriately selected real environment, it is essential to   define the levels of granularity so that their model according to the "*theory of systems*" provides the necessary information, data or necessary knowledge on the structure and behaviour of the real environment.

Fig. 1: The definition of a real environment for the identification and modelling of a system
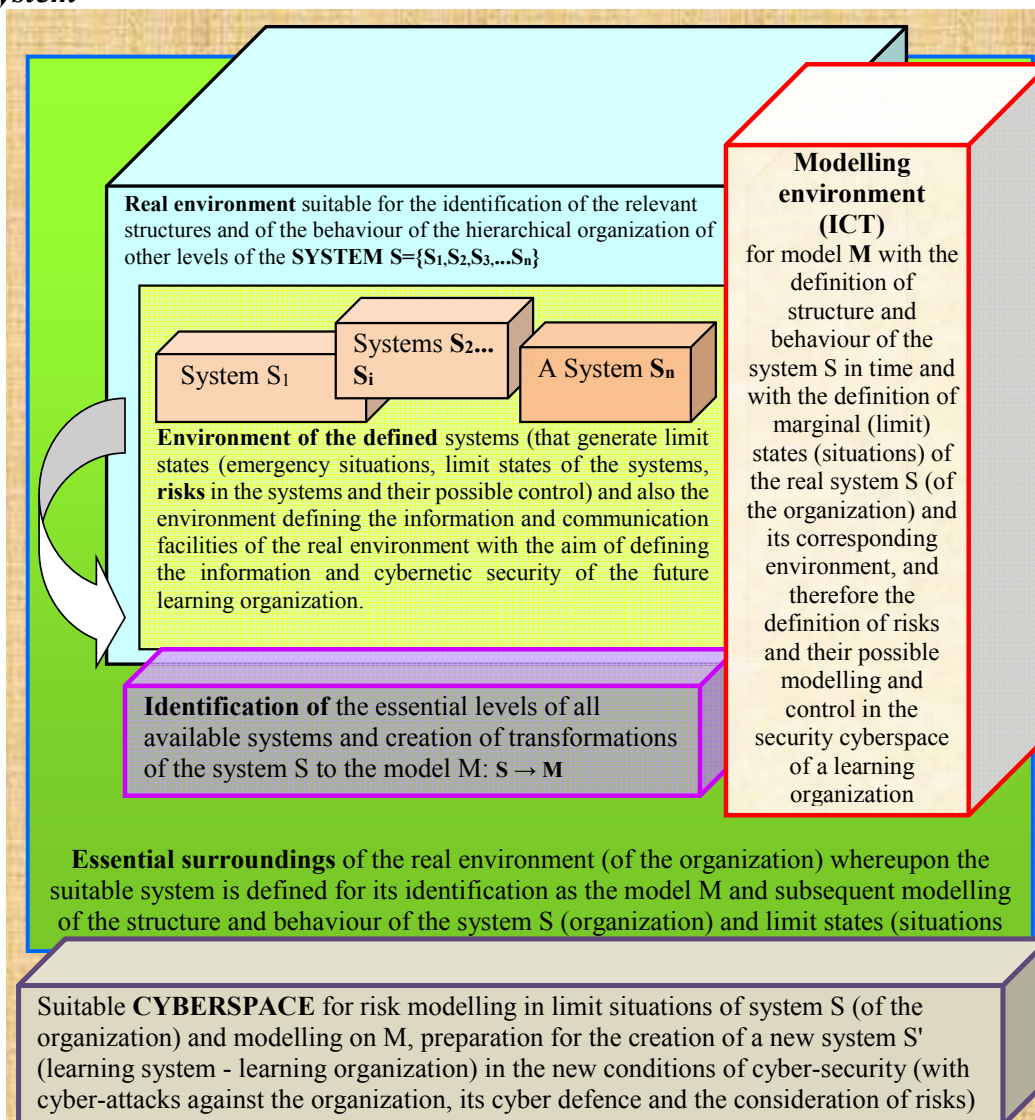
Source: own [10]

2 Methods

The methods used (Figure 2) for a given area of research listed in this paper are mainly: „*theory of systems*", „*model theory and modelling*", „*artificial intelligence*", „*applied cybernetics*".

Fig. 2 : The system of representation of the chosen methods of risk modelling in limit situations in defined cyberspace

SYSTEMS THEORY

The definition of research areas examined, determination of the methods and conditions for the creation of a model and for modelling, task solving, the results of modelling and propositions.

ICT

CYBERNETIC PROFILE OF A LEARNING ORGANIZATION

"Options of risk modelling in limit situations of self-learning organizations"
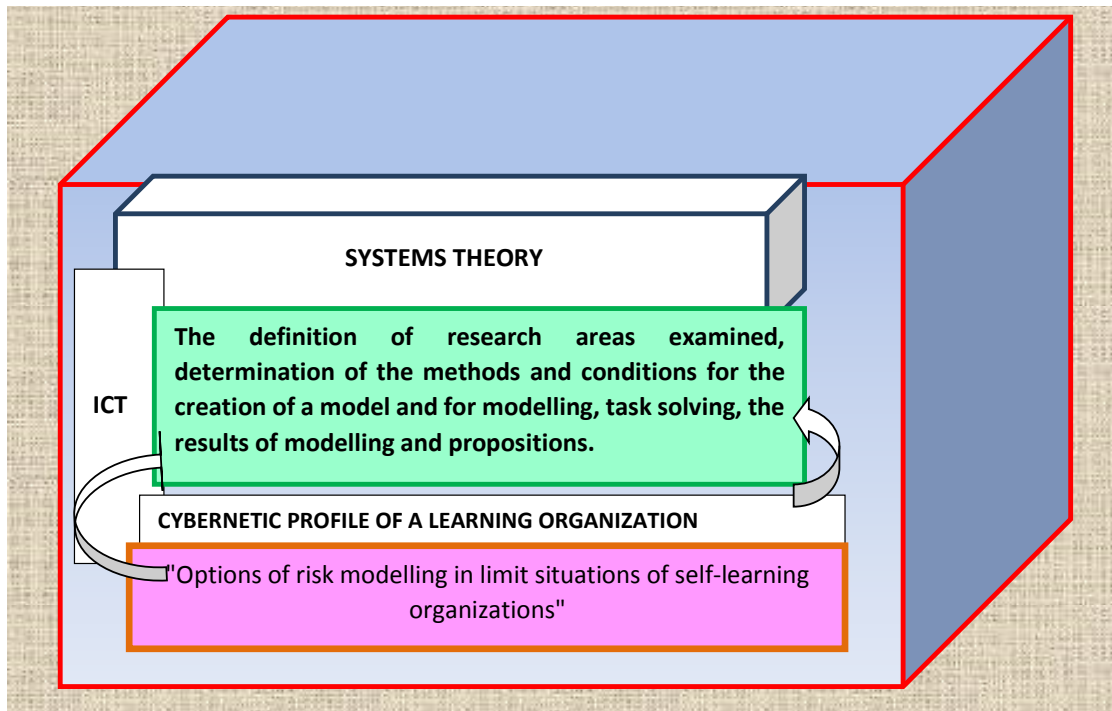
Source: own [10]

3 Analysis of the problem

It is necessary here to highlight the new modelling capabilities in limit situations of systems deriving risks (i.e. the behaviour of the system upon the existence of a structure of hierarchical breakdown of the organization, such as here the public administration) aiming at the creation of an efficient model of the future real system, that is of the future model of a learning organization, in accordance with the definition of the theoretical assumptions of modern risk modelling in limit situations of learning organizations. This paper was elaborated with the support from the research project "*Effective Use of ICT and Quantitative Methods for the Optimization of Business Processes*" and some partial results have been published gradually.

The resulting solutions [10] indicated only in this paper can be described briefly as a model system of a standard lifelong learning organization (business 1) and of trainee organizations (companies 2, 3 ... n), which at the outset - on a time scale t_1, t_2, t_3. ...t_m - create precisely a model of the competitiveness of organizations in the field of ICT so that the competitiveness criteria contained both a social subsystem (represented by knowledge workers of organizations) and technical and technological environment of the information and communication subsystem of the organization (indicated by modern and prospective ICT elements posed by adaptive computer networks in the organizations). Through modelling based on expert evaluation

of *companies 1 to n* and on adequate assessment conducted by means of a survey (statistical survey), we evaluated the possibilities of competitiveness of the final product of the information security of management functions of the organization in the corresponding simulated environment of cyber-attacks and defences - that is still in a simple environment of cyber-technical security of the organization (of businesses in general). The results of the task are interesting in terms of initial information listed for example. A positive correlation of variables X and Y indicates that the values of variables will also be rising, i.e. in case of the educational criterion of business 1 (X), the educational criterion of business 2 (Y) will increase. The value of 0.35 indicates medium dependence between the businesses (organizations) 1 and 2.

Fig. 3 : Measuring correlations - Information Criterion
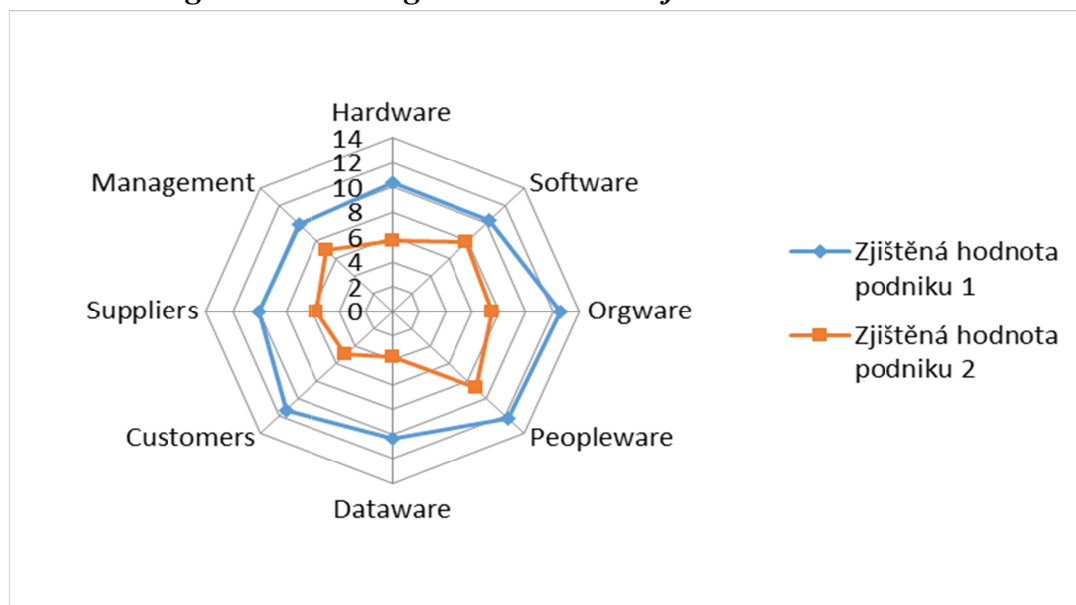
4 Discussion

An environment suitable for the modelling of learning organizations is created according to the extensive information gathered, the isolated topics from information sources and the indicated framework of new methods from the performed research published (with a new perspective on the practical modelling of the current environment of the Internet and intranet environments of businesses and organizations).

Both parties (business, organization - as a standard and typical business; organization - as a potential customer) generate in the modelled environment solution results of such qualities that the educational system and newly applied resources and tools are construed as a modelling unity in understanding and implementation of knowledge and thus, this system uses the knowledge potential of both businesses to change the herein solved quantifiable competitiveness of businesses and creates itself this model of a new simulation environment where the needs referred here will be indicated by other required criteria. Mutual information and data (or knowledge) interconnection of the listed companies and thus especially of both the sets primarily solved and the isolated tasks and needs of new customers of the organizational structures of public administration create on the basis of these results an educational

field of the learning organization (with adaptable components) which is generated in the process of introducing modern means of ICT into practice. The common part is then the environment of data bases of experience and application of new methods which are always associated with the feedback relations (i.e. with the model and the corresponding space) in the solved system of risk modelling.

Said modelling provides knowledge workers of organizations, as evident from the above-mentioned component solutions of practical problems in this model, with the initial quantifiable values also for the assessment of the quality of the solutions to the listed tasks - a graphical representation of the tasks solved which in this process represents an essential control and feedback quantity of the model thus understood.

Conclusion

The connection of systemic uses of research methodology provides a number of incentives for the quality of learning organizations. The modelling results from crucial impeti for the creation of the (especially for the near future) necessary large knowledge bases of learning organizations, for the model of Internet tools, the perception of the real lifelong learning based on human resourcing strategies and, also, for a significant correction parameter of the whole system of integrated Internet resources, including education, through further continuous calculations in real time t. An important part is formed by another ongoing modelling and further topics and possibilities for future practical use of selected methods of artificial intelligence in this vast model.

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DEMOGRAPHIC AGING OF THE EUROPEAN UNION COUNTRIES

Veronika Fričová, Zdeněk Matěja

Abstract: *This paper deals with the issue of demographic aging of the European Union. Its aim is to describe the process of demographic aging, and to evaluate the demographic situation of the European Union at the turn of the third millennium. Today, demographic aging is considered one of the most important challenges of many developed economies. Its range and speed are particularly dependent on the development of average life expectancy, the level of fertility and migration process. The demographic changes rank among the most important future challenges of the European Union as a whole and its member states. Demographic aging impacts the society and its economics, infrastructure and government. Hence, the great scope strategies in the fields of economics, spatial planning, education, transportation, accommodation, and social inclusion having to take into account all the factors provoked by an aging population. It is appropriate to remember that the increasing share of the older population leads an increase in both their contributions to society and their needs from society or consumers' and citizens' requirements and expectations.*

Keywords: *Demographic aging, Age structure of the population, Fertility, Life expectancy, European Union.*

JEL Classification: *J11, R23.*

Introduction

The process of demographic aging in developed countries brings many economic, social and political issues. It is manifested by changes in the age structure of the population, characterized mainly by the increasing proportion of retirees (65+) at the expense of the rest of the population. The range and rate of population aging is primarily dependent on the development of average life expectancy, birth rate level and migration.

Fig. 1: World aging as a % of total population
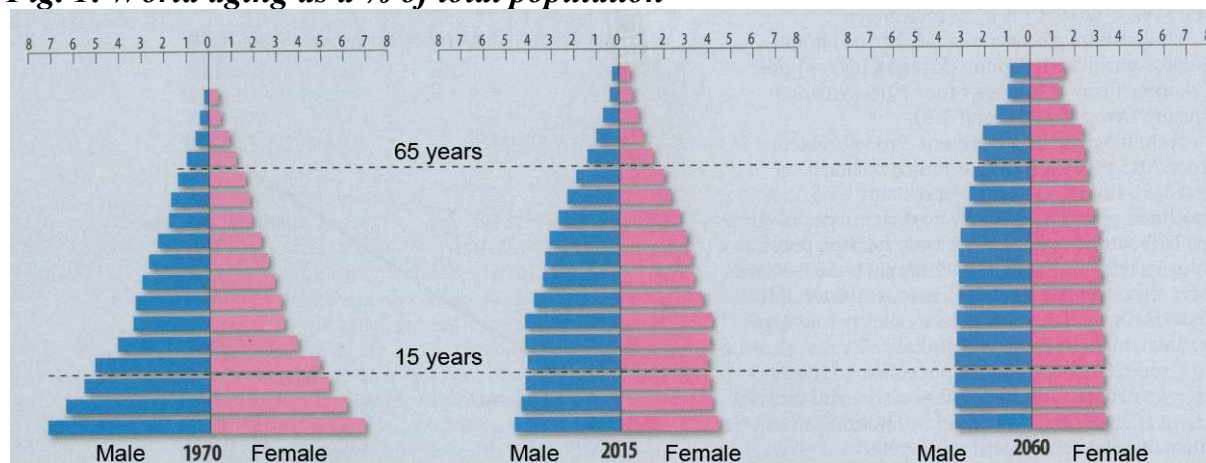
Source: [12]

When looking at the structure of the world population in 1970, 2015 and 2060 (prognosis) in Fig. 1, the process of demographic aging is clearly visible, but the traditional shape of the visualization of the population structure – the age pyramid – is disappearing. Due to declining fertility, a rapid narrowing of the base is occurring on one hand, represented by the pre-productive generation (up to 15 years), and on the other hand, there can be clearly seen an increase in life expectancy and the associated increase in the older population – post-productive generation (65+).

In connection to the declining birth rate in developed countries, new theoretical approaches and opinions began to form at the turn of the third millennium. One of the most important theories dealing with this issue is currently the so-called theory of low fertility, which combines the ideas of four theoretical approaches – rational choice theory, risk aversion theory, post-materialist values theory, and the theory of gender equality. [10]

The uneven temporal and territorial development in different parts of the world is reflected by the current state of demographic aging in the world. The aging population is so far located mainly in the developed parts of the world (Europe, North America, Australia, New Zealand and Japan), but gradually it starting to appear already in some developing countries. Japan, however, has the oldest population in the world, but Europe is the oldest macro-region in the world. [8]

The purpose of this paper is to describe the problems of demographic aging and subsequently evaluate the demographic situation in its context in the European Union countries at the turn of the third millennium.

1 The issue of demographic aging

It is possible to find various definitions for demographic aging, but usually they do not significantly differ. Gavrilov and Heuveline describe the aging process as a general phenomenon for the procedure in the age structure of the population from the youngest to the oldest [7].

In the United Nations' report concerning World Population Aging 1950 - 2050 [14], population aging is described and explained as a process resulting from the fact that older residents form the greater part of the total population.

According to Kalibová, the aging of society is occurring due to changes in the nature of demographic reproduction, thus changing the ratio of the children and senior component in the population. It further states that two types of demographic aging can be characterized. The first is the aging at the bottom of the age pyramid. It is occurring due to reduction in fertility levels, thus slowing the growth of the children component in society. The second type of aging is on top of the age pyramid, caused by the improvement in mortality rates. These types of aging can take place simultaneously or with a small-time interval. [9]

Koschin holds the same view, adding the knowledge that the size of the grandparent generation is increasing along with the decrease in mortality. This phenomenon is referred to as absolute aging. Conversely, the fertility rate is decreasing with relative aging, and the ratio of the children's generation along with it. [11]

Rabušic characterizes demographic aging as a long-term process in which the age structure of the population is gradually changing. People older than 65 years of age are dominant in society, and their share is increasing simultaneously with a decline in people younger than 15 years of age. According to him, the important thing is also to distinguish between population aging and the aging of an individual. An aging population, in contrast to an individual, can become younger. [13]

It must also be mentioned that the process of demographic aging, among other things, is a consequence of the demographic revolution often also called the demographic transition. This phenomenon is one of the key theories in demographics. Demographic transition, according to De Vaan Kaa, is caused by population aging, ended for decades in most developed countries. Now, however, other changes can be seen in society, which can be referred to as a second demographic transition. [15]

The old age index, dependency indices and the index of economic burden can be used for the measurement of demographic aging. The old age index measures the number of people of post-productive age and pre-productive age in society. The dependency index has two appearances; the first evaluates the dependence of the pre-productive generation, the second dependence of the post-productive generation, always towards the productive age generation. The economic burden index is then the sum of both dependency indices. The values of these indices may also serve to reflect the possible implications of demographic population aging in society and the economy.

2 Demographic aging of European Union

Demographic changes are considered one of the greatest future challenges of the European Union. In the past, a declining population in Europe was mainly due to famines and large infant mortality, at present mainly due to a decline in marriages, changing patterns of family life, the older age of parents, growing affluence, and also problems associated with unemployment. [1]

The low birth rate already lasting several years and accompanied by the steady increase in average life expectancy suggests profound changes in population structure will occur in the European Union in the first half of the 21st century. This means that globally it may have to face a loss of competitiveness and a slowdown in economic growth compared with the parts of the world in which a significant demographic rise is occurring.

The European Commission launched reflections on this issue and proposed a strategy for the five key areas through its communication by means of "The Demographic Future of Europe – Let's Take Advantage of the Problem" [2]. The key areas are demographic renewal, longer and more active life with higher quality, a more efficient Europe through innovations, the better integration of immigrants, ensuring social security and solidarity among generations.

Demographic renewal is associated with the creation of conditions under which all Europeans could realize their desire to have children. The basic requirement is the possibility of combining work, family and a personal life – because women still have to choose between work and family too often. Europe needs to increase the rate of labor activity of women, young people and older people in order to achieve a better

balance between workers and retirees. There is interest in reducing the number of early retirements from the labor market and develop an active aging strategy requiring an investment in education and ensuring high quality working conditions throughout life. Future economic growth will increasingly depend on the condition of an increased productivity and abilities to innovate, thus investment in education, research and development. It will also depend on how enterprises will be able to exploit new market opportunities associated with the needs of an older population, but also with an increasing number of significantly older people who need social and health care. The better integration of immigrants is also desirable. Immigration will not prevent aging, but along with how the active age population is declining, an increased demand for immigrants can be expected in the labor market. The aging brings increased expenses on social security, health care and long-term care, which places a considerable burden on public finances. For the sustainability of funding it is, however, necessary to also involve private sources (savings or insurance) in addition to healthy public budgets.

Also, the message "An Aging Europe? A fact, for which a person needs to be prepared," [5] highlights the fact that a sharp increase in the proportion of older people will occur in the European Union in the coming decades and an associated significant decline in the proportion of young people and people of working age. More and more older people will be dependent on an increasingly smaller number of young people. It is expected that a third of the EU population will be at a post-productive age by 2060 and the number from the economically active population will in turn be reduced by about ten percentage points (67% in 2010, 56% in 2060). Lengthening average life expectancy is obviously considered a success, but the aging population poses significant challenges for the economy and social care systems. The impact on public finances can be illustrated by the prognosis that public expenditure used only in the context of older citizens (pension and social security benefits, health and long term care) will increase by about 4 percentage points by 2060 of their share in GDP, from 25% (in 2010) to 29% (in 2060).

3 Analysis of the demographic situation in European Union countries

There were four indicators chosen for the demographic analysis of the European Union in relation to demographic aging – the age structure of the population, the average age of the population, life expectancy and total fertility rate. The analysis was performed for all 28 current Member States of the European Union, Tab. 1 up to Tab. 4, then showing only selected data.

Tab. 1 shows the age structure of the population of individual countries up to 1. 1. 2015 in the division of the pre-productive (0–14 years), productive (15–64 years) and post-productive generation (65+). The pre-productive generation is involved for 16% of the total European Union population, for 65% of the productive generation and for 19% of the post-productive generation of which in effect is a regressive type of population.

Tab. 1: The age structure of the population in selected EU countries up to 1. 1. 2015

COUNTRY/GENERATION	0-14 years		15-64 years		65+ years	
EU	79 369 624	16%	333 099 995	65%	95 981 237	19%
Czech Republic	**1 601 045**	**15%**	**7 056 824**	**67%**	**1 880 406**	**18%**
France	12 356 171	19%	41 846 445	63%	12 212 545	18%
Germany	10 686 723	13%	53 422 103	66%	17 088 711	21%
Great Britain	11 463 255	18%	41 898 460	65%	11 513 450	18%
Greece	1 577 918	15%	7 011 027	65%	2 269 073	21%
Ireland	1 024 787	22%	3 003 481	65%	600 681	13%
Italy	8 383 122	14%	39 193 416	64%	13 219 074	22%
Luxembourg	93 747	17%	389 371	69%	79 840	14%
Poland	5 714 790	15%	26 431 118	70%	5 859 706	15%
Slovakia	830 181	15%	3 834 289	71%	756 879	14%
Sweden	1 682 033	17%	6 152 438	63%	1 912 884	20%

Source: authors' own work based on data [4]

The pre-productive generation has the largest share of the total population in Ireland (22%), France (19%) and the UK (18%) and the least in Germany – only 13%. Slovakia (71%) and Poland (70%) show the highest working-age population and France and Sweden (both 63%) the lowest. Italy (22%), Germany and Greece (both 21%) rank among one of the oldest countries in the European Union based on the proportion of the post-productive generation; on the other hand, the lowest post-productive generation is represented in Ireland (13%), Luxembourg and the Slovak Republic (both 14%). The age structure of the Czech Republic does not significantly deviate from the EU average.

Tab. 2: The average age of the population in selected EU countries

COUNTRY/YEAR	1990	2000	2010	2014	Change 1990 – 2014
EU	:	:	41.0	42.2	:
Bulgaria	36.5	39.1	42.2	43.2	6.7
Cyprus	30.5	33.3	35.6	36.8	6.3
Czech Republic	**35.1**	**37.3**	**39.6**	**40.8**	**5.7**
Germany	38.1	39.8	44.2	45.6	7.5
Great Britain	35.8	37.5	39.4	39.9	4.1
Ireland	29.1	32.4	34.0	36.0	6.9
Italy	36.9	40.1	43.3	44.7	7.8
Lithuania	32.4	35.8	40.3	42.4	10
Luxembourg	36.3	37.3	38.9	39.2	2.9
Portugal	33.9	37.5	41.2	43.1	9.2
Slovakia	31.2	33.9	37.0	38.6	7.4
Slovenia	34.0	37.8	41.4	42.5	8.5
Sweden	38.4	39.3	40.7	40.9	2.5

Source: authors' own work based on data [4]

Tab. 2 demonstrates the development of the average age in selected EU countries between 1990 and 2014. An increase in the average age of the population occurred identically between these years in all 28 member states, but significant differences can be found in the rate of growth. The most "grown old" residents of Lithuania (about 10 years), Portugal (9.2) and Slovenia (8.5), the residents of Sweden (2.5), Luxembourg (2.9) and Great Britain (4.1) the least. The highest average age in 2014 is

shown by Germany (45.6 years), Italy (44.7) and Bulgaria (43.2), and Ireland (36), Cyprus (36.8) and Slovakia (38.6) aligned at the opposite end of the ranking. The Czech Republic with an average age of 40.8 years, compared to other European Union countries in 2014, belong among those "younger" countries.

Tab. 3 demonstrates life expectancy (calculated for old age of one year) of the population of selected EU countries sorted by gender in 2005 and 2014. Certainly, one positive finding is that life expectancy in all EU countries is constantly increasing without distinction. It is not surprising, that elderly women live longer, the most in Spain (85.4 years in 2014), France (85.3) and Italy (84.8). The lowest life expectancy is demonstrated by women in Bulgaria (77.6), Romania (78.3) and Latvia (78.7). Men living to the highest age live in Cyprus (80), Italy (79.9) and Spain (79.6), while the first die in Latvia, Lithuania (both 68.4) and Bulgaria (70.7). The life expectancy of women and men in the Czech Republic can be ranked among the lower ones in comparison to other EU countries.

Tab. 3: Life expectancy according to sex in selected EU countries

YEAR	2005			2014			Change 2005 – 2014		
COUNTRY/SEX	Total	Male	Female	Total	Male	Female	Total	Male	Female
EU	77.9	74.8	80.9	80.2	77.4	82.9	2.3	2.6	2
Bulgaria	72.3	68.9	76.0	74.1	70.7	77.6	1.8	1.8	1.6
Cyprus	78.0	75.9	80.2	81.9	80.0	83.8	3.9	4.1	3.6
Czech Republic	**75.4**	**72.2**	**78.5**	**78.1**	**75.0**	**81.1**	**2.7**	**2.8**	**2.6**
France	79.7	76.1	83.1	82.1	78.8	85.3	2.4	2.7	2.2
Italy	80.2	77.4	82.8	82.5	79.9	84.8	2.3	2.5	2
Latvia	70.2	64.4	75.9	73.7	68.4	78.7	3.5	4	2.8
Lithuania	70.7	64.7	76.9	74.0	68.4	79.4	3.3	3.7	2.5
Romania	72.0	68.6	75.5	74.7	71.1	78.3	2.7	2.5	2.8
Spain	79.6	76.4	82.9	82.5	79.6	85.4	2.9	3.2	2.5

Source: authors' own work based on data [4]

The total fertility rate for selected countries of the European Union is shown in Tab. 4. It is clear that not even a single country in the years 2005 to 2014 reached the level of simple reproduction, which is defined by a value of 2.1. France was the closest to approaching this value in 2014 (2.01 children per woman), followed by Ireland (1.94) and Sweden (1.88). The lowest values of the total fertility rate in 2014 were reached by Portugal (1.23), Greece (1.3) and Cyprus (1.31). The Czech Republic with its value of 1.53 ranks approximately in the middle of the EU order. When analyzing the difference in the total fertility rate between 2014 and 2005, the value has increased in 18 countries (mostly in Lithuania, Slovenia, Latvia and the Czech Republic), the same remained in the Netherlands and was reduced the most in 9 countries on the contrary (mostly in Portugal, Cyprus and Luxembourg).

Tab. 4: The total fertility rate in selected EU countries

COUNTRY/YEAR	2005	2014	Change 2005 – 2014
EU	1.51	1.58	0.07
Cyprus	1.48	1.31	-0.16
Czech Republic	**1.29**	**1.53**	**0.24**
France	1.94	2.01	0.07
Greece	1.34	1.30	-0.04
Ireland	1.86	1.94	0.08
Latvia	1.39	1.65	0.26
Lithuania	1.29	1.63	0.33
Luxembourg	1.63	1.50	-0.13
Netherlands	1.71	1.71	0.00
Portugal	1.41	1.23	-0.18
Slovenia	1.26	1.58	0.32
Sweden	1.77	1.88	0.11

Source: authors' own work based on data [4]

Conclusion

Demographic structures and likely future patterns considerably vary across the European Union, both in individual member countries, as well as at the regional level. It is necessary to use a variety of approaches to effectively deal with this issue, taking into consideration many regional specifics, and unconditionally including also the regional level, represented by the relevant regional factors, into a multilevel decision-making process. [3]

Demographic aging has an undeniable impact on society, its economy, infrastructure and administration. It is a necessary for the successful development of society to take into account the factors caused by an aging population and to integrate their solutions into a broad range of strategies in areas such as management, urban planning, education, transport, housing and social inclusion. [6]

With the increasing proportion of representation in the population, the importance of older people and their contribution to society is growing, but also their demands as consumers and for their expectations as citizens. It is advisable to focus on strengthening their productive contribution for society and identifying the consumption patterns of their behavior in relevance to both the private and public sector, as older people are an important growing group of consumers. It is also desirable to involve older people in regional governance and address the issue of possible poverty and social exclusion.

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COMMUNITY PLAN AS A METHOD FOR MANAGEMENT OF DEVELOPING PROCESSES OF SOCIAL SERVICES IN A MUNICIPALITY

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Abstract: *The main objective of this article is based on theoretical knowledge acquired from foreign and domestic literature and quantitative research to map and analyze the requirements for the citizens the municipality to assist in social planning and subsequent implementation of activities in order to streamline activities in selected municipalities, located in the Slovak Republic. Consecutively, we designed social services through method of community planning in order for them to respond to needs of individual groups of public, and also to be in correspondence with local specifications. This article was prepared using mainly methods of analysis, when processing theoretical knowledge and scoring questionnaires, methods of synthesis, when formulating conclusions of individual sections of this article and analysed phenomenon, methods of comparison, when handling community plan emanating from comparison with starting point in selected municipality, methods of observation, when searching visual elements in surroundings, methods of induction and deduction, when creating suggested solutions for current state of community plan. There were 83 questionnaires statistically processed, which represents 69,16 % out of all addressed respondents. We can establish that community planning is an important area securing an effective functioning of social politics. Current questions opened in community planning create an interesting discussion of what scope and what role does community planning have these days.*

Keywords: *Social planning, Community planning, Community plan, Community, Municipality.*

JEL Classification*: J18, R58, Z18.*

Introduction

Support of community development on bases of applied community planning methods has an important role when solving social issues in a municipality. Thus, is created a need for community plan as a method for solving of unfavorable social situations and solving of local social problems. Towns and villages form support of community development in sphere of providing social services to community work and community rehabilitation. Municipalities are assigned to formulate community plan for social services and higher territorial unit designs conception of social service development in cooperation with other providers of social services and together with consumers of social services in their local territory. Considering importance of community planning it can be said that the plan makes the following contributions: introduction of a primary thought, definition of the main aim of community planning for social service, determination of partial objectives, realization of plan feasibility and plan control.

1 Problematics formulation

1.1 Community planning as a part of social planning

Social planning can be characterised as a process, when politicians - law-givers, government agencies, project engineers and often investors - attempt to solve community problems or improve conditions in society and suggest implementation of policies with an aim to have certain results. These policies can have form of laws, regulations, incentives, media campaigns, programs or services and information that form a wide scale of implementation choices and social politics.

This is closely connected to long history of social planning in the USA and other countries. Traditionally, it meant, that politics decided what they believed was good for community and population and did the politics they believed would bring them desired results. In better cases, it meant implementation of programs for public health and services. In worse cases, social planning was used in favor of friends and followers [7].

Consequences of social planning are not often obvious. Sometimes, social plan or social politic that seems positive have strongly negative results. In the past, after the second world war, there were new complexes of flats built, that were supposed to be clean, safe, comfortable residences for people with low incomes. Instead, their institutional character and isolation from main communities, alienation and desperation of these residents led to illegal activities and terrible living conditions [4].

Confidence building within the process might require a lot of community work - door to door agitation, personal conversation, small meetings in resident houses, before community is ready to take on the risk of social planning [6].

1.2 Importance of social services in community planning sphere

Social services have a legal responsibility to protect and support good living conditions and children welfare, vulnerable adults and communities. The main activity of this service is to provide social care (protection and support), support integration and partner cooperation.

Time is an important element to active ageing but little attention has been given to work-life balance debates in relation to citizenship. In the questionnaire survey 'to put my spare time to good use' was the most popular response to the question about reasons for volunteering. It was selected by nearly three fifths (56 per cent) of current volunteers aged 55 or over but by only 40 per cent of their younger counterparts. This suggests a residue of unused time among older citizens that can be accessed by volunteer-using organisations. Retirement was an event that many interviewees described as contributing to their interest in volunteering [5].

Positive results of provided social services are achieved by good communication with employees and other involved parties, planning of systems on site to be able to measure results consistently, monitor effort and to evaluate effectiveness, appropriate financing of competent and skilled working groups, structure of processes with an aim to assess and fulfil needs, added value of offered services.

1.3 Theoretical starting point of community planning for social services

There is number of community planning definitions. Many authors consider this term community planning from different angles, however, the core and the meaning of the term remains the same. In this article we state number of theoretical definitions formulated by several authors dealing with sphere of providing social services and community planning of towns and villages.

The transformation of the social work role through the imposition of neo-liberal policies is creating widespread dissatisfaction. This article identifies some bases for resistance to these policies and discusses their potential for informing a new paradigm, based on a rejection of neoliberalism in social work [2].

Furthering the social capital research agenda will require a much more thorough consideration of these, and other, models of social co-operation and governance than space allows us to undertake here [3].

In general, it is a method of planning where public is participating, and by community we can consider those affected by they area, or consumers of these services. For needs of community planning for social services is by community understood municipality or micro region and community planning seeks a way to help certain social groups within municipality, who needs this help [1].

Community plan focuses on a role of consumers of social services and representation of their interests in planning process. Wide scale of public is involved in this process, which allows every citizen to express their opinion on problematics of availability and quality of social services. It describes and analyses not only existing sources and needs, but it also offers strategy of development and suggests responsibilities of involved subjects. Community plan ensures involvement of public in preparation and realisation of the process. Thus, citizens have an option to partake on happenings in their village, town. They have an opportunity to point out problematics of social services - their quality, availability. Process of community planning creation allows its members to feel involved, which helps to deepen relation to community. Together, they seek possible solutions, sources and increase effectivity [8].

2 Methods

In this article we analysed and investigated quality of social services ,in selected village located in Slovakia, on bases of theoretical knowledge fined from international and national literature and empirical research.

In order to meet objectives we applied several methods of observation, including: analysis, which was utilised when processing theoretical knowledge and assessing questionnaire, synthesis methods, used for conclusion of analyzed phenomenon, method of comparison, which helped to process community plan which came from comparison with starting point in selected municipality located in Slovakia, methods of observation, applied when searching visual elements in chosen municipality located in Slovakia, induction and deduction methods, utilized when forming suggested solutions for current conditions of community plan. When writing this article, we used special methods, mathematical-statistical. Object of our investigation was a village

in Slovakia. By means of community plan we analysed current state of quality of social services and consecutively, we determined direction of social services through suggestions obtained by different methods with an aim to increase life quality of citizens living in selected municipality located in Slovakia. Quantitative research was used as method of research.

As a tool of research we used questionnaire. Questionnaire consisted of 14 questions regarding providing of social services in selected municipality located in Slovakia. Questionnaire surveyed six fundamental spheres of problematic social areas such as:

- social services to ensure necessary conditions to satisfy basic human needs in facilities,

- social services for support of families with children,

- social services with use of telecommunications technologies,

- social services to solve unfavorable social situation,

- supporting services,

- evaluation, opinion of citizens to secure social services in selected municipality located in Slovakia.

In the first part of questionnaire research we investigated basic data of respondents, in the second part we were interested in above mentioned areas and opinions of participants of questionnaire research.

3 Problem analysis

83 respondents participated on the research, 53 women and 30 men from selected municipality located in Slovak Republic. Number of women was above number of men by 28%. Citizens participating on research belong to groups of different economic activity. The biggest part was represented by employed people 41 %, retired people 30 %, unemployed 8 % and self employed accounted for 5 % of asked respondents.

We were interested in opinion of respondents, what is the share of social services assuring necessary conditions to satisfy life needs, such as accommodation, food, necessary clothing, shoes, basic personal hygiene. Respondents expressed their opinion based on which it would be effective to provide social services such as rest houses 1%, shelter 4 %, house in half way 8%, low threshold day centres 9 %, facilities of emergency accommodation 78 %.

Telecommunication technologies found their application also in area of social services to provide guidance of to call for help. In accordance with answers of respondents, 51 % believe there is a need of telecommunication technologies in social services providing and 49 % thinks it is important to monitor and signalize need for help. The difference in share between two types of social services is almost insignificant. We can establish, that out of given situation stated, there is an obvious need of both types of social services and telecommunication technologies. Social security and social comfort of citizens is the most important part of social services.

Despite rich infrastructure in village, there exist facilities with higher demand. The biggest share 35 % of services and facilities missing in the village are exercise studios. This emerges from the need to provide services for younger generation. Clubs for youngster with share of 29 % signal lack of space and activities for young people, who have very limited space to show their creativity or do something interesting. Youngsters should have an opportunity to socialize in cultural area as well, where they could learn etiquette and other missing values, they have not been thought yet. In the village in last years, there has been successful a project of a club for young families and children, where mothers have an opportunity to partake on projects with their children and meet with others to share skills and experience regarding child upbringing. Children can meet other children, play and socialize within their own age group. It is a good start for children to adapt before they are enrolled into kindergarten.

The biggest share of missing social care 72 % represents the need to care for elder members of the family. Care for sick people represents the second biggest share 28 %. Care for people in need and care for children or adults with health disabilities do not seem as necessities in this municipality.

An important question, in research regarding providing social services, involves subjects that assures social care for family members. 57 % of asked respondents stated that social care for family members reliant on help is provided by another family member. Social field worker replaces family member in 28 % of cases. In 12 % of cases the care for reliant person is provided by social facility of non public character. Only 3 % of asked respondents do not use any social services.

We statistically verified stated hypothesis in order to achieve reliable validity of a research:

H: According to activity respondents see problems with service providing differently.

Tab. 1: According to activity, respondents see problems with service providing differently

	employed	unemployed	citizens with lowering ability to be employed	retired	self employed people	Total
subjective financial care	11	0	4	0	8	23
financial inaccessibility of services	22	0	7	8	10	47
remote locality of facilities	0	4	0	2	0	6
professional care	0	0	4	2	0	6
all day care	0	0	1	0	0	1
Total	33	4	16	12	18	83

Source: own processing of authors

Calculation for chi-quadrat: $\chi^2 = \sum \frac{(O-E)^2}{E}$

Chi - quadrat = 80,786

Calculation for degree of freedom: df=(s-1)*(r-1)

df=(5-1)*(5-1)

df=16

p= 0.00000106

Hypothesis was confirmed as value p < than 0,05.

4 Discussion

Mentioned empirical research was a starting point for determination of fundamental aim groups for social service providing. Answers of respondents were an impulse for leaders and management of the municipality when setting strategic goals. The aim of community planning is to map and analyze requests of village citizens and collect data that help with social planning and consecutive implementation of activities with an aim to make the activities more effective. Fundamental pier of successful functioning of a village are well functioning health services, offered social services, facilities, technical infrastructure, effective utilization and preservation of traditions and history of the village. Preservation of mentioned piers results in citizen satisfaction, which is the primary objective of every municipality. Support of young families and youngsters belongs to strategic objectives of the municipality too, as beneficial village must try to attract more young people in order to assure minimal emigration and dynamic growth of the village. We also have to highlight the importance of preservation of citizen structure. Minimization of unadaptable citizens of the village and maximization of those citizens who contribute to the growth of the village. Rating and image of the village is strongly influenced by the structure of citizens. Growing number of unadaptable citizens depresses image of the village, demand for properties and number of new immigrated citizens.

Conclusion

The main objective of this article is to analyze and investigate quality of social services in selected municipality, that is located in Slovak Republic, on bases of theoretical knowledge gained from international and national literature and quantitative research. Consecutively, we planned social services through the method of community planning so they would meet needs of individual groups of citizens and at the same time were in corresponding coal specifications. In this article we performed empirical research using questionnaire consisting of questions regarding offered social services in selected municipality located in Slovakia.

After the analysis and processing of respondent answers from questionnaire research we came to suggested solutions in sphere of offered social services in selected municipality for individual target groups. The first target group are elderly people with health disability. The main aim is to secure quality social services to citizens reliant on help of other people so every citizen would live dignified life, this would be

achieved for example by ensuring daily care taker, supporting maintaing of healthy eating habits for retired people, incite sheltered employment and workshops, cultural programs for elderly, establish rest houses, provide services of lunch delivery for appropriate price etc.

The second target group consists of families with children and youngsters. The main aim is to ensure favourable living conditions for families with children and young people, peaceful life by the means of offered social services that would ease the life of village citizens. We can include the following services into the group: sufficient capacity of places in kindergartens and creches, support of formal and informal activities of citizens oriented at help to families with children, support of hobby groups for children and young people, incite facilities of supported living, establishment of club organizations for families with children and young people.

We can establish, that community planning is an important sphere for securing effective functioning of social politics. Current questions regarding community planning open space for an interesting discussion, to what extent and what role does community plan have nowadays.

Acknowledgment

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ANALYSIS OF EXISTING SOCIAL SERVICES FOR HOMELESS PEOPLE IN SLOVAKIA

Tomáš Habánik

Abstract: *Homeless people represent a specific subculture within society that professes different standard values and behavioral phenomenon different from the majority. These people also present the target of social work, which is produced through a set of existing social services. The stated contribution is focused on the analysis of available social services for homeless people, as well as an analysis of the availability and capacity of disparities in terms of providing services within regional authorities. The acquired results can then be applied in practice, where in the present state of the issue they will represent starting point in the development of community plans and Social Service Development Concepts with a focus on expanding the type of social services. The results also can be applied within the Central Register of Social Service Providers, which would contribute to the adjustment of the registered agenda of services provided for homeless people, which is currently already inaccurate and out of date.*

Keywords: *Social policy, Social work, Homelessness, Social services, Society.*

JEL Classification: *I38.*

Introduction

Social services are one of the key instruments of social policy to address, mitigate or prevent the emergence of unfavorable social situation of citizens. Homeless people represent a specific group of people living in society, determined by an extreme form of social exclusion, and also as one of the target groups in the context of provided social services. The aim of the presented paper is an analysis of the existing and real possibilities of aid (types of social services and capacities) for the target group of homeless people under the terms of the Slovak Republic, noting the differences in terms of individual regions.

1 Formulation of the issue

In the society there are constant changes in the living conditions of its members, who can not always overcome an adverse situation through their own efforts. The result is the emergence of social risks, which affect not only the life of the affected individuals but also society as a whole due to their nature and consequences [8]. Developed countries must therefore seek to minimize the extent of these social risks through the chosen concept of state social policy, which as a priority is related to the model of the existing social security system, and which is also interested in maintaining social sovereignty in society. In this respect, despite efforts to ensure equal opportunities, a large number of people still suffer from limited access to such opportunities [2].

The issue of so-called *new poverty* and the derived social exclusion is currently associated with the ongoing processes of qualitative changes in the labor market, while

at the same time they can also be seen as a consequence of the de-industrialization process, the transition to a knowledge-based society and global extension of economic competition. Those who are unable to adapt to the given changes then go through the process of marginalization in the labor market, the real consequence of which is the gradual isolation and loss of social status [15, p. 628]. In this regard in the event of an unfavorable situation, room is created for the activity and directness of the social service system as one of the tools of social policy. Aid to an individual or group of people most in need, as well as the solution, mitigation or prevention of the process of deepening social exclusion is becoming the primary objective of social services [3].

1.1 Homeless people as target groups for social work

Homelessness can now be regarded as a highly topical issue, characterized by its far-reaching consequences for the whole society. Several factors have caused the emergence of homelessness (objective and subjective) which are often cohesive. At present, two models of solutions to homelessness may be encountered in developed countries, through the concept of social housing or through a multi-stage model of the existing social services that are provided and ensured by public and private providers [9]. As an example of the existing models of solutions we can mention the US, where there was a longstanding system of social services for homeless people, whose pillars stood on the multilevel scheme of provided services. Later, however, it turned out that many clients were not able to complete the whole scheme of the given model, a significant percentage solely remained using the low-threshold type of social services. Under these circumstances, there was a focus on the Housing First approaches whose primary role did not lie only in the provision of immediate housing for the person (family) at risk of losing their home or living without a home, but also in the interest to maintain the housing by the client. These approaches later came from the US to Europe, where they have become a part of the adopted strategies in many countries, aimed at tackling homelessness [6], arguing that the availability of finance for sustainable housing is a basic pillar which other aspects necessarily associated with the life of an individual in society have developed from [5].

2 Methods

Based on the chosen theme, we decided to implement a form of quantitative research, in the time-period from March to May 2016 using the method of analyzing the existing social services for homeless people in the Slovak Republic as at 30 May 2016. For the given form of research, we decided due to outdated and inaccurate information recorded through the Central Register of Social Service Providers under the Ministry of Labor, Social Affairs and Family. Given this unfavorable situation, we proceeded to a detailed analysis of the register of social service providers in all autonomous regions (8), through which we obtained current and accurate data, emphasizing the scope of the existing social services, whether low-threshold or higher. Within the presented research, we decided to analyze the same number of establishments providing the specified type of social services, the capacity of these facilities in the Slovak Republic, as well as within individual regions. Based on the gained knowledge we also can also point out the share of public and non-public providers in ensuring and operating social services for homeless people, as well as other factors whose consequences significantly affect the process of expanding the

number of people living in absolute poverty and are subject to extreme forms of social exclusion.

3 Analysis of the problem

The system of social services in the Slovak Republic is legally defined by National Council of SR Act No. 448/2008 on Social Services, which came into force in 2009. Despite the lack of a legal definition of homelessness, among existing social services for homeless people we can mention the circle of social services belonging to set of crisis intervention social services, among which we include *field social services for crisis intervention, low-threshold day center, doss house, shelter, halfway home, and emergency housing facility.* Homeless people can also benefit from the support services such as cantinas and personal hygiene centers.

Fig. 1: Scope and forms of provided social services for the homeless in the Slovak Republic emphasizing the securing of the shelter
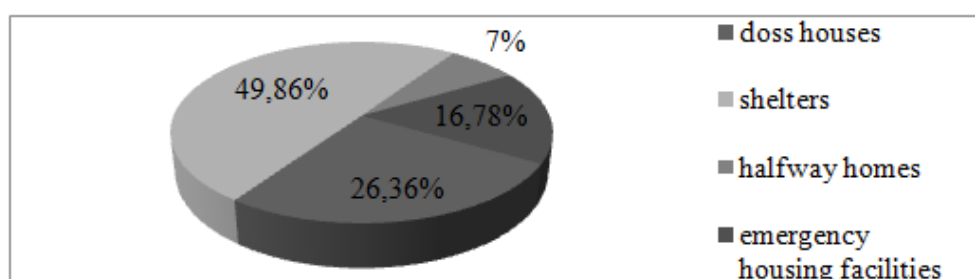
Source: [1,4,7,10,12,13,14,17,19]

Based on the results of examination of the availability and capacities in the social services for homeless people or persons in unfavorable social situation, it can be stated that the total capacity of facilities providing the given type or services represents 4,334 available spots in Slovakia. Within the overall capacity we talk about the operation of 46 doss houses, 96 shelters, 24 halfway homes, 45 emergency housing facilities and 20 low-threshold day centers. In this regard, we register the predominance of social services in the form of shelters (2,187 spots), followed by doss houses providing a shelter (1,128 spots), emergency housing facilities (712 spots) and halfway homes (307 spots).

Fig. 2: The percentage range of provided social services for homeless people in terms of the type of social service provider
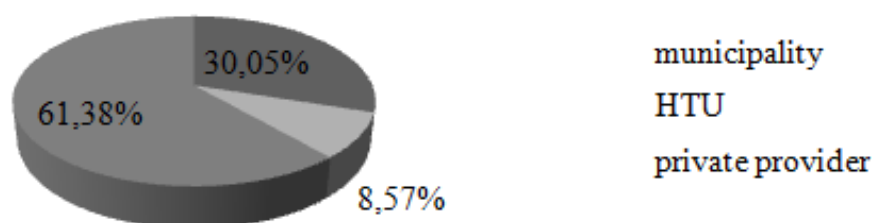
Source: [1,4,7,10,12,13,14,17,19]

Based on the analysis of the social service providers for homeless people, non-public representatives have a dominant position in the Slovak Republic (2,703 spots), followed by public providers of social services in the form of towns and villages (1,268 spots) and the Higher Territorial Units (HTU) (363 spots). In this

connection, we may highlight that while the government remains the guarantor in the social area (as well as the legislative basis) in its conception of social policy, it creates space for the activity and realization of private providers in terms of the securing and provision of social services.

Tab. 1: Scope of the existing social services for homeless people in Slovakia in terms of the various types of social services and their capacity options

region	low-threshold day centre (number of facilities)	doss house	shelter	halfway home	emergency housing facility	total capacity of accommodation facilities
Banská Bystrica region	2	100	354	22	89	565
Bratislava region	3	402	248	41	89	780
Košice region	3	141	353	45	124	663
Nitra region	2	94	325	20	17	456
Prešov region	2	81	378	119	91	669
Trenčín region	1	129	199	26	78	432
Trnava region	3	90	130	6	93	319
Žilina region	4	91	200	28	131	450
total capacity for the SR[8]	20	1128	2187	307	712	4334

Source: [1,4,7,10,12,13,14,17,19]

As already mentioned, the loss of home is a complex issue, comprising several factors. Among regional authorities we can also observe obvious differences, both in terms of number and capacity of facilities providing specified types of social services, but also a significant differentiation in terms of socio-economic dimension. As a result of socio-economic problems, manifesting themselves as an accompanying phenomenon of social exclusion and homelessness, we can mention the presence and

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[8] In terms of the target group of homeless people, this analysis may also include the operation of 29 outreach social service programs of crisis intervention, representing the realization of social work in the natural environment of persons who are subject to social exclusion or are at risk of its occurrence.

persistence of poverty in those areas. In this context, it is also important to note that poverty is a multidimensional problem, consisting not only in socio-structural, but also socio-spatial dimension. A different levels of poverty is determined depending on the effect of several phenomena (economic, historical, social...) as well as differently implemented processes within each area or region. Due to these circumstances, we can identify regions in which there is not only the occurring perpetuation of poverty, but also the process of intergenerational poverty in the long term [11]. In relation to the persistence of poverty at the same time there is also a concentration of other socio-pathological phenomena whose interconnectedness often creates barriers to effective search for solutions.

Fig. 3: Percentage of poverty within each region for 2014
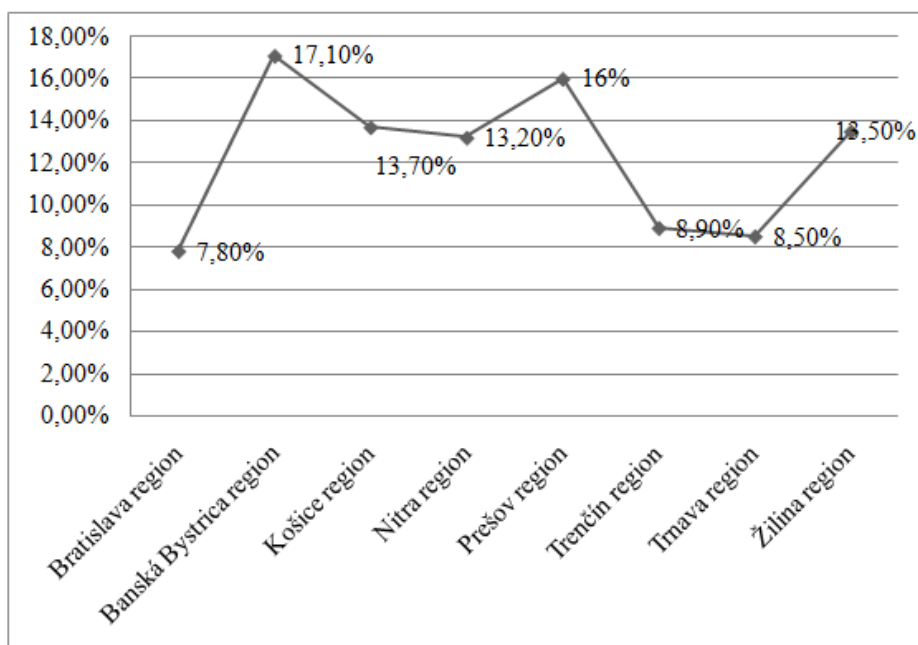
In view of the existing differences (but nevertheless with the common issue of homelessness), attention can be drawn to Bratislava and Prešov regions, which have the greatest capacities in the context of social services for homeless people in Slovakia. Interesting are, however, not only the structure and share of different types of services, but also differences in terms of selected socio-economic factors. While the Bratislava Region is the region with the lowest unemployment rate and the share of poverty, Prešov region is known for long-term problems related to high rates of poverty and unemployment. In this context, the socio-economic problems may thus participate in the further expansion of socio-pathological phenomena and the expected growth in the number of people suffering from homelessness, as well as justification for further development of social services of this type. On the other hand, the number of homeless people is growing, even in the most developed region of Bratislava. In this context, it can be concluded that homelessness and other pathological phenomena occur in different types of environments in which they persist but also further expand due to several factors, as well as insufficiently developed network of social services.

4 Discussion

The issue of homelessness and its possible solutions within the SR are subject to several factors such as inappropriately conceived legislation, insufficient capacity of facilities providing social services and their uneven distribution in terms of individual regions, as well as other factors related to the dimension of socio -economic factors (unemployment, poverty, extent of education, etc.). Based on the examined problem, it can be stated that in Slovakia we register a total capacity of 4,334 spots as at 30 May 2016, with regard to the possibility of obtaining shelter or longer-term accommodation. In terms of results we present unevenly created network of distributed social services in which there is a dominant representation of shelters, as well as the dominance of non-public providers in the provision of social services.

Conclusion

The existence of social services for the target group of homeless people is necessary in order to stop the growth of the number of people threatened by extreme form of social exclusion. Due to the absence of real and long-term solutions to homelessness we consider the current system of social services to presently be the only way we can at least partially mitigate this negative social phenomenon in Slovakia. The current aid system, however can help only a fraction of the total estimated number of homeless people in Slovakia. In this context, we also bring attention to other factors that do not only result in the emergence of homelessness, but also their accumulation with other negative phenomena. Based these circumstances, we consider it essential not only to adjust the legislative framework (legal definition of homelessness), expand the distribution and capacity of social services (in particular, outreach programs, shelters and halfway homes) and increase funding in this area, but also to create such conditions which can ensure the integration of individuals or groups of individuals back into society, along with the application of the model to ensure affordable and sustainable housing (Housing First approaches) following the example of several EU countries.

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APPLICATION OF CBR IN PUBLIC ADMINISTRATION

Meaza Haile, Jiří Křupka

Abstract: European Union (EU) member countries are expected to have acquis communautaire public administration and to fulfil all criteria adopted by European Council in Copenhagen, Madrid and Luxembourg. There are different tools and frameworks to help states achieve these criteria, such as Reference Framework for European Sustainable Cities (RFSC) and Quality of Public Administration: A Toolbox for Practitioners. Most of these frameworks and tools provide a guideline for countries to public administration and other purposes. Even though most cities of the EU member countries have different capacities, different cities could face the same problem at the same or different point in time. What is proposed in this paper is the use of case-based reasoning (CBR) to share experience among cities in solving a specific public administration problem; that is solving a problem of one city based on past experience of other cities. To identify the best solution in the case base similar to a problem at hand text parser and fuzzy aggregation method, Choquet fuzzy integral method, was used.

Keywords: Acquis Communautaire, Case-Based Reasoning, Choquet Fuzzy Integral, Multiple Criteria Decision Making, Strategic Planning.

JEL Classification: D70, D83, H83.

Introduction

The lack of general European Commission legislation applicable in the domains of public administration and administrative law poses a problem for European Union candidate countries. Candidate countries are required to have administrative systems and public administration institutions capable of transposing, implementing and enforcing the acquis communautaire, EU legislation, according to the principle of "obligatory results" ("obligation de résultat"). Candidate countries have to meet the criteria required for EU Membership as adopted by the European Council in Copenhagen, Madrid and Luxembourg. In addition, candidate countries' progress will be measured against those criteria, i.e. in the wording of the European Commission's Regular Reports, in terms of their "administrative and judicial capacity to apply the acquis", which signifies implicitly that their progress will be assessed against European administrative standards [16]. Therefore, it is essential for the EU member states to use strategic planning to achieve the expected progress.

Strategic planning… is based on the premise that leaders and managers of public and nonprofit organizations must be effective strategists if their organizations are to fulfill their missions, meet their mandates, and satisfy constituents in the years ahead [2].

The framework, used by many authors in developing strategic plan is data collection, surveys, researches and thematic analyses – SWOT (strength, weakness, opportunity and threat) analyses (analytical part); vision – goals, aims, (strategic part); actions and activities (action part) and a part of implementation, management,

measurement and evaluation [17]. As long as measurement and evaluation is involved a strategic planning process is on-going where organizations evaluate their improvement, identify their weakness propose a solution to overcome their weakness implement it and back to evaluating improvement.

1 Problem statement

Even though EU member cities have their differences in many ways, most cities suffer from the same problem at one point or another. 'Our cities possess unique cultural and architectural qualities, strong forces of social inclusion and exceptional possibilities for economic development. They are centers of knowledge and sources of growth and innovation. At the same time, however, they suffer from demographic problems, social inequality, social exclusion of specific population groups, a lack of affordable and suitable housing, and environmental problems' [11]. For instance based on studies conducted independently for the city of Vienna and Prague although presented in different categories and different words both countries face the following weaknesses:

- Poor coordination between public and private sector

- Low interaction between companies, authorities and education

- Relatively low outcome in research and development

Over the years may frameworks and tools have been developed where EU member countries would exchange experience and refer guidelines in order to improve their countries and to create similar situation through the member countries. Among those are RFSC and Quality of Public Administration: A Toolbox for Practitioners.

RFSC is a web tool designed to help cities and urban territories promote and improve their integrated urban development actions [13], [15]. Where "respect" means the RFSC values the diversity of European cities, respecting differences in local priorities and institutions. There is no one-size-fits-all solution for integrated urban development, no universal recipe for success. It is the shared vision that matters, the time frames, targets and themes should be decided locally. RFSC enables cities to move at their own pace and choose the scope of their involvement. It offers a set of tools for evaluating and monitoring public policies, and an online space for cities to share their experiences. The RFSC rethinks the basis for sustainable development of cities by proposing a grid of 25 common questions formulated based on the following four dimensions: enhance the economic efficiency of territories, foster social cohesion in conurbations, improve the environmental quality of cities, and develop integrated governance practices. It means that RFSC analyzes four areas simultaneously: economy, social, environment and governance. The RFSC is a vibrant community of cities that learn from each other, share experience and discuss common challenges. By joining the RFSC community, cities get access to different forms of exchange and support, including dedicated training sessions, peer learning and coaching from urban governance experts. Finally, for "cooperation", not competition, which is at the heart of the RFSC. Developed for cities and with cities, RFSC is a meeting place that aims to bring together various actors within one city, hundreds of cities and local authorities from across Europe and finally all those at the national and European level who believe that sustainable cities are the future [14],

[15]. The RFSC is used in countries such as Czech Republic, France, Italy, Netherlands, Poland, Portugal, Spain and Sweden [15].

Quality of Public Administration: A Toolbox for Practitioners was conceived as a helpful and practical guide for civil and judicial administrations to the challenges of good governance in a constantly changing environment. It examines the key elements of good governance and highlights positive real-world responses in Member States to dilemmas in administration, signposting the way that others may also wish to follow. The Toolbox concentrates solely on the administration of public policy and services, including both civil and judicial systems. It is about governance as a process. It does not cover the specifics of individual policies or services - for example regarding education, taxation, health, customs, competition, training, etc [12]. The figure below (Fig. 1) shows the toolbox.

Fig. 1: Toolbox overview by theme and topic

Core functions

Theme 1: Policy-making
1.1 Qualities of policy-making
1.2 Instruments of policy implementation
1.3 Continuous improvement and innovation

Theme 4: Improving service delivery
4.1 Understanding user needs & expectations
4.2 Improving processes to benefit public service users
4.3 Meeting user expectations of easy access to services
4.4 Using e-Government to access faster, cheaper, better services
4.5 Committing to service standards and measuring satisfaction

Theme 7: Managing public funds effectively
7.1 Public financial management
7.2 Public procurement
7.3 Managing ESI Funds

Major challenge

Theme 2: Embedding ethical & anti-corruption practices
2.1 Establishing the policy framework
2.2 Building public trust through transparency and accountability
2.3 Promoting integrity & reducing the scope for corruption
2.4 Detecting and acting on corruption

Mechanics of administration

Theme 3: Professional & well-functioning institutions
3.1 Managing for results
3.2 Professional leadership
3.3 Modern human resources policy and management
3.4 Total quality management

Applications of good governance

Theme 5: Enhancing the business environment
5.1 Putting business first
5.2 Streamlining administration for businesses

Theme 6: Strengthening the quality of judicial systems
6.1 Assessing and enhancing performance
6.2 Improving access to justice
6.3 Modernising justice systems
6.4 Training and continuing professional development

Source: [12]

What is proposed in this paper is a reasoning system that could be used by EU member countries to solve specific city problems or make decision based on the experiences of other member cities. By solving problems in the same or similar way as other EU cities quality of public administration of cities could get closer to unanimity. What makes the proposed method different from the RFSC discussed in the above section is that the proposed method does most work while the decision belongs to the city council. The city council provide the system with desired criteria and the system presents the council with top solution based on the criteria set by them. The system focuses on cities since cities play a key role in the social and economic development of all European territories and provides home for the majority of population [6]. Different cities have different capacity but by using CBR system cities could be able to share their experience in solving a specific problem.

2 Case-Based Reasoning

The idea behind CBR terminology is to solve a problem by using previous experience. While solving a problem we refer to a similar problem that has already been solved and if the perfect solution is found it will be used. Otherwise, a solution with more similarity values will be modified to suit the current problem and the new solution will be stored in the case library for future reference. In CBR terminology, a case usually denotes a problem situation previously experienced which has been captured and learned in a way that it could be reused in the solving of future problems. In general, a case is composed of problem description, problem solution, and outcome [1], [10]. The problem description essentially contains as much data about the problem and its context as necessary for an efficient and accurate case retrieval. Problem solution or outcome states the derived solution to that problem. CBR has the two main processes: storing and organizing cases in the case library and retrieving the solution that best suits current problem [9].

In order to solve problems using previously solved cases, there has to be an initial case memory that stores successful cases in an indexed and organized way, to make access efficient. CBR scholars have proposed several guidelines on indexing; Indexes should be: predictive of the case relevance, recognizable in the sense that it should be understandable why they are used, abstract enough to allow for widening the future use of the case base and discrete enough to facilitate efficient and accurate retrieval. Methodologies for choosing indexing could be manual and automated methods. when cases are complex and the knowledge needed to understand cases well enough to choose indexes accurately is not concretely available, hand indexing is needed otherwise automated indexing could be used. Another important factor is case organization; the case base should be organized into a manageable structure that supports efficient and accurate search and retrieval methods. Accurate retrieval guarantees the retrieval of best matching case, and efficient retrieval guarantees fast retrieval of cases for acceptable system response times [9].

The retrieve solution task starts with a (partial) problem description, and ends when best matching previous case has been found. The subtasks of retrieve process are referred as identify features, initially match, search, and select, executed in that order. The identification task comes up with a set of relevant problem descriptors. The goal of the matching task is to return a set of cases that are sufficiently similar to the new case given a similarity threshold of some kind. The selection task works on these set of cases and chooses the best match (or at least a first case to try out) [1]. In this step, a new case is entered into the system by the user; the system recalls cases that have relatively high similarity values, i.e., previous cases with similar indexes are retrieved. This process is called interpretation. When problem situations are interpreted, they are compared and contrasted to old problem situations. Different methods can be used to search cases [9].

CBR has been applied by researchers since the 90's for different fields recent applications include business failure prediction [7], eco-innovation product design [3] medical domains [5], [8].

In this paper instead of the traditional retrieving methods, such as inductive retrieval, Choquet Fuzzy Integral was applied, that is to use specific characteristics and compare cases based on these characteristics to find the best solution that satisfy

the cities' requirement. Once a similar case is retrieved the next step is to adopt the solution to meet the demands of the new case and to store the new solution to the case base for future reference.

3 Discussion

As mentioned in the introduction strategic planning is on-going process and needs a constant monitoring and fix to improve success. What is proposed here is CBR system that records all the problems or weaknesses faced by EU member cities and their solution so that solutions could be adopted by other cities in the future. This will create relation among cities in sharing experience, avoids redundancy and saves costs.

While solving any problem cities consider solutions that are implementable on their capacity and structure. Capacity includes fund, human resource, time limit, the city the problem was solved in, and so on, which are considered as case attributes. Therefore, in case representation each case contains these attributes, problem statement, and solution. The advantages of the proposed method over existing tools include:

- Providing a way to adapt solution for a specific problem instead of a strategy, based on the criteria set by city council;

- The method is also cost and time effective since the system does most of the heavy lifting, by avoiding the process of proposing alternate solutions;

- Solving these specific problems improve the overall success of a strategy;

- The system provides cities with options and freedom to choose a detailed solution for a specific problem based on their capacity without going through strategies of other cities.

Generally, the method provides a bottom up approach where cities can solve their weakness and improve the success of their strategic planning.

In this paper, a two-step retrieval method is proposed. The first step is to use text parser to find similar cases. Once these cases with similar problem statement are found Choquet fuzzy integral method will be used to choose the best-suited case for the current problem based on the comparison of case attributes.

In the first step of the case retrieval process, the problem statement of the new case is compared with cases and the cases that match the new case are chosen. These will limit the number of candidate cases. To further eliminate candidate cases Choquet fuzzy integral method will be used to find the best matching solution based on criteria set by city council. For instance, cities with smaller population would prefer solutions generated in cities with similar population size, similar culture, and growth rate based on the type of problem the city is facing. Furthermore, the solution has to be implementable with resources affordable by the city. These criteria could be implemented using multiple criteria decision-making methods such as analytic hierarchy process. For this paper, Choquet fuzzy integral method is chosen to avoid dependency issues among characteristics [4]. The following figure (Fig. 2) shows the two step case retrieval process.
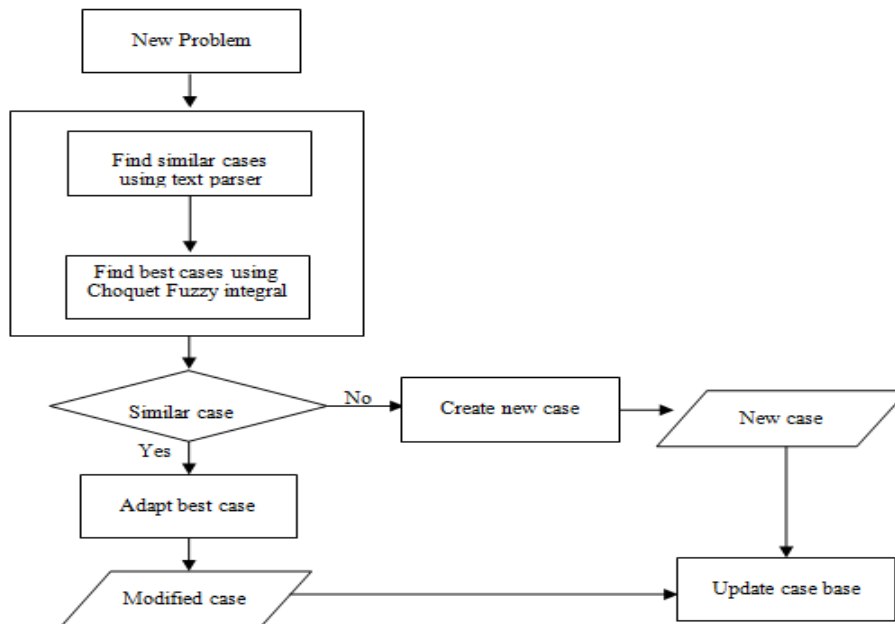
Fig. 2: Case retrival process

If a case that satisfies the given characteristics is found then the solution will be adapted and implemented by the city. The adaption process highly depends on knowledge and experience of experts the city has. After the adaption and implementation process the new solution will be stored in the case library for future reference. If there is no such case that satisfies the given criteria a solution for the new case will be created, implemented by the city and stored in the case library. The following figure (Fig. 3) shows the process flow while accessing a solution from a case base using the proposed method.

Fig. 3: Process flow for the proposed model CBR
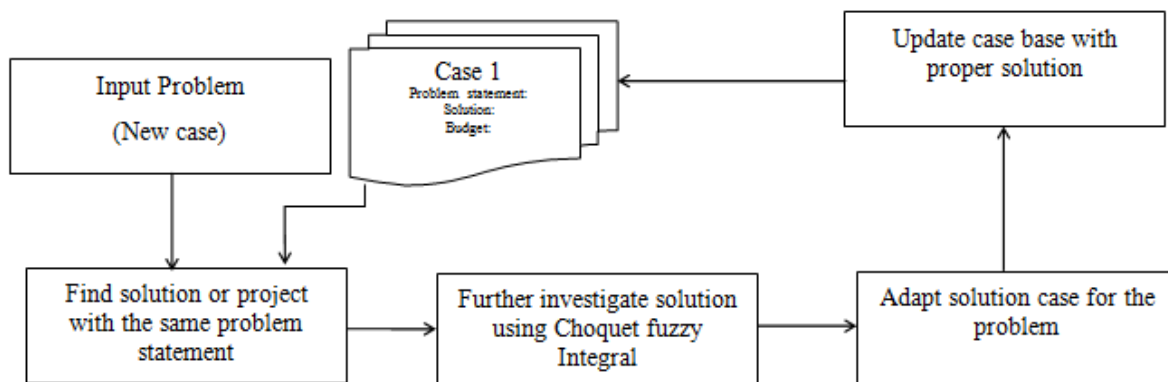
For instance in section 1, the common weaknesses of the cities of Prague and Vienna was discussed. If one of these cities were to solve those problems, using the proposed method, the city specifies the problem, and the characteristics the expected solution has to fulfill. Since it is unlikely to find a case that fulfill all required characteristics the characteristics has to be assigned priorities. Then the case library will be searched for proper solution, if a solution is found it will be adopted, implemented, and the new solution will be properly indexed and uploaded to the case

library. If the problem has not been solved by another city in the past, a solution will be created, implemented, and uploaded to the case library.

Conclusion

Over the years, different frameworks and tools have been available for EU member countries to assists member countries to have administrative systems and public administration institutions capable of transposing, implementing, and enforcing the acquis according to the principle of "obligatory results". The method discussed in this paper is application of CBR for solving cities' problems based on others experience.

The advantage of the proposed method over existing tools include: the proposed method provides a way to adapt solution for a specific problem instead of a strategy, but still provides countries the final say, like other tools and frameworks. Solving these specific problems improve the overall success of strategic planning. The method also provides cities with options and freedom to choose a detailed solution for a specific problem based on their capacity without going through strategies of other cities. This is a bottom up approach where cities can solve their weakness and improve the success of their strategic planning. For further work case study will be conducted.

Acknowledgement

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PUBLIC ADMINSTRATION AND SOCIAL POLICY IN PALESTINE: CASE STUDY OF UNEMPLOYMENT IN GAZA STRIP AND WEST BANK

Ola Hajjaj

Abstract: *This study aims to highlight the State and Public Administration policies on social problems and unemployment in relation to unemployment problem and employment policies in Palestine. It analyses the different trends of unemployment in West Bank and Gaza Strip as Palestine is fragmented geographically. Some of the regional unemployment characteristics are targeted in order to demonstrate effects of public administration measures and show the differences of unemployment rates between the two mentioned areas and its reasons. Comparison depending on the regional distribution is done to discuss the population density and political stability in both of them. The study has proved that Public Administration realised by Palestinian National Authorities has been effective in West Bank, whereas in Gaza Strip the unemployment rates shows continuous increment. Because of the current political situation in Palestine, Gaza Strip is no longer under the administration of the Palestinian National Authority as a result of internal Palestinian conflict.*

Keywords: *Unemployment, Employment, Gaza Strip, West Bank, Labour market, Policy.*

JEL Classification: *E24.*

Introduction

West Bank and Gaza Strip (WBGS) is a description often used to describe "State of Palestine" or "Palestinian territories" after Palestinian National Authority (PNA) was established in 1994 as a result of the Oslo agreement in 1993 which was held in Norway, between Israelis represented by the government of Israel and the Palestinians represented by Palestine Liberation Organization (PLO).

The Accord states that The Palestinian Authority would have responsibility for the administration of the territory under its control. The Accords also called for the withdrawal of the Israel Defense Forces (IDF) from parts of the Gaza Strip and Bank. However, since 1994 Israel separates Gaza Strip from West Bank and does not allow the movement of people between the two sides. It only allows the movement in one direction, which is from the Gaza Strip to the West Bank, and under certain humanitarian conditions [5].

Due to these circumstances the Palestinians in the West Bank and the Gaza Strip live in two different, geographically separated areas. Moreover, since the Palestinian Internal Conflict in 2007, which occurred between the PNA (represented by PLO or as known by Fatah Party) and Hamas Movement, the winner of the parliamentary elections in 2006, this political breakup has widened the geographical gap and caused the caused the two parts to drift further apart and even have become governed by different governments, rules and regulations.

The economic indicators are affected significantly with the mentioned above political events. One of the main problems which emerged since 1994 in WBGS is the unemployment problem.

1 Statement of a problem

1.1 Unemployment in Palestine and the widening Gap between Gaza Strip and the West Bank

Unemployment problem has distinguished dimensions because of the particular situation of Palestine which encouraged researchers to focus on it. It is noticeable that the rates of unemployment remained within low levels under the Israeli occupation and did not have any negative impact on the overall developments of the Palestinian labour market. In fact, the rates of unemployment reached 1 % only in the worst case scenario during the seventies [12].

With the establishment of the Palestinian authority in 1994, the Palestinian economy was suffering from the lack of ability to contain the entire Palestinian labour, this, along with the closure and siege, created a large surplus in the workforce as a result of the decline in the Israeli market demands for it. In addition, the second Gulf War at that time caused the return of many Palestinian workers who were working in the Gulf countries to Palestine. Another reason to be mentioned is the Oslo peace agreement in 1993 which also resulted in the return of many Palestinians who had been living abroad. This rapid increase in the number of returnees to Palestine in the same period was a huge burden to the Palestinian authority which was not able to manage this problem, which caused the growth of unemployment and poverty.

From 1995 until 2000, the unemployment rate reached 14.3 % in Palestine (12.2 % in the West Bank, 18.9 % in Gaza Strip). The Palestinian labour market experienced some limited improvement with regards to absorbing Palestinian labour. The public sector began to expand and employ some of the excess labour, reconstruction projects encouraged the private sector to increase its investments in ways which exaggerate its capacity to absorb more employment, and Israel allowed more Palestinian workers to work inside the Green Line, particularly in 1998-2000 [10].

With the start of the second Palestinian Intifada in 2000, the labour market expansion stopped and its imbalance was exacerbated, as is shown in Tab. 1, this is mainly attributed to the vast decline in economic activity due to Israel's oppressive measures against the Palestinian people (sieges, closures, the separation barriers, restrictions on movement of people and goods....etc.).

In addition, It started to reoccupy many cities in the West Bank (especially in 2002); that caused a rise in the unemployment rate in the period from 2001 until 2006 to 23.7 % (18.8 % in the West Bank, 34.8 % in Gaza Strip) and the gap between the demand and supply in the Palestinian labour market.

In the period from 2007 until 2010, the unemployment rate was oscillating in the range from 21.7 % and 23.7 %, reaching 20.9 % in 2011 and 23 % in 2012 (19 % in the West Bank, 31 %in Gaza Strip). After that, it continued to increase to 26.9 % in 2014(17.7 % in the West bank, 43.9 % in Gaza strip).

1.2 Public Administration Measures to Support Employment

Public policy is responsible for how the decisions of government institutions and public administration are formulated and implemented. Social policy relates to the role of the state in relation to the welfare of its citizens [6].

The high rates of unemployment often have deeper roots, it points to shortcomings and structural weaknesses in such other spheres as public administration, education and labor market institutions. The transition from school to employment needs specialized structures in public administrations to support young people after they finish education [4].

The government seeks for proper public policy measures which will reduce unemployment. Public policy may create programs which help entrepreneurs to employ job seekers. [7] State is responsible for creation of relevant business environment where all people get equal conditions while accessing job market. Entrepreneurial support policy provides vacancies in different areas, provides workshops to help train people more in-depth in a particular skill [8].

In Palestine, the legal setting has been shaped for decades by foreign governments and economic and social policy decisions, ranging from Ottoman and British to Jordanian, Egyptian and Israeli rule. After the PNA took administrative control in 1994, it sought to revamp the political situation to better meet Palestinian needs. An interim agreement was signed with Israel intended to last until 1999. In this period the PNA introduced new laws and revamped existing legislation [2]. In 2000, The Palestinian Authority has expressed its commitment to respect the international labour standard, Palestinian Labour Law No 7 was adopted as part of reforms designed to unify the fragmented legal systems of Palestine and to create a set of essential laws that would pave the way for a modern legal infrastructure for the Palestinian state. The new labour legislation replaced the Jordanian and Egyptian labour laws of 1960 and 1964 in force in the West Bank and in the Gaza Strip, respectively. The new law, ratified in accordance with International Labour Organisation (ILO) and Arab Labour Organisation (ALO) standards, is organised into 10 sections covering a range of issues [11].

The Labour Law prompted the establishment of the National Tripartite Committee for Labour Affairs, mandated to play a leading role in the development of labour and social policies. In February 2010, the Tripartite Committee met in Turin and launched a declaration – referred to as the "Turin Declaration" outlining its vision, plan of action and institutional frame work. The Turin Declaration focused on improving industrial relations, effective and transparent governance of the labour market through social dialogue, development and effective enhancement of labour administration and labour inspection, and reforming the Labour Law and legislation, while recognizing the important role of free, independent and representative workers' and employers' organizations [3].

In 2011, The Palestinian National Development Plan 2011–2013 was developed by the Palestinian National Authority. It was aligned with the Labour Sector Development Strategy of the Ministry of Labour. The plan aims included enabling private sector growth and job creation, development of the Palestinian educational system and investing in the national infrastructure. As well as, it paid attention to the

full participation of both women and youth in order to activate their economic empowerment. However, activities within the Plan did not tackle specific issues related to employment especially youth employment. Moreover, it did not have effect on the continues increase in unemployment rate in Gaza Strip because of the existence of Hamas government which is considered illegal government after the Internal Palestinian Conflict in 2007 and the split of the unity government and the division of the Palestinian territories into two entities, the West Bank governed by the Palestinian National Authority, and Gaza strip governed by Hamas.

In 2013, the unemployment rate was 23.4 % (18.6 % in the West Bank, 32.6 % in Gaza Strip). The general framework of the Palestinian National Development Plan (2014-2016) placed employment as one of the national priorities and calls for the creation of 600,000 new job opportunities over the next decade. Youth employment and entrepreneurship development are both prioritized in the strategic development goals of the Palestinian National Authority. In order to achieve these goals, the Palestinian National Development Plan (2014–2016) has put forward policies for training programmes for graduates, capacity development of young entrepreneurs to manage small and medium sized enterprises (SMEs), enhancing business incubators and providing advice to young entrepreneurs [14].The plan has a positive impact on the unemployment situation in West Bank as the unemployment rate in 2015 dropped to 17.3 %.

2 Methods

The research applies analytical approach and is based on time series data from the period 1995 - 2015, by reference to the statistical surveys, annual reports and publications concerned about unemployment sector and the Palestinian labour force which issued by the Palestinian Central Bureau of Statistics. This numerical data are used to describe the characteristics of the unemployment to clarify the aim of the study in showing the differences of unemployment rates between Gaza Strip and the West Bank and justifying it.

3 Problem Solving and Discussion

In order to understand the difference in unemployment rates between Gaza Strip and the West Bank we will study the unemployment characteristics in both of them depending on regional distribution.

3.1 Effect of Public Administration Measures on the Regional Distribution of Unemployment

Geographical unemployment rates are often regarded as signposts for the socio-economic performance of regions. Consequently, the analysis of regional unemployment differences has attracted increasing interest in the economic literature [1].

The time series annual rates provided by PCBS, for the period from 1995 to 2015 indicated in Tab. 1, shows that: The unemployment problem started to surface in the early nineties, reaching 23.8 % in 1996. Then it increased during the second Intifada to 31.2 % in 2002. After that, it declined slightly by the end of 2003 as a result of the improvement in economic activity, ultimately, falling to 21.7 % in 2007. After 2007,

it continued oscillating between high rates especially in Gaza Strip because the Palestinian national development plan cannot involve Gaza Strip which is controlled by Hamas government.

Tab. 1: Unemployment Rates in Palestine for the period from 1995 to 2015

Year	Palestine	West Bank	Gaza Strip
1995	18.2	13.9	29.4
1996	23.8	19.6	32.5
1997	20.3	17.3	26.8
1998	14.4	11.5	20.9
1999	11.8	9.5	16.9
2000	14.3	12.2	18.7
2001	25.3	21.6	34
2002	31.2	28.2	37.9
2003	25.5	23.7	29.1
2004	26.8	22.8	35.3
2005	23.5	20.4	30.3
2006	23.7	18.8	34.8
2007	21.7	17.9	29.7
2008	26.6	19.7	40.6
2009	24.5	17.8	38.6
2010	23.7	17.2	37.8
2011	20.9	17.3	28.7
2012	23	19	31
2013	23.4	18.6	32.6
2014	26.9	17.7	43.9
2015	25.9	17.3	41.0

Source: [13]

Geographically, Fig. 1 below clearly shows the difference in unemployment rates between Gaza Strip and the West Bank. In 1995 the unemployment rate in the West Bank was 13.9 while in Gaza Strip it was 29.4, after that it fluctuated to reach the lowest value for both in 1999 at 9.5 in the West Bank and 16.9 in Gaza Strip. Then it started to rise continuously again to reach 37.9 in Gaza Strip and 28.2 in the West Bank in 2002.After that, in the West Bank it started to decline and the trend has not changed much, However in Gaza Strip the rates have fluctuated in the high values and reached 43.9 % in 2014 and 41.0 in 2015 %.

Fig. 1: Unemployment Rates in Gaza Strip and West Bank (1995-2015)
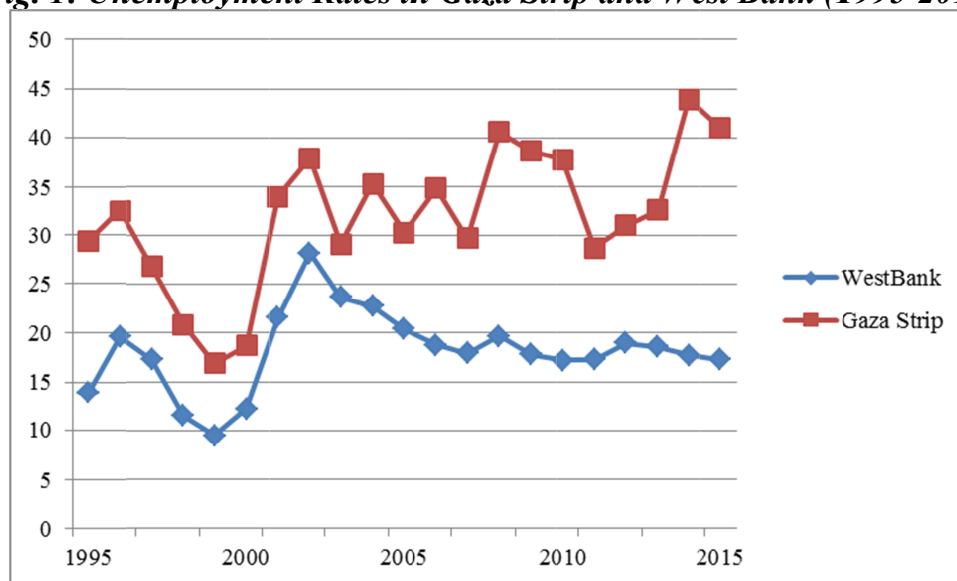
Enhancing regional distribution of employment was included in the Palestinian National Development Plan (2014–2016). Improving the quality of education and specifically vocational education is stated as a policy priority. As well as, supporting the establishment of conductive business environment and promoting the cooperative sector. However, this plan is not applicable in Gaza Strip because of the Palestinian internal conflict. In addition to other reasons which can be summarized in the following:

- Gaza Strip has a higher population than the West Bank. According to the data of the PCBS Statistical Yearbook, which was published in December 2015, the total population density in Palestine was 778 (Capita\km2) by the middle of 2015, while in the West Bank it was 506 (Capita\km2) and 4,986 (Capita\km2) in Gaza Strip.

- Limitation of external international aid to Gaza Strip after the Palestinian Internal Conflict in 2007 which occurred between the PNA (Fatah Party) and Hamas Movement which is considered as an unacceptable party by the international community.

- Repeated closures of Gaza Strip borders and the Israeli blockade in place since 2006 when Hamas won the parliamentary elections. After that, Israel launched a war on Gaza Strip in 2008; it is of note that the unemployment rate in this year was significantly higher than the previous years. Then another war in 2012 was followed by yet another in 2014, which was the hardest, where the unemployment rate jumped to its highest level. The New York Times noted that damage in this third war was more severe than in the two preceding wars, 2,310 Gazans were killed according to the Gaza Health Ministry statistics. Palestinian officials estimated on 4 September that 17,000 homes were destroyed and 30,000 were partially destroyed by Israeli bombing, the reconstruction would cost $7.8 billion, which is about 3 times Gaza's GDP for 2011[9].

- Natural Resources in Gaza Strip are limited.

Conclusion

Study has evaluated the unemployment characteristics in both Gaza Strip and the West Bank and has provided comparison of social and political aspects of state policies of local administration depending on regional distribution. The fact that the unemployment rates is higher in Gaza Strip than its rates in the West Bank is obvious and approved by the available time series data provided from the PBCS. Also its trends differ between Gaza Strip and the West Bank because of many reasons mostly the political stability as the situation in the West Bank can be considered relatively more stable than the situation in Gaza Strip, especially that Gaza Strip had suffered from three wars since 2008. In addition to the Palestinian internal conflict which not allowing the involvement of Gaza Strip in the Palestinian national development plans which developed by the Palestinian National Authority which is currently located and controlling only West Bank while Gaza Strip is controlled by Hamas government. In addition to the geographical area and population as the West Bank is characterized by larger area (5,655 km²) compared to (365 km²) for Gaza Strip while in the same time the population density of Gaza Strip is much higher which causes a lot of pressure on the economy in general and on providing a new job opportunities in particular.

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THE ROLE OF LOCAL PUBLIC SECTOR IN FINANCING PUBLIC SERVICES

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Abstract: *Local public sector is significant mainly in areas where it provides public services unattractive for subjects from the private sector. Local public sector provides services in the public interest and finances them from public resources (local self -governments' budgets). The paper deals with expenditures of local public sector divided by COFOG functions (social protection, health, education, culture and recreation) and the rate of their decentralisation of expenditures in 28 countries of the EU. It aims to evaluate local public sector according to financing, with a particular focus on capabilities of expenditures of local self-governments in selected areas of public services in EU countries. By using cluster analysis, similarities and differences are evaluated in the expenditures of local public sector by function in EU countries. Results of the research carried out by using cluster analysis showed the most marked differences in EU countries by clusters in expenditures from the public sector on health. Conversely, the least marked differences in all countries are seen in the expenditures of the local public sector on recreation and culture.*

Keywords: *Local public sector, Public services, Local government expenditure, Decentralisation, Cluster analysis.*

JEL Classification: *H75, H76, H83.*

Introduction

The local public sector plays an important role in the implementation of local public policies in European countries. Each reform of public administration should lead to an increased efficiency of public resources, quality of provided services and performance of the public sector. The range of public expenditures is closely associated with financing of public needs and the public sector. Budgetary expenditures of local governments are allocated to the needs of the local and regional sector. The type and nature of a local public service defines the structure and volume of territorial budgetary expenditures. Nevertheless, the volume of territorial budgetary expenditures is constantly increasing, which is a reflection of increased autonomy and responsibility of local governments for securing and financing the public sector within their area, but also the growth of the public sector as a whole [1], [2], [18].

This paper aims to evaluate the local public sector by financing, with a particular focus on expenditure potential of local governments in areas of public services in EU countries. It attempts to provide a view of local public expenditures in four key areas of the local public sector, fundamental for the development of human-potential services. The paper concentrates on the expenditures of the local public sector by COFOG functions (social protection, health, education, recreation and culture) and the extent of their decentralisation of expenditures in the individual countries in 2014. Using cluster analysis and box plot, similarities and differences

in expenditures of the local public sector in EU countries are compared by means of clusters.

1 Statement of a problem

The local public sector can be characterised as a non-profit public sector financed from public funding, managed and administered by the local government (municipalities, regions), reaching decisions through public vote and subject to public checks [4], [7]. Another definition of the local public sector is provided in the ESA methodology (European System of Accounts), where public administration is considered a sector (S 13) comprising four sub-sectors (Central Government, State Government, Local Government, Social Security Funds). Local Government sector is one part of the public administration sector and it includes the sorts of public administration authorities whose competence reach local part of economic area [8], [14]. As stated by [6] local public sector (classified S1313 by the ESA), it comprises local authorities with general competencies (local and regional governments) and bodies with more specialised competencies (responsibilities vary from one country to the next).

The local public sector provides public services in the public interest, financing these from public resources (the budget of local governments). The significance of the local public sector consists mainly in areas where those public services are provided which are not (e.g. financially) attractive for private-sector subjects [15], [16]. Municipalities and regions procure public services not only from the viewpoint of their, i.e. local, needs, but frequently also public services defined by the range of delegated power and responsibility for their procurement in terms of the decentralisation of the public sector [18].

In connection with ensuring public services, most advanced countries delegate expenditure competences to the individual levels of local governments: public administration is decentralised. A successful decentralisation joins public finances and fiscal power with responsibility for providing services with functions of local governments. The scope of decentralisation of public administration is mostly expressed by the share of expenditures of central, regional and local administration on total expenditures of public administration or GDP. Fiscal decentralisation plays a significant role for the development of local public services, expressing that lower levels of public budgets decide about the provision and financing of services of the public sector on the basis of generally valid rules of local specificities as well as specificities of a given local unit [17], [19], [20].

Local public sector is dealt with in numerous papers, such as [4], [7], [13], [15], [16], [20] in connection with its scope, trends and reform tendencies, procuring and financing public services. In the management and financing of public sectors, however, also corruption is tackled, including the evaluation and measuring [12]. In [13], attention is paid to the comparison of effects of local reforms of public sector in Europe, mainly to financial austerity measures, territorial reforms, democratic innovations and measures in New Public Management, but also other aspects of management.

2 Methods

Eurostat data have been used [10]. The set comprises 28 EU countries (Belgium-BE, Bulgaria-BG, Czech Republic-CZ, Denmark-DK, Germany-DE, Estonia-EE, Ireland-IE, Greece-EL, Spain-ES, France-FR, Croatia-HR, Italy-IT, Cyprus-CY, Latvia-LV, Lithuania-LT, Luxembourg-LU, Hungary-HU, Malta-MT, Netherlands-NL, Austria-AT, Poland-PL, Portugal-PT, Romania-RO, Slovenia-SI, Slovakia-SK, Finland-FI, Sweden-SE, United Kingdom-UK). The paper provides a comparison of total expenditures of local public sector allocated by local governments in EU countries, including selected areas of local public services by COFOG classification (education, social protection, health, recreation and culture, as % of GDP) and the extent of decentralisation in 2014 (the latest available data on local public expenditures by COFOG). By use of cluster analysis, similarities and differences in the allocated local public expenditures by function in EU countries by clusters have been compared (Denmark has been excluded from the set as it shows extremely high expenditures of local public sector on social protection when compared to other countries). Cluster analysis is a multi-dimensional statistical method used to classify objects. It enables sorting observed units into several groups so that similar units occurred in the same group, and, in turn, so that units from other groups differed fundamentally. In the present study, these were EU countries excluding Denmark. In the processing stage, hierarchical cluster analysis was used, and the resulting distances between the individual objects (EU countries) were visualised by means of a diagram called dendrogram [10]. Further, EU countries were compared using Box-plot, which is a form of graphic visualisation of numerical data through their quartiles, dividing the statistical set into quarters, when 25 % of items are below the values of the lower quartile *Q0.25* and 75% below the upper quartile *Q0.75*. The middle "box" of the diagram is delineated by the third quartile from the top, the first quartile from the bottom, and between those the line defining the *mean value* is found. The height of the box represents an *interquartile range*. The lower vertical line (lower whisker) corresponds with values found beneath the box in the distance not more than the factor of 1.5 of the size of the box. The end of the whisker corresponds with the lowest such value from the set. Similarly, the upper whisker corresponds with the highest value from the set. Apart from whiskers (below and above them) are seen points which correspond with the so-called outliers [10].

3 Problem solving

3.1 Public expenditures of local public sector for the development of services in EU countries

The size of the local public sector as a whole and in selected areas of local public services in EU countries expressed as a share of local public expenditures on GDP in % is seen in Fig. 1. Strong expenditure preferences of the local public sector as a whole as well as by selected functions including services of human development can be observed in Scandinavian countries. The role of local public sector is connected with a huge volume of territorial budgets, possibilities of own local resources, mainly tax resources, and a high autonomy of territorial budgets. The lowest expenditures of local public sector, including expenditures by function, is seen in Malta and Cyprus. Very low expenditures of local public sector by functions are also observed in Ireland,

Greece and Spain. These countries demonstrate centralisation of expenditures in the observed public services, resulting from a strong dependence on resources from the government budget and low autonomy of territorial budgets.

Fig. 2 shows the extent of decentralisation of expenditures of the local public sector (as % of total local expenditures) in EU countries. The strongest extent of decentralisation of expenditures in social-protection services is observed in Denmark, the United Kingdom and Germany. In Italy, Finland and Sweden, the strongest decentralisation of expenditures is seen in health services, and a strong decentralisation of expenditures in education is observed in Slovakia, Lithuania, Latvia, Estonia, Slovenia and the Netherlands. By contrast, a low extent of decentralisation of expenditures can be observed in cultural, recreational and sport services (except for Cyprus). Cyprus and Malta are characterised by a strong decentralisation in other local public services. As there is no single system and structure of local administration in EU countries, there are also differences in the extent of decentralisation and centralisation of expenditures in public services, which are influenced by numerous other factors, external as well as internal, in the individual countries (system of taxation, cultural, social, political, demographic, historical or economic influence).

Fig. 1: Expenditures of local public sector for the development of public services in 2014 (% of GDP)

■ Total local public expenditures (% of GDP)

□ Total selected local public sector expenditures (social protection, health, education, recreation and culture) % of GDP
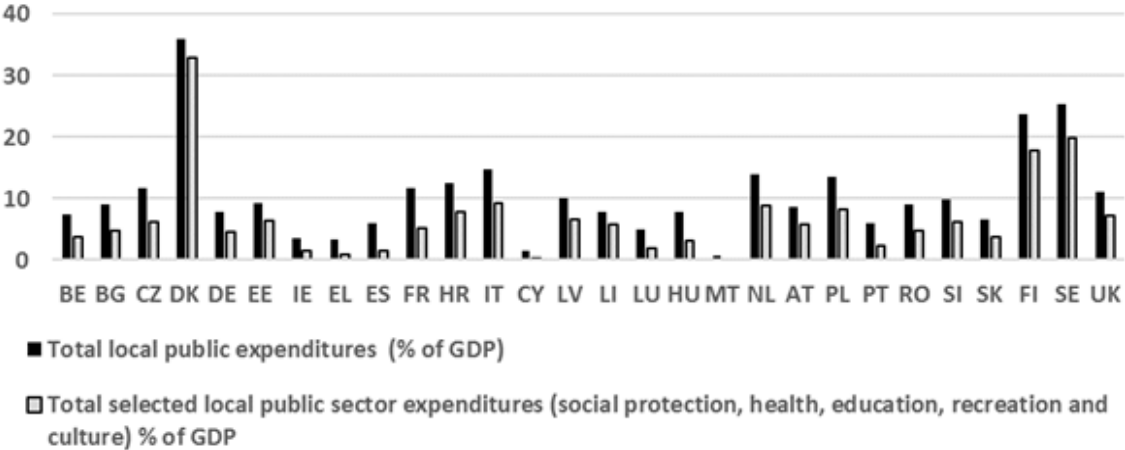
Source: author's according to [9]

Fig. 2: Comparison of decentralisation of expenditures in the local public sector by public services in the EU countries in 2014 (% of total local expenditures)

■ Social protection   ▤ Health   ▦ Education   ▣ Recreation and culture
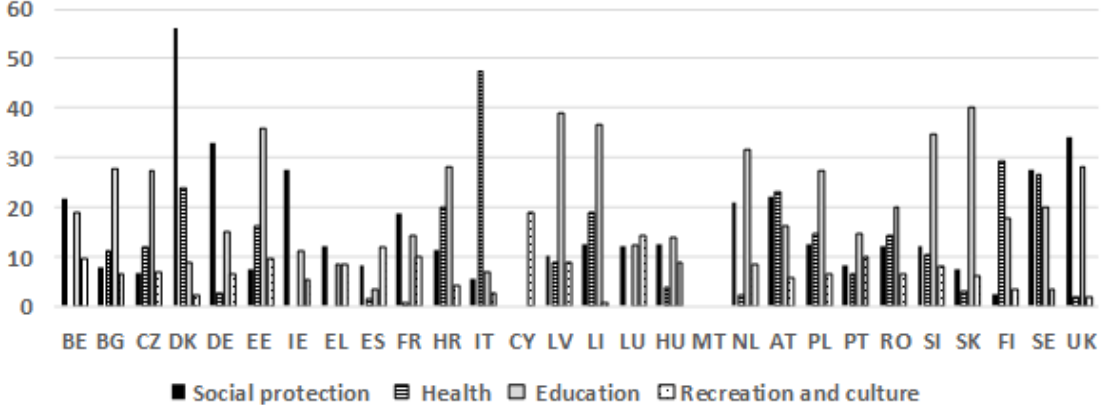
3.2 Comparison of public expenditures of local public sector by functions in EU countries using analysis

The comparison of expenditures of local public sector by COFOG functions (education, health, social protection and recreation and culture) in EU countries, excluding Denmark in 2014 was generated through the method of cluster analysis. Results of the cluster analysis enabled division of EU countries (without Denmark) into three clusters based on internal similarity. The first cluster comprises Belgium, Bulgaria, Malta, Germany, Ireland, Greece, Spain, France, Cyprus, Luxembourg, Hungary, Austria, Portugal, Romania, and Slovakia. The second cluster consists of the Czech Republic, Estonia, Croatia, Lithuania, Latvia, the Netherlands, Poland, Slovenia, and the United Kingdom. The third cluster is composed of Italy, Finland, and Sweden.

In the first cluster, seven countries: Cyprus, Malta, Hungary, Portugal, Spain, Luxembourg, Greece, and Ireland; demonstrate the highest internal similarity in allocated local public expenditures on public services. Another internal similarity in the first cluster is seen in six countries: Belgium, France, Germany, Bulgaria, Romania, Slovakia, and Austria. In the second cluster, the highest similarity in the structure of local public expenditures in services is seen in the Netherlands and the United Kingdom. Another internal similarity of local public expenditures in the second cluster is seen in seven countries: in the Czech Republic, Estonia, Lithuania, Latvia, Slovenia, Croatia, and Poland. The third cluster is composed of three countries (Sweden, Finland, and Italy), where the highest similarity in expenditures of local public sector by functions is seen in Finland and Sweden (see dendrogram, Fig. 3).

Fig. 3: Evaluation of expenditures of local public sector by selected functions in EU countries (% of GDP)

a) Dendrogram   *b) Box plot*

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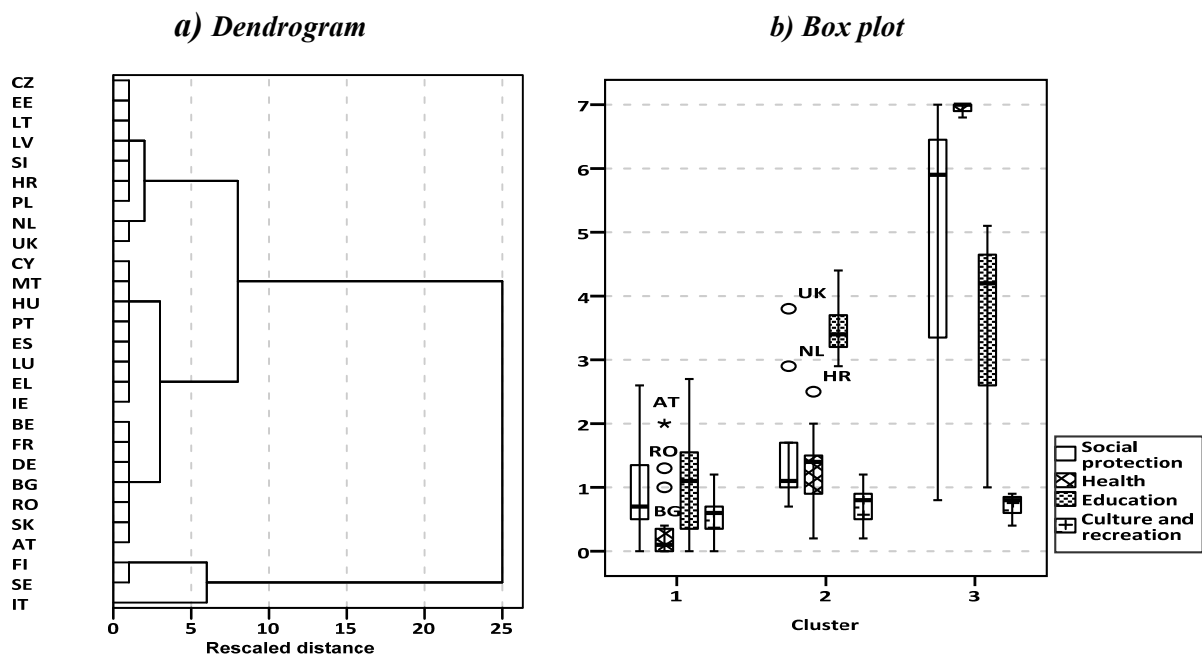
Fig. 3 (box plot) further describes the form of graphic visualisation of local public expenditures as % of GDP in EU countries in clusters. **The first cluster** is composed of countries with lowest expenditures of local public sector on health, culture and recreation. These countries also have relatively low expenditures on social protection (with a mean value of approximately 0.8%) and expenditures on education (with a mean value of approximately 1.1%). The highest value in local expenditures on social protection is seen in Germany, 2.6% GDP, as opposed to nil local public expenditures on social protection in Malta and Cyprus. The dispersion of value is apparent in expenditures on education, with highest expenditures in Slovakia (2.7%), as opposed to nil expenditures in Malta and Cyprus again. Outliers can be observed in expenditures of local public sector on health in Austria (2%), Romania (1.3%) and Bulgaria (1%) with significantly higher local expenditures compared to other countries in the first cluster. **The second cluster** shows countries with the highest expenditures of the local public sector on education (with a mean value of approximately 3.3%, with the highest local public expenditures seen in the Netherlands, 4.4%, as opposed to Lithuania, 2.9%) and low local public expenditures on other observed public services. Outliers are represented by the United Kingdom (3.8%) and the Netherlands (2.9%) in expenditures of local public sector on social protection, in comparison with the mean value, approximately 1.1%. In Croatia, an outlier can be observed in local expenditures on health (2.5%, against the mean value of 1.5%. **The third cluster** comprises three countries (Italy, Sweden and Finland) with the highest local public expenditures on health (with the mean value of approximately 7%) and low local expenditures on recreation and culture (with a mean value of approximately 0.8%). The widest dispersion of value in terms of the inter-quartile range is seen in expenditures of local public sector on social protection and education. Apart from Italy (0.4%), Finland and Sweden also have the highest expenditures of the local public sector on social protection (mean value of approximately 6%), compared to other EU countries excluding Denmark. In expenditures of the local public sector on education (mean value of 4.2%), the lowest value of local expenditures is observed in Italy (1.0%), as opposed to Sweden (5.1%) with the highest value.

The most marked differences between EU countries found through cluster analysis were observed in expenditures of the local public sector on health. Conversely, the smallest differences between the clusters are seen in expenditures of the local public sector on recreation and culture. The widest dispersion of values was observed in expenditures of local governments on education and social protection. The results showed a varied extent of fiscal decentralisation of expenditures by function in EU countries.

4 Discussion

Local public sector plays a significant role in procuring and financing public services. Recommendations of some authors can be summarised as regards local public sector, associated with procuring public services [1], [5], [11], [17], [18]. With respect to allocation, most services should be procured at the local level in case they serve a local purpose. Those products and services should be procured at the central level whose purpose goes beyond the local area. Services leading to market failure, but still wanted by the society, should be provided at the central level in case of a low government failure. Subsidies from a higher level of the budget should be provided

only on the services whose benefit overlaps local boundaries and to ensure balancing of income in municipalities. Based on the results, it can be argued that the higher the engagement of local public sector is, the higher the volume and variety of structure of public expenditures, and vice versa. According to some authors, [2], [11], [17], [19], [20], decentralisation of public administration (fiscal decentralisation) can be considered the pillar for the development of local public sector. These authors based their opinion on the assumption that provision of public services at the local level is more efficient and economical, mainly because local expenditures conform more to local priorities and preferences, which motivates local governments to improve on exploiting their resources, resulting in higher transparency and responsibility for allocated expenditures. The extent of decentralisation or centralisation of expenditures varies in the observed services in the countries, which was also confirmed by the present research. Many factors come into play, mainly the economic level of the country, political and demographic factor, local specificities, the size of the local public sector and the local governments' willingness to procure, provide and finance the respective public services. As [3, p. 245] argues, local governments deal with whether it is more beneficial for the public sector to provide a given service in terms of its direct authority or to delegate the provision of the service to other subjects for a particular fee (either explicit - regular payments from public budgets, or implicit - authorisation for the collection of particular fees from the public). As the present results, as well as other pieces of research or studies, such as [6], [11], show, Cyprus and Malta demonstrate a strong centralisation of expenditures in most observed public services (social protection, health, education), Malta also in recreation and culture. This fact can be explained by their small size, comparable to the size of a municipality, where the role of local public sector is quite limited or none. By contrast, these countries demonstrate the impact of the public sector and a strong decentralisation in general public services. It is therefore more economical and efficient to provide most public services in a centralised manner.

The results are difficult to define and the efficiency of resources impossible to measure directly in the public sector. It is therefore necessary to consider various approaches to measuring and evaluation of allocated public expenditures in the individual areas of local public sector. In analysing the efficiency of the public sector and for the sake of an objective system of public expenditures, specific methods and processes are applied, mainly comparative methods (temporal, spatial), performance, norms or standards. Also, a comprehensive audit or a system of public control of the given country can be considered a significant method contributing to the evaluation of public-expenditure efficiency.

Conclusion

Increased responsibility of local governments in advanced countries in procuring and financing of the public sector in their area reflects increased autonomy and volume of territorial budgets. Nevertheless, a particular fiscal system is always a compromise in the given country, based on historical, political and other aspects. Different preferences of local expenditures by function have been proved in EU countries, as well as their extent of decentralisation. The results show that the highest expenditures of local public sector as a whole as well as by selected functions that include services of human development are seen in Scandinavian countries, and the lowest

expenditures of local public sector, including local expenditures by function are seen in Malta and Cyprus. The comparison of expenditures of local public sector by use of cluster analysis revealed rather significant differences in preferences of expenditures of local public sector in the individual countries, which are reflected to various degrees in centralisation or decentralisation of public services, but also in financial capabilities of their development. The largest differences in EU countries were found in expenditures of local public sector on health; conversely, the least differences in all countries were found in expenditures of local public sector on recreation and culture. The highest volume from the observed expenditures of local public sector in EU countries was proved in education and social protection. Also, the widest dispersion of values of local public expenditures was also found in these services in the given countries. There are numerous unanswered questions connected with the role of local public sector and financing of local public services in the EU, such as the evaluation of efficiency of allocated expenditures and the quality of public services, which may serve as a theme for further research.

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POPULATION AGING AND VOLUNTEERING IN FIRE SERVICE IN THE PARDUBICE REGION: A CASE STUDY ON IMPACT ON PUBLIC FINANCE

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Abstract: Both fire protection and fire service are considered as traditional state functions under public interest. Besides, fire service is considered to be economic good provided not only by state, public sectors and municipalities or communities but by career and volunteering fire fighters as well. In general, volunteers have substantial significance for cost of fire service in the Czech Republic due to fact that they participate in fire service as altruists and often without any claim on remuneration. The Czech Republic has come to the phase of population aging; thus there is an expectation of declining of volunteering in fire service due to overaged fire service units not able to meet requirements for service as fight fighters. In such a case, the unit would be substituted by fire fighters serving as state employees. This article, as a case study for the Pardubice region, deals with an impact of population aging on public finance when volunteering fire fighters would be substituted by Fire Rescue Service of the Czech Republic. The study proved that impact of population aging on public finance in the area of fire protection would be expected as really tiny.

Keywords: Fire service, Volunteering, Public spending, Population aging.

JEL Classification: J18, H41, H59, H61, R58.

Introduction

The Czech Republic entered the stage of population aging a couple of years ago. According to a demographic projection for the next 50 years, both increasing of mean age of men and women and shrinking of working population as well as continuing of rural depopulation are considered as a challenge to national security in all Czech regions. [22] In addition, such changes do not only change availability of manpower needed for national security system´s capabilities but also they may have an impact on public money. For that reason, it is worth analysing that problem on the regional -level due to fact that police and fire protection are organized in regional patterns. Thus their capacity and capabilities usually depend upon local manpower, in particular, the fire service. [13] The aim of the article is to make an estimation of impact of demographic aging on costs of fire service in the Czech Republic, in particular, in the Pardubice region.

1 Problem statement

Both fire protection and fire service are considered as economic goods/services which can be classified not only as public but as private once as well. [5] From a historical point of view, fire protection and fire service are ordered to traditional both municipal and state functions which are usually linked very closely to volunteering. Taking into account life and institutions in the Czech Republic, the Czech Republic is considered as a country depending upon volunteering in fire service units because

almost each of more than 6,000 small villages in the Czech Republic runs a fire unit and overwhelming majority of them is operated by volunteers. That organizational model saves public money significantly. Nevertheless, economic transition a privatization in 1990´s cased a reduction of number of fire units in the Czech Republic in general, due to axing costs. As a result of entrepreneurial greed, a deal of industrial fire units was dissolved and business got depended upon fire units run by state and municipalities.

In fact, the quantity of fire units is in the Czech Republic keeps shrinking on. The number of fire units decreased from 10,545 in 1998 to 7,599 in 2014. In addition, the number of fire unites operated by volunteers diminished from 10,182 in 1998 to 7,261. [17, 19] Regarding such a development, fire service is more and more an area of responsibility for fire fighter units run by the Czech state. While Fire and Rescue Service of the Czech Republic (FRS) run 226 fire units in 1998 only, they run already 241fire units now. [18, 20] With regard to the stage of demographic aging which the Czech Republic entered in 2010 in, there is, in general, an estimation that cost of fire protection and fire service covered by public finance may rise because there would not be fit volunteers enough who would be able to carry out the proper fire service. Hence, the quantity of employees working in FRS should increase and the cost spent on fire protection service may rise significantly.

2 Methodology

Due to fact that responsibility for fire protection is a state one; in fact, it is part of the polity, [24] any reduction of capacity in fire protection which have been run either by private sector or municipalities so far should be substituted by expanding FRS´s capacities. Besides, the Czech Republic is ordered to states with high level of volunteers participating in the fire service according to an international statistic [23]. Heretofore, only 12% firemen and 8% fire units serve in the 24/7 regime. In comparison with the U.S., Belgium and Norway, the Czech Republic has two times less employees (full-time job) in the fire service. For instance, the U.K., Bulgaria and Greece employed 80% firemen for job. Nevertheless, the firemen for job intervene more often than fire units operated by volunteer in the Czech Republic. In particular, they handle 60% of fires. [19] Hence, they are very productive in a sector which has been already labour intensive for more than two centuries.

So authors suppose that any reduction of volunteer fire protection units caused by ongoing demographic changes would be substituted by FRS units with a small increase in staff, ergo in personal cost which are to expect manifold higher than in the volunteer fire protection units not serving under condition of 24/7 stand-by regime. That should be verifying by a case study focusing upon a region, in specific case of the Pardubice region. This region was chosen with regard to information availability needed for analysis. Although most of such information is provided by FRC´s Directorate General as a yearbook, e.g. [17, 19], the territorial division of FRC in Pardubice is the only one in the Czech Republic which provides more details in its regional yearbooks. [18, 20]

Furthermore, data provided by the Czech Statistical Office, Ministry of Finance, [2] Ministry of the Interior [12] and Ministry of Labour and Social Affairs [3] was applied in order to conduct this case study. In particular, authors had to scrutiny more than 600

issues in Business Register [16] on citizen-actions public focusing on fire protection in the Pardubice.

3 Problem analyse

3.1 Fire service as a good and volunteering in Fire service in the Czech Republic

Whether fire protection and fire service are believed to be either public or private goods usually depends upon national polity. From the Czech Republic point of view is fire protection considered as public interest under the aegis of constitutional law; therefore, fire service is supported by public money and government takes precautions against failures in fire protection caused by both private and public stakeholders. For that reason the state operates a chain of fire stations staffed by fire fighters units. In fact, this chain is completed by a set of other unit under different status (see Fig. 1).

Fig. 1: National technical polity and status of fire service units in the Czech Republic, 2014
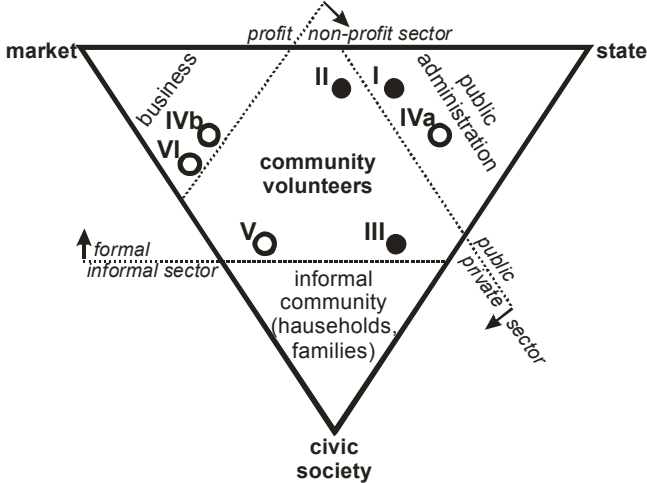
According to Fig. 1, there are six kinds of fire service units in general. Two of them (run by Fire Rescue Service of the Czech Republic – type I and Czech Armed Forces – type IVa) are under responsibility of Ministry of the Interior and Ministry of Defence. Other two types (IVb, VI) are industrial fire departments usually run by private sector. Nonetheless, majority of fire service units is operated by communities and municipalities (type II, III, and V). Going more into details, the substantial differences among the units as well as their capacity and performance in fire protection is shown in tab. 1 where we can find out that fire units are organized partly in accordance with principle of territoriality (I, II, III), partly in compliance with responsibility for property of community/municipality (IVa, V) and business unity (IVb, VI).

Tab. 1: Organization, capacity, and performance of the fire service in the Czech Republic, 2014

area of responsibility	public sector				private sector (plants, airports, etc.)	
	state		municipalities			
	em-ployees	volun-teers	em-ployees[a]	volun-teers	volun-teers	em-ployees
all-inclusive reg. district	I	-	-	-	-	-
municipal district	-	-	II	III	-	-
property (local) district	IVa	-	-	V	VI	IVb
capacity and performance						
number of units involved	241 (+16)[b]	-	232	1.334 (+5.551)[c]	144	81
number of people in the 1st line)	6.476 (+424)[b]	-	70.503			2.476
number of actions (fires)	18.551 (+135)[b]	-	13.735		61	1.020

Notes:

I…Fire Rescue Service of the Czech Republic (Ministry of the Interior)
IVa… Czech Armed Forces (Ministry of Defence)
a)… either full-time or part-time job
b)… Ministry of Defence
c)… only category V

II… Fire Department (cities, district towns, more than 1.000 residents in community)
III… Fire Department (small towns)
V… Fire Department (small communities)
IVb, VI… Industrial Fire Department

Source: [19]

3.2 Fire protection in the Pardubice region

Nevertheless, fact that majority of fire units is operated by volunteers in towns and villages (II, III, V) poses a significant menace for suitability of standard of fire protection in the Czech Republic because they have been affected by internal migration for decades. As a consequence of permanent rural depopulation and entering population aging, average age of the Czech rural population is increasing and to operate a fire fighters unit of the V-class is getting more and more difficult.

Tab. 2: Fire service units in the Pardubice Region in 2010 and 2014

Status of unit	District								the Pardubice Region	
	Chrudim		Pardubice		Svitavy		Ústí nad Orl.			
	2010	2014	2010	2014	2010	2014	2010	2014	2010	2014
I[*]	3/3	3/3	3/3	3/3	4/4	4/4	5/5	5/5	15/15	15/15
II[*]	7/11	10/11	0/1	0/1	5/7	5/7	9/10	9/10	21/29	24/29
III[*]	16/12	12/11	27/26	27/25	29/28	28/27	15/15	14/14	87/81	81/77
IV[**]	0	0	4	4	1	1	1	1	6	6
V[**]	154	150	84	84	88	87	116	116	442	437
VI[**]	1	1	1	1	1	1	1	1	4	4
Total[**]	181	176	119	118	129	127	148	147	577	568
	municipalities (citizen-actions public)									
	108 (180)		112 (125)		116 (148)		115 (158)		451 (611)	
km2	992		880		1,379		1,267		1,519	

*… planned/in fact **… in fact only

Source: [10, 16, 20]

The trend of shrinking of the fire service capacity in the Pardubice region is demonstrated in Tab. 2. Although there is a deal of status-V fire fighters units, a majority of them is not considered as ready for command under regional directorate of FRS in Pardubice. According to the fire station bill 2014 [20], 127 status-V fire fighters units are classified as not necessary for minimum functionality of the regional fire service system yet advisable to running with regard of public interest. Hence, about one third of the status-V fire fighters units is not needed to provide the fire service under the FRS command. From FRS´s point of view, only units of the I, II, and III status ought to be considered as core units providing their fire service capabilities in the area of responsibility of the regional directorate of FRS in Pardubice in fact.

Furthermore, there are much more citizen-actions public than municipalities. In comparison with quantity of fire service units, there is about a fifth of citizen-actions public in fire protection more than municipalities. Furthermore, there is about a fifth of fire service units more than is needed to ensuring fire protection standard in the Pardubice region by FRS. Due to the fact that there is often two and more the citizen-actions public in a municipality, a substantial part of citizen-actions public does not run its fire service unit. That disproportion between number of citizen actions public in fire protection and number of municipalities is to explain by integration of public administration in the territory. Nevertheless, some additional FRS fire units might be built-up in the Pardubice region in the future in order to reduce dependency on volunteers. That might induce more cost spent upon fire protection.

3.3 Population aging in the Pardubice region and economy of fire service

According to a national statistics [12, p. 25], the Czech Republic spent on FRS 7,722m CZK in 2014. In particular, labour cost was 5,516m CZK and capital spending was 737m CZK. Thus, fire service is considered as a labour intensive economical sector. Apart from fact that fire service is difficult to substitute labour with capital, the intensity is caused by 24/7 service. On the contrary, volunteers provide fire service during their free time or simultaneously with their jobs. In this way, they are not only complement of functionality of the fire units under the I-status but they can be also considered as their partial back-up. In addition, cost of fire protection and fire service may be covered by a bunch of sources, however each fire fighter unit is obligated to meet technical and organizational standards set by FRS in order to be put on list of fire units which are permitted to operate under the FRS command.

Due to fact that some municipalities could not be able to cover bulk of cost of fire protection, in particular municipalities running volunteer fire units of V-status, FRS and regions usually invite them into competition for investment grants. Such grants can be used only for acquisition fire service gear, in particular, for fire engines with life cycle over 20 years. From managerial point of view, such an approach enables to FRS to control the building-up the system of fire protection operated under command of FRS. For all that, volunteering in the fire service has to be considered as truly effective (see Tab. 3).

Tab. 3: Labour cost on fire fighters in fire service in the Czech Republic, 2014 (CZK)

	FRS of the Czech Republic, Czech Armed Forces (I, IVa)	Municipal and Private Fire Service (II, IVb)	Local and Private Fire Service (III, V, VI)
status of a fire fighter	employee in national service	employee under labour law	local volunteer
average monthly wage[a]	26,255	21,068	1,000[c]
compulsory national insurance	8,926	7,163	-[d]
commercial accidental insurance	-	300[b]	175-375[b]
extra pension claim[e]	10,500	-	-
TOTAL	**45,681**	**28,531**	**1,175-1,375**

a)... the 1st decile   b)...estimation (based on data from Hasičská vzájemná pojišťovna)

c)... estimation; according to internal directions, each member of fire service unit ought to be decompensated for being on standby duty, however, a deal of units renounce all claims

d)... in order to reduce financial impact on the municipal budget, a deal of municipalities pays its fire fighters without any link to compulsory national insurance

e)... extra pension claim after 20 years in service (estimation) paid by the Ministry of the Interior from termination of contract until age of 65 years.

Source: [3, 12]

Comparing data in Tab. 3, a volunteering fire-fighter is 35 times cheaper than a fight fighter at FRS and 22 times cheaper than a fire-fighter working at a fire service unit of II-and-IVb-status. In addition, those cost ratios are to affirm by national finance statistics. According to the Monitor Portal [2], run cost of FRS in the Pardubice region (the I-status fire service units) was 321m CZK, of which labour costs reached 259m CZK, and cost on the fire service units (II, III, and V) operated by municipalities in the Pardubice region was circa 66m CZK, of which labour costs were about 10m CZK only. Nevertheless, extra pension claims are not included because they are a part of the central budget controlled by the Ministry of Interior of the Czech Republic. In comparison with the FRS fire-fighters, volunteer ones are many times cheaper for public finance, indeed, than the FRS fire fighters are.

4 Discussion

Firstly, taking into account insignificance that amount of money for fire protection spent by small municipalities, such a financial support for citizen actions public should be considered rather for a support of social live in the country than an community investment into local security. Besides, Bohemian, Moravian, and Silesian municipalities were forced to take care of fire protection and organize fire service from the era of Josef II, [21, p. 10-12] hence the financial support of volunteering fire fighters by local public budgets became a tradition. Secondly, from labour cost of point view, the substitution ratio between a volunteer and an employee in fire service is very similar to the substitution ratio between a soldier serving as conscript and a career soldier. Pernica [14, p. 148] calculated this ratio for substitution of conscription armed forces by all-volunteer force in the Czech Republic as multiple varied between 18 and 29. That may be evidence of significance of both compulsory and volunteering service for public finance. However, volunteering usually enjoys more popularity in public than conscription, which is, according to Friedman [8], only

a specific kind of taxing not compatible with free citizenship in any democracy. Finally, organization of fire service of the Czech Republic is based on regional risks which are in accordance with amount of public spending on fire protection as Kraftová [9] proved. In addition, such approach is incorporated in national law [25] which admits the V-status fire service units in the regions where fire risk has been set as the lowest. If a municipality disposes of a V-status fire service units it makes a backup of fire service capabilities provided by the state for acceptable costs.

Conclusions

In spite of ongoing population aging and rural depopulation in the Czech Republic, any significant impact of both adverse trends on public budget for fire protection is not to be expected. Although a partial and gradual substitution of volunteering fire-fighters by career FRS-fire-fighters is expected, cost should not rise dramatically. On the one hand, a FRS-fire-fighter is 35 times more expensive at least than a volunteering one; on the other hand, cost of volunteering in fire service beard by municipalities seems to be rather minute. However, in order to prevent the country from continuing of rural depopulation leading to social exclusion [11] and to make municipalities resilient [6], the Czech Republic should boost its financial support to volunteering in rural areas.

Acknowledgement

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DEVELOPMENT OF REGIONAL ABSORPTIVE CAPACITY – THE CAUSE AND THE CONSEQUENCE OF REGIONAL DISPARITIES

Vita Juknevičienė

Abstract: *Innovations as the core of a social-economic progress in all regions are directly linked with an absorptive capacity (individual, organizational, regional) - the main precondition for any innovative activity. The development of the absorptive capacity of regional innovation systems could enable the regional development, but regional disparities still remains the main challenge. Therefore, this article gives evidences on the development of the regional absorptive capacity as one of main causes and consequences of regional disparities (based on the example from Lithuanian regions). Results of the research justify interfaces between the regional absorptive capacity and the situation of regional development: as the bigger potential of the development of an absorptive capacity is, the better results of the regional socio-economic situation are, and vice versa.*

Keywords: *Regional absorptive capacity, Innovation, Regional development, Regional disparities.*

JEL Classification: *O31, R11.*

Introduction

The term of the regional absorptive capacity is used by many scientists, working on researches of innovation management, management of innovation systems and innovation policy. Most of them are interested in the development of innovations in particular organization, innovation system or region [1; 4; 5; 8; 9; etc.], but only few of them look for connection between development of absorptive capacity and regional socio-economic development [2; 6; 10; 11; etc.]. The absorptive capacity as the core precondition for innovative activities in a regional innovation system is tightly connected to the development of all organizations and sectors in a region. Organizations (or sectors) with the higher level of absorptive capacity are taken as more successful, smart and/or developed, more exploiting opportunities in the environment [1; 4]. There emerges **a scientific problem**: how the absorptive capacity influences and is influenced by the socio-economic situation of a region? **The aim** of the article is to present the regional absorptive capacity as a cause and consequence of regional disparities. For the implementation of the research idea, following **objectives** were used: 1) to reveal the concept of regional absorptive capacity and features of its development; 2) to identify the connection between the development of the regional absorptive capacity and regional disparities; 3) to present, how indicators of regional absorptive capacity reflect regional disparities, by giving empirical evidences from Lithuanian regions. **Methods** such as the literature analysis, statistical analysis and interpretation were used for this scientific research.

1 The connection between the development of regional absorptive capacity and the situation of regional development

1.1 The conception of the regional absorptive capacity and its development

Regional absorptive capacity (hereinafter RAC) is taken as the main precondition for innovative activities. Therefore, this phenomenon must be supported and maintained in a regional innovation system (hereinafter RIS). It must be understandable for all participants and focused on the essential task – the development.

1.1.1 Main elements of absorptive capacity

Analysis of scientific literature and scientific discussions indicates several versions of the concept of the absorptive capacity and its dimensions. But the modern conception of **absorptive capacity** (which is followed in this research) declares three main components: the capacity to access international networks of knowledge and innovation; the capacity to anchor external knowledge from people, institutions and firms; the capacity to diffuse new innovation and knowledge in the wider economy [6; 8; 9]. This phenomenon and its features are depended on the level of its application, which is the important aspect for the analysis of regional development and regional disparities too. This concept comprehended two levels of absorptive capacity (individual and organizational) in early studies, but later the third level (the regional one) was highlighted by various researches, explaining the connection between innovativeness of a region and its absorptive capacity: absorptive capacity should be supplemented by development capacity, when both of them concentrate needed forces and resources for innovative activities. Innovations can be understood as a final result of this process or as the element of process which leads to new products or services.

Innovations as the result of innovative activities in a regional innovation system require for the empowerment of all actors of a RIS (representing elements of the Triple Helix Model - business, science and government and support institutions [3; 6]). Institutions, presenting business and science elements, are main institutions usually participating in the process of the creation and the transfer of innovations. Their ability to innovate depends on internal (regional) and external (supra-regional) knowledge sources, complementing each other. It is important to be able to attract good ideas from elsewhere (regional absorptive capacity RAC) and exploit them to develop new products or services (regional development capacity). These are main conditions for the enabling and enhancing the efficiency of innovative activities in a region. Each regional innovation system is unique; therefore, different RISs can be characterized by different scale, intensity, speed and empowerment options of the regional absorptive capacity. But all of them share a common goal – innovations. It can only be achieved by ensuring the continuous dynamic process – the development, which nourishes and maintains innovative activities in a RIS.

1.1.2 The concept of the absorptive capacity's development

A dynamic process, enabling actors of a RIS to identify changes in the environment, to improve the situation, to contribute to the growth and/or positive changes in a particular sphere, is defined as the "development". Therefore, **the development of a regional absorptive capacity** is perceived as an acquisition, building and enhancement of capacities of knowledge access, anchoring and diffusion, that liberate the potential of existing knowledge, realise potential opportunities,

integrate the learning into the behaviour. In other words, the development of the RAC enables better exploitation of the potential of existing implicit and explicit knowledge, and creates needed preconditions for the generation and realization of innovative ideas.

The development of the RAC is possible just with the maintenance of a particular RIS environment, which consists of: a) appropriate basic and developed advanced infrastructure, enterprises and appropriate activities of formal and informal institutions [11]. All those elements of the RIS environment (their existence and/or the level of their development) strengthen or interrupt the process of the development of the RAC. This explains the need of understanding, how the multidimensional process of the development of the RAC is composed. First of all, the awareness of the need for the development must exist in all levels (individual, organizational and regional) in a particular RIS. This awareness leads to the intensification of the understanding (to know who, why and how) and the clarification of the goal of this process (the final achievement of the development). Furthermore, all steps (positive changes) of the development must proceed and be maintained in a favourable environment, supported by legislation and administration (legal basis, decisions, made by public policy and administration institutions), market and economy (system of taxes, stability of a market, etc.), human resources (scientific and educational activity, number of high qualified specialists in a region, the system for training, etc.), and infrastructure for knowledge diffusion (access to the Internet, networks and bridges of telecommunications, etc.). Besides, all actors of a RIS must choose appropriate instruments, means and ways for making positive changes and going forward towards the goal. It should be emphasized, that the development must be organized in all three levels (individual, organizational and regional). But the public policy (objectives, programs, instruments, etc of national innovation policy and regional policy) plays the crucial role in the development process at the regional level. The goal of the development could be reached only with the support of governmental institutions. But it is necessary to emphasize, that a homogenous national Innovation policy as well as Regional policy does not ensure a harmonious development of all regions in a country. Therefore, it is necessary to identify factors, determining the capacity to access, anchor and diffuse the knowledge, specific in a particular RIS.

1.2 Connection between the regional absorptive capacity and regional disparities

Regional disparities are determined as the divergence or inequality of characters, phenomena or processes, having specific territorial allocations and occurring in three types of spheres: social (relates to population, quality of life, incomes, social facilities, etc.), economic (the economic and development potential, regional outputs, employment level, etc.) and territorial (geographical, natural and technical conditions, such as natural environment, availability of markets, education, services, infrastructure, etc.) [7, p. 17]. The welfare of the society and the quality of its life are depended on those spheres; therefore, the regional development is connected with regional disparities. And elimination of those disparities usually is main aim of the regional policy.

It is stated, that the absorptive capacity is crucial for regional development, because it allows actors of a RIS to internalize knowledge that exists elsewhere (either within the regional economy or externally) that is made available directly or indirectly to them [11, p. 7]; therefore, it creates preconditions for the strengthening of a regional

111

competitive advantage and for the favourable environment of the socio-economic progress. But sometimes the real result of the innovativeness as well as the regional development is far from the expected one even with a lot of resources and strong efforts of actors in a RIS. This happens because of regional differences and the multidimensionality and the complexity of the development process (Fig. 1).

Fig. 1: The model of the connection between the regional absorptive capacity and regional disparities in the context of the development process
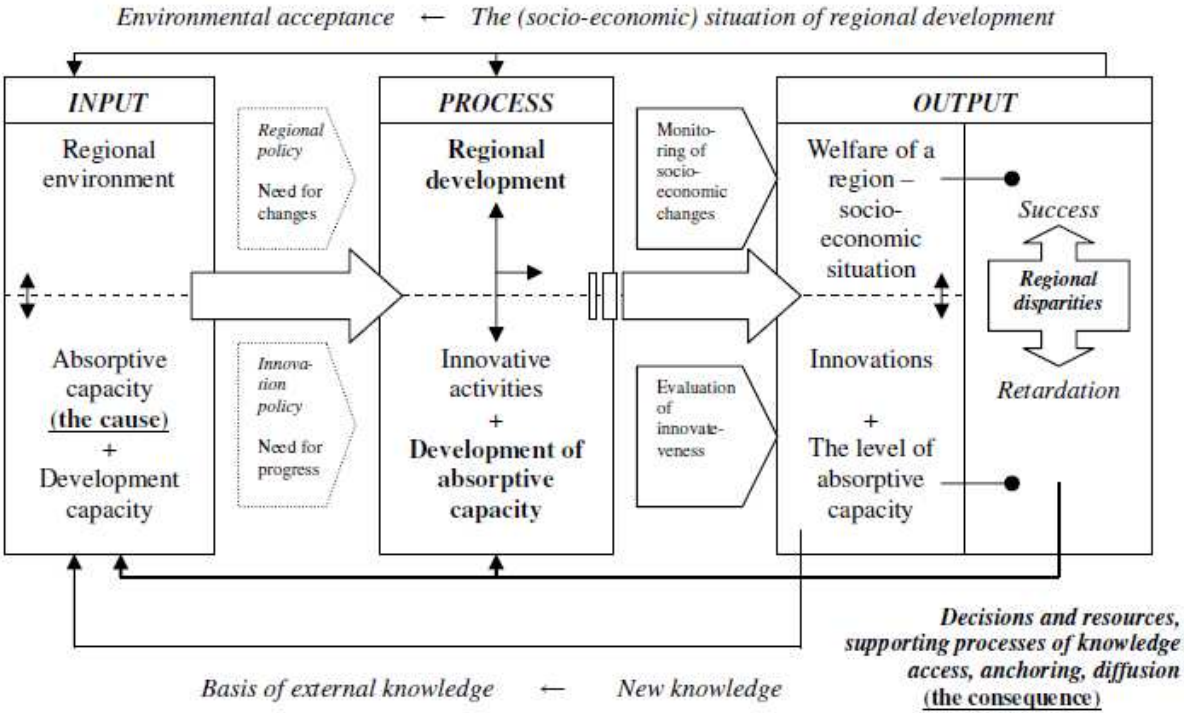
The RAC is the beginning of innovative activities, leading to innovations as a reflection of the successful region and its development. Regional policy as well as Innovation policy is targeting to eliminate the gap between successful and lagging behind regions, enabling all resources and instruments in the process of development. The RAC participates in the process as the stimulus (the cause) for the process of catching up other regions (eliminating regional disparities). The final result of the process of socio-economic development (success or retardation) determines environmental acceptance, decisions and resources as well as the level of the RAC – the potential for the future knowledge absorption (the consequence). However, processes of the development of the RAC and the regional development are influenced by specifics of a RIS in a particular country.

2 Methods

The research on the development of the RAC as one of main causes and consequences of regional disparities was based on the case study approach.

The list of indicators, presenting the situation of the RAC, is based on the scientific research, accomplished by the author [6], which substantiated the methodology of the assessment of the development of the RAC. Indicators, introduced in this article, were selected in accordance with the need to reflect the connection between the RAC and

regional socio-economic development. All those indicators were connected to elements of the RAC: knowledge access, anchoring and diffusion. Indicators were presented in two groups of input and output (causes and consequences) of the development process.

This research included sub-national regions – counties (in accordance with NUTS classification) of Lithuania. In accordance with the method of criterial selection, two regions were selected for the research: one – successfully carrying out, and the other – insufficiently successfully carrying out innovative activities (respectively Kaunas and Šiauliai regions), which differently seek for economic growth, competitive advantage and development of absorptive capacity. The comparison with the general situation in Lithuania and the hypothetic medium value (of Lithuanian 10 regions (counties)) gave the opportunity to reflect regional disparities.

Due to limits of access to the regional statistics and the lack of newest data, the most recent statistical data (presenting 2012) is introduced in this research. All data was obtained from databases of two institutions: Statistics Lithuania and The State Patent Bureau of the Republic of Lithuania [12; 13].

3 Problem solving

The situation of the RAC (values of indicators in 2012) (Tab. 1) reflects some regional (socio-economic and infrastructural) disparities of Lithuanian (successful and insufficiently successful) regions.

Analysing infrastructural disparities, it is mentioned, that Kaunas region has 11 institutions of high education, Šiauliai region - only 3. Number of enterprises, introducing innovations, in Kaunas region exceeds the same number in Šiauliai region by 35.5 percent. It shows that institutional indicators reflect tendency of differences. Number of specialists, graduated from regional universities (as a social indicator), 3.1 times exceeds the national average of Lithuania and even 4.6 times the number in Šiauliai region. Similar situation is with the number of specialists, graduated from regional colleges – respectively 2.0 and 3.0 times. Unfortunately, net international emigration from Kaunas region is twice higher than in Šiauliai region (Šiauliai region indicator is equivalent to the national average of regions). Kaunas region (successful region) exceeds 1.5-3 times the national average of all economic indicators, when Šiauliai region (insufficiently successful region) lags behind by 0.3-4 times.

The statistical analysis shows that the successful region – Kaunas region exceeds levels of medium Lithuanian values (input and output) approximately by 2.5 and 2.0 times, and respectively the insufficient successful region – Šiauliai region lags behind the medium level approximately by 0.7 and 0.6 times (and even 4.1 and 3.6 times behind the level of Kaunas region). Despite of one exception (the bigger number of net international migration of a region) the insufficiently successful – Šiauliai region lags behind in all spheres.

4 Discussion

All indicators of knowledge absorption reflect disparities between regions. They can be taken as the contribution as well as the final result of the development process.

Tab. 1: The situation of the regional absorptive capacity (values of indicators) of Lithuanian regions in 2012

INPUT		Region*	Value	OUTPUT		Region*	Value
ACCESS	Number of universities in a region (units)	Lithuania_R	23	ACCESS	Number of organizations, engaged in vocational, scientific and technical activities (excluding R&D) in a region (units)	Lithuania_R	7782
		Lithuania_M	2			Lithuania_M	778
		Kaunas_S	5			Kaunas_S	1162
		Šiauliai _N	1			Šiauliai _N	281
	Number of colleges in a region (units)	Lithuania_R	24		Share of Regional Gross Domestic Product in a structure of national GDP (percent)	Lithuania_R	100
		Lithuania_M	2-3			Lithuania_M	10
		Kaunas_S	6			Kaunas_S	19.6
		Šiauliai _N	2			Šiauliai _N	7.6
ANCHORING	Number of specialists graduated from regional universities (units)	Lithuania_R	30333	ANCHORING	Net international migration of a region (units)	Lithuania_R	-21257
		Lithuania_M	3033			Lithuania_M	-2125
		Kaunas_S	9517			Kaunas_S	-5076
		Šiauliai _N	2034			Šiauliai _N	-2460
	Number of specialists graduated from regional colleges (units)	Lithuania_R	13044		Share of employees, involved to R&D in higher education and governmental sectors of a region, in the structure of total labour force (percent)	Lithuania_R	1.33
		Lithuania_M	1304			Lithuania_M	1.33
		Kaunas_S	2672			Kaunas_S	2.51
		Šiauliai _N	897			Šiauliai _N	0.44
	Share of citizens at the age of 25-64 having at least the higher education (ISCED 5-6) in a region (percent)	Lithuania_R	18.3		Foreign direct investment per capita in a region (EUR)	Lithuania_R	4071.767
		Lithuania_M	18.3			Lithuania_M	4071.767
		Kaunas_S	20.6			Kaunas_S	2505.792
		Šiauliai _N	13.9			Šiauliai _N	599.513
	State and municipal budgets for students of region's higher education institutions (universities and colleges) (million EUR)	Lithuania_R	303.793	DIFFUSION	Number of issued patents in a region (units)	Lithuania_R	83
		Lithuania_M	30.379			Lithuania_M	8
		Kaunas_S	86.808			Kaunas_S	24
		Šiauliai _N	21.282			Šiauliai _N	5
	Ratio of regional R&D expenditure in higher education and governmental sectors and the region's GDP (percent)	Lithuania_R	0.661		Number of registered designs in a region (unit)	Lithuania_R	53
		Lithuania_M	0.661			Lithuania_M	5
		Kaunas_S	1.195			Kaunas_S	13
		Šiauliai _N	0.163			Šiauliai _N	1
					Number of enterprises, introducing innovations, in a region per 1.000 inhabitants (units)	Lithuania_R	8.441
						Lithuania_M	8.441
						Kaunas_S	6.726
						Šiauliai _N	4.961
					Added value, created in a region, in prices of production (million Euro)	Lithuania_R	12560.322
						Lithuania_M	1256.032
						Kaunas_S	3203.574
						Šiauliai _N	1116.346

CAUSES	⇄	CONSEQUENCES
Means of "Regions": Lithuania_R – the real value of indicator of Lithuania Lithuania_M – the hypothetic medium value of Lithuanian 10 regions (counties) in the country		Kaunas_S – the real value of indicator of Kaunas region – the successful region Šiauliai_N – the real value of indicator of Šiauliai region – the insufficiently successful region

Source: concluded by the author, on the basis of [12; 13]

Firstly, the regional institutional (infrastructural) disparities can be noticeable. The process of knowledge access, anchoring and diffusion is maintained by different

number of actors of both RISs. Especially it is important, because of directly linkages between the development of the RAC and the existence and vitality of RIS actors, involved to activities, enquiring innovative behaviour (universities, colleges and enterprises, introducing innovations). Secondly, regions differ obviously according to efforts and results of the development of human resources and its involvement to innovative activities. Kaunas region has the higher potential of high qualified specialists, even with the bigger number of emigration from the region. This fact testifies about "brain-drain" phenomena in a region, sufficiently carrying out innovative activities, which becomes a threat for future regional development. Thirdly, the regional economic situation (aspects of GDP and Value added) reflects the tendency of disparities (leading and lagging behind) of regions.

All those indicators and their analysis proclaim about directly connection between the RAC in a particular RIS and regional (socio-economic) disparities (as causes and consequences).

Conclusion

Particular elements of knowledge access, anchoring and diffusion contribute to the development process (input) as well as emerge as the final result (output). The duplex connection between the RAC and the socio-economic situation in a region is identified as the theoretical and empirical approach. The smaller scale of innovative activities, determined by weaker absorptive capacity, leads to the retardation of a region (in innovations as well as economy of the insufficient successful region), what causes fewer possibilities (in terms of the acquisition of resources and the potential's empowerment) for the development of the RAC. And vice versa, the successful region with the higher level of the RAC can create the favourable environment for efficient innovative activities, giving satisfying results of regional socio-economic development, leading to the forthcoming knowledge absorption. In summary, the development of the RAC in Lithuanian regions could influence and be influenced (causes and consequences) by regional disparities.

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IMPORTANCE OF PUBLIC INTEREST TO SOCIAL RESPONSIBILITY

Violeta Kiurienė

Abstract: *The aim of this article is to analyse the importance of public interest to social responsibility. The article reveals how public interest shows up in theories explaining social responsibility, discloses the importance of public interest to social responsibility in analysing the concepts of society-business-state interaction.*

The conclusion drawn in the article is that absence of universal and clear agreement on what public interest and social responsibility are and on how important public interest to social responsibility and vice versa is obstructs successful application of these concepts in practice, therefore further research on this topic is definitely important and necessary.

The concerns of the influence of public interest on social responsibility and its manifestation in implementation of social responsibility remain relevant. The level and quality of assumption and implementation of social responsibility, its harmony with public interest, the level of coordination of individual and common interests can be evaluated only with complex analysis of state-society-business interaction.

Keywords: *Public interest, Social responsibility, Corporate social responsibility, Organisational social responsibility, Society-business-state interaction, Public sector.*

***JEL Classification:** H41, H83, M14.*

Introduction

The aim of this article is to analyse the importance of public interest to social responsibility.

The article reveals how public interest shows up in theories explaining social responsibility, discloses the importance of public interest to social responsibility in analysing the concepts of society-business-state interaction.

1 Statement of a problem

Theoreticians of philosophy, sociology, economics, management, political and law sciences have been analysing the concept of public interest in various aspects. Discussions over definition of public interest are not closed yet; there is no consensus over this concept, which shows the relevance of analysis of this topic. Various interpretations of concepts of public interest are linked to individual, societal and state improvement, development, ability to function better, to realize their potential better and contribute to improvement of other subjects, creation of welfare and general fundamentals of life and adherence to them.

In the recent decades organisational social responsibility becomes one of the most important concepts of modern management, meaning obligations of organisations to their employees, customers, society, and environment.

Ongoing economic, social, cultural, and political changes affect the trends of development of modern society; moreover various scholars pay increasingly more attention to the role of a state (public sector) in implementation of social responsibility of commercial organisations and emphasize the influence of public interest on social responsibility. Recognition of the importance of organisational social responsibility and emphasis on the public interest not only on the national, but also on the global level make a huge influence on the changing relation between state and business, between state, business, society, non-governmental organisations etc [7].

Despite broad and comprehensive analysis of the themes and concerns of social responsibility in scholarly literature there is a lack of research and discussions on the influence of the public interest on social responsibility, on the manifestation of public interest in theories explaining social responsibility, on society-business interaction in context of social responsibility.

2 Methods

The main objective of this research is to analyze the importance of public interest to social responsibility.

The research methodology was applied to reach the research objective:

• scientific literature review – social responsibility, public interest concepts, definitions, theories and attitudes, interaction among society, business and state, new social responsibility theories and etc.;

• analysis and synthesis to systemize scientific literature of importance of public interest to social responsibility and related attitudes, to show public interest and social responsibility in state-society-business interaction.

The methods usually complement each other and, in consequence, overlap. The author predominantly use methods of qualitative research to reveal how public interest shows up in theories explaining social responsibility, to disclose the importance of public interest to social responsibility in analysing the concepts of society-business-state interaction.

3 Public Interest in Theories Dealing with Social Responsibility

Social responsibility is one of the key concepts of modern management. Earlier research used to link social responsibility to private business and the challenges that it encounters at the times of globalisation and that make it seek profit while minding social welfare and long-term aims of sustainable development and growth as well as the new social needs emerging on the market [15].

Recent research shows increasing attention from various scholars to the role a state (public sector) plays in implementation of social responsibility of commercial organisations. This demonstrates that corporate social responsibility stimulation policy adequately made, adapted to the present situation, systematically implemented, monitored and reflexively improved by the state becomes efficient in pursuing long-term, all-embracing aims of sustainable development.

Presently both business and public administration institutions gradually adopt integrated approach: running sustainable operations both inside and outside the

organisation. For this reason recent research deals not only with *corporate social responsibility*, but also *organisational social responsibility*, suggesting that the concept of *organisation* covers both commercial sector companies and public sector institutions and establishments. Nowadays various social structures as well as traditional non-governmental, commercial and public sectors undergo transformation [3]. Various structures of these sectors become similar in their key aims and principles of functioning, therefore such social structures are best described by the concept of *organisation*. According to Bromley and Meyer [3], this concept is the best for describing various social structures for two reasons: first, individuals have most of their rights and duties because they act as social actors, second, social activity can be and is pursued in natural and social environment that is equally important for all individuals regardless of the social structure they function in (non-governmental, commercial, or public sector). Though the concept of *corporate social responsibility* prevails, holding the view of Bromley and Meyer [3], talking about social responsibility it would be more accurate to use the concept of *organisational social responsibility*.

Analysing organisational social responsibility emphasis on effect on society, public interest, coordination of interests, and relations among different sectors can be observed. In the Renewed EU strategy for Corporate Social Responsibility [12] the European Commission gives a new definition of organisational social responsibility as "the responsibility of enterprises (organisations) for their impacts on society". This strategy outlines that organisations should have procedures in place for integration of environmental, ethical, human rights and consumer aspects in commercial activities and key strategy through close cooperation with stakeholders to maximise common benefits not only to owners and (or) shareholders and other stakeholders, but also to the whole society.

Scholarly literature dealing with various aspects of social responsibility also emphasizes the coordination of individual and common, state and society, state, business and public interests and the relationship between these interests. According to Clapp and Rowlands [5], scholarly literature on organisational social responsibility can be arranged in two large categories:

1) social responsibility concepts dealing with behaviour of organisations and their motivation to act socially responsibly;

2) social responsibility concepts dealing with social responsibility as an outcome of arrangements between the state and the public, which is highly dependent on decisions made by public institutions as well as legitimacy, transparency, accountability and efficiency [14].

The latest scholarly literature on organisational social responsibility deals with social responsibility through emphasis on relationship of organisations with external environment and importance of public interest as organisation functions in a social system. This view is supported by various theories such as corporate social activity, systems, cooperation and intersectoral collaboration, interests, institutional etc.

Wood [17] suggests that intellectually organisational social responsibility is based on the general systems theory holding that, on the one hand, an organisation is influenced, on the other hand, it influences other organisations itself. Organisational

social responsibility is related to it costs and profit, which are also influenced by the organisation's external relations made up of social, cultural, legal, political, economic, and environmental aspects [17].

Zhao [16] also links organisational social responsibility to the systems theory according to which the whole society is one large system. Economic system is one of the most important components of the social system, while organisations are important components of the economic system. Survival and development of any organisation cannot be dissociated from the entire environment around it. Behaviour of any organisation is determined by decision making influenced by the interests of stakeholders, society, and governmental institutions. Organisational social responsibility has gone through four stages: 1) organisation's responsibility to its stakeholders; 2) organisation's responsibility to its stakeholders and community; 3) organisation's responsibility to its employees, customers, and society; 4) organisation's responsibility to its stakeholders, employees, customers, and the entire society [16].

According to Abdolvand and Charsetad [1], socially responsible organisations can be described as "open systems" that are dependent on other actors in the system, but with their activities they also influence other organisations. Systematic approach to social responsibility is also analysed by Louche and Hebb [9]. According to them, systematic approach to social responsibility as a part of the large social system helps to deal with problems of the society, safeguard the public interest, and manage and influence changes.

Analysing social responsibility Liang and Gan [8] reveal that it is characterised by features attributable to the interest theory: 1) importance of interests, which means that not only their internal welfare (profit seeking) interests, but also external interests of the society, partners, clients, customers, and community are important to companies; 2) corporate social responsibility is based on economic responsibility of the company, however ethical, moral and legal responsibility of an organisation are nonetheless important.

Research into organisational social responsibility is also supported by holistic, institutionalised approach. Analysing organisational social responsibility Filatotchev and Nakajima [6] refer to the institutional theory that helps to disclose the relationship between management of companies, responsible leadership, and social responsibility. These scientists bring mechanisms of control and stimulation to their analysis of different concepts of leadership and approaches to organisational social responsibility. According to the institutionalists, state and law are two integral concepts. Organisational social responsibility is directly influenced by legal and institutional systems of each country. Economy is an object of legal control, while a state is a means for obtaining economic gain. It is proposed to regard an individual and an organisation not as separate subjects, but rather as components of the social system.

Cooperation and partnership are particularly important in disclosing organisational social responsibility [9]. Intersectoral partnership is an integral part of social responsibility. A partnership that has generated a coalition of interests helps to reach a generated agreement, ensures working towards common aims and strategy,

influences risk, resource and skill sharing, delivers common benefit, creates common value and manifestations of synergy effect. Synergy is more than attainment of different aims of the cooperating parties: it is the creation of the added value while the partnership members seeking different aims cooperate and create added social benefit [10].

Individual, organisational, public, and state interests and the harmony of these interests in context of social responsibility are also analysed in other theories explaining social responsibility (stakeholder, humanistic organisations, networking, knowledge management etc). What is common to all these theories is that they refer to one or another aspect of public interest as individual, organisational, public, or state interest.

4 Public Interest and Social Responsibility in State-Society-Business Interaction

Public interest affects social responsibility of both commercial sector and public sector organisations and manifests in activities of organisations of these sectors by various aspects. Active collaboration of most stakeholders of different sectors drives development of relations and organisational changes in dealing with pressing problems of national and global scale.

Albareda, Lozano, Tencati, Midttun and Perrini [2] provide a social responsibility interaction model by Lozano, Albareda, Ysa and Roscher (2005), which reveals interaction between state, business and society in implementing social responsibility.

Fig. 1: Relational model for analysis of public policies on CSR
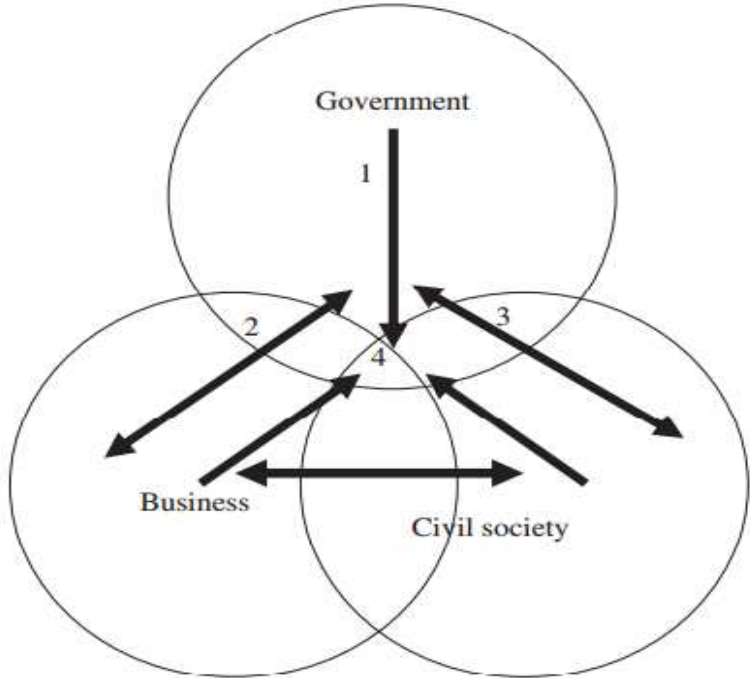
1. CSR in public administration
2. CSR in administration-business sector relationships
3. CSR in administration-society relationships
4. Relational CSR

This social responsibility model is called "interactive corporate social responsibility" where the entire social responsibility policy and social responsibility programmes are run and implemented in interaction between state, business and society. In the organisational social responsibility development process a state is assigned main functions related to creation of legal system promoting responsible, socially oriented and sustainable business practices. The ongoing state-business cooperation enables creation of more flexible laws to promote organisational social responsibility. Active cooperation between society, individuals and stakeholders leads to development of relations and organisational changes in dealing with pressing national and global problems.

The corporate social interaction model presented by Midttun [11] links three state governance models: the neoliberal model, the welfare state model, and the integrating interaction model.

Fig. 2: The embedded relational model
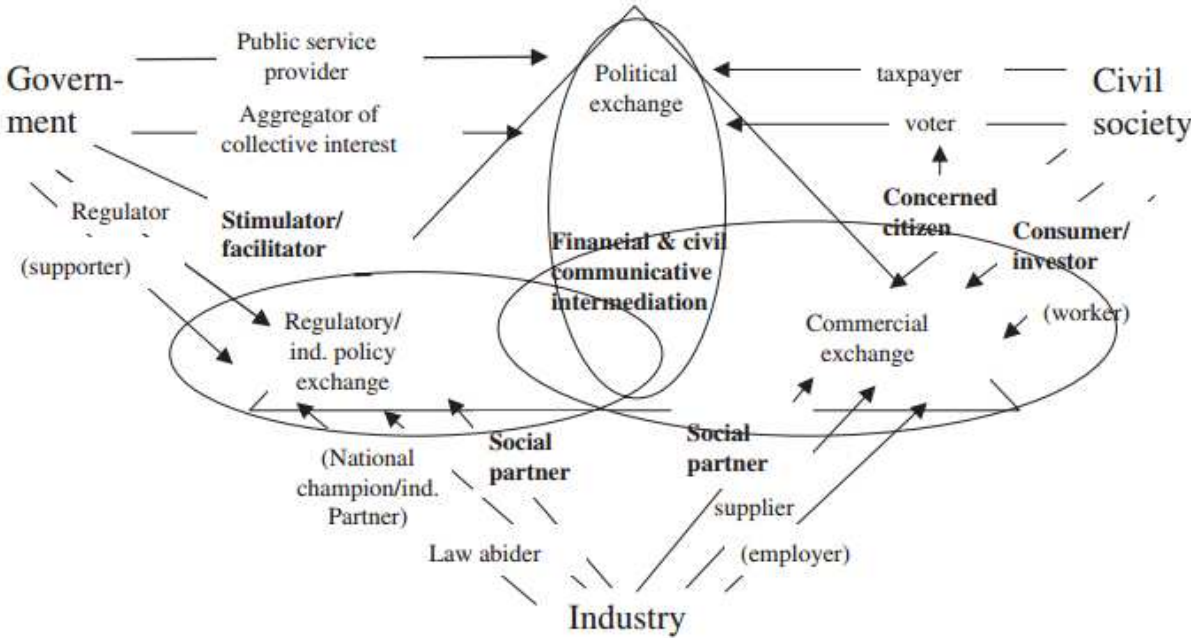
In this model a state is assigned the role of a creator and promoter of organisational social responsibility policy making and implementation measures. The state also performs the functions of control: lawmaking, regulation, stimulation and tax policy are the suitable instruments for the public governance institutions to support, stimulate or safeguard certain aims important to the society.

Albareda, Lozano, Tencati, Midttun and Perrini [2] identify circumstances that determine the efficiency of introduction of organisational social responsibility: social responsibility policy of public organisations (vision, aims, strategies and priorities), internal governmental social responsibility structure (position, organisational structure, centralised or decentralised), distribution of social responsibility to different levels of government (complex policy, regional / decentralised governance, local self-government), scope of social responsibility policy (national or international/ global), role of social responsibility of other organisations (governmental

organisations, intermediary organisations, stakeholder organisations, international organisations).

With integrated interaction model, the actions of state in the area of social responsibility are determined by the public interest. The public sector must deal with those social and economic problems that individuals cannot solve alone, because public sector is assigned those areas of activity, which meet the public interest (education, health care, environment protection, urban design, cultural activities, administration of state and others the regulation of which is ensured by joint efforts of the society and the governmental institutions). The result of successful activity of the public sector organisations is increased wellbeing of society, which in turn is the aim of the public sector social responsibility as well. In their everyday activities public sector organisations implement social responsibility and seek social justice as an outcome of the implementation of social responsibility by distributing the public good and ensuring that the public interest gets accumulated into public decision making and implementation [13]. Social responsibility of the state is a very broad concept that covers all areas of activities of state, business and society.

Analysing social responsibility of commercial organisations S. C. Certo and S. T. Certo [4] emphasize that social responsibility derives from social power; an organisation must operate in an open system of bidirectional movement (if the aim to create and boost public welfare is genuine, there must be ongoing open dialogue between the organisation, society, and state); before making a decision it is important to accurately estimate the social benefit of this decision to the society; being civil institutions organisations are responsible for certain social problems arising outside the area of their activities, therefore organisations must help the society to deal with its problems because the organisations themselves are part of the society.

Social responsibility is also one of the main tools for building and supporting the civil society. The integrating interaction model presented by Midttun [11] shows that society comprises taxpayers, electors, consumers, investors, employees and interested citizens who directly influence public sector and business through political and commercial exchange. Expectations of the society push both public and commercial sectors to act socially responsibly, without harming the public interest.

The concept of the state-society-business interaction with the emphasis on the importance of the public interest to social responsibility is further developed in the new public governance theory where this partnership is evolved into cross-sectoral cooperation the practice of which shows that this form enables far greater inclusion of citizens (consumers, their groups – that is, those who are interested in solving social and economic problems) into the cooperative network of partnership and distribute social responsibility more flexibly.

Conclusion

The concept of public interest and the concept of organisational social responsibility are both multifaceted, making research into them problematic.

Concepts of public interest and social responsibility develop further through analysis and development of current concepts and new theories, innovative approaches that are inevitable in context of social changes, however the absence of universal and

clear agreement on what public interest and social responsibility are and on how important public interest to social responsibility and vice versa is obstructs successful application of these concepts in practice, making further research on this topic definitely important and necessary.

Coordination of individual and common interests, search for compromises, interrelation and interdependence of universal benefit determine that public interest must be useful to all members of society in one way or another. In modern democracy the concept of public interest can be simplified and described in two ways: as common will of subjects and as aggregation of interests of subjects that certainly has big influence on organisational social responsibility.

The concerns of the influence of public interest on social responsibility and its manifestation in implementation of social responsibility remain relevant. The level and quality of assumption and implementation of social responsibility, its harmony with public interest, the level of coordination of individual and common interests can be evaluated only with complex analysis of state-society-business interaction. Public interest plays a very special role in this interaction, because public sector that must inherently act in a socially responsible manner has an important role in the processes of establishment and development of corporate social responsibility and both public and corporate social responsibility has a direct impact on society (overall wellbeing of the nation).

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ANALYSIS OF THE COMPETITIVENESS OF REGIONS OF THE CZECH REPUBLIC IN THE CONTEXT OF THEIR DEMOGRAPHIC POTENTIAL

Radka Knězáčková

Abstract: *Regional development and the concept of competitiveness of regions get to the forefront of interest primarily in connection with the European Union. Competitiveness and increasing cohesion of the European Union has become the main objective of developing strategies of nations. Member states carry out regional policy in the context of support of employment, growth and competitiveness. In this context, it is necessary to predict the factors that increase the competitiveness of regions. They contribute to the growth of the whole area. The search of factors that would increase the competitiveness of the area, must be based on respecting of different economic levels of regions within a country. In a country there are prosperous regions and also regions with below average economic performance, high unemployment and with other social problems. Human factor, its quantitative and qualitative aspects, is also an important factor. The article analyzes the competitiveness of the regions of the Czech Republic. The aim of this article is to analyze the economic situation of the regions and in connection with characterized their demographic potential.*

Keywords: *Regional competitiveness, Regions.*

JEL Classification*: R11, R23.*

Introduction

Competitiveness is considered as a criterion for evaluation of the success of companies, states and regions. It is basic indicator for evaluation of the economic development of economies. In Europe, the concept of competitiveness was highlighted in particular in relation with objectives of the European Union. The European Union establish that achievement of higher level of competitiveness and higher employment will be the main objective for the programming period 2007 – 2013. The European Union uses competitiveness in context with economic, social and territorial cohesion. Cohesion is regarded as a basic aspect of current development and assumption of deeper integration. Given the growing importance and greater role of regions in the economy, the attention of experts focuses not only on competitiveness at the national level, but also on the competitiveness of regions. There are prosperous regions with a high standard of living in each region, but also there are regions which are struggling with high unemployment, social problems and lack of industry. The aim of regional policy is to attempt to steady development of areas, so that they can fulfil their potential and that the growth of the state could be achieve.

The aim of the present article is to analyse the interregional disparities in the Czech Republic and in the context of these differences to assess the demographic potential of the region. The work will test the hypothesis, which assumes that regions which have got a better assessment of the economic situation do not suffer the loss of economically active population and the effects of aging populations are slower

in comparison with other regions. Definition of the region will work on the basis of the administrative dvision of the Czech Republic. The analysis will be performed at the level of higher government units. The analysis will be performed on the basis of values of indicators from 2014 due to the availability and comparability of data. The data will be drawn from a public database of the Czech Statistical Office.

1 Theoretical aspects of regional competitiveness

Although the concept of competitiveness is nowadays often used, the precise definition still not exists. The literature suggests that the definition of regional competitiveness can be defined from two perspectives. The first approach is based on the idea that regional competitiveness is determined by aggregation of enterprise competitiveness. The second approach derives the regional competitiveness from macroeconomic view.

The first approach is discussed for example in [10]. The authors based from the fact that in region, there are companies that produce units in accordance with price and quality demands of the market and they have permanent profit. This concept of competitiveness faces the problem that is given by the objectives of individual subjects. The main goal of the company is to maximize profit; competitiveness of regions is also depending on other factors such as the level of employment. European commission defined regional competitiveness based on this concept. [3] According to the definition regional competitiveness is an ability to produce goods and services which can withstand international markets while ensuring high and sustainable level of income. Wokoun in Competitiveness of Regions of the European Union and the Czech Republic [13] adds that if the region wants to be competitive, the region must secure jobs in adequate quantity and quality.

The second concept is derives from macroeconomic competitiveness. The concept of regional competitiveness in accordance with the second approach is based on the impossibility of applying of some laws or macroeconomic tools on the less level of governance than nation level. Regions within a country can not use foreign exchange differences, rations of prices as tools for competitive weapon. On the other hand, the ownership of production factors and their movement plays very important role.[1] Macroeconomic concept is emphasized for example in [8, s. 264]. Regional competitiveness is defined as the ability of the local economy to attract firms with stable or rising market share and also as the ability of regional economies to ensure a stable or rising standard of living of the participating parties.

From the foregoing, competitiveness at the regional level is very difficult to define, but also it is problem with its assessment. Evaluation systems are based primarily on the productivity of the economy, and they are supplemented by additional factors revealing about quality of life and sustainability. International organizations World Economic Forum (WEF) and the International Institute for Management Development (IMD) uses evaluation which is based on desegregation of summary macroeconomic indicators. Viturka [11] focuses on the evaluation of the long time perspective. Martin [7] tried to describe competitiveness from comprehensive issue by defining the key factors of economic development, productivity and economic growth. The amount of produced goods and services is important indicator of competitiveness of area. European Commission in the sixth periodic report on the social and economic situation

and development of the regions of the European Union considers that productivity and employment are the main indicators of competitiveness. Huggins brought a new approach to measuring of competitiveness. Huggins constructed an index of competitiveness in the United Kingdom. It was the first attempt to capture the competitiveness by one number. Huggins tried to include evaluation of inputs, outputs and outcomes of the economy in to the index. [5] Index of regional competitiveness was further developed by the European Union. European Commission proposed Regional Competitiveness Index (RCI). The index compares the European Union regions at level NUTS 2 in terms of their competitiveness. [6] considers labour, physical and social infrastructure, the efficiency of the public sector, performance in productivity as fundamental factors which determine competitiveness. In context of this definition, GDP per capita, employment rate and labour productivity are considered by Wokoun as the best indicators of competitiveness. Despite the problematic definition of competitiveness at regional level, competitiveness of regions has recently come to the fore. Many experts agree that regional competitiveness is an essential prerequisite for economic growth and it is its important integral part. [9]

2 The classification of regions due to their competitiveness

From the literature search, it could be set that regional competitiveness is determined by economic, social, political and organizational potential of the region. The aggregate index of regional competitiveness which could be applied to the regional level has not yet been created. The analyses of competitiveness of regions of the Czech Republic will be carried out based on the economic indicators of competitiveness from works Huggins and Turok. They defined fourteen indicators for comparing of regions according to their competitiveness. Indicators were processed by Pěluch or Wokoun [13]

Tab. 1: Indicators of economic competitiveness of regions

The number of businesses per capita	GDP per employee
The number of sciences institutions	Exports at current prices
The share of knowledge-based companies	Average monthly gross wage
The level of economic activity	Net disposable household income per capita
The number of employees in science and research institutes	The unemployment rate
The expenditure on research and development	The migration balance
GDP per capita	The share of the urban population

Source: [13]

The analysis of competitiveness of regions in the Czech Republic will be based on indicators which are monitored by the Czech Statistical Office. The value of Exports at current prices and Share of knowledge-based companies is not recorded on the regional level in the Czech Republic. The analysis will be based on indicators which are shown in Tab. 2.

The analysis of inter-regional disparities will be carried down by using cluster analysis. The structure of selected file could be determined by using this method.

Objects could be classified according to their similarities also. The aim of the cluster analysis will be to identify regions which are the most similar in terms of competitiveness so define regions that have similar values of economic development and identify regions among them the biggest differences are. The cluster analysis will be presented in the statistical software Statistica 12 and it will be carried out due to availability and comparability of data on values of indicators from 2014.

Tab. 2: Input indicators of analysis

Prom1 – The number of business per capita	Prom2 - The expenditure on research and development
Prom3 – The number of research institutions	Prom4 - Net disposable household income per capita
Prom5 – The number of workers of science and research	Prom6 - GDP per employee
Prom7 - The level of economic activity	Prom8 - The unemployment rate
Prom9 - GDP per capita	Prom10 - Average monthly gross wage
NProm – The migration balance	N1Prom - The share of the urban population

Source: own processing

In accordance with the assumptions of the application of cluster analysis, correlation analysis will be conducted. Relations between indicators with high degree of correlation will be identified and eliminated. Correlation analysis will be done by using the Spearman correlation coefficient (1). Relations between indicators with correlation coefficient higher than 0,75 will be eliminated. [4]

$$r_{i_x} r_{i_y} = 1 - \frac{6 \sum (i_x - i_y)^2}{n(n^2 - 1)} \tag{1}$$

The results of correlation analysis are shown in Tab. 3.

Tab. 3: The results of correlation analysis

	Prom1	Prom2	Prom3	Prom4	Prom5	Prom6	Prom7	Prom8	Prom9	Prom10	NProm	N1Prom
Prom1	1,00	0,21	0,09	0,51	0,14	0,18	0,50	-0,41	0,38	0,27	0,65	0,39
Prom2	0,21	1,00	**0,85**	0,48	**0,77**	**0,76**	0,31	-0,48	0,68	0,73	0,64	-0,13
Prom3	0,09	**0,85**	1,00	0,48	**0,55**	**0,87**	0,29	-0,37	0,64	0,53	0,50	-0,21
Prom4	0,51	0,48	0,48	1,00	0,47	**0,80**	0,51	0,07	**0,82**	0,23	0,25	0,21
Prom5	0,14	**0,97**	**0,90**	0,47	1,00	**0,98**	0,28	-0,43	0,67	0,69	0,60	-0,15
Prom6	0,18	**0,99**	**0,87**	**0,80**	0,98	1,00	0,25	-0,42	**0,87**	0,71	0,62	-0,12
Prom7	0,50	0,31	0,29	0,51	0,28	0,25	1,00	-0,32	0,48	0,28	0,47	0,21
Prom8	-0,41	-0,48	-0,37	0,07	-0,43	-0,42	-0,32	1,00	**-0,84**	-0,52	**-0,76**	0,25
Prom9	0,38	0,68	0,64	**0,82**	0,67	**0,87**	0,48	**-0,84**	1,00	0,69	0,74	-0,13
Prom10	0,27	0,73	0,53	0,23	0,69	0,71	0,28	-0,52	0,69	1,00	0,64	0,2
NProm	0,65	0,64	0,50	0,25	0,60	0,62	0,47	**-0,76**	0,74	0,64	1,00	-0,02
N1Prom	0,39	-0,13	-0,21	0,21	-0,15	-0,12	0,21	0,25	-0,13	0,2	-0,02	1,00

Source: own processing according to data [2]

According to the conclusions of correlation analysis, eight indicators will enter in to the cluster analysis - The number of business per capita, The expenditure on research and development, The number of research institutions, The level of economic activity, The unemployment rate, Average monthly gross wage, The migration balance, The share of the urban population. The distance between objects will be calculated by using the Euclidean distance. It determines the length of the shortest path

between two objects. Clustering process will be based on the weighted average of groups of couples method.

The results of the cluster analysis are shown in Fig. 1. Based on the similarity of the input parameters, eight clusters were created in a distance 20 % (according to clustering schedule, suiting chart). The first cluster was created by regions Ústí, Moravia-Silesia and Olomouc, the second cluster accounted Liberec Region, Hradec Králové Region, Vysočina Region, Zlín Region and Pardubice Region. By looking at the further clustering process, South-Bohemian Region, Pilsen Region and South-Moravian Region are the closest. They created a separate cluster at a distance of 34 %. Central-Bohemian Region, the capital city of Prague and Karlovy Vary Region are regions that are at least similar to others. See graph in Fig. 1.

Fig. 1: Results of the cluster analysis
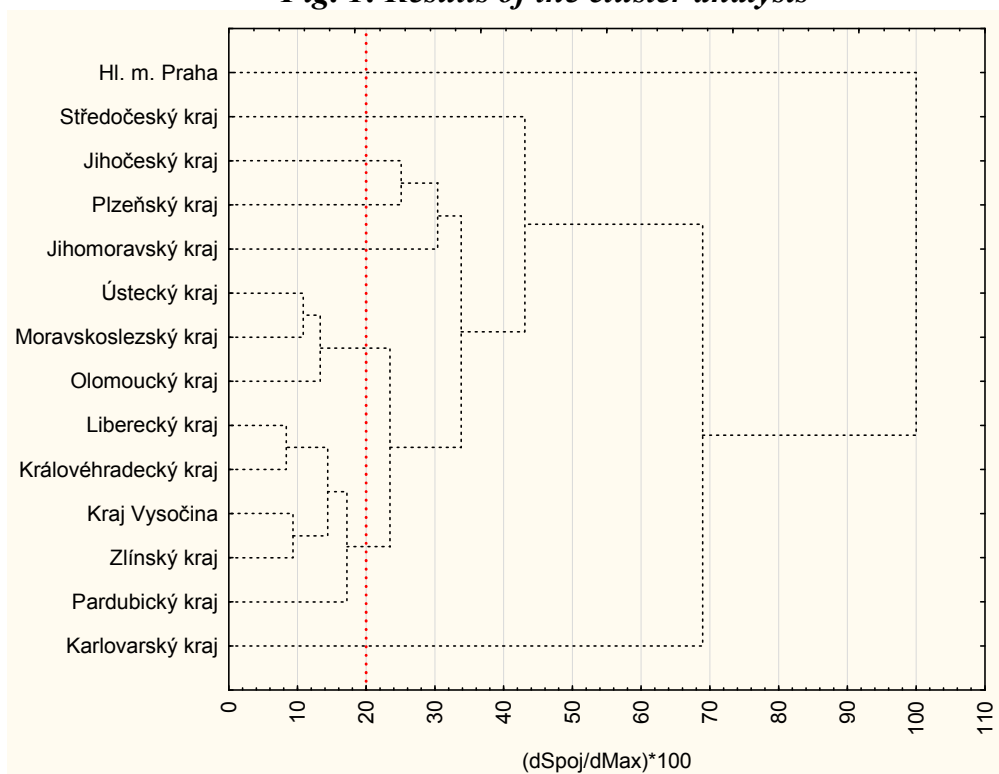
On based of the results of the cluster analysis, it could be said, that the first cluster is created from regions which show in these indicators of economic performance average ratings (South Bohemia Region, Pilsen Region and South-Moravia Region). They are regions which contribute to the competitiveness of the whole country. The second cluster is created from regions with below-average values of indicators (Ústí Region, Moravia-Silesia Region and Olomouc Region). The third cluster is formed from regions which values of indicators are around average value. They are Liberec Region, Hradec Králové Region, Vysočina Region, Zlín Region, Pardubice Region. Region Capital city of Prague and Central Bohemia are the regions with best values. The worst region in this comparison is Region Karlovy Vary.

2.1 Comparison of economic performance of region and its demographic potential

The competitiveness of region is an important indicator that tells more about the economic and social situation in a selected area. According to the theoretical conclusions, regions with the better evaluations of competitiveness should have better demographic potential. Labour is a production factor and it is one of the key determinants of the production function. The quality of human capital in the region affects the level of production, but on the other hand, economically prospering region can offer better conditions for living. The Czech Republic, like other Western countries are beginning to deal with problems of aging of population. The Czech labour market is also characterized by a low level of interregional labour migration. Next analyse will deal with the comparison of economic performance and demographic situation in the region.

Regions can be divided in to four groups based on the value of net migration and natural increase, see Web´s chart in Fig. 2. Regions with positive native and migration balance belong in to the first group. In the Czech Republic they are Prague Region, Central-Bohemian Region, South-Moravian Region, Pardubice Region, Liberec Region and South-Bohemian Region. With the exception of the Plzeň Region, there are all regions with better evaluation of the competitiveness than is national average value. The second group includes regions which have positive natural balance and negative net migration. In the Czech Republic, there is only Vysočina Reigon. Negative natural balance and positive net migration is in Plzeň Region. Natural loss is not so significant – 87. Moravian-Silesian Region, Ústí Region, Karlovy Vary Region, Zlín Region, Hradec Králové Region and Olomouc Region are confronted with depopulation due to migration and negative native balance. The worst situation is in the Moravian-Silesian Region.

Fig. 2: Web´s chart
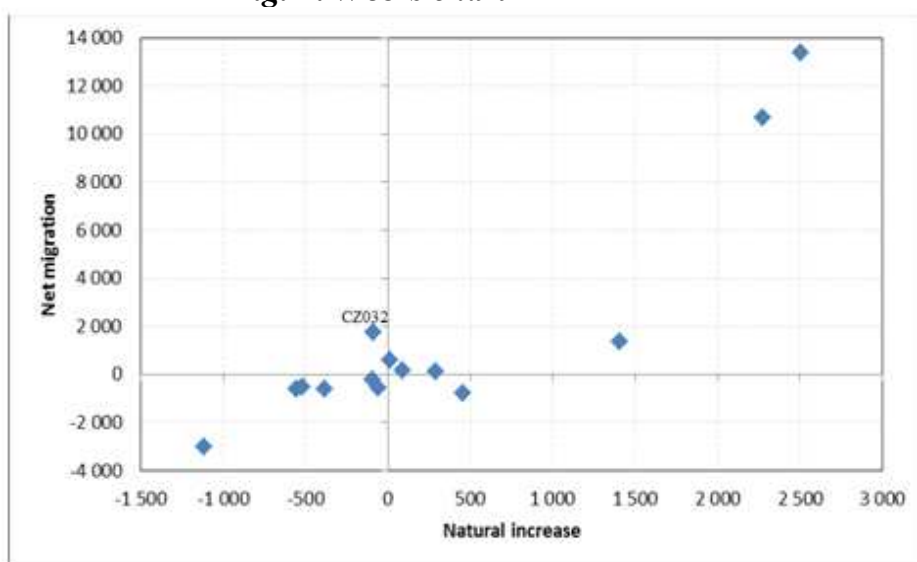
Prague Region	CZ010	Moravian-Silesian Region	CZ080
South-Bohemian Region	CZ031	Olomouc Region	CZ071
South-Moravian Region	CZ064	Pardubice Region	CZ053
Karlovy Vary Region	CZ041	Plzeň Region	CZ032
Vysočina Region	CZ063	Central-Bohemian Region	CZ020
Hradec Králové Region	CZ052	Ústí Region	CZ042
Liberec Region	CZ051	Zlín Region	CZ072

Source: own processing according to data [2]

A more detailed analysis of population development in the last ten years show that in all regions in the Czech Republic except Central-Bohemian Region the number of people over 65 years exceeds the number of children aged 0 – 14. The biggest difference is evident in the Moravian-Silesian Region and in South-Moravian Region. Nowadays, the development of children in age 0 – 14 years shows increasing trend. Only in Moravian-Silesian Region, the number of children in this age group is decreasing. But particularly the number of people in working age is most important for economic development. Graphs in Fig. 3 show the development of number of people in productive age.

Fig. 3: Development of the population in working age
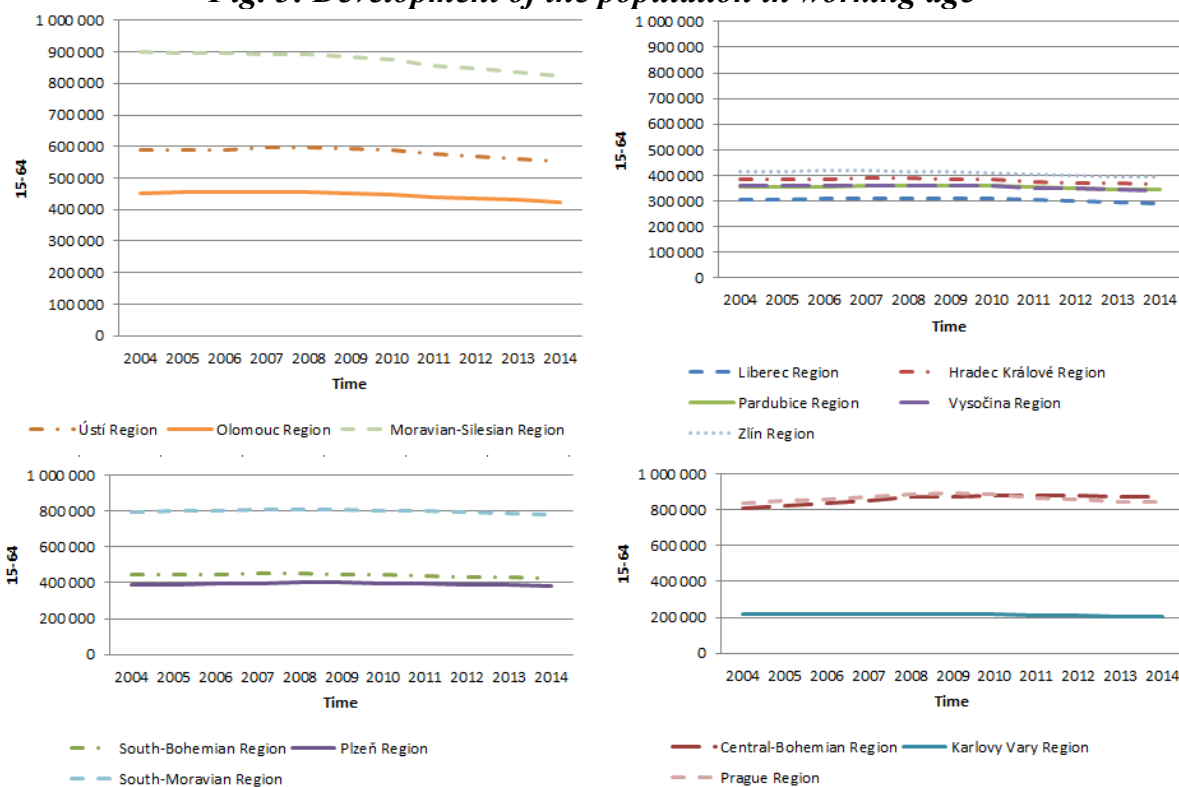
Source: own processing according to data [2]

Conclusion

The aim of the paper was to analyze the competitiveness of the regions of the Czech Republic. Competitiveness was analyzed by using cluster analysis based on twelve indicators of economic performance. The cluster analysis divided regions in to three groups. The first group consists of regions which have greater economic potential and contribute to the growth of national indicators – South-Bohemian Region, South-Moravian Region, Plzeň Region. The second group was made up of the regions in which the values of the indicators were around the national average values

– Hradec Králové Region, Pardubice Region, Vysočina Region, Liberec Region and Zlín Region. The third group includes Moravian-Silesian Region, Olomouc Region and Ústí Region. They are regions with below average values of indicators, they are regions that exhibit worse economic conditions. Prague Region, Central-Bohemian Region and Karlovy Vary were separately in cluster analysis. Prague Region and Central-Bohemian Region surpass other regions in economic development, they are the best regions, Karlovy Vary Region has the worst values of indicators.

In the article there were also analyzed the demographic aspects of regions. Only basic demographic data were included in order to assess the demographic situation in regions with regard to their economic performance. The conclusions of this analysis will use for further and more detailed analysis of interregional disparities in population. The analysis shows that the issue of population aging affects all regions regardless of their economic situation. The number of people in working age is important economic aspect of the region. All regions are facing with the decline in people in age group 15 – 64. Since 2010, the change of trend is marked in regions with the worst economic evaluation. The number of people in working age is decreasing rapidly.

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THE SELECTED ASPECTS OF FOREIGN TRADE OF THE CZECH REPUBLIC AS A FACTOR OF SUSTAINABLE ECONOMIC DEVELOPMENT

Jaroslav Kovárník

Abstract: *The Czech Republic has a significant position in the central Europe. This country is member of different international organization, among others of the European Union and of the Visegrad Four. Two other members of Visegrad Four, namely Poland and Slovakia, are traditional export destinations for the Czech Republic, however, the most important export destination is Germany. Additionally, Germany and Slovakia use Euro as their official currency, while Poland has Zloty. With respect to the Euro, the Czech Republic has intervened the rate between Czech Crown and Euro with the aim to support export. This article deals with several selected topics. Firstly, it analyses the development of gross domestic product in the Czech Republic, Slovakia, Poland, and Germany, where GDP is one of the most frequent indicators for evaluation of economic development of every country. Moreover, GDP formula of open economy contains also net exports as a difference between exports and imports. That means that foreign trade is important for every open economy, and analysis of foreign trade of above mentioned countries is next aim of this article, where it focuses especially on the export of the Czech Republic to other countries and on the influence of interventions.*

Keywords: *Czech Republic, Export, Import, Foreign trade.*

JEL Classification: *F43, O11.*

Introduction

Macroeconomic theory shows that Gross Domestic Product (GDP) is one of the most important indicator showing and evaluating development in particular country. This indicator can be calculated in three different ways, as described in [1], [9], or [10].

First approach is based on the definition of GDP, where it measures value of the goods and services in specific year in all industrial sectors in particular country. Second approach of GDP calculation is based on income earned by all the factors of production in economy, which presents wages paid to labour, rent earned by land, and the return on capital in the form either of interest, or entrepreneur's profit. Last approach for GDP calculating is based on spending of different groups that participate in the economy. According to this method, GDP is a measure of consumer spending (C), business investment (I), government spending (G), and net exports, which is exports minus imports (X - M), which means

$$GDP = C + I + G + (X - M). \tag{1}$$

From above mentioned description is quite obvious that foreign trade is important for every state because it can either improve the GDP level (in case that export is higher than import) or worsen it (in the opposite case). Nevertheless, foreign trade is

important for every country because of other reasons as well, such as solving of proportionality problem, demonstrative effect of foreign trade, and others. The importance of foreign trade has been evaluated in other articles by other authors, for example [2], [3], [4], [7], [8] or [11].

1 Statement of a problem

As was already mentioned, this article deals with the problematic of foreign trade of selected countries from central Europe, namely of the Czech Republic and its important trade partners Germany, Slovakia, and Poland. The analysis focuses on several partial topics:

- Analysis of GDP development of above mentioned countries. GDP is traditionally one of the most frequently used macroeconomic indicator, which can help evaluate economic development of particular country, and also compare different economies among others.

- Analysis of foreign trade development of above mentioned countries. As was explained, foreign trade is part of GDP formula and it can either increase or decrease the level of GDP.

- Germany, Slovakia, and Poland are the most important partners for the Czech Republic in terms of its export. Moreover, the Czech Republic has intervened the exchange rate between Czech Crown and Euro, which is official currency of Germany and Slovakia, while there has not been any intervention with Polish currency Zloty. Next aim of this article is to analyse the development of export of the Czech Republic into Germany, Slovakia, and Poland, and compare these results with the exchange rate development.

2 Methods

It is obvious that methods of analysis, comparison, and comparative analysis will be used in this article. From the theoretical point of view, this article builds on the basic macroeconomic theory of GDP, where net balance of foreign trade creates a part of this formula. This theory also explains that export has only autonomous part, while import has both autonomous and induced parts. This article analyses the development of export of selected countries, but also export of the Czech Republic into three other countries, and it also compares the GDP of these countries with the export from the Czech Republic.

From theoretical point of view, exchange rate can be very important for the changes of export of one country. If the exchange rate increases, domestic product is relatively cheaper for foreign companies, and domestic export should increase, and vice versa. The Czech Republic has intervened in the exchange rate between Czech Crown and Euro with the aim to support export from the Czech Republic. This article also analyses and compares the development of exchange rate and the export of selected countries.

3 Problem solving

3.1 GDP Development Analysis

Germany has had around eighty millions of inhabitants, Poland around thirty eight millions, the Czech Republic over ten millions, and Slovakia little bit more than five millions. Therefore it is quite obvious that the GDP in millions of euro is the highest in Germany, Poland is on the second position, the Czech Republic on the third place, and Slovakia is the last one.

However, for mutual comparison of different countries is necessary to recalculate the level of GDP per capita. Following Fig. 1 shows the development of GDP per capita in four analysed countries in whole analysed period 2000 – 2015.

Fig. 1: GDP per Capita in the Selected Countries
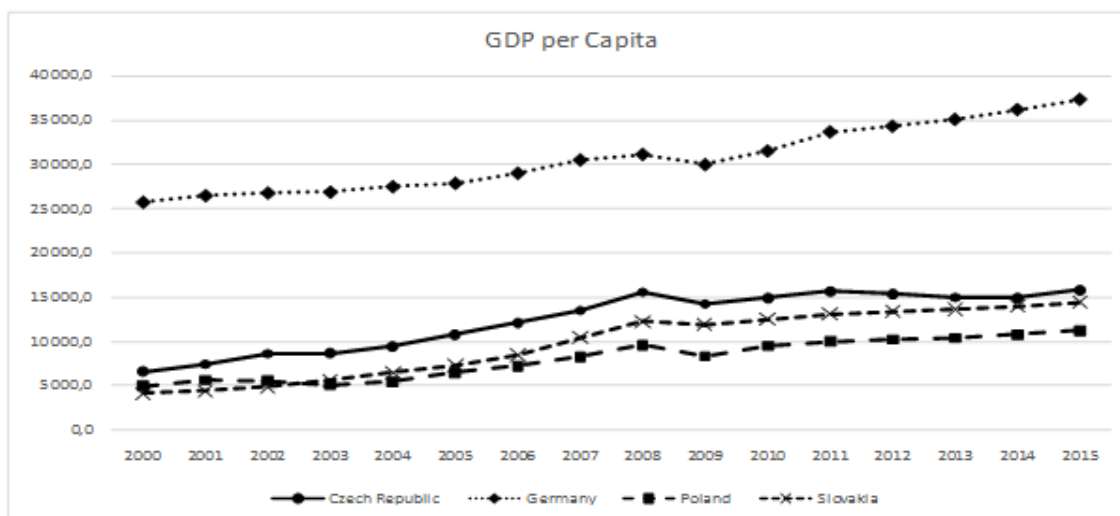
Firstly, Germany has had significantly higher level of GDP per capita than other analysed countries, which is proof about economic development in this country and about undisputed position of Germany as one of the most developed countries of the world. It is also obvious that there exist some similarities, but also some differences among analysed countries. For example, in all analysed countries can be seen decrease in the year 2009 as a result of economic crisis.

However, after-crisis development is different, where level of GDP per capita was decreasing in the Czech Republic between the years 2011 and 2014, while other analysed countries have been growing after crisis till 2015. Before crisis were growing all countries except Poland, where it is possible to seen decreases in the period 2001 – 2003. These decreases are the reason why Slovakia exceeded Poland.

The analysis of growth rates shows different results. The highest growth rate (247.9%) has Slovakia, the Czech Republic is on the second position (144.33%), Poland is on the third place (131.06%), and Germany is the last one (45%). On the other hand, this relatively small growth rate in Germany is because of significantly higher starting position (compare GDP per capita 25,759 euro in Germany in 2000 with 6,484 euro in the Czech Republic). Therefore it is obvious that the gap between Germany on one side and other countries on the other side is still huge, and it has been even increasing after crisis. In 2000, the level of GDP in Germany was almost four

times higher than in the Czech Republic, but in terms of euro per capita was this difference only 19,274 euro. In 2015 has Germany only 2.4 times higher level of GDP per capita, but the difference in euro was 21,507 euro.

Moreover, the analysis of after-crisis development shows different results. Growth rates between the years 2009 and 2015 are as follows – Poland 35.36%, Germany 24.49%, Slovakia 21.45%, and the Czech Republic only 11.34%. It is obvious that the position of Germany is really strong and it has managed to recover really quickly, while the position of the Czech Republic after crisis is really weak. If this development will continue in the future, it is possible to expect that the position of the Czech Republic, Slovakia, and Poland can change, while the position of Germany will remains same and the gap between this country and the other countries will even grow.

3.2 Foreign Trade Development Analysis

The analysis of foreign trade development in millions of euro shows again dominant position of Germany. Germany is the only country, where the balance in 2000 was in surplus for almost six millions of euro. However, the overall growth rate of trade balance in Germany has been enormous (3,930.54%) and currently has Germany trade balance almost 230,000 millions of euro.

All other analysed countries had negative trade balance in 2000, where the Czech Republic managed to achieve positive trade balance in 2004, Slovakia in 2012, and Poland in 2013. Not only are the amounts of trade balances in these countries significantly lower than in Germany, but the growth rates are lower as well (compare the Czech Republic with 928.35%, Slovakia with 430.13%, and Poland with 201.17%). Even if Poland has the lowest growth rate, its position has improved the most from the three analysed countries (except Germany), where there was the highest deficit in Poland in 2000 (- 11,802 million Euro), and currently has Poland second highest surplus (after Germany, 11,941 million Euro). This fact is supported by the after-crisis growth rates, where Poland has 539.41%, Slovakia 299.51%, Germany 88.89%, and the Czech Republic 77.61%.

Nevertheless, the analysis shows that Germany is really export-oriented economy, where the surplus has been increasing and has helped to build the GDP. The other three economies have been developing, but this development is slow compared to the Germany. On the other hand, the development of trade balance is not as steady as the GDP development. GDP has been mostly growing in all analysed countries, with the only exception of crisis year. Trade balances are not developing in this way; it is possible to find several increases and decreases in all analysed countries. Quite interesting is also the fact that in the year 2009, where GDP decreased in all analysed countries, trade balance decreased only in Germany and it grew in other analysed countries. The explanation of this development can be found in the theory, where export has only autonomous part and import has both autonomous and induced parts, as was already explained.

Because of a huge difference between trade balance in Germany and other countries in millions of euro is in following Fig. 2 the trade balance recalculated again per capita. It is obvious that after this recalculation the differences among countries are not so significant, but they still remain. Moreover, after this recalculation is Poland again on the last position, while the Czech Republic has second highest trade balance

per capita in euro. This Fig. 2 is important especially for the analysis of irregular development.

Fig. 2: Trade Balance per Capita in the Selected Countries
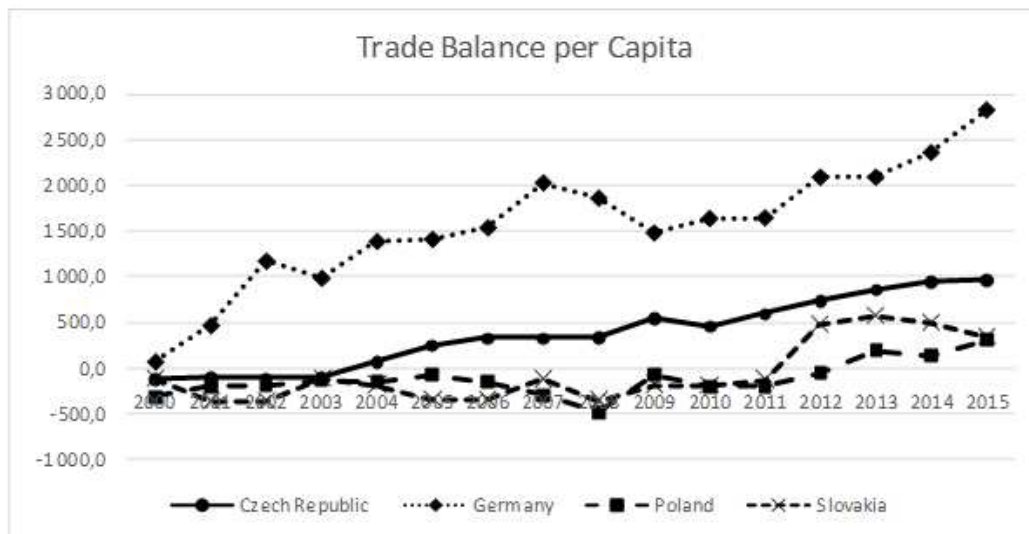
3.3 Analysis of the Export of the Czech Republic

Last topic of this article is the analysis of the export of the Czech Republic into the other analysed countries; because of these countries have been the most important trade partners for the Czech Republic. Following Fig. 3 shows the development of export in millions of Euro.

Fig. 3: Export of the Czech Republic into the Selected Countries
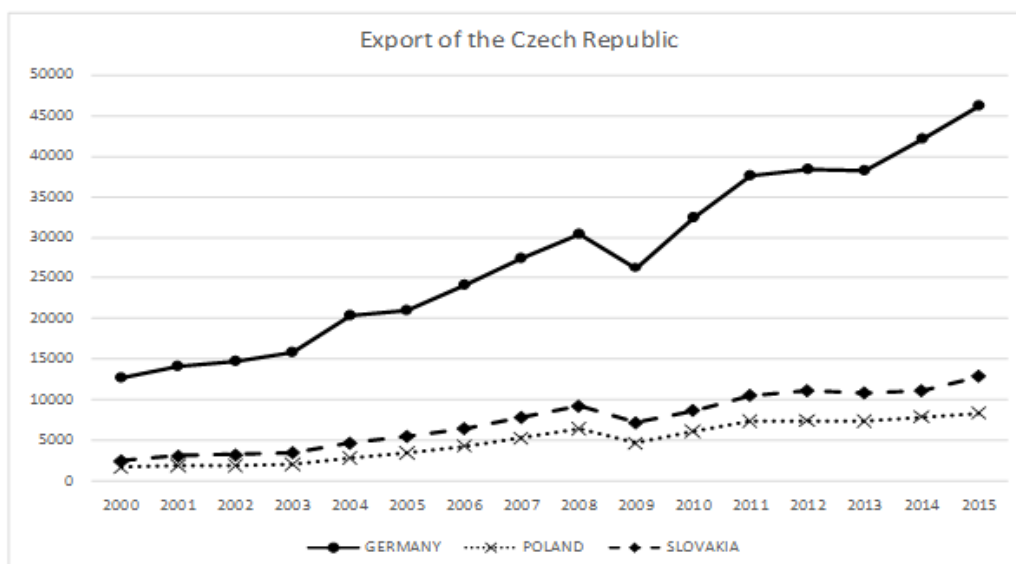
The analysis of Fig. 3 reveals several interesting facts. First of all, by comparing export development with trade balance development between the Czech Republic and other analysed countries can be revealed that even if the export has had similar development as GDP and import as well, trade balance has had irregular and different development. That means that there exist differences between export and import development (in other words the size of increases and decreases are different), where

140

these differences lead into irregular development of trade balance. On the other hand, Germany has managed to achieve increasing trade balance during the analysed period, which means that this country has been focusing on export more than other analysed countries.

The development of export also shows relatively significant decrease of export in 2009 as a result of economic crisis, where GDP in all analysed countries also decreased. However, there are some differences. In case of Germany, in the year 2013 GDP in Germany grew, while the export into this country decreased a little bit. With respect to Poland, GDP in Poland decreased in 2003, where export into this country grew in this year, and on the other hand, export decreased in 2013 a little bit, while GDP in Poland grew in this year. Same in case of Slovakia, where export into this country decreased in 2013, while GDP in this country grew.

This development is relatively unexpected. Export from the Czech Republic into all analysed countries, namely Germany, Slovakia, and Poland, decreased in 2013 in spite of the fact that GDP per capita in these countries grew. On the other hand, GDP in the Czech Republic decreased in 2013. According to the theory, export should be independent on domestic product, quite the contrary, it should be affected by the foreign GDP development. However, the situation in 2013 in the Czech Republic shows different results.

With respect to the exchange rate development, as was mentioned above, the intervention of the Czech National Bank with the aim to support export of the Czech Republic has started in the year 2013. It is obvious that in this year were the Czech Republic going through another crisis and this step should support economic growth in the Czech Republic thanks to export increase. In case of Germany, it is possible to talk about successful step. The overall growth rate of the export of the Czech Republic into Germany is 263.4%, which is the lowest amount from three analysed countries (387.5% in Poland and 429.6% in Slovakia), but this amount is again, as well as in case of GDP, caused by significantly higher amount of export into the Germany in 2000 (compare 12,734 millions of Euro in Germany with 1,711 millions of Euro in Poland, and 2,420 millions of Euro in Slovakia).

After-crisis growth rate is still the lowest in Germany (76.1%, where Poland has 78.9%, and Slovakia 80.9%), but the gap between Germany and other countries is really small. Additionally, the growth rates from 2013 to 2015 (after interventions) show significantly higher increase of export into the Germany (growth rate 21%, where Slovakia has 19%, and Poland only 13.8%). Based on the increase of export into Germany is possible to make a partial conclusion that the interventions have been successful. Export into Poland supports this partial result, because the growth rate of export into Poland after the interventions is the lowest. However, the export into Slovakia little bit disputes this partial conclusion. The growth rate of export into Slovakia is the highest not only in the period 2000 – 2015, but also in the after-crisis period 2009 – 2015. However, after the interventions is the growth rate second highest, after Germany. This rate is higher than in case of Poland, but based on the other growth rates can be assumed that this short-term growth rate will also be the highest, but this assumption is denied. It can be explained in such way that either the interventions have not be successful in the increase of export into Slovakia, or Germany is much more important business partner for the Czech Republic.

4 Discussion

Comparative analysis in this article shows some expected results, but also some unexpected. It is quite expected that Germany is the strongest economy both in terms of total GDP and in terms of GDP per capita. According to the total GDP, on the second position is Poland, the Czech Republic is on the third position, and Slovakia is the last one as a result of number of inhabitants. However, after recalculation per capita is the Czech Republic on the second place, Slovakia is the third, and Poland the last one. Nevertheless, based on the development can be expected that the Germany will remain the strongest economy, but the situation among the other countries can change in the future, because the Czech Republic has had some problems in its development, while Slovakia and Poland have been developing relatively quickly.

International trade balance is an important part of GDP formula, but such irregular development of trade balance has been relatively unexpected. The development of both export and import is relatively similar to GDP development, the only difference is the size of increases and decreases. These differences are the reason while the final net balance is so irregular. However, in spite of this irregular development can be seen relatively significant growth of net surplus in Germany, while the other countries are growing really slowly. Partial conclusion can be made that Germany is strong economy with increasing exports, which helps consequently to improve GDP again.

During analysis of the export of the Czech Republic into other analysed countries can be seen similar development as in case of GDP. However, according to the theory should be export only autonomous that means independent on domestic GDP, exactly the opposite, foreign product (more precisely foreign demand) should be the important indicator for domestic export. But in case of the Czech Republic is possible to see another unexpected result, where in the year 2013 the GDP in all three analysed trade parthers grew, but the export of the Czech Republic into these countries decreased, where domestic GDP of the Czech Republic decreased as well. This development is going against the theory and potential relationship between domestic GDP and export can be assumed. However, statistical verification of this hypothesis is not done in this article, because of the limited space, and the plan of the author is focus on this problem in other article.

Conclusion

This article deals with selected topics of foreign trade in selected countries from central Europe, namely the Czech Republic, Germany, Slovakia, and Poland. Firstly, it analyses the GDP development, becuase this macroeconomic indicator is one of the most frequently used indicator for comparison of different countries among others. This analysis shows strong position of Germany, while other three countries have similar level. However, the development in last few years is better in Slovakia and in Poland; therefore change of position among the Czech Republic, Slovakia, and Poland can be expected in the future.

Secondly, this article evaluates net balance of foreign trade, because this net balance is important part of GDP formula of every open economy. Relatively unexpected result is that the net balance development is irregular in all analysed

countries. The possible explanation of this irregularity can be seen in the sizes of fluctuation of export and of import.

Last analysed topic is the development of export of the Czech Republic into other three countries, where these countries are the most important trade partners for the Czech Republic. Moreover, in 2013 has begun the interventions of the Czech National Bank with the aim to support export into countries with Euro as official currency, where this currency is used in Germany and Slovakia. These interventions seem to be successful, because especially the exports into Germany have increased since 2013. However, during this analysis was revealed another unexpected fact. According to the theory, export should be autonomous (indipendent on domestic product). In case of the Czech Republic, exports in all three countries decreased in 2013, as well as GDP, despite the GDP growth in all other three countries. This development is relatively unexpected and it will be verified with statistical tools in other article.

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REMARKS TO INNOVATIONS IN EUROPEAN LOCAL GOVERNMENT EDUCATION

Karel Lacina

Abstract: Innovations in the civil servants and otherofficerseducation and trainings are closely connected in our European continent with reforms of the public administration. That time became clear that successful reforms also required- among others -also transformations of educational and training systems.The mentioned linkage was caused predominantly by the fact that new tasks fulfilled by the whole European public administration since the end of the 1970s were relatively intensively reflected in the sphere of elected representatives, civil servants and other officers education and training. This fact is considered as one of key prerequisites of the European countries competiveness strengthening and simultaneously as one of significant toolsenabling the reinforcement of the local population social integration.

Keywords: Education, Training, EU educational strategy, Civil servant, Officer, Public administration, Reforms, Transformation of systems, Competiveness, Reforms of European public administration, Long - life education, TQM. principles implementation.

JEL Classification: A 20.

Introduction

The main aim of this essay is to characterize principles of trainings offered by different specialized institutes and schools as well as principlesof the so called in - service - training derived from principles of the in - company training including its role in the long - life education strategy implemented in the European Communities and later in the European Union especially since the 1980s. What concerns this type of education and trainigs legal aspects severalits important documents (valid till now) were approved in the European Unionas well as in the national levels since the l990s.One of themis the European Commission Green Book called officially „*Life and Work in Information Society: People as the First*"which was adopted in July l996. Four years after - in the 2. November,2000 - the European Commission issued another principal documentcalled „*Long - life Education:Time to Act* „[3, p.18]. The European Commission underlined in them the importance of the e - learning activities as the component part of the *"Initiative E - Europe".*Those documents have a great significance both for the state administration and for the municipal and regional local government staff education and training.

I have written the essay on the basis of the long-term study of books, official papers, analyses,studies, essay and articles publishedin proceedings from different international scientific conferences - including divergent statistic figures - dealing with the contemporary European public administration execution.Taking facts presented here into account the explanation of the contemporary systems of councillors, civil

servants and other officers I specified as the principal objective of the essay. This objective I divided into three smaller aims:

a) Good Governance conception specific features and assessment.

b) Good Governance as the basis for modern councellors and officials education and traning.

c) System of education and trainings in the French public administration as the example of good practice.

I have decided on the basis of the indicated objectiveto formulate two hypotheses:

1. The Long-life education conception answers the contemporary European local government execution needs.

2. *The French and German system of the public administration staff education is* possible assess as the example for other European countries training systems.

1 Issues Formulation

Processes of the devolution and the deconcentration of the public administration activities resulting into the municipalities and regions competences reinforcement arecharacterized in the European continent as important decisive results of administration reforms implemented in the western European and Scandinavian countries since the end of the 1970s and the beginning of the 1980s and in the Central European and the Baltic countries since the 1990s. They represented a great challenge for all spheres of the public administration execution because they were one of crucial preconditions for the achievement of the higher economy, efficiency and effectiveness of the whole public administration execution. Thanks to the transfer of competences from the state administration to the local government (on the basis of the *devolution principle* implementation) as well as the transfer of competences from the central state administration to the regional state administration (on the basis of *deconcentration principle* implementation) municipalities and regions became able to take part more actively in the solution of different problems which, of course, requiredsimultaneously the increaseof their elected representatives and officials knowledge and skillslevel.

The European Commission emphasizedin this connection in itsdocument called „*Long -Life Education: Time to Act*" six key tasks:

1. General and permanent access to the education oriented towards the adoption and the improvement of knowledge and skills necessary for the participation of everybody in the knowledge society.

2. The necessity to invest a greateramounth of financial means into the humanresources management.

3. Effective methods of teaching and learning working out.

4. Ways of people participation in the education and training improvement and assessment.

5. Easy approach of citizens to high quality of information and to advisory activities.

6. Providing opportunities to take part the long - life education as near as possible to concrete elected representatives, civil servants and officers in such a way that enable

the implementation of specialized individual educational forms directly in concrete municipalities[18, p. 89].

Taking the mentioned facts into account a growing number of theoreticians started to stress the the extremely significant role of the following tasksimplementation in the public administration education and trainings:

- the necessity to improve the management knowledge and skills in the public administration as the whole;

- the implementation of some key transformations in the whole public sector;

- the intensification of the information technologies utilization in the authorities and local government offices predominantly in the form of e - government.

2 Methods

The presented essay is based on the author´s long-term research of the European public administration execution including the study of methods applied in the elected representatives, civil servants and clerks education and trainings in several European countries and in the U.S.A. Predominantly methods of *analysis* and *synthesis*are utilized here. The another important method is the *comparation* helping, first of all, to assess real possibilities of the management approaches implementation in individual Europeancountries public administrationsystems. Last but not least I have also used *methods of induction* and *deduction*.

Last but not least I also utilized *classical methods of usability tests* and the *method of heuristic assessment* as well as *methods of secondary literature analysis* and *empirical survey*.

3 Analysis of the problem

The analysis is based on the research of the so called *New Public Management*[26,p.12]and then *Good Governance*(or *PublicGovernance)*conceptions typical features which are playing the decisive role in the European as well as US public administration since the 1980s. Lucy Gaster, one of theoreticians, explains reasons of NPM principles popularity by stressing the dissatisfaction of consumers with the growing number of public services provided by the local government predominantly due to their low quality in the1960s and the 1970s. She reminded: "L*ow quality services, generating and perpetuating low expectations, have too often been the experience of both users and producers of these services. Dissatisfaction, frustration, but not much action was the result* "[8, p. 1].

I personally share the opinion that the implementation of the indicated tasks represents one of significant challenges not only for the public administration authorities and offices but also for the universities and other educational institutions developing their activities in the regions.Let me remind the fact that the *Good Governance* conceptionwas developed step by step through discussions of theoreticians in the 1990s and adopted definitely by the European commission in June 2001.

Its key principlesare:

- transparency;

- accountability;

- respect to human rights;

- openness of the public administration implementation;

- the general need to demonstrate greater transparency in the use of public resources and to document performance;

- a growing demand for the quality of public services providing.

Characterizing the essence of the Good Governance conceptionDavid Farnham and Sylvia Hortonunderlined the fact that there are "*dynamic organizational contingencies facing public officials since the 1980s.These contingencies have resulted, inter alia, in:*

- higher emphasis laid down on the citizens understanding as "customers", "clients" and " consumers" of public services;

- contracting and market testing opening - up;

- shifting from an administrative to a managerial approaches, focused on target - setting, performancemanagement systems andperformance indicator "[7, 47].

Some other theoreticians are also reminding the fact that the *Good Governance* conception implementation in the European public administration execution raises the significant question that could be defined like: *„Why there is such a great focus on quality"?* A required answer to the mentioned question - important also from the point of view of the education and training - is connected, in my view, especially with the sensible perception of some contemporary European public administration specific features representing the essence of the *Good Governance* concept. Those are predominantly:

- a shift from rules to responsiveness;

- ahierarchy to partnership;

    and

- an audit to evaluation.

4 Discussion

The mentioned author Lucy Gaster - similarly like some other British and US authors - pointed out the necessity to reformthe system of elected representatives and officials education that should be based on the "*awareness, assessment or diagnosis, planning and preparation, implementation including education and training and the development of commitment and understanding within the organization, a stage of continuous or intensive improvement*"[8, p. 75]

Lucy Gastersupplemented her position by stressing some other necessary approaches that are significant mainly from the point of view of the required staff education and training reinforcement.She recommended the training of different categories of the staff predominantly in:

"Listening, giving time, empathizing, thinking through, giving enough information for options to be clear, not "fobbing off", sensitivity to individual needs, fairness, honest, treating people equally, being polite , friendly and ensuring a speedy response

(Neighbourhood Office staff).

Being open with people, providing full information, looking at alternative possibilities,minimum waiting, sensitive, trustworthy, responsive staff - and speedy response

(Housing staff).

Understanding, being knowledgeable, flexibility, equal treatment and "do as You would be done"by minimum waiting, offering real choice, consumer involvement

(Social Services staff)" [8, 15]

The growing importance of the so called *non - technical quality*of elected representatives,civil servants and officers knowledge and skills and its reflection in the education and trainingis discussed very often by the theoreticians of the public administration. Therefore, it is not surprising that answer to the question how to improve the quality of public administration execution is closely connected with the improvement of the public administrationactorsprofessional training.

British authors Heady and Stodel specified goals of the public administration staff effective trainings already in year 1988 by the achievement of following characteristics:

"1. Helpful staff.

2. Knowledgeable staff.

3. Not to be overhead (privacy).

4. Staff have time for You.

5. You can ask questions."

[13, 1988].

Lucy Gaster supplements, for example, the mentioned goals by the followingnecessary transformations:

"- Better information to the public.

- Empowering the public.

- Extension of individual consumer rights.

- Improving consistency, speed and overall quality of services.

- Winning awards.

- Providing information to potential competitors."

[8, p. 99].)

The mentioned positions are topical till now.

I would like to stress the idea that we are able -in the theoretical level of discussions-to come to the consent in the *necessity to develop more responsible and better qualifiedpublic administration execution in the benefit of all citizens*.The implementation of this position presupposes *the real need to increase the quality of all services for citizensproviding*with the sensitive attention to the *Total Quality Management* principlesincluding the *quality of services standards* implementation. One of the crucial ways to the mentioned taskimplementation could be a systematic long-term elected representatives and officers education and training.

It would be useful in my view to remind the TQMconcept principal aspects (playing a very significant role in the contemporary public management) ín this connection. One of their characteristics was defined, for example, by the U.S. Department ofDefence underlining that:

- *„TQM is both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization.*

- *TQM is the application of quantitative methods and human resources to improve materials and services supplied to an organization, to improve all the processes within the organization, and to improve the degree to which the needs of the customer are met, now and in the future.*

- *TQM integrates fundamental management techniques, existing improvement efforts and technical tools under a disciplined approach focused on continuous improvement"*. [35, p. 11].

5 Example of effective approach: French conception of public administration elected representatives and clerks education

The effective orientation could be illustrated by the French system of education and trainings which is very closely connected with the carreer system principles implementation. Therefore a new officer is involved immediately - when he (she) starts to work in the office -into the special trainings implemented in the period till three years. Officers are divided into several categories that differ mainly by the level of their education and trainings as well as by their practical activities in the public service duration. There are three basic categories A, B, C. The civil servant or officer involved into three years educational activities is integrated into the category A, the other one with two years education and training into the category B and a man or a woman are involved into the category C after one year teaching activities.

Officersworking in the French local government offices are educated by one big training organization called *Centrenational de la fonction publique territoriale* – (C.N.F.P.T.). It organizes trainings in the 31 regional training centres as well as in the special schools located in Angers, Nantes and Mompellier. C.N.F.P.T. prepares in such a way trainings for nearly 1 300 000 clerks of 36 757 municipal , 95 departemental and 26 regional offices.

The most significant civil servants of the state administration are educated by the prestigeous École Natinale d´Administration (E.N.A.) established in 1945 year. Only approximately 100 students are engaged here every year. The E.N.A graduates are nominated very often to be top functions in the central state administration authorities.

Other ones are nominated as prefects of departements and regionals authoritiesas well as their deputies.

6 Results

Based on my studies I came to the conclusion that:

a) it is necessary to develop and to improve permanently in the contemporary public administration elected representatives as well asthe public administration staff working in the state administration authorities and simultaneously in the municipal and regional offices professional knowledge and skills.

b) A special attention should beoriented towards the training of managers (like secretaires generale des communes in France and stadt directors in Germany).Their position is confirmed predominantly by the experience of the French and German educational institutions.Their results could be also perceived as the challenge for educational centres, including the universities in the Czech Republic.

c) Taking the mentioned facts into account I would like to underline the position that not only specialized public administration training centres staff but also universities teachers knowledge and skills could be applied more effectively than till now in the elected representatives and officers many different types of trainings.

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RESTRICTION OF THE OFFICIAL'S DISCRETION COMPETENCE AS AN ANTI-CORRUPTION TOOL

Veronika Linhartová

Abstract: *As a possible tool for reducing opportunities for corrupt behavior of public officials in the public sector, a lot of studies have shown that this could be done through easy access to information for all citizens through the use of e-government. This paper analyzes the potential role of e-Government in reducing corruption by examining the impact of the use of e-Government on the level of corruption in 117 countries in the period 2003-2014. Used correlation and regression confirmed the possible reduction of the level of corruption in a country through the use of e-Government for economically developed countries, but for economically not so developed countries as well. A one percent increase of the use of e-Government led to reduction of the level of corruption by 0,12% for the most economically developed countries. A one percent increase of the use of e-Government caused corruption reduction by 0,14% for the least economically developed countries. Thus, in fact cannot be a panacea for fighting corruption in all countries, political regimes and government establishment, whereas, the use of e-Government should be considered as an opportunity to reduce corruption.*

Keywords: *Official′s Discretion Competence, Anti-corruption Tool, Corruption, Corruption Perception Index, E-Government Development Index.*

JEL classification: *D73, E6, H41.*

Introduction

The studies that focused on the topic of corruption have shown that corruption discourages investments, reduces economic growth, changes the composition of government spending, undermines government efforts to reduce poverty and hampers the quality of life in rural and poor parts of the developing countries [1, 4, 7, 14]. These are the main reasons why governments of individual countries all over the world spend considerable financial and other resources to build an effective anti-corruption policy. One possible way to reduce corruption, especially in the public sector, may be reducing the interactions between officials and the public. This can be achieved by means of e-government. E-government can ensure not only providing more information to the public, but also remove the discretion of public officials [2, 9, 10].

The aim of this paper is to prove or disprove the relationship between the level of corruption and the degree of utilization of e-government in the country. The paper examines the relationship between changes in the use of e-government and changes in the level of corruption in selected group of countries.

1 Reducing the official´s discretion as a potential way to reduce the level of corruption

The issue of corruption has become a highly debated topic which troubles governments of countries but their citizens as well. Although corruption is not a new phenomenon, unambiguously and universally accepted definition of corruption does not exist yet. Different perceptions and understanding of corruption may be a possible barrier to prevent the establishment of a clear definition. A gift that someone considers as an expressing of gratitude, someone else considers as a bribe. The different perception of this concept led to create a lot of definitions. The World Bank created the most known definition. It defines corruption *as an abuse of public office for private gain* [3]. The mentioned definition of corruption is focused just on the abuse of public power. Somewhat the corruption in the private sector is neglected, but it also exists of course. However, most studies are focused on corruption in the public sector for one simple reason - the consequences of such abuse of public power hit the broad mass of taxpayers and the state in general. Corruption in the public sector can lead to increased public spending and reduce the amount of taxes collected, thereby increasing fiscal deficits and create macroeconomic instability [1, 8].

Some studies identified the potential role of E-government in reducing corruption. Torres, Pina, Acerate [15] studied the relationship between corruption and E-government and concluded that well-designed ICT policies can be effective in the fight against corruption. Shin and Eom [11], focus on bureaucratic professionalism factors and quality of the bureaucracy, also found that e-government has a positive effect on these variables. Following the above mentioned research Shim and Eom [12] examined the impact of ICT and social capital on corruption and confirmed that ICT has the potential to reduce unnecessary human intervention in the public processes, which reduces the need for corrupt behavior. Singh el al. used panel data from various sources for their research concluded that information and communication technologies are an effective tool to reduce corruption in the country. E-government reduces the scope for bribery, removing intermediary services and enabling citizens to settle their affairs themselves [13].

2 Methods and used variables

In order to verify the existence of a relationship between the level of corruption and the utilization rate of E-government, established indexes will be analyzed. Specifically, the Corruption Perception Index and the E-government Development Index will be used. Analyzed time series is the period from 2003 to 2014. This is the longest time series, which could be analyzed. 2003 was the first and 2014 was the last year of calculation of the E-government Development Index, the indicator of the level of E-government in a country. Eleven years' time period is reasonable to capture effects of changes in the use of E-government on corruption.

The Corruption Perception Index (CPI) has been published by Transparency International (TI) since 1995. It is an index that is based on corruption perceptions of respondents, which are domestic and foreign entrepreneurs, analysts and representatives of the professional public in the evaluated countries. The index is published annually. The surveys contain questions aimed at public officials, bribery or kickbacks in public procurements. As a result, the CPI takes values in the interval

from 0 to 100, where 0 is highly corrupt country and value of 100 indicates a country without corruption.[9] The sample of examined countries is changed over time. For example the index of 1995 included 41 countries, and in the last survey in 2014, there were already 175 countries evaluated. [17].

The E-Government Development Index (EGDI) is used to estimate the level of E-government in a country. This measurement is based on a survey compiled in cooperation between United Nation´s Department of Economic and Social Affairs and Civic Resource Group, consulting firm providing technology solutions in the field of E-government. The EGDI reflects how a country uses an information technology to promote access and inclusion of her inhabitants. The Web Measure Index shows a general ability of governments to use E-government methods as a tool for information, communication, data transfer etc. The Telecommunication Infrastructure Index defines the IT capacity of the country. Finally, the Human Capital Index is based on measuring the level of human capital development in the country. EGDI has been published since 2003 and takes values in the interval <0; 1>, where 1 represents the high level of usage of E-government and a value of 0 means a low rate of application of E-government in public administration [19].

Verification of the relationship between E-government and corruption will be carried out by using a ***simple linear regression analysis and graphical models.*** The calculations will be conducted by using statistical software STATISTICA with the significance level 0,05.

3 Analysis of the impact of E-government at the level of corruption in the country

Empirical evidence shows that corruption does not produce long-term economic stability of the country, because it distorts the priorities of government policy objectives, including monetary and fiscal policies [4, 6, 7, 8, 14]. Comparison of economic development of the country and the level of corruption perception refers to the world's poorest countries as the regions with the highest corrupt activity. These are mainly countries of the African continent, which in global comparisons are the last on the international rankings. In recognition of the significant differences in the evaluated group of 117 countries, not only in terms of the level of corruption and the use of ICT, but in general economic maturity, it is appropriate to analyze the potential impact of E-government on corruption among smaller and more homogeneous groups. As a criterion for dividing 117 countries into smaller units GDP/capita of the country in 2003 according to the World Bank data was used. Analyzed countries were divided into four numerically smaller groups of 29, respectively 30 countries.[10]

Bag plot was used for graphical interpretation of the examined variables. This is a generalized two-dimensional graph, which serves the graphic interpretation of statistical data. Points in the graph represent a combination of dependent and independent variables of individual countries. Dark -blue area (i.e. Bag) contains 50% of surveyed countries (between the first and third quartile) and dark- blue square represents the median value of the examined countries. Light blue exterior bag

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[9] CPI was until year 2011 in the interval from 0 to 10.
[10] List of countries in the attachment.

contains other rated states that achieved different values than countries in the dark blue field, but are not outliers. Outside of this area there are outliers that are shown in the chart with small stars. Bag plot also shows other characteristics of data displayed as the country's position within the evaluated countries, as well as the relationship between the evaluated variables indicated by the orientation of the bag (positive slope of bag indicates a positive relationship between the evaluated variables and negative slope of bag suggests the negative relationship). Figure 1 shows bag plots of created four groups of countries that use the data from 2014. On the x-axis there is the EGDI in 2014 and on the y-axis there is the CPI in 2014.

Fig. 1: Bag plots 2014
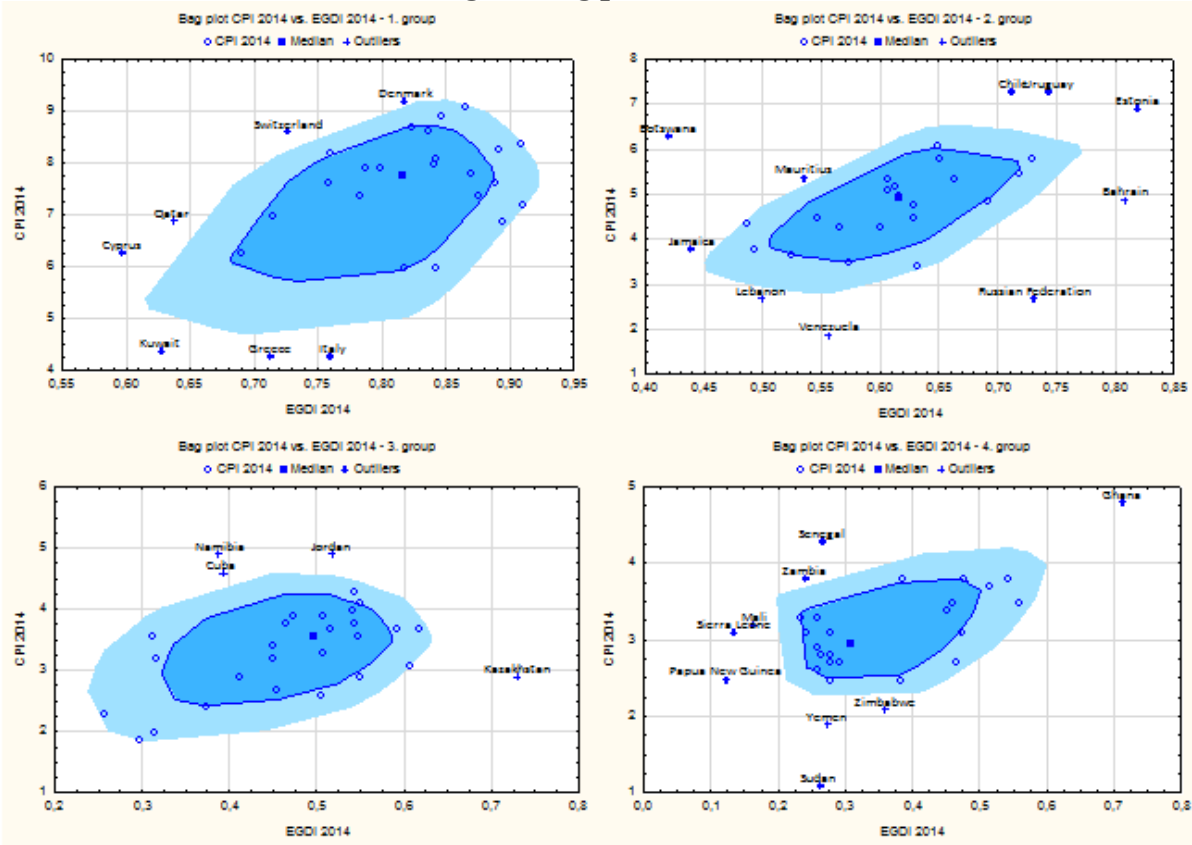
Source: author´s own processing according to [17, 19]

Bag plots of 2014 values achieved a positive slope in all groups of countries, which confirms a positive relationship between the variables. In all, bag plots illustrated several clusters of remote countries that are lagging behind in their group, both in terms of the use of E-government or the assessment of the extent of corruption. For example, in the group of countries with the lowest GDP/capita was a significant separation of Ghana from other countries of the group. Ghana recorded in the reporting period 2003-2014 the most significant progress in the use of E-government in public administration. In the analyzed years, Ghana reached the level of the index EGDI 0.241 in 2003 and 0.712 in 2014, which means an increase of 95% in the level of usage of E-government. In that country also the level of corruption was decreased by more than 45%. It is worth to mention also the development of the variables of Bangladesh, which recorded improving indicator of E-Government by almost 82% while improving the value of the indicator of corruption by 104%.

The following regression function was used to verify the relationship between the changes in the rates of induced change in E-government in the country: [10]

$$\Delta \text{Corruption} = \alpha + \beta * \Delta \text{E-government} + \varepsilon , \qquad (1)$$

where ΔCorruption is the change of the Corruption Perception Index between 2003 and 2014, and ΔE-government is the change of the E-government Development Index in the same period.

Figure 3 is focused on how changes in the EGDI may affect changes in the CPI. Figure 3 shows the percentage change in the EGDI between 2003 and 2014 on the horizontal axis and the percentage change in the CPI between 2003 and 2014 on the vertical axis. This graph basically shows the evolution of the CPI and the EGDI during the sampling period. The linear regression line shows that not all countries with raised value of the EGDI recorded also simultaneously decrease of corruption. However, the linear regression line still has a slightly positive slope.

Fig. 3: Linear regression model for variables change in years 2003-2014
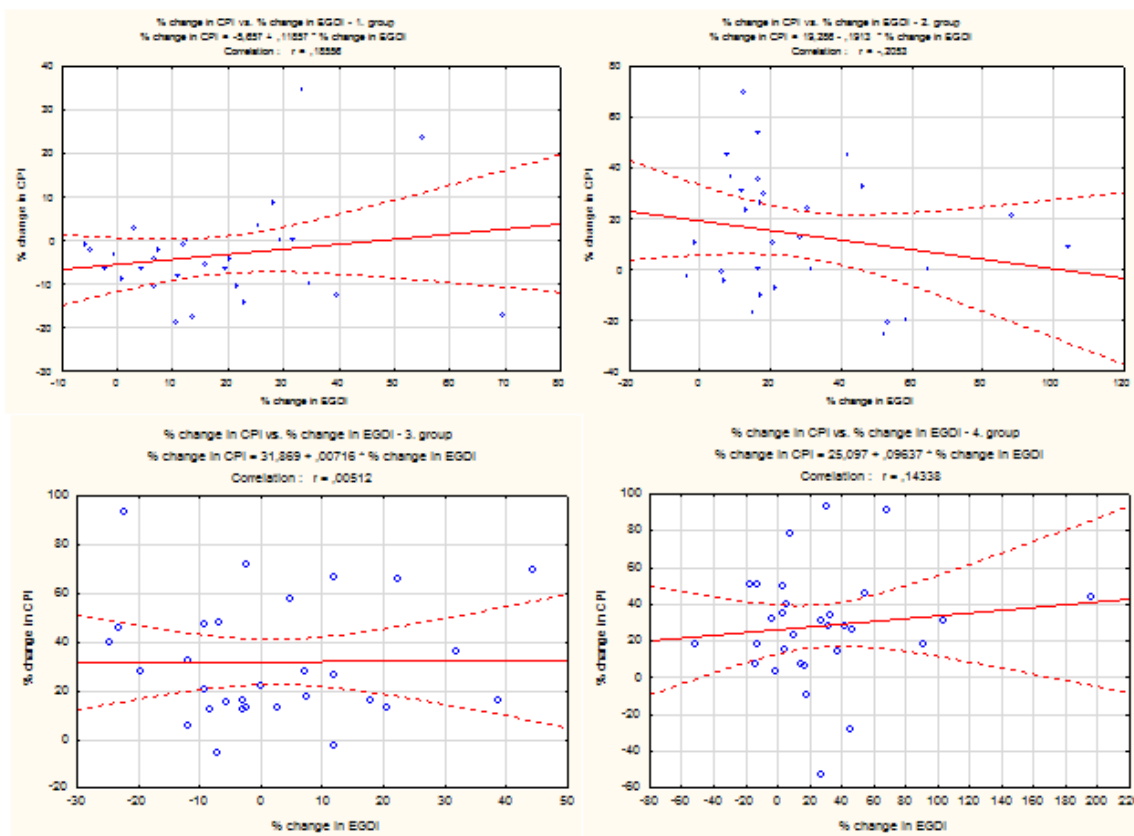
In countries with the highest GDP/capita for the period demonstrated that at constant conditions and other variables results in a one percent change in the index EGDI nearly 0.12% change in the CPI. In other words, improvement in the assessment of E-government in the country by 1%, leads to the improvement of corruption in the country by 0.12%. In contrast, the group of countries with the lowest GDP/capita for the reference period showed that a one percent change in the index EGDI has resulted in more than 0.14% change in the CPI. Thus improving the assessment of the level of E-government in the country was reflected in a better assessment of the extent of corruption in the country by 0.14%.

Conclusion

This paper examined the existence of relationship between corruption and E-government and tried to find an answer for the question, if changes in the exploitation of information technology lead to changes in the level of corruption in the country. In order to examine these relationships, defined hypothesis which truth was confirmed by empirical models were stated. It was found that the use of information technology and the development of E-government contribute to reducing the level of corruption in most of the countries.

The positive effect of E-government is not seen in all surveyed countries. Despite the increased level of usage of E-government, worsening the state of corruption was proved in some countries. This finding only confirms the well-known fact that there are many causes of corruption, corruption occurs in different areas of public administration and takes various forms. For this reason, it is not possible to find a simple recipe for fighting corruption, which would be effective in all countries worldwide from across the political arrangements or governmental arrangements in a country. However, we can say that the use of E-government as a tool for reducing opportunities for corruption in public administration is one of the good roads for reducing corruption among officials.

For the reporting period 2003-2014, it was found that there was a positive effect in economically most developed countries, but also in group of economically least developed countries. It has been shown that 1% percent increase in the index EGDI in the period caused reduced corruption (increase the value of the CPI) by 0.12% in first group of countries. 1% percent increase in the index EGDI in the period caused reduced corruption (increase the value of the CPI) by 0.14% in the group of countries with the lowest GDP/capita. The performed analysis of the impacts of E-government on the corruption in the country builds on existing studies (e.g. [5, 6, 10]) and confirms the possible reduction of corruption in the country through the use of E-government.

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Attachment

A list of surveyed countries in terms of GDP/capita:

1. Group of countries

Luxembourg, Norway, Iceland, Switzerland, Qatar, Ireland, Denmark, United States of America, United Arab Emirates, Sweden, Netherlands, United Kingdom, Finland, Austria, Belgium, Canada, Japan, Kuwait, Franc, Germany, Australia, Italy, Singapore, New Zealand, Spain, Cyprus, Greece, Israel, Portugal.

2. Group of countries

Slovenia, Bahrain, Czech Republic, Saudi Arabia, Trinidad and Tobago, Oman, Slovakia, Hungary, Estonia, Croatia ,Poland, Lithuania, Mexico, Chile, Latvia, Turkey, Argentina, Malaysi, Venezuela, South Africa, Lebanon, Russian Federation, Botswana, Uruguay, Mauritius, Brazil, Romania, Costa Rica, Panama, Jamaica.

3. Group of countries

Bulgaria, Cuba, Kazakhstan, Dominican Republic, Namibia, Serbi, Colombia, Tunisia, Belarus, Algeria, Ecuador, Bosnia and Herzegovina, Albania, Iran, Peru, Thailand, Jordan, Guatemala, Morocco, Ukrain, China, Congo, Angola, Armenia, Syrian Arab Republic, Azerbaijan, Paraguay, Honduras, Indonesia, Egypt.

4. Group of countries

Sri Lanka, Philippines, Nicaragua, Bolivia, Cameroon, Yemen, Republic of Moldova, Nigeria, Papua New Guinea, Senegal, India, Zambia, Viet Nam, Pakistan, Sudan, Kenya, Ghana, Kyrgyzstan, Zimbabwe, Mali, Bangladesh, United Republic of Tanzania, Sierra Leone, Uganda, Mozambique, Madagascar, Malawi, Ethiopia.

AN ECONOMIC EVALUATION OF PUBLIC LIBRARIES´S SERVICES – CASE OF THE CZECH REPUBLIC

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Abstract: To appropriate allocation of public resources is increasingly assessed the performance and effectiveness of public institutions. Economic valuations of public libraries are being carried out more frequently in recent times. In the middle of 90´s researches have begun to measure their value and ask users for their opinion regarding the libraries performance. The economic value of public libraries for local residents in Czech Republic was measured in this paper. An economic value measurement model that enables the estimation of diverse types of public library services was designed, using a contingent-valuation measurement method. Benefits were taken as the value of the main services provided by public libraries, such as accessibility to informational materials, facilities and programs. Costs included the total amount of expenses at libraries such as personnel expenses, materials purchasing expenses and other operational costs. Data for the analysis were collected for 37 public libraries in the Czech Republic. The return on investment (ROI) was calculated to be 5.86 – 6.17 %. That is, for every $1.00 spent on analyzed Czech public libraries, on average $6.00 of value was realized by taxpayers.

Keywords: Public Services, Public Library, Return on Investment, contingent valuation.

JEL Classification: E62, H41.

Introduction

Effectiveness is currently increasingly discussed concept. In a market environment the allocation of resources is consistent with the evaluation of economic performance and effectiveness of the activities of the business units. Penetration of market-based approaches also into the public sector entails assessing the effectiveness also of the activities of public sector organizations. Providers of public funds consider very carefully to which organizations should be allocate the public sources for delivering public goods and services. It is common ground that libraries are extremely valuable institutions providing broad mass of public services to their customers. The goal of a public library services is to meet the cultural, educational, and social demands and requests of local society by providing information services to residents [12].

Outcomes of public libraries are benefits of a system or service produces to its users [23].. Their value is more complex in the public sector than in the private sector and can therefore be harder to measure [3].. The public services provided by libraries are often referred to be a "hardly appraisable" services. Generally it is always difficult to quantify outcomes in the form of non-financial benefits, among which we can undoubtedly include also library services. Despite of this fact, the current state of international knowledge already provides methods for quantification of these "hardly appraisable" services. Thereby methods for evaluation of public performance, such as public library services is provided. Providers of public funds can gain

a valuable information for decisions making about the allocation of public funds. Common feature of these existing approaches is that they were performed in limited number of developed countries.

The aim of this paper is to quantify the economic value of public libraries for local residents in Czech Republic. The method of Return on investment (ROI) will be used, which gives that valuation a whole new dimension, because it allows to demonstrate the worth of public libraries in term of money.

1 Statement of a problem

Many international studies show that there are appropriate procedures that can define the output of public service and appreciate its usefulness for its users. Economic valuations of public libraries begun carried out more frequently in recent times. In the middle of 1990s researchers [2], [8]. began to study the benefits of public libraries, measure their value and ask users for their opinions regarding their performance. In 1990´s came a new methodology, taking a broader view of the value of libraries and seeking to establish their value to stakeholders and clients. It was used the Balanced scorecard methodology, which enabled to set goals to split hard numbers under consideration to determine, which services should be changed and also to consider process improvements [9]. The high point of these approaches for evaluation of public library services can be seen in the current studies of value using return-on-investment and contingent valuation. These methods are generally conducted to determine the economic benefit to citizens of public libraries and the economic benefit of particular services, such as national union catalogues and bibliographic services [18].

Several methods can be used to measure library value. For evaluating public service outputs or outcomes, input-output economic methods are used. These analyze either one criterion by itself or more criteria, often just the costs as inputs or outputs in the form of benefits. Methods of economic evaluation of non-market goods or effects, based on consumer's surplus, are mainly three: the Travel Cost Method, the Hedonic Price Method and the Contingent Valuation Method [15]. The problem with these methods is again difficult measurability of outputs or results and the need for direct interaction with the consumer. Other methods replicate practices commonly used in the private sector, as an example is the return-on-investment [10]. The goal is to provide a clearer picture of the benefits and costs of service producer. These methods can be used both to analyze the efficiency of individual providers and for the region or the entire system of the selected type of service in the state [17].

Many economic studies of the ROI of public libraries use contingent valuation (CV), which was established in 1947 [5], to provide an estimate of the value of their services when users receive those services for free. CV surveys ask users what they would be willing to spend in time and money to get access elsewhere to the information resources they recently received from the library. This method allows researchers to calculate the average user-assessed value of access. The contingent valuation method is a widely used nonmarket valuation method especially in the areas of environmental cost [24], health care [11] or public libraries [22]. CV principle is the basis of a method that is still used today in practice – contingent valuation method (CVM). The CVM is a survey-based technique generally accepted as a meaningful tool used to estimate the value of various nonmarket goods [13], it reflects altruistic

motivation, a major component of non-use value in contingent valuation. This method gained popularity after the two major non-use values, namely, option and existence values have been recognized as important components of the total economic values [24]. For methodology of contingent valuation see [20]. Results from contingent valuation studies are used for many purposes in benefit–cost studies [4], [15].

Studies about the measurement of public economic value in case of library services have been performed by the St. Louis Public Library, the State Library of Florida, Toronto [16] and the British Library. Diverse techniques for inducing value amounts have been used depending on the circumstances or research conditions for each library [12]. [7], [22] used auxiliary tools such as payment card in their studies. The British Library and another public libraries in the United States examined the amount of the WTP by asking open questions [8], [21]. The split-sample method was used by [2] with two value elicitation question formats to minimize sampling and to correct for elicitation method effects. One of the newest research from the area of public library services and their evaluation made in Florida [6]. It is also the largest research, because they started with the pilot project in 2004, continued in 2008 and the last one was in year 2013. The result of ROI measurement for public libraries in the state of Florida in individual years was a quantification of the total return on investment in public libraries. The total value of ROI was $6.54 dollars per $1 of libraries expenses in 2004, the value of $8.32 per $1 in 2008 and $10.18 per $1 in year 2013. In other words, taxpayers in 2013 invested $496 million, but received an economic benefits of approximately $5.55 billion dollars. It follows that during the eight years there has been an increase in ROI of 3.64 dollars, which is an increase of 55%. One of the last research was made in the U.K. in 2015 [14]. The results of London Public Library's economic impact study clearly demonstrate that London Public Library delivers a strong Return on Investment. Through the delivery of library services that enhance London's competitiveness and prosperity and contribute to a better quality of life for all. For every dollar invested Londoners received $6.68 in value. Studies about the measurement of value for the users of public libraries, all around the world, are shown in table 1, where are also written methods which was used and the value of effectiveness for each library.

Tab. 1: Review of studies dealing with the determination of the value of public libraries in the years 2006 – 2014

Year	Place/country of research	Methods	ROI (in $)
2006	Pittsburgh	ROI	3,09
2008	Florida	ROI	8,32
2008	Illinois	ROI	4,38
2009	Colorado	ROI	4,99
2011	Victoria	B/C	3,56
2012	Queensland	B/C	2,3
2013	Florida	ROI	10,18
2013	Toronto	ROI	5,63

Source: own processing according to [21]

2 Methods

Return on Investment (ROI) is calculated by taking the total economic benefits as the sum of direct tangible benefits and indirect tangible benefits and dividing them by the cost to provide the service [20]. For analyzing effectiveness, it is necessary to express the values in numbers for the benefits of individual services and the costs for their provision over a definite period. Cost/benefit analysis is the most used means of characterizing the euro benefits that accrue to communities when they provide tax support to public libraries [1]. Input data - costs for providing of evaluated portfolio of the public services - into the cost/benefit analysis were obtained from accounting of each library. Output data – utility are measured by CV methods, it depends also on the number of customers, number of book loans etc, which were obtained from KULT report of each library. In a cost/benefit analysis using measurement of secondary economic impacts, the library's impact on the rest of the economy can be calculated, e.g. its contribution towards employment, income, consumption expenditures, and state or local government revenue in the form of taxes. Economic impact studies are an established methodology in economics [1].

3 Problem solving

3.1 Data Collection and Pre-processing

With the survey of the project "*Methodology of measuring the value of library services*" in 2011, Czech libraries began to be evaluated from the point of view of their effectiveness. The respondents were only readers of the Municipal Library in Prague (MLP). The total number of members of the panel questionnaire was the 1061 (answered only 374). Individual respondents were randomly selected from a panel of readers aged 15+. The question forms were sent during October and November 2011 by intranet of MLP.

During a year 2012 another empirical survey was realized. The survey was conducted in July and August 2012 as a qualitative and representative with the help of on-line questionnaire (CAWI). Were addressed 11,397 randomly selected readers MLP library. These readers were older than 15 years, said in their application an email and they used of library services in the last quarter before receiving the questionnaire. Return of the survey was 20 %, after cleaning the data file consists of a basic set of 2227 respondents.

Evaluating the effectiveness of libraries within the project *"Lucky number for the library"*, followed the previously mentioned projects of MLP. The data obtained from the service users has been applied to calculate the ROI in 37 libraries in the Czech Republic in period 2012 - 2014. It is probably the most comprehensive study looking at this issue in Central and Eastern Europe.

Ways of putting questions were arisen from foreign studies, which used mentioned methods WTA and WTP to determine the respondents' opinions on the value of library's services. Part of the questions was conceived independently of the contributor [21]. The questionnaire determining the perceived value of selected services provided by the library was first subjected to pilot testing so that individual questions were understandable for readers and the questions were able to be answered. At the same time, it was drawn up so that neither the way questions were phrased nor

their order influenced the readers; this ensured a high degree of predicative ability and that the valuation obtained for the individual services would be realistic. The experiences published by [24] were used here.

3.2 Return of Investment of Czech libraries

The ROI was calculated by multiplying the total number of registered users by the WTP per capita for a year and dividing the resulting value by the total cost. The ROI analyzes was categorized into the size of library. Each libraries were divided into three groups depends on their number of registered users on: large (70.38 % of total registered users), medium (19.74 %) and small (9.88 %) libraries. Data regarding the registered users as of December 31st, 2014 were obtained from KULT report of each library. The results of estimating the ROI by library size are shown in Table 2. The ROI 2014 of large libraries was 6.17, the ROI 2014 of medium sized libraries was 5.86 and the ROI 2014 of small libraries was 6.07. The ROI 2014 of medium-sized libraries was the highest. However, analysis shows that there is no big difference in the ROI values due to the difference in library size.

As a result of measuring the total value of public libraries in the Czech Republic in the CVM, the final ROI 2014 was estimated as 6,03. This result is comparable to the values of studies all over the world (see Table 1).

Tab. 2: Diversification the value of ROI 2014 by library size

Library size	Total number of registered users	Avg ROI
Large (13)	199123 (70.38 %)	6,17
Medium (12)	55832 (19.74 %)	5,86
Small (12)	27958 (9.88 %)	6,07
Total (37)	282913 (100.00 %)	**6,03**

Source: own processing

For graphical interpretation of the examined variables was used so called Bag plot created in program Statistica. Bag plot is a generalized two-dimensional graph, which serves the graphic interpretation of statistical data. Points in the graph represent a combination of dependent and independent variables of individual countries. Dark blue area (i.e. Bag) contains 50% of surveyed countries (between the first and third quartile) and dark blue square represents the median value of the examined countries. Light blue exterior bag contains other rated states that achieve different values than countries in the dark blue field, but are not outliers. Outside of this area there are outliers that are shown in the chart with small stars. Bag plot shows the relationship between the evaluated variables indicated by the orientation of the bag (positive slope of bag indicates a positive relationship between the evaluated variables and negative slope of bag suggests the negative relationship). Figure 1 shows a bag plot of examined libraries. On the x-axis there is the number of registered users and on the y-axis there is the ROI. Bag plot in Figure 1 shows that the size of the library, according to its registered users, does not affect the value of ROI. The efficiency of the library is not affected by its size.

Fig 1: Bag plot chart with relation between the value of ROI 2014 and registered users
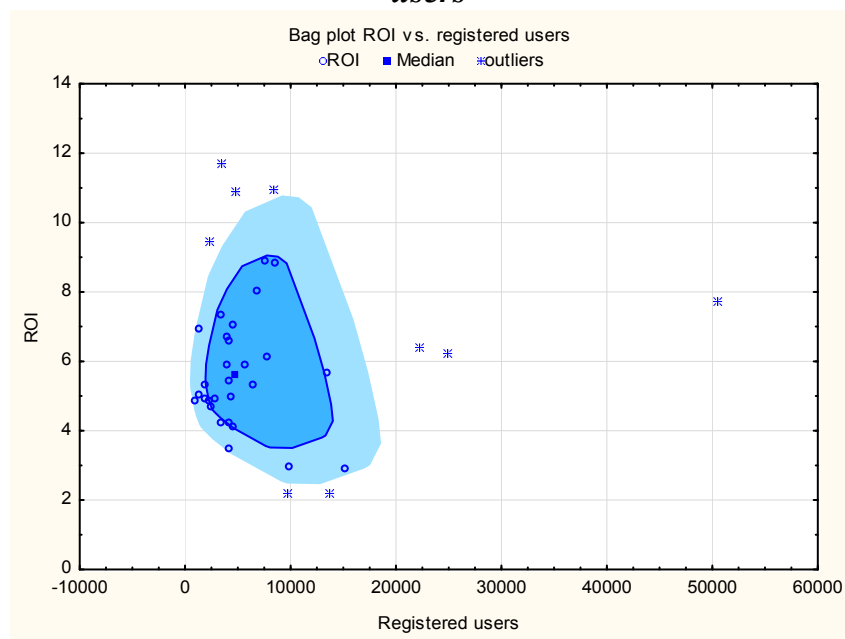
Source: own processing

Conclusion

The methodology of ROI calculation for public service systems is a very valuable tool for regional providers of public services and their investments. It will no longer be a question of making standard decisions under conditions of high uncertainty, applying this methodology will reduce the uncertainty.

Libraries feel increasing pressure to demonstrate their value to their communities. These institutions face a greater competition, rising costs, lower budgets and greater pressure to demonstrate their success. The value demonstrated by a ROI study can be leveraged within the institution to advocate for the library budget. It can also reveal the relative effectiveness of library services' contributions toward institutional outcomes, determining which should be prioritized or improved.

In the international standards IFLA, libraries are categorized according to the number of titles, size of area etc. None of the IFLA standard does sort public libraries according to the number of registered users. Performed ROI analysis showed that the value of the ROI in the analyzed 37 Czech libraries with different numbers of registered users does not differ. The analysis thus showed that the efficiency of the library is not affected by the its number of users. A library with a small number of readers for every $1.00 spent brings back to the taxpayers almost the same amount like a "big library". The resulting total ROI of 6.03 is quite comparable to results from similar studies conducted in other developed countries.

Acknowledgement

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THE CIVIL SERVICE COMPETENCE MODEL IMPLEMENTATION IN LITHUANIA

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Abstract: *This article presents the results of the investigation carried out in the selected municipality, as a case study, by examining the changes that have happened since the middle of the year 2013 when the Lithuanian Government approved the improved and partially centralized selection system of employing public servants for office positions. LR Civil Service Department started coordinating the implementation of the Model on the state level; furthermore, it took the responsibility for the publicized results. Mažeikiai District Municipality is one of LR municipalities. It was chosen for the investigation and analysis. Analysis of the legal and administrative basis shows that having trimmed strategically the State Legal and Administrative framework before starting the implementation of the new Civil Service Competence Model and having achieved the consensus of political parties on the implementation continuity, a stronger interaction with the municipalities is needed, in order to maintain the going on Model in progress and to see its effectiveness in the future.*

Keywords: *Modernization of public administration, Civil service, Development of human resources, Competence model, Municipal institutions and offices.*

JEL Classification: *O15, H11.*

Introduction

Human resource development is becoming the key factor in modernizing public administration. According to management theorists [1; 2], meeting the public needs and challenges arising from globalization, and the ability to integrate them competently into the current reforms, without increasing bureaucracy, depends on the ability to plan, adopt, and execute decisions made by public bodies and public sector staff. This strategy aspirationally reflected by EU guidelines is included in the 2008-2012, 2012-2016 Government programs of the Republic of Lithuania (hereinafter - LR), and it is integrated into the main strategic documents of LR. Modernization of public administration through competence-based management is also gradually starting to be implemented in municipalities.

Currently Lithuania is in the implementation process of the new state Civil Service Competence Model (hereinafter - CSCM, or Competence Model, or the Model). The Lithuanian human resource restructuring process was initialized by the Civil Service Department. Since the very start it has been actively supported by researchers. In 2008 the restructuring process was formalized in the political programmes as well as the State, and LR Government documents. Subsequently, CSCM was created by prudently utilising EU funds and by learning from the experience of other states. Its creation initiated the following activities: creation of the virtual instruments required for the Model's implementation, making the perspective project implementation

schemes and coordinating structures, preparation of the interim solution evaluation methods and others.

1 Statement of a problem

This Model attracted the majority of public attention due to the General Competencies Assessment Test required to be taken while attempting to become a civil servant as well as evaluating the competence of specialists in managing positions. Lithuanian scientists [7] perceived much wider context of the CSCM usage and initiated practising it on the central level, i.e., in such cases as planning, searching for and selecting employees, evaluating working activities, educating the employees, assessing the need for further education and its effectiveness, creating compensation systems at work etc. However, there is a lack of information and research, as to how much beneficial it is for municipalities and their institutions.

At present, the LR State Office is comprised of 597 institutions, with a total of 58,041 office positions (see Table 1), some of which are vacant. Not all applicants seeking to join the civil service are in line with the competence requirements, and only about 65% of contenders pass the centralized General Competencies Assessment Test that has been organized by LR since the middle of 2013 (see Table 2).

Tab. 1: The civil service in numbers in the Republic of Lithuania

Civil service institutions in Lithuania	Total number of positions in state and municipal institutions /occupied office posts	Working in municipal institutions and offices		Office posts in Telšiai District /positions in Mažeikiai Regional Municipality which is one of the District Municipalities
		Civil servants	Career civil servants and institution managers	
597	58.041/ 53.573	6.747	6.551	1.612 /303 (151 are civil service positions, 135 are filled positions)

Source: Civil Service in Numbers. Data of 31-08-2016. Online statistics of the Civil Service Department: http://statistika.vtd.lt/index.html

Tab. 2: Results of the centrally used Civil Service Competence Model Test for applicant selection in 2013-2016.

Applicants for civil service from 30-06-2013 to 31-08-2016	
Applicant selection	**Numbers**
Applications submitted (figures).	17.484
Passed document verification (figures)	15.474
Individuals whose general skills and, if required, management skills, have been assessed positively (figures)	11.620
Individuals who have taken and passed the General Skills Test (%)	65

Source: Civil Service in Numbers. Online statistics of the Civil Service Department: http://statistika.vtd.lt/index.html

The aim of this research is to summarize the first results of the Competencies Model implementation, having performed the analysis of the scientific literature on the CSCM implementation in Lithuania, as well as the analysis of legal and administrative environment in the State and in one of the Municipalities at first.

2 Research methodology

Analysis of the scientific literature was invoked in order to summarize the effectiveness of the CSCM use in public administration as well as seeking to improve the civil service management through competency-based management. Document analysis performed focusing on the content aspect show the CSCM integration into the municipal human resources management process and outline the CSCM application possibilities, both, already realized ones and the potential ones.

Mažeikiai Region Municipality is a typical institution. It doesn't belong to the group of municipal administrations with the significantly increasing number of office positions, i.e., number of civil servants per 1,000 inhabitants here increases slightly. Such documents as legal regulations prepared by the Municipality and approved by the Municipal Council or the Director's of Administration orders, and activity reports, and other activity records have been analysed during the research.

3 The Implementing of the Lithuanian Civil Service Competence Model in Municipalities

3.1 Lithuanian Civil Service Competence Model

Lithuanian researchers and politicians, in agreement with foreign public management theorists, define the word competence with reference to the ability to complete certain tasks, with individual behaviour that is related to personal experience, wisdom and moral compass. According to researchers [7], essential personal competencies provide an ability to predict an individual's behaviour in the workplace while performing civil service duties, and this can be measured while applying specific criteria and standards. Thus, following this logic, the competence model can be defined as skills, knowledge, experience, behaviour, and other personal characteristic sets which are required to guarantee the effectiveness of activities for a specific working position, or belonging to a related group of working positions.

The usefulness of the Competence Model's application in civil service and its effectiveness are themes that have been greatly expanded in the works of researchers during the recent years, either as discussions of the experience in implementing it or as initializing the implantation of a further more advanced model. The Competence Model in Civil Service:

- increases the attractiveness of civil service in the labor market helping the transition to a higher career flexibility, due to cultural changes within institutions;

- it makes the civil service more efficient [7], more transparent, coherent, and professional, visible to the public;

- it is becoming the basis of the human resources management in civil service, because it enables the authorities to set the required competences in order to achieve their goals [7];

- it helps not only to implement changes in the human resource management model, but also to realize the foreseen changes on the cultural level of state institutions [5];

- it becomes the basis for objective assessment of training needs [8];

- it enables to associate the evaluation of the civil servants' performance and motivation with specific activities results at work, thus, liberalizing civil servants' employment and dismissal from the civil service [6] and etc.

According to Gražulis and Markuckienė who analysed the implementation of the model [3], the CSCM created and being implemented in Lithuania is similar to the one used in the Netherlands, and in some respects, to the one used in Belgium: it is **partially centralized**, and like a key element sums up the entirety of the human resource management system, i.e. it is used in all human resource management processes, and general competencies are also actualized in it. The model chosen and adopted in Lithuania is partially centralized. The contenders who have passed the centralized General Skills Test organized by the Civil Service Department participate in the next selection stage in the institution that has published the contest (the decentralized phase), where the main focus is put on the applicant's specific and professional competences [4].

The Civil Service Department, responsible for coordinating the implementation of CSCM in Lithuania, in 2009 launched a project "Analysis of Competences Necessary in Civil Service and the Catalogue of Civil Service Positions' Description" supported by EU in accordance with the implementation measure VP-4.1-VRM-01-V of the 4th Priority "Strengthening of the Administrative Capacities and Increase of Public Administration Effectiveness" of the Programme "Human Resource Development Action Programme for 2007-2013". The project started with the based Model concept (Concept of Public Service Improvement, 2010), afterwards, working together with JSC "Human Studies Centre" and JSC "Ernst & Young Baltic" the Model was developed; it was followed by the development of methodology necessary to implement the change [9].

Lithuanian CSCM consists of three groups of competencies: **General Competencies** (competencies required in any field of activity, and therefore, mandatory for all civil servants); **Managerial and Leadership Competencies** (competencies necessary to manage the activities of the institution (department), therefore, they are mandatory for the heads of departments and their deputies); **Specific and Professional Competencies** (competencies required in professional activities. These are defined, taking into account both general and specific areas of activities).

3.2 The Legal Aspect of the CSCM Implementation in Municipalities

Analysis of the main LR legislation, of the years 2012-2016, relating to the modernization of civil service and regulation of the CSCM implementation, as well as its content, shows that these instruments are common to **all State and Municipal institutions and bodies**. Development of the main tools and measures, and coordination of their implementation takes place centrally, i.e. the process is centralized.

- In accordance with the LR Government Resolution No. 171, 07-02-2012, provisions were adopted of the "Programme for the Improvement of Public Administration 2012-2020". They aimed at improving competencies of the civil

servants, the competences which were integrated into the Lithuania's Progress Strategy "Lithuania 2030" approved by the Seimas Resolution No. XI-2015, 15-05-2012. This Strategy presented the full-scale implementation of the CSCM as a factor of public governance progress. LR Government Resolution No.1482, 28-11-2012, "For the Approval of the National Progress Programme for Lithuania for the period 2014-2020" states concrete measures, deadlines and responsibilities, in accordance with which CSCM will be implemented and developed in service.

- LR Government Resolutions discussing separate processes of competency-based management, and the Ministry of Internal Affairs Minister's Orders detailing the reorganization-implementation process, provides concrete functions and responsibilities of the State and Municipal authorities and institutions as implementing bodies (see Table 3).

LR Government Resolution No. 312, 30-03-2016, approved the "2015 Annual Report on LR Government Activities". Its submission to the Seimas proves that the CSCM has already been implemented in the civil service and management selection processes, and the staff training system; its further development for the year 2016 has also been foreseen.

Tab. 3: Legal regulation coordinating the involvement of State and Municipal institutions in competence-based management

Document	Functions and responsibilities of State and Municipal institutions and offices while implementing the CSCM
Lithuanian Government (LG) Resolutions	
Resolution No. 1575, 28-12-2012 "For the approval of the organization procedure for civil servants training"	The institution may initiate the preparation of training programs and submits them to the Civil Service Department for approval; it outlines training plans for the current year; it makes reports on civil servants' training etc.
Resolution No. 228, 13-03-2013, "For the approval of priority measures implementation in the programme for 2012-2016 adopted by the LG"	Responsibility for the selection phase of decentralized organization, employee assessment, staff demand planning processes.
Resolution No. 478, 31-05-2013, "For the description of the competition procedure for a civil servant's position"	The institution provides employment demand within the Public Service Information System; it announces a tender, and cancels it, according to the change in demand; it performs document verification of the tender participants, sets up commissions and performs tenders for the applicants in accordance with the competitions statutory order.
Resolution No. 481, 28-	It is responsible for the updating the following Model

05-2014, "For the approval of civil servants training strategy for the years 2014-2017"	constituents inside the very institution, such as training needs, training plans, and the assessment of training quality; prevision of the necessary financial resources, and training opportunities through the State and project funding.

Orders issued by the Minister of Interior, Republic of Lithuania:

Institutions were encouraged to implement the competence-based human resource management in civil service (until the fourth quarter, 2015); moreover, they were authorized to uptake the projects for civil servants' qualification development. Dissemination of the information to the staff as candidates for the office positions.

Source: Author

3.3 Implementation and integration of the CSCM into the Municipal legal and administrative environment: case study of Mažeikiai Region Municipality

The analysis also gives overview of the documents and sources published in virtual space such as strategic documents, performance reports and legislation regulating work and activities. As it can be seen from the analysis presented below in Table 4, by 2013, the strategic documents adopted by the Region Municipality administration targeted at the usual administrative processes, and the human resource management topics were not relevant. Some reference towards the topics appeared in 2013-2014 documents, but it was not a priority. Human resource development focused on specific and professional skills. The results of 2015 show a significant change.

Tab. 4: Manifestation of competency-based management in Municipal legislation

Document	Implementation of Competence Model or the competence-based management aspect
Strategic documents adopted by Mažeikiai Region Municipality (MRM)	
Strategic action plan of MRM for 2013-2015	Competency-based management **is not manifested** in it as the programme under the title "Municipal performance management programme" focuses on the improving asset management and other issues.
Long-term strategic development plan of MRM for 2014-2020	The CSCM **is projected.** There are some measures planned in the 2nd Priority "High Social Well-being" meant for the intended purpose "High quality of Region management and public services"; such measures are planned as specialized training for administrative staff and politicians, and optimization of the administration process. Legal and Personnel Administration Offices of MRM Administration take the responsibility.
Strategic action plan of MRM for 2015-2017	The CSCM **is projected**. The information system consolidating and managing all the administrative and township management processes is going to be installed. All the institutions take the responsibility. It is intended to develop the employees' qualification using the EU support.
Strategic action	**It is implemented through the improvement of employees'**

plan of MRM for 2016-2018	**competencies.** It is stated in the situation analysis that a computerized process control system was installed in 2015; over 100 employees were trained to work with documents and service management system, 85 employees learnt to use the sub-system required in project management, 70 employees have been trained to work using the system of financial management and etc.
MRM: top management reports on the implementation of activities	
2015 Annual activities report given by MRM Mayor	The target aspect **is not manifested,** but the fact that the Mayor's report, where he specifically articulates his activities and his contribution to the achieved results, is publicly available on the Internet, proves that the CSCM is already functioning, and it is acknowledged that the managers' activities must be transparent and visible.
2015 Annual activities report of MRM Council	The target aspect **is not manifested** among the priority issues of the meetings, but the approval of the carried out qualification training sessions for the municipal administration employees and the process optimization procedures shows a favourable environment for the implementation of the Competence Model.
2015 Annual activities report given by the Director of Administration of MRM	The target aspect **is manifested** as the report contains a whole chapter devoted for civil service and the modernization process of its performance. Competence Model issues are not mentioned directly, however, its implementation is projected.
Operational regulation of the department responsible for personnel management	
Department Regulations for Personnel Administration	The target aspect **is manifested**. CSCM is not mentioned, but all the functions to be implemented by this Department correspond to the key aspects of CSCM implementation, such as planning, selection, information, training, motivating and evaluating the personnel, etc. This new Department was established in 2015.

Source: Author

Action Reports prepared by the top-level executive managers show that human resource management is not a priority topic, however, the Director of MRM Administration pays more attention towards it in his Report. On the other hand, the publicity of these reports shows that the CSCM is already going on, and the managers seek to demonstrate their leadership and publicize their activities. In 2015 restructuring was completed in MRM, i.e. the functions of human resources management as well as legal regulation functions were separated and two new Departments – Personnel Administration Department and Legal Department – were established. The change was initiated by the State new policy of civil service modernization. Communication about the contests to fill the vacant positions and qualification requirements, and the testing procedure is quite informative and easily accessible in the MRM website.

4 Discussion and Conclusions

The first three years of the CSCM implementation in the Lithuanian civil service show that the choice of the partially centralized model was right:

1. The State Civil Service Department has competency and valuable experience in reform-making and collaboration with the academic community and researchers. The Model is used in the selection of employees; it is used while planning and optimizing the demand of office positions, and assessing the competencies of the employees who wish to stay in the occupied position; it is also used in planning the training centrally.

2. Scientists were invited to actively participate in the Competence Model creation and making analysis of the experience of other countries. The Model was widely publicized in academic communities through scientific conferences, publications, and the website of the State Civil Service Department, thus establishing a special active community which monitors the results of the CSCM implementation, and tends to make suggestions for the process improvement.

3. State and local government institutions realizing the CSCM implementation, got used to the application of the General Competencies Assessment Test in the process of recruitment easily; they put up with the changes in the activities administration easily too. Relatively high percentage (currently about 65 %) of employees who passed the General Skills Test shows that the information spreads through the municipal and public institutions well, and the Public Service Information System is good for the procedure of testing.

4. Demand for the high competence and planning the training to develop competencies is not clearly felt yet.

5. The CSCM should serve as a key factor for the implementation of the competence-based management in government institutions, however, it is not treated as a priority in municipalities.

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DECISION-MAKING SUPPORT AND ITS APPLICATION IN PUBLIC ADMINISTRATION

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Abstract: *This article describes modern methods of decision-makingin companies and possible utilization of these methods in public administration.At the beginning, the articlefocuses on the current state of cooperation between the private and the public sectors.So-calledPublic-Private Partnership (Projects) are one option for such cooperation, the takeover of certain public sector services by private operators is another option for such cooperation. Then there are shown the different levels of the modern decision-making and utilization of the decision-making methods in the public sector. It includes Reporting, Ad Hoc analysis, Dashboards, Classification, Predictionand What-If modelling.Finally, there are shown two approaches in a decision-making case studyin the private sector. The first study concerns theimpact of exchange rate fluctuations in the volume of transactions at an electronic money institution. The analysis is then used in the standard reporting and has impact into Key Performance Indicators. The second example case study shows advanced techniques like statistical analysis, logistic regression, neural network and decision tree within the classification of clients.The methods in the case studycan be applied in public administration (e.g. in tax administration).*

Keywords: *Business intelligence, Decision-making, Public administration, Public-private partnership.*

JEL Classification: *C15, D89, H74.*

Introduction

Long-term decision-making in public administration (PA) is becoming more and more complex. In the framework of projects influencing a large number of limited resources – like money and human resources, it is essential to evaluate not only definite inputs, outputs and individual elements of a system, but also the environment of the system that previously has not looked so important. It includes for instance ecology impacts, sustainable development, long-term strategies of national and multi-national corporations, assumptions of further science developments and similar [9], [12]. In the period of economic growth PA must also compete with price competition from private companies in the area of salaries of workers/human resources and also with prices of investment actions themselves. All of these mentioned inputs increase the insecurity of a decision-making process and they can lead to an end or at least to a negative view of a given project

Another factor that is often mentioned is slow reaction of PA to changes in externalenvironment and thus issuing worse ability to adapt to changing demands for services provided under a given project. One of the models that should change this situation is "Public Private Partnership" (PPP) [2], [21] model. The objective of the PPP [2], [21] model is to interlink public andprivate sectors (PS and PS) and thanks tothat interlink better allocate individual resources from both of those economic units.

While a number of projects have been successfully implemented using the PPP methods, in particular in English speaking countries, in the Czech Republic PPP projects have been successfully used only in a couple of sectors (mainly in water management). This model (PPP) has not been much used in other sectors in the Czech Republic. In 2015 the volume of Concession Agreements (CAs) was less than 68 billion CZK (1,5% of GDP) [11], [16]. On top of that most of the CAs use, as a source of financing, the EU funds. Thus it is not possible to say here that the PS has taken over the financing of projects [4], [17].

Contrary to that some services that used to be managed by the PA have been taken over by the PS. This trend is very prominent in health services management where private companies (e.g. AGEL a.s.) buy up and then manage health facilities ranging from hospitals to polyclinics down to individual departments or to dialysis centres, transfusion centres or secondary medical training schools [1]. These companies demonstrate that also in the environment where entities managed by PA have economic/financial problems and must be provided with grants it is possible to be financially profitable. The reason is high quality management and decision-making, which means strict control of expenditures and costs, elimination or risks and utilization of opportunities.

Decision making manner in a private company differs not only based on the company size, or based on e.g. the size of its decision-making and support bodies, but also based on the company's sector orientation and on the branch in which it operates.A productioncompany observes primarilyinputs prices, supplies in stock and fulfilment of forecasted sales margins. Trading companies strive to understand trends, customers needs, to set prices in relation to competition andto run marketing campaigns [20]. For support to decision making it is possible to use methods that are stated for instance in Business Intelligence (BI) [7] pyramid where on the base level is regular reporting (charts and graphs), then follows selective reporting, Dashboards and Ad Hoc (AH) analyses; then follow advanced analyses (classification and prediction) and on the top there is modelling (What-If scenarios and sensitivity analysis).

The objective of this article is to demonstrate possibilities provided by utilization of decision methods that are used in the public sector in the PA. This is demonstrated by a case study for a trading company. This company decides on the basis of an elementary method – reporting and on the bases of classification that belongs among more advanced analysis methods.

1 Decision-making and public administration

Decision-making in PA has undergone significant changes in the last 25 years thanks to wide spread penetration of information technology. Especially in the areas that are deterministic, that means that it is possible to get unambiguous outputs from these areas [13]. On top of this they also draw from a long tradition. This tradition started to develop in the second half of the twenties century. They concernfor example solving crises situations where geographic information systems are used (e.g. maps of flooding areas and similar) [19]. The newer part of decision making in PA are sociology and economy areas. Sociology utilizes primarily questionnaires based research that is then evaluated by means of standard statistical methods [9]. Economy science utilizes, next to statistics, also econometrics, mathematics and other branches

of science. On a general level PA however lacks behind in utilization of software tools and in overall standardization.

PA exists in the same economic reality as the PS and it has started to take over and use the same tools in recent years. These tools are for instance Enterprise Resource Planning (ERP) and Customer relationship management (CRM) systems. The ERP systems are used to detect and save information. The ERP systems are used for instance by the Ministries of Defence, Interior and Culture, by the Capital City Prague Magistrate, the Labour Office of the CR, Statutory City Brno, Statutory City Ostrava (all ERP GORDIC Ginis), the Office of the Senate of the CR, Královehradecký region, cities Písek, Uherský Brod, Rokycany (ERP HELIOS Fenix). CRM systems that process„soft data"are utilized by Pražskéslužby(„Prague Communal Services company"), Directory of Roads and Highways (HELIOS Green), city Svitavy, Hospital Nymburk (OR-INFO). BI is then implemented by a number of tools, from simple table processors (Excel, LibreOffice), to more advanced tools (Tableau, MS PowerBI, IBM Cognos) up to data mining tools (SPSS Clementine, IBM SPSS Modeler, Statistica, RapidMiner, Orange, Kmine, Weka).

Suitability of utilization of BI methods is possible to demonstrate on the example of a trading company. At first sight it seems that the demonstrated company has not much to do with PA, however its operates in the same economy environment and it has to deal with the same uncertainties as are for instance exchange rate fluctuations, economic environment abroad and similar.

2 Case study in a selected trading company

Regular reporting is the basis for decision-making. Basic reporting can not only summarize fundamental indicators of an entity, but it can also be helpful in the evaluation of these indicators. Its introduction is very cheap. In majority of cases MS Excel program is successfullyused, or free open sourceis used – office packet software Libreoffice is available free of charge. In case more employees are supposed to work with the information in the reporting then it is useful to create a unified Dashboard that shows all key indicators at one place. Basic forms are on the Internet. From these examples it is possible to create by means of a simple adjustment unique decision-making reports [5], [6]. The daily profit report is such an example. Itis one of the key indicators for a company and it is a part of other further activities such as is for instance planning of costs.Top management, or possibly managers directly responsible for sales, are evaluated based on this indicator. This indicator influences also a number of other factors. In a payment institution one of such factors is exchange rate change. After very good results achieved for a couple of days consequent to the CNB interventions (the CNB introduced them in November 2013) drop of profits came about on a currency pair EUR-CZK. For this reason AH analysis has been executed, the results of this analysis are demonstrated in Figure 1. The Left side shows the volume of exchanged finance of clients in one day and the bottom line shows the Exchange rate change in the day on the currency pair Euro – Czech Crown in CZK/crowns.

The profit has been influenced by long-term stagnation in the exchange rate. Its development cannot be forecast with reliability and that is why only the long-term expected development has been included in the plan. However, the evaluation of profit

and potential changes in the plan are done with the knowledge of this quantity. It is, jointly with other factors such as seasonal and weekly cycles, holidays and similar [15], the substantive part of the reporting.

Fig. 1: Average volume of trades on the currency pair EUR/CZK accordingtoexchange rate development
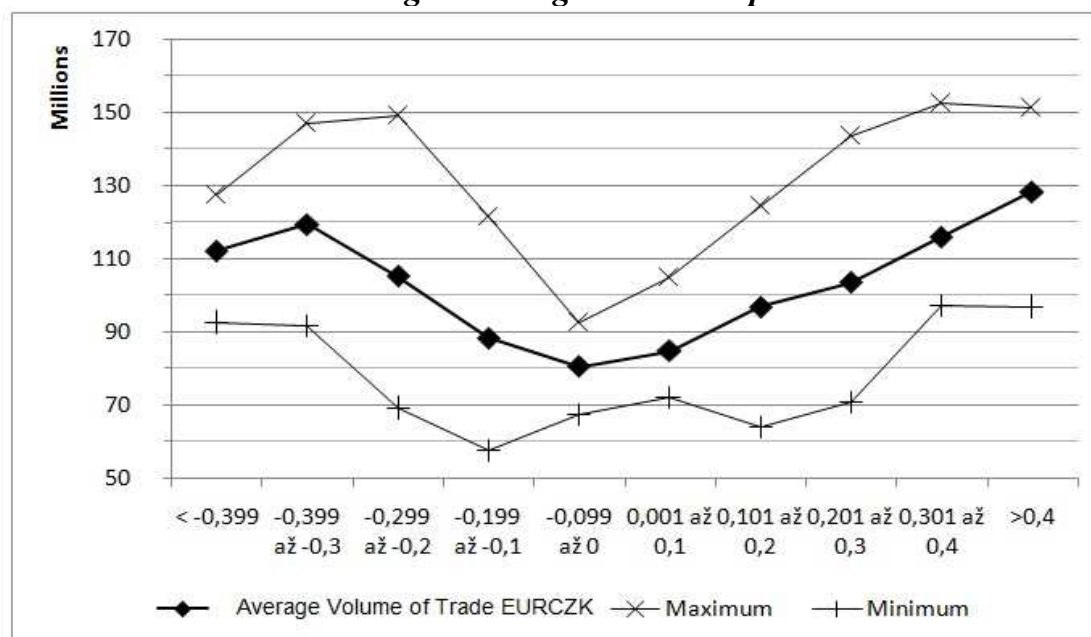
Utilization of the above-stated method in PA is possible to see in „collection of taxes from abroad that is influenced by exchange rate development or by the CNB forecast of the CR balance of payments.

Advanced analyses deal with the detection of so far undetected interlinks or they should determine the rate in which output parameter is influenced by the individual input parameters. When doing classification we strive to assign an element, based on the information we have already, to a group of similar elements. Based on the group (into which the element have been assigned) we can later deduce its future behaviour [18]. With prediction we strive to estimate the volume of the input parameter that is in majority cases solved by regression methods. It is possible also to use different methods such as neural networks [10, s. 98], decision trees, logistic regression, and similar. In the framework of these analyses it is essential to find valid parameters that in fact really influence the outputs. With a growing size of the company there usually also growths the number of these parameters and by that, at the same time, the volume of data that is possible to process. There are two possible approaches for this large volume of data. The first approach is decomposition of large units into smaller ones and consequently solving the smaller ones. This is less demanding regarding capacities and all capabilities of statistics and of BI can be used for this task. The second approach is to work with big data (Big data – terabytes or petabytes size/volume) [8]. The advantage here is that any hidden connections can be detected that cannot be detected at data decomposition. On top of that standard BI methodology can be used"Cross Industry Standard Process for Data Mining", commonly known by the acronym CRISP-DM. The disadvantage is high demands on company technical and human capacities. That is why a number of such services, also in large companies, are

outsourced. The results of such analysis are then used in standard reports or on decomposed observations [3].

An example of de-composed observation may be classification of a client, to a profitable and a non-profitable client, based on data from the first three months after contract signature. This classification is done after one-year time have elapsed from contract signature. The estimate is thus very complex. A number of factors enter into the business relation and these factors cannot be easily quantified – for instance competition offers, production failure, exchange rate disadvantageous for the client, and similar issues. However it is essential to try to do this because of margin settings, price list and agent compensations. In year 2015 the payment institution found out by means of an analysis that the share of non-profitable clients that were classified as profitable is among natural entities (FO) bigger that among legal entities (PO) or among natural entities-entrepreneurs (FOP). On the other hand with the PO group a high rate of errors in the existing classification has been identified. 2385 clients have been tested, out of that 743 FO and 1292 PO. According to standard statistical methods (comparison of the median value, median and other parameters according to individual attributes) classification parameters have been changed. Thanks to that the quality of the output (profitable and non-profitable) has improved by more than 10% (see Table 1). Consequently also other possibilities for classification improvement have been researched into. In Table 1 there are stated three most successful algorithms: the Top Down Induction of Decision Trees (TDTID) – C5 algorithm, the neural network – Multi Layer Perceptron (MLP), logistics regression. The above-stated classification algorithms have shifted the quality of the classification again by about 10% (with FO over 87%). The results are stated here for or a test group comprising 30% clients (223 FO and 388 PO).

Thanks to this significant improvement profits have increased (less profitable clients have less friendly tariffsand margins, more profitable clients have relevant trading conditions and are less prone to switch to competition) and costs have become optimized (optimization of the reward system).

Tab. 1: Comparison of analytical methods

Client Classification Method	PO - correct/incorrect classification	FO - correct/incorrect classification
Original classification	62.71% / 37.29%	66.03% / 33.97%
Standard statistical methods	73.54% / 26.46%	76.31% / 23.68%
TDIDT – C5	81.76% / 18.24%	87.15% / 12.85%
MLP	83.65% / 16.35%	87.25% / 12.75%
Logistic regression	79.25% / 20.75%	86.85% / 13.15%

Source: Own research

Decomposition thus not only reduces demands on capacities of companies in comparison with utilization of BD, but at the same time, it is a way how to improve individual decision-making processes and to increase efficiency especially in those cases where this efficiency is managed according to the behaviour of very different groups of the researched objects. Utilization of similar principles is possible also for e.g. tax administration – it also deals with different groups of tax payers (FO, FOP and PO).

Conclusions

In this article standard decision making processes in the PS have been introduced and their possible utilization in the public sector-PA. At the beginning of this article the existing overlaps of PA and PS are described (PPP and takeover of some public services by PS) as well as the utilization of BI tools in PA. From this overview it is clear that BI methods and tools are already used on the various levels in PA. Not only by regulatorsof PS such as the Czech National Bank or the Ministry of Finance of the Czech Republic, but also in other PA subjects.

The first case illustrates a simple utilization of reporting for review of an undertaking's financial results. Exchange rate changes cannot be predicted for a longer period of time. Despite that they significantly influence business parameters including for instance meeting the profit goals. Thereby it is important to monitor their development and when it is necessary to adjust company's evaluation or company's business plan respectively because the difference between the lowest and the highest average value is more than 60%.

In the second example options for clients' classification in the time period of three months after contract signature are compared. The original situation with error rate from 33% to 38% has been improved by means of statistical modelling methods and new classification criteria have been introduced which led to accuracy improved by 10%. These criteria are used in the system of agents' rewardssince they are simple and unambiguous. More advanced methods the accuracy of which is yet again by 10% higher have been utilized for setting trading parameters (margin, price list) for the period after three months of contract signature. This arrangement is fully in the payment institution'scompetence and as such it does not have to be totally unambiguous and it may change. In this way savings in costs have been achieved by means of optimization of bonuses for agents as well as increased profits per clients have been achieved – for those clients that otherwise have been little profitable or even represented loss for the company.

Both of the executed analyses show how the BI methods are employed in the PS. The illustrated differences in profit fulfilment in the first case and the improved quality of classification in the second case are a clear evidence that BI provides a very strong support for decision-making and it prevents hasty and inaccurate decisions.

Utilization of decision-making support in the PA is thus one of the possible ways to improve quality of management in the PA. In the PA this can be demonstrated both as cost savings and higher satisfaction of citizens with the PA services. Direct utilization of these two examples can be executed in the taxes administration area.

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THE IMPACT OF FISCAL DECENTRALIZATION ON INCOME POLARIZATION IN THE SELECTED COUNTRIES

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Abstract: *The paper explores the impact of public sector decentralization on income polarization of society. However there are authors, which assume that greater fiscal decentralisation on local level leads to lower income inequality within the population, in this paper we aimed at verification of hypothesis, that the increasing rate of fiscal decentralisation is followed by greater income inequality of population in the country. We tested the assumption on the sample of V4 countries (Slovakia, Czech republic, Poland, Hungary) and Austria. In the first part of paper we set the formulation of selected topic. The second part presents the methodology used by authors. We analyse the issue in the third part of the paper by constructing of model, panel data analysing and presenting the output of panel regression. The attachments at the end of the paper help to understand interpretation of each model analysis. This part is followed by discussion of results, based on which we can formulate conclusions. In the result we refused the hypothesis, and we concluded that the increasing rate of fiscal decentralisation is followed by lower income inequality of population in the country.*

Keywords: *Fiscal decentralization, Redistribution, Income inequality, Polarization, Palma index.*

JEL Classification: *E62, D63, H77.*

Introduction

The decentralization of public administration is linked to a division of the tasks between various government levels, which include an adequate setting of financal flows, that ensure enaugh resources for providing the goods in the public interest and the efficient public affairs management. A theoretical basis of the decentralisation process itself is based on classical theory of fiscal federalism (Musgrave 1959), while a modification of the words „fiscal federalism" to the words" fiscal decentralization" is linked to possibility to apply the basic principles of this theory in unitary state´s practice. In the long term we can state, that the shift from centralization to the decentralization, respectively from the decentralization trends to the centralization trends, is almost everytime the result of significant economic, political and social changes. For example, under the influence of world wars and Great Depression (1929-1933), the position of state was reinforced and its interventions into economy through the public sector were supported. At the same time, the teachings of J. M. Keynes have began to develop, and vice versa after social and political changes in the 90´s 20th century many countries started emphasize the role of the lower government level (governance should be closer to the citizen). However, economic science still has not offer a clear answer to the question, if it is better to centralize or decentralize the governance.

For the purposes of the observation of development trends or comparative analysis, the economists, that are dealing with issues of public administration are trying to sort the countries into categories, that would present at least partial basis for the possibilities of uniform assessment of relevant processes in the public administration (including the assessment of decentralization process). The distinguishing categories can be for example geography, common historical roots, economic strength, range of provided public services and many others. In this sense we can distinguish between the studies discussing one of the partial problems into the deep – eg. within the Slovak Republic Zubaľová, A. [17] deals with the issue of income inequality, and the studies which explore the interaction between the some of the above mentioned elements and fiscal decentralization – eg. within the Czech Republic Halásková, M and Halásková, R. pay their attention to the relationship of fiscal decentralization and social services. [2].

The ambition of presented article is to offer a view at the fiscal decentralization in relation to income inequality. In other words, to verify hypothesis, using the econometric modeling: *„With incresing fiscal decentralization at local level, the rate of income inequality increases."* According to analysis of larger range of the countries (eg. OECD, EU, etc.) and the interpretation of results obtained, we consider that it would go beyond the paper´s contribution, therefore we decided to concentrate on identifying the impact of fiscal decentralization on income polarization in the selected countries (V4 and Austria).

1 Problem formulation

In terms of assessing the extent of decentralization several indicators/indexes were constructed, which bring a possibility to measure decenralization and thus compare coutries according to selected criteria. With the designed „decentralization index" are associated the names as Lessman, Ch., Price, V. C., Garello, J., Vo, D. H. and others. [3] The basis of these ways of measuring fiscal decentralization are primarily the expenditures of lower government levels, as a percentage of total expenditures, the revenues of lower government levels, as a percentage of total revenues, the expenditures of lower government levels, as a percentage of GDP, the revenues of lower government levels, as a percentage of GDP and other indicators (the distribution of tax revenues between the central and local government levels, the level and extent of taxation powers, the financial autonomy of the municipalities, the expenditues share for selected branch of public sector to the total expenditures of lower government levels, eg. education, health, social security and many more as a percentage of total expenditures of lower government levels).

However, the process of globalization and expansion of international economic space opens up a number of other issues related to the decentralization processes, for which the governments but also integration groups are trying to find satisfactory solutions and answers. The subject of the european debate have became topics such as climate change, energy and migration, but also the need to promote social, economic and territorial cohesion is more intensive. [1]

For the public administration is significant, that there is not possible to objectively unite the applied principles of organization, management and financing, for all the states and mostly, their function depends on the national government´s policy

(the distribution of the power in the state, fiscal policy, regional and social disparities and many more). Ultimately, just such a difference of initial conditions leads the research to cross-sectional topics, and so to the resarch of decentralization processes in relation to fiscal, regional or social policy, from different points of view.

Following the intention of the article, we mention the studies, that deal with the effect of fiscal decentralization on income redistribution. They can be divided into two groups:

1. The studies showing, that the decentralization causes bigger regional disparities between individuals in the country (Qiao et al. 2008 [10], Sepulveda and Martinez – Vasquez 2011 [13] , Sacchi and Salotti 2014 [12]). These results are in accordance with the classical theory of fiscal federalism (Musgrave 1959) [6], according to which the income redistribution is done better through the central government than through the local governments;

2. The studies, which do not confirm the hypothesis, that the fiscal decentralization leads to income inequality in the country. Neyapti (2006) [7] examided the efekt of fiscal decentralization on income inequality on the sample of 54 countries and concluded, that the level of inequality in decentralized countries depends on the level and quality of government. Rodriguez-Pose and Ezcurra (2009) [11] examined the impact of decentralization on the regional inequality in 26 countries (19 developed and 7 developing countries) during the period 1990-2006 According to them, the impact on regional inequality depends on the degree of economic development of the country. Tselios et al. (2011) [15] examined the relation between the decentralization, regional economic development and income inequality in Western Europe. According to them, a greater degree of decentralization leads to a greater income equality, but as soon as the level of economic development of regions increases, this effect becomes smaller.

While processing the paper, we have been inspired by scientific study, entitled *Fiscal decentralization and income inequality - cross section analysis of central and southeastern European countries*, processed by Suzana Makrashanska. [5] She deals with the examination of **dependence between the degree of fiscal decentralization and income** inequality, without taking into account overall income and economic differences between regions, within the countries. To quantify the income inequality S. Makrashanska used Gini coefficient (as defined by the World Bank), in our model we used the **Palma index.**

2 Methods

When processing paper, we have used the method of econometric modeling formed as a regression function, which we applied at the sample of selected countries (Austria and V4 – Slovakia, Czeck republic, Hungary, Poland), based on panel data for the period of years 1995-2014. Before performing the above mentioned, we have studied the sources dealing with this topic, as well as we have processed secondary survey data [16], that were covering the variables, used in the econometric modeling. While interpreting the outcomes, we have used the panel data analysis, comparison and sythesis.

As a dependent variable we have chosen **Palma index.** Chilean economist Gabriel Palma found out, that the proportion of the income of those who are in the deciles 5-9 is in generally stable (around 50%, for the different countries and during the different times). The remaining 50 % of population´s income is the share of the income of „top" 10 % (the 10th decile) and those, who are in terms of the amount of disposable income in the 1st – 4th decile (this division is different between the countries during the different times). Alex Cobham and Andy Summer constructed in this way so called **Palma index,** which they considered as more sensitive to those income groups of population, within which the inequality really is. Therefore, Palma index ultimately gives to the ratio the income of the richest 10% to the poorest 40 % of population. It represents the share of total income held by 10% people with the highest disposable income to the share of total income held by 40% people with the lowest disposable income. [9] As an example, we can look at the OECD data in 2012, when the Palma index in Slovakia was equal to the value 0,83. We can say, that in Slovakia, if 1 EUR behalfs to the poorest 40 % of citizens, the richest 10 % of population owns 0,83 EUR.

To quantify **the degree of fiscal decentralization, we used three indicators,** while each of them is further divided into two, depending on whether there was considered state (not central) or local level.[11] We will be working with those, applied at the local level, as following::

- *The decentralization indicator of government expenditures* (the share of lower government level´s expenditures to the total government spending-Decentr_Exp_Local).

- *The decentralization indicator of government revenue* (the share of lower government level´s revenue to the total government revenue-Decentr_Rev_Local).

- *The indicator of vertical fiscal inequality* (the share of fiscal transfers from the central level to the total lower government level´s revenue-Decentr_Transf_Local).[8]

Into the constructed model we have included following variables: **the size of public sector in the country (the size of government),** calculated as the share of government expenditures to the GDP; **the unemployment rate** – the data were collected from the OECD database by exploring the period 1995-2014; **the trade openness,** which is set as a proportion of imports and exports to the country´s GDP; **the urbanization rate,** calculated as the percentage of population living in the areas defined by national statistical offices; **the age dependency** – we have approaches as a share of population older than 64 years and economically dependent, to the working population aged 15-64 years. **The rate of economic development** is in our model represented by the indicator of GDP per capita.

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[11] The stated division is based on the fact, that apart from the unitary states there exist also federal states and by state level are meant the components of federation. Despite the fact, that we have incuded into our sample also Austria, we aimed primarily at unitary states - V4, therefore the „state" level as a variable (in the meaning of federal state´s components) has been excluded.

3 Problem analysis

3.1 Model construction

Based on the **Kuznetz hypothesis**, the economic growth initially leads to higher income inequaliry in the country, because at the beginning only higher income groups can feel the benefits from the development. After level of development reaches a certain point, the benefits from economic growth are becoming more available for lower income groups too. Therefore Kuznetz assumed, that the relationship between the economic development and the income inequality is U-shaped, ie. quadratic relationship. According to Sepulveda and Martinez-Vazquez [13] the economic development, expressed as the logarithm of the value of GDP per capita, includes in it a number of socio-economic factors, such as the strenght and quality of institutions, the legislation, the financial sector development etc. Consequently, it is possible to construct a model, representing the variation of the income inequality rate and decentralization level in the countries, in the following form:

$$\text{Income\_inequaliry} = \alpha_i + \beta_1 \text{decentralization}_i + \beta_2 \text{government\_size}_i + \beta_3 \text{economic\_development}_i + \beta_4 \text{openness}_i + \beta_5 \text{unemployment}_i + \beta_6 \text{urbanization}_i + \beta_7 \text{age\_dependency}_i + u_i$$

(1)

Processed according to: Makreshanska (2015) [5]

The ordinary least squares (OLS) method will be the one, with which we will estimate the parameters of independent variables.

3.2 Panel data analysis

A fixed effects model we use in case, that we analyse the impact of variables, which vary over the time. The model using fixed effects examines the relationship between dependent and independent variables, between the entities (countries in our model) over the time. This model type controls for all time delays the differences between different entities (countries), so the estimated coefficients for each independent variable can´t be „biased" (under the influence of omitted features of individual time delays). [14] On the one hand, the fixed effetcs model is characterized by the fact, that it can not estimate the effect of time delay, respectivly, the time impact on the dependent variable. The model is designed to deal with the causes of changes between the entities (countries).[4] If there is any reason, based on what we do believe, that the differences between the entities over the time have any impact on the dependent variable, we should use a random effects model. The advantage of this type of model is, that we can include time lags as variables. When deciding whether we should use fixed or random effects model, Hausman test has helped us. The null hypothesis of this test is, that the preferred model is the random effects model, while the alternative hypothesis is, that the preferred model is fixed effects model. If the value of chi-squared (chi^2) is less than 0,05 (it is significant), than we refuse the null hypothesis and we do accept alternative hypothesis – we will use the fixed effects model.

3.3 Panel regression analysis - output

Following the above defined indicators measuring the degree of fiscal decentralization – *the decentralization indicator of government expenditures, the decentralization indicator of government revenue, the indicator of vertical fiscal inequality* – we constructed three models. Each of these will vary between the models as a variable for expressing the degree of fiscal decentralization.

Based on Hausman test, we decided to use fixed effects model. The value of chi-squared was less than 0,05, based on what we refused the null hypothesis. By using the fixed effects model we estimated the parameters of variables and the outputs for each model we provide below.

Tab. 1: The statistical characteristics of models

Model nr. 1	Model nr. 2	Model nr. 3
Decentralization of expenditures at local level	*Decentralization of revenue at local level*	*Vertical fiscal inequality at local level*
The models have in all three cases the conflicting values of R-squared, but for all three models we can conclude that the estimated parameters explained about 12 % of the model (within values)		
The p-values for individual parameters of independent variables are significant usually for two from the total seven variables.		
„GDP per capita" variable has been excluded from the model, because of high degrese of collinearity		

Source: processed by authors

3.4 Economic interpretation of the results for each model

The analysis of the panel regression outputs, on the sample of V4 countries and Austria, showed for all models the reduction of income inequality between the richest 10 % and the poorest 40 %, in case of **increasing the trade openness** in the country. Similarly the finding, that if for all the variables the values remain the same, in other words, if there will be absence of yearly change in either of the variables, the degree of income inequality between the richest 10 % and the poorest 40 % population will be reduced. Further, we pay attention to the differences between models:

Model nr. 1:

If the degree of decentralization at local level, measured by method of government expenditures, increases by unit, the value of Palma index will increase by circa 0,05 units.

From the control variables, we choose those, that have a positive impact on Palma index, and so lead to its **decreasing**:

- If the degree of **trade openness in the country** increases by unit, Palma index decreases by circa 0,03 units;

- If the degree of **government size** increases by unit, Palma index decreses by circa 0,001 units;

- **The constant** tends to decrease Palma index value by 46 units, in case all other variables will remain the same.

By providing the first (highlighted) finding, we do confrrm our hypothesis. On the sample of V4 countries and Austria, in case of greater level of fiscal decentralization, the income inequality increases between 10% of the richest and 40% of the poorest.

Model nr. 2:

If the degree of decentralization at local level, measured by method of government revenue, increases by unit, the value of Palma index will decrease by circa 0,017 units

From the control variables, we choose those, that have a positive impact on Palma index, and so lead to its **decreasing**:

- If the degree of **trade openness in the country** increases by unit, Palma index decreases by circa 0,03 units;

- **The constant** tends to decrease Palma index value by 33 units, in case all other variables will remain the same.

Model nr. 3:

If the degree of decentralization at local level, measured by method of government revenue, increases by unit, the value of Palma index will decrease by circa 0,005 units

From the control variables, we choose those, that have a positive impact on Palma index, and so lead to its **decreasing**:

- If the degree of **trade openness in the country** increases by unit, Palma index decreases by circa 0,03 units;

- **The constant** tends to decrease Palma index value by 33 units, in case all other variables will remain the same.

By providing the first (highlighted) finding, we do refuse our hypothesis in the second and third model. On the sample of V4 countries and Austria, in case of greater level of fiscal decentralization, the income inequality decreases between 10% of the richest and 40% of the poorest.

4 Discussion

It is necessary to substantiate the interpretation of econometric modeling by testing the suitability of the method used. We used *testparm*, which is the combined test dealing with the question, if the dummie variable for all years is equal to zero. If so, it was not necessary to use a fixed effects model and simple OLS could be used instead. The values for all three models have shown, that the method was properly used. The value of chi-squared has been lower than 0,05, therefore we reject the null hypothesis. We note, that the panel regression was the correct method to estimate parameters of variables.

The results of panel data analysis for V4 countries and Austria during the period 1995-2014 revealed several findings. Increasing the degree of fiscal decentralization at local level led in two from three cases to reduction of income inequality. The value of the reduction of income inequality is ranged from 0,001 to 0,05 (when fiscal decentralization increases by the unit). With these results we can reject the hypothesis:

„With incresing fiscal decentralization at local level, the rate of income inequality increases." The additional fading is, that in all cases the increasing urbanization degree led to income inequality reduction. In other words, with increasing number of people living in the cities and their peripheries, the income inequality rate is decreasing. The explanation can be found in better labor supply, availability of public goods and services in the cities, compared to villages. We refuted the conclusion came from the study of S. Makrashanska, which inspired us. With increasing fiscal decentralization at local level, the rate of income inequality decreases.

Conclusion

Based on the results of the data analysis for relatively close countries (in terms of history, geography, politics, economics) within the period almost twenty years we can state, that these countries should achieve reduction or stabilization of income inequality by their fiscal decentralization policy. Delegation of power towards the local level could reduce the gap between the richest 10 % and the poorest 40 % of the populations, just because of the fact, that local level is closer to both target groups and it can respond faster, better and with more individual approach to their needs. The existing economic theories corresponding to the results, that our research has shown, refer to other factors, necessary to achieve required effect, such as the development direction of the economy, the quality government with responsible finance management.

To weigh the statistical significance of each model, there is needed deeper analysis, that goes beyond this article. It is necessary to add, that seemingly unreliable test results tend to be typical for panel regression, therefore more precise and deeper analysis is needed. However, for the purpose of this paper the economic interpretation is more important, and we are dealing with it.

The contribution of this article lies in the use of the Palma index, as an indicator of income inequality level. This index is relatively new and therefore it is not part of previous economic analysis, even though it is considered as the one with greater explanatory power.

For the further follow-up research we recommend to focus on the comparison of Gini and Palma index within particular countries, as well as detailed analysis of the experiences with fiscal decentralization for V4 countries and Austria. The suggested topics go beyond the framework of this contribution, so we could not pay attention to them.

Acknowledgement

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ANALYSIS OF THREATS TO THE CZECH REPUBLIC

František Paulus

Abstract: *Although the relevant risks, threats and vulnerabilities of critical infrastructure and the methods for securing critical national infrastructure are similar in the EU, the single member states use individual approaches, institutions and initiatives with specific and national conations to handle this problem.*

Threat analysis for the Czech Republic was carried out on the basis of a task set by The Conception of Civil Protection. Common dependencies and vulnerabilities together with existing protection strategies were gathered.

The working group set up the procedure and then in cooperation with the relevant sector specialists within principles, processes and instruments for its implementation provided step by step risk assessment of threat identification, analysis and evaluation comparing the related potential risks, theoretical understanding of phenomena, practical preventive and reactive measures, and required a national coordination and cooperation. The outcome of this is a survey of hazards types for which a type plan will be prepared.

Keywords: *Civil protection, Hazard, Risk, Risk analysis.*

JEL Classification*: Z18, Z19.*

Introduction

The growing complexity of dangers and threats and risks arising from them affects directly or indirectly ensuring protection of population and requires constant adaptation of capabilities of the Czech Republic security system units. Potential threats may be chained and their impacts on protected interests of society can be mutually multiplied. Given growing number of natural and manmade emergencies and severity of their consequences is integrated approach, targeted to reduce of these phenomena consequences, becoming increasingly important. Within the systematic application of prevention of emergencies and crisis situations and preparation to handle it, is a threats analyse and risks arising from them crucial.

In the Conception of Population Protection to 2020 with a view to 2030 (hereinafter the "Concept of population protection") [1] was therefore established the following task: "To analyse threats for the Czech Republic and its conclusions reflect into methodical and strategic materials in the field of national security "(hereinafter "the task "). Date for the task was assigned to the end of 2016. Responsibility for the implementation has been tasked to the Ministry of Interior in cooperation with the concerned ministries and other central administrative authorities.

The task itself can be divided into two parts of content. The first part includes an analysis in a broad sense, i.e. risk assessment, which includes identification of hazards and threats, then the analysis and subsequent risk assessment. At the same time, a level of the risk within exposure of these adverse events is also determined.

Subject of the second part is implementation of analytical outputs into documents essential for ensuring the Czech Republic security.

The presented paper summarizes activities undertaken in the first part of the task. It introduces chosen method and achieved results. General background of subsequent stages of the task is also given there.

In order to perform analytical work was within the Ministry of Interior established a working group consist of representatives of The Czech Republic Fire and Rescue Service (hereinafter the "Fire and Rescue Service"). As well as representatives of concerned ministries and other central administrative authorities significantly participated in the final analysis

Performed activities reflect the Decision of the European Parliament and the Council no. 1313/2013 / EU of 17. 12. 2013, on Civil Protection Mechanism of the European Union and respond to the requirements for Member States within prevention. Making information available to the Commission of the European Union on the outcomes of the risk assessment process The Czech Republic contributes to promote the effective and coherent approach of Member States of the European Union to cope with large-scale emergencies and crises.

1 Analyses Procedure

Assigned process of the task respects relevant normative documents regulating the area of risk management [2, 3, 4] and takes into account findings drawn from experience with the implementation of hazard analysis in preparation for dealing with emergencies and crisis situations. The procedure was designed for needs of a complex design task.

The chosen procedure involves realisation of key and cross-cutting activities and is shown graphically in Figure no. 1.

Fig. 1: Analyses Procedure
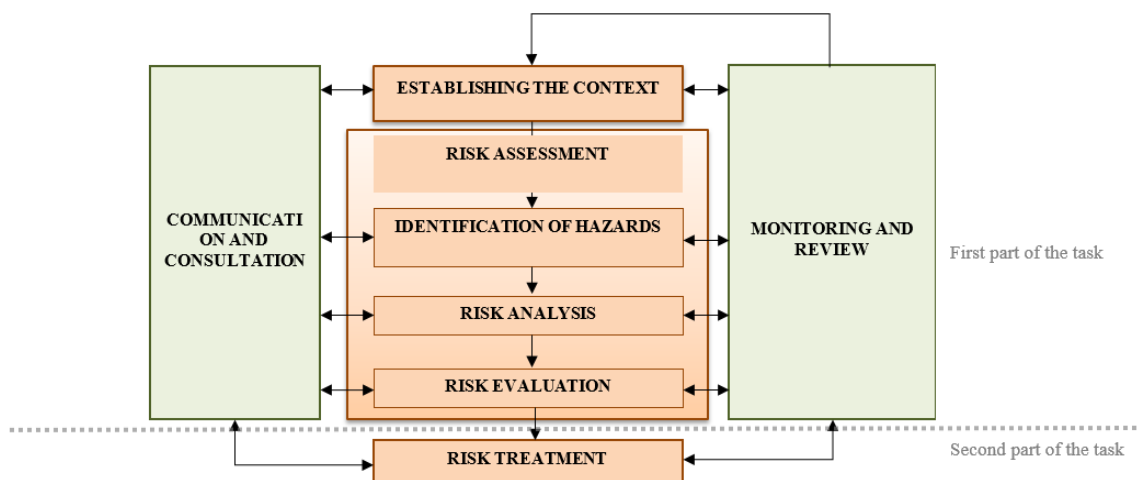
Source: author

1.1 Description of key activities

1.1.1 Establishing the context

The main objective, in accordance to the task assignment, was to work out the analysis of threats to the Czech Republic and the risks arising from them. The intention was to divide risks according to their significance and to determine types of hazards for which the rating plan will be processed according to newly processed methodical instruction.

Type Plan [5] is part of the auxiliary part of a crisis plan of the Ministry and other central administration. It contains recommended type procedures, policies and measures to handle each specific kind of crisis situation. This is work up by the competent ministry or other central administrative authority. Within regional crisis plan and crisis plan of the municipality with extended power type plans are elaborated for procedures dealing with specific threatening emergencies identified in the analysis of threats for the relevant territory.

Definitions written below and used in context of the task are applied in many other areas and for their conception therefore it is not possible fully take into account any industry specifics. Terminological discussions were not subject of the task and therefore basic used terms were specified in following way:

- Danger - any phenomenon that has the ability to damage protected interests.

- Protected interests - the lives and health of persons, property, the environment and economic or social stability.

- Threat - is synonymous expression of concept of danger. Use of the term is particular in relation to serious dangers capable harming of the Czech Republic interests.

- Risk - the possibility of certain event that is considered from a security point of view as undesirable. The risk is always related to a particular type of danger.

1.1.2 Risk assessment

Risk assessment is a core activity of the task´s first part. It is a process which involves identification of hazards (threats), risk analysis and risk evaluation.

Identification of hazards

Within the identification of hazards were by members of the Czech Republic Fire and Rescue Service working group and by representatives of concerned ministries and other central administrative authorities made the determination of individual types of hazards and established the unified registry. For each identified type of risk the concerned ministry or other central administrative authority and possibly co-coordinator were determined. Identified types of risk were divided into three categories:

- naturogen (abiotic / biotic / Space);

- anthropogenic (techno genic / sociogenic / economic).

Risk Analysis

For identified types of hazard was a risk analysis carried on. To determine level of risk - measures presenting a certain probability that a particular type of hazard and the application of its destructive potential can happen, was he outcome of it. The risk is given by the product of probability and consequences.

To optimize process, the risk analysis itself was carried out in two steps.

In the first step was on all types of hazards registered in the registry of danger carried on their selection by preliminary analysis. The outcome of this activity was a selection of types of danger into two groups - danger of low risk and danger of high risk. Types of risk falling into a low-risk were regarded as acceptable and not necessary to be subjected to further search. However, in justified cases the concerned Ministry or other professionally relevant central administrative authority could for danger of a low-risk decide to carry out a second step of the analysis. For all types of threats falling into the high risk area was in the second step carried a detailed multi-criteria analysis on and set specific levels of risk.

Probability as well as were evaluated by ten points scales, when consequences of such aggregate value, took into account the partial effects on the lives and health of people, environment, state economy and society. The outcome of the risk analysis is determination of risk level, which is a value ranging from 0 to 100 describing the significance of the risk.

Risk evaluation

The purpose of the evaluation was to identify priority risks which should be focused on. With regard to the need for differentiation of adopted measures were by members of the Fire and Rescue Service workgroup set limits of risk levels (lower limit value of risk level is 10, upper limit of the level of risk is 30), and according to them three basic categories of risk were subsequently specialized:

- acceptable risk (risk level 0-10);
- conditionally acceptable risk (risk level 11-29);
- unacceptable risk (risk level 30 and above).

1.1.3 Risk treatment

Implementation of risk treatment falls into the second part of the task. The purpose is to implement outcomes of the analytical findings to key materials for national security and to support their practical implementation.

1.2 Description of sectional activities

1.2.1 Communication and consultation

Process required close coordination between concerned actors, in this case, members of the Fire and Rescue Service working group and representatives of concerned ministries and other professionally relevant central administrative offices. For this purpose, they organized seminars and workshops on a bilateral level. Intention of the task processing and process framework were also discussed with secretaries of security councils of regions.

1.2.2 Monitoring and review

The entire process shall be subjected to periodic renewal and to review identified types of hazards in relation to current security situation. As well as used method will be reviewed and possibly modified. The proposed frequency of process repetition is in relation to the future Concept of the population protection.

1.3 Results

First, in accordance with the determined procedure of the task, it was by members of the Fire and Rescue Service workgroup and by representatives of concerned ministries and other central administrative authorities identified totally 72 types of danger and according to classification and defined categories was a register of them made up. Subsequently we analysed risks. Within the preliminary analysis were among 21 types of hazard identified low risk and those were not subjected to further survey. Then there were comprehensively analysed 49 types of total identified hazards. The remaining two types of danger were without prior analysis identified as a danger with unacceptable risk (disruption of security information of critical information infrastructure, disruption of state financial and foreign exchange management of large-scale). The reason for this step was the fact that the statutory requirements predict the occurrence of a state of emergency in these situations.

In detail analysed risks arising from various hazards were then subsequently evaluated in terms of their significance. The proportion of individual categories of the total evaluated number was as follows:

- Acceptable Risks - 4 %;

- Conditionally Acceptable Risks - 53 %;

- Unacceptable Risks - 43 %.

Acceptable Risks are categories for which is not adoption of emergency measures presumed. Usually it is a manageable situation under the current activities of the Integrated Rescue System. With regard to the low level of risk were dangers discarded in a preliminary analysis included to this category as well.

Conditionally Acceptable Risks require adoption of measures leading to their elimination. The category falls to area of preparation for dealing with emergencies and mainly includes emergency planning and training of type activities.

Unacceptable Risks represent a category that must have the highest priority on all levels of public administration. Measures for elimination them fall to preparation for crisis situations and mainly include contingency planning.

Graphical presentation of risk assessment arising from individual risks undergoing a detailed multi-criteria analysis is shown in Figure no. 2.

Fig. 2: Results of risk analyses and evaluation
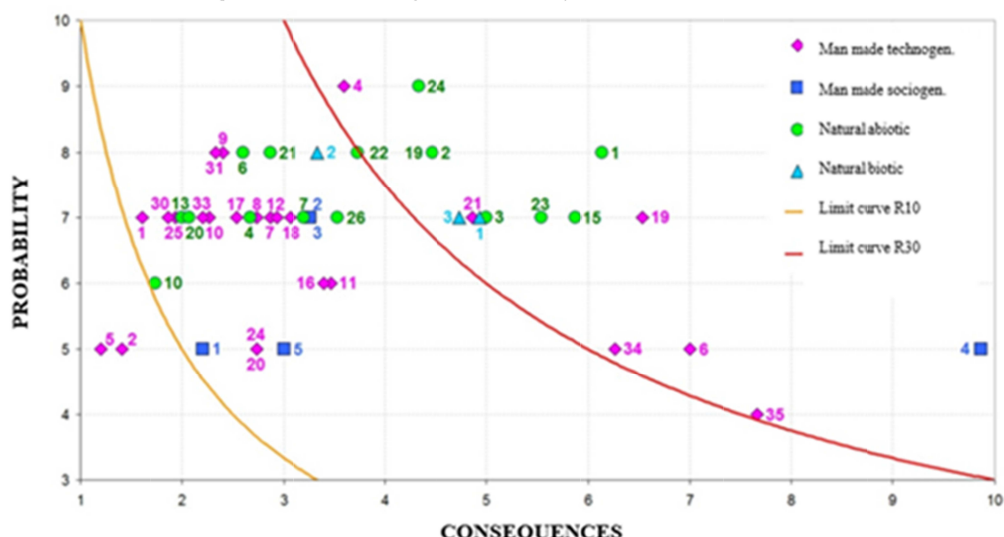
Source: author

Based on an evaluation there were identified 21 types of hazards with unacceptable risks. The threat referred as "Military assault of the Czech Republic" and included in this category was then excluded from another process, considering that for this area has a comprehensive independent system of planning and preparedness been developed. Furthermore, the above mentioned threats of "information security disruption of critical information infrastructures " and "disruption of state financial and foreign exchange of large-scale" were included to the category of unacceptable risks without previous analysis, for the reasons mentioned above.

In total, for the Czech Republic were identified 22 types of hazards for which it is possible to reasonably expect possibility of a state of emergency. For these cases, it is necessary to take measures to reduce risk in the system of contingency planning and develop a new generation of type plans to replace the existing documentation.

Table no. 1 presents 22 identified types of unacceptable risks.

Tab. 1: Types of unacceptable risks

DANGER		DANGER WITH UNACCEPTABLE RISK	Responsibility[*)]
Natural	abiotic	Extreme long-term draught	**M. of environ.,** M. of agricul., M. of interior
		Occurrence of extremely high temperatures	**Min. of environ.**
		Flash flood	**Min. of environ.,** M. of agricul., M. of interior
		Heavy rainfall	**Min. of environ.,** M. of interior
		Extreme wind	**Min. of environ.,** M. of interior
		Natural flood	**M. of environ.,** M. of agricul., M. of interior
	biotic	Epidemics - persons epidemics	**M. of health**
		Epiphytia - outbreaks in field crops	**M. of agricul.**
		Epizootic - animal epidemics	**M. of agricul.**

204

Man made/techmnological	technogenic	Disruptions in deliveries of large-scale	**M. of agricul.,** M. of industry
		Disruption in important systems of electronic communications	**Telecom. office,** M. of industry
		Disruption in security of information of critical information infrastructure[**)	**Nat. security authority,** M. of interior
		Special flood	**M. of agricul.,** M. of interior, M. of environ.
		Leakage of hazardous chemicals from the stationary device	**Min. of environ.,** M. of interior, State off. for nuclear safety
		Disruption of drinking water supply of large-scale	**M. of agricul.**
		Disruption of gas supply of large-scale	**M. of industry,** M. of interior
		Supply disruptions of crude oil and petroleum products, large-scale	**Administration of state mater. reserves,** M. of industry
		Radiological accident	**State off. for nuclear safety,** M. of interior
		Disruption of electricity supply of large scale	**M. of industry,** M. of interior
	sociogenic	Large-scale of migration wave	**M. of interior.,** M. of foreign affairs
		Disruption of legality of large scale	**M. of interior**
	economic	Disruption of the financial and foreign exchange management of large-scale state **)	**M. of financ., Czech Nat. bank**

Source: author

)   In bold are concerned ministries or other professionally relevant central administrative authorities.
**)   Classification of danger in the category of unacceptable risks of danger comes from the fact that the legal conditions foreseen in these situations a state of emergency*

Conclusion

The paper summarizes the findings from threats analysis and risks arising from them for the Czech Republic developed on a task arising from the Concept of population protection and taking the decision of the European Parliament and the Council no. 1313/2013 / EU of 17. 12. 2013 on Mechanism of Population Protection of the Union into account.

Within the national level was identified 72 types of hazards, 22 of them were identified as a danger of unacceptable risks with priority attention at individual levels of public administration. With these situations has the Czech Republic real experience. For other situations, which however in our conditions have not occurred yet, it is necessary to take measures to reduce them due to level of risk.

Outputs described in the article were approved at meeting of the Committee for Civil Emergency Planning of National Security Council, National Security Council and the Czech Republic Government. It became basis for implementation of the second part of the task. Within the activities related to compliance with the second part of the task – risks management, is currently "Methodological Guidelines for the processing of type plans" being developed. This will be as well as the presented threat analysis of the Czech Republic submitted for approval to the Government after

consultation of the Committee for Civil Emergency Planning National Security Council and National Security Council.

The described procedure applied in the context of the task and results of the risk assessments are developed through the implementation of methodological tools for carrying out of regional risk assessments for the purpose of emergency planning and emergency planning at the level of regions and municipalities with extended powers.

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[3] *ČSN EN 31010 Management rizik – Techniky posuzování rizik.*

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REGULATION OF SOCIO-CULTURAL FACTORS
OF PUBLIC E-SERVICES

Beatričė Poškuvienė

Abstract: *Electronic public services, their origin and development are understood as a result of democracy development in public sector which let the citizens to be actively involved and participate in management and decision making. While analyzing the examples of European countries, development tendencies and attitudes of public e-services, the influence of socio-cultural factors upon the choice of e-government models is noticed. The selected models enable to direct electronic public services towards the satisfaction of society's socio-cultural needs, citizens participation and involvement, whereas information communication technologies enable to select appropriate forms of their provision. Therefore, it is important to answer the problem questions such as what legal principles e-services are fine-tuned with in order to satisfy the expectations and socio-cultural lifestyle, what role is given to the politics. The aim of the presented research is to determine the unity of regulation of socio-cultural factors of public e-services referring to the regulation of politics formation and implementation of legal public e-services. Theoretically analyzing modern possibilities of public services in the context of democratic development, European provisions of development of these services the conclusions have been drawn.*

Keywords: *E-government, E-services, E-public services, E-democracy.*

JEL Classification: *Z00, M00.*

Introduction

Referring to the media and other popular scientific resources, for the majority of society electronic public services are associated usually in the narrow sense only with the e-government and services which are available for the consumers using information communication means. A.Augustinaitis (2009) distinguished five types of isolations according to how new public management influences the main spheres of activities economically, socially, politically and culturally in the third type of isolation indicating the main spheres of activities and aspects of e-government and public e-administration. Fast and enthusiastic installation of ICT in public sector brought more disappointment in some countries then society's involvement into decision making, approaching services to the users, first of all encountering users' differences, experience, dependence upon certain groups of digital disjuncture, insufficient perfection of technologies. E-government provides an opportunity for majority of people to get involved in management processes and political decisions as well as to overcome social, professional and educational obstacles. At this point of view, e-government helps to overcome animosity of social isolation groups towards progress, modernization of life and work (European e-Inclusion Initiative, 2007).

Modern models of e-democracy lack new technologies and innovations in order to refer to the opinion of every citizen when making political decisions. Therefore,

ideal and achievable aim of implementation of e-democracy – an opportunity for the citizens to contact directly local and EU institutions. Usually the examples of implementation of e-government practically correspond to the traditions of a country or a region as well as cultural peculiarities, so when analyzing implementation of e-government, e-democracy and public e-services, evaluating the accessibility of these means and services, efficiency, citizens' involvement into the processes of decision making, political traditions become very important as well as cultural differences, legal regulations, socio-cultural aspects.

1 Theoretical statement of a problem

1.1 Theoretical substantiation of the research

Referring to these theoretical models, it is obvious that the conception of e-government is understood not only as application of ICT in public administration but also as means to strengthen and transform democratic processes, enabling citizens' participation making decisions and providing opportunity to communicate directly with the institutions of public administration solving personal issues.

T.Sjostrom (2006) "The Future of e-Government. Scenarios 2016" presented such model of public e-services – definition that is applied in Sweden and is composed of three main components: e-services, e-management, e-democracy – like earlier presented theoretical examples.

E-services are related to public services of public institutions provided by various channels. E-government in this case is defined as internal institutions' changes that are related to implementation of ICT. E-democracy – active involvement and enablement of citizens to participate and influence political decisions of government.

Legal environment regulating installation of e-government and e-services is remarkably determined by creation of general e-politics, stimulation of participation processes selecting certain models that enable citizens, state institutions and business structures to act together. Referring to the needs, usually three main models are selected: G2G – government to government; G2C – government to citizens; G2B – government to business.

E-government comes into intersection of management institutions, society and ICT, therefore, the main characteristics defining it are as follows: 1) usage of ICT; 2) support of management actions; 3) improvement of communication between the government and citizens; 4) strategy that creates the value of public services (Gil-Garcia & Luna-Reyes, 2006).

According to E.Barcevičius (2008) the most important value of e-governance – mutual confidence of citizens and government, and the mechanism for implementation of this value – cooperation (employees, organizations) and participation (citizens, involvement of interested parties into governance). Good governance is such where information is exchanged inside the organization and among the organizations, cooperation is carried out while arranging and making decisions, citizens are stimulated to participate in the processes of public governance and governance is understood first of all from common general interest, new decisions are searched which would stimulate citizens' confidence in government.

1.2 Situation of e-government and public e-services

Development of e-government in Lithuania is properly legally regulated and is quite wide therefore, there is a precondition that it causes difficulties transferring services to electronic space since there is a lack of complex attitude towards process organization and later to evaluation of their quality, usually it is tried to restrict only to the transfer of already existing services hardly searching for new ones impossible in traditional space. Another problem is relevant to services' consumers – dissemination of information about services. It is not centralized, there is a lack of transparency while presenting performed projects of e-services implementation in public sector, their results, information accessible to the users is usually limited, fragmentary, spread in the sources of various level.

In 2007 "The Future of eGovernment. An exploration of ICT-driven models of eGovernment for the EU in 2020" defined what is expected from ICT that may transform governance distinguishing three main aspects: 1) absolute transparency which will not allow government institutions to "hide" from the citizens, business and public organizations, respectively the citizens will be "visible" for government institutions; 2) extinction of limits will create the conditions to join the models "consumer to consumer" (C2C), "government to business (G2B) as well as "government to government" (G2G) and will make the preconditions for the forms of cooperation involving the citizens; 3) strengthening of political knowledge will allow to present unused forms of e-government, public e-services that will be directed towards citizens.

The greatest barrier that prevents majority of consumers to use e-government and public e-services is digital isolation, social isolation and too low stimulation of using e-services. Commercial networks, for instance e-banking systems that first provided a free opportunity for the consumers to get certain popular services after a period of time "easily" taxed them, later again presented certain privileges getting the consumers used to use them. Undoubtedly, in the public sector sometimes it is difficult to speak about material benefits, however, even elementary order of services using ICT allows to save certain expenses. Therefore, services are more popular among young, educated people – they almost do not belong to the group of digital isolation, they are experienced users of new technologies, very busy, mobile, searching for the ways how to get the same services faster and at convenient time. These preconditions have been verified by the researches carried out not only in Lithuania but also in other EU countries, for instance, in the United Kingdom the researches have shown that the main reasons that people are not using internet or do not have internet access are too low or insufficient knowledge that would allow to use internet as well as the price (Dutton & Helsper, 2007; Dutton et al., 2009; Ofcom, 2009).

2 Methods

Theoretical research on regulation of socio-cultural factors of public e-services investigates Lithuanian and foreign author's works, publications regarding the topic of e-democracy, e-government, legal acts, strategies fineturing implementation of e-services, the place of socio-cultural factors while implementing public e-services.

E-government and e-services is rather complicated research sphere therefore, nonconformity of the terms and research methodology is quite often (Scholl, 2007).

Insufficient experience of comparative researches in the sphere of e-government is related to the traditions of other cognate sciences – public administration, information sciences and computer researches, however, e-government researches with their specificity are much closer to political sciences (Eglene & Dawes, 2006).

3 Results of review on e-government and public e-services

In majority of installation strategies it is spoken about new technologies, their development, opportunities but not sufficient attention is paid to the means for society's development and its information about e-services paying more attention to the information and attraction of consumers to get interested in these services. Referring to the data of the Department Statistics Lithuania and data of the report "Evaluation of Lithuanian information society's development tendencies and priorities during the period 2014-2020", some tendencies really indicate that preconditions for the increase of the number of e-services' consumers are favourable, for example, 95% of people of the age 16-74 are constantly using internet (within the last 3 months were using the internet not less than once per week), the websites of public sector correspond to the technical standards of the access for the disabled, 10-20 main services are provided only electronically, 95% of people who were using public and electronic services used electronic way of these services, 90 % of consumers of public and administrative services accessed them through the portal of public services, however, people know and evaluate insufficiently internet safety threats.

Therefore, referring to the evaluation of development tendencies of Lithuanian information society and priorities, the growth of one of the most difficultly accessed indicators of offered services is directly related not only to the quality of transference of public services into electronic space and accessibility but also with active stimulation of citizens to use these services and not only technologies influence that for a great part of consumers e-services become a habit. Referring to statistical data and theoretical sources, government services are mainly not used by the people having relatively lower incomes that belong to certain isolation groups, therefore, they will usually belong to the group of "digital" isolation. Majority of citizens even having reproaches to the decisions made by local government institutions do not tend to use the opportunities of e-democracy and express their opinion, to get involved in decision making and even do not know all the possibilities and relate e-democracy only to the vote opportunity expressing approval or objection.

New e-democracy covers much wider meaning than only e-voting, it is also political citizens' opportunity to express their opinion guaranteeing certain anonymity and influence upon decision making. This results in the rise of civil initiative and equal opportunities. However, traditional paradigm of political activities allow the politicians to be visible at a real time, in a real environment, to feel tangible results of actions and decisions, whereas e-democracy, e-government, e-participation and even e-services transform political activities into immaterial action. Using e-government opportunities to transfer majority of services into electronic space as well as involving people causes doubts as there might appear problems of social level, e.g. transparency, manipulation, digital isolation role change of citizens, direct communication etc.

Besides the issues of social level there are also technological ones which involve both service providers and consumers and cause many questions regarding responsibility and safety, impossibility with the help of IT to get involved into communication of citizens and state institutions trying to influence, change the on-going processes or decision making.

Referring to the data of Department Statistics Lithuania, even in 2011 21.5% of Lithuanians were interested in others opinions regarding civil and political issues, presented their opinion in blogs, social networks, etc. 8.8 % of citizens expressed their opinion on-line regarding civil and political issues. Other forms of civil and political participation involve suggestions concerning provision of legal acts and electronic voting.

Following evaluation results of development of information society "Evaluation of Lithuanian information society's development tendencies and priorities during the period 2014-2020", Lithuania takes average positions in various composite rankings (i.e. involving various criteria, for example, ICT infrastructure, digital skills, development of internet services, etc.) and this position has not changed much since 2007, but it lost a bit in all positions, e.g. E-Government development Index: 28 (2010) to 29 (2014, but in 2016 it rose to position 23.

It was made new review and updated "Evaluation of Lithuanian information society's development tendencies and priorities during the period 2014-2020" in May. It included new more detailed definition of "e-service". In the updated definition are added more new information transfer channels, e.g. mobile, interactive TV etc. as well as this definition gives the wider possibilities how to get some services explanations such as for some services is not needed any special initiation procedures from the both sides individuals and public institutions, they are applied automatically.

The new update of document includes 8 new initiatives, for implementation on the period till 2020. The main point was – widely accessibility for broadband internet, "smart users" of internet, all public and administrative e-government services are accessible via Internet.

Tab 1: Evaluation and tendencies of inequalities of development indicators of Lithuanian information society in comparison with EU

Indicator	Indicator dimension	Year	Lithuania	EU (27) average	Lithuania 2020
Persons used the Internet (permanent)	Percentage of the country population	2013	65	72	85
		2014	69	75	
		2015	69	77	
The Internet Access at households	Percentage of the country households	2013	65	79	Not defined
		2014	66	81	
		2015	69	83	
Broadband Internet penetration	Percentage, number of broadband lines(30 Mbps and	2013	64	76	100
		2014	65	78	
		2015	67	80	

Indicator	Indicator dimension	Year	Lithuania	EU (27) average	Lithuania 2020
	higher)				
Persons used the PC (permanent)	Percentage of the country population	2013*	65,9		Not defined
		2014	66		
		2015	68		
		2016*	72		
Persons used the Internet (permanent) from social sensitive groups	Percentage of the social sensitive groups individuals	2013*	43		74
		2014	44,6		
		2015	60		
Residents using electronically delivered public and administrative services	obtaining information	2013	33	37	Not defined
		2014	40	41	
		2015	42	40	
	downloading forms	2013	25	25	
		2014	31	29	
		2015	28	28	
	returning filled forms	2013	28	21	
		2014	31	26	
		2015	31	26	

*Department Statistics Lithuania and Eurostat. * - not presented officially report of 2016 or no data*

In Lithuania the portal of public and administrational services provided by state and municipality institutions and offices is established that is accessible at the following websites – www.evaldzia.lt, www.epaslaugos.lt (eGovernment) Gateway, www.govonline.lt. The portal has been created for the purpose that the consumers would have an opportunity to find quickly and comfortably and use public and administrative services provided electronically. The portal presents information for the people and companies about public and administrative services provided by the state and municipality institutions. At the moment the portal contains more than 400 links for receiving public and administrative services. Electronic democracy is often related to interactive consultations and voting during which preconditions for the citizens are made to express their opinion regarding various relevant questions; however, depending upon the demand which is determined by the level of society's political culture, a wide spectrum of technological decisions is available.

Referring to the data of researches ordered by ISDC, a remarkable change of transference of main public services is noticeable in 2010-2011 comparing with 2010, in Lithuania the accessibility of 20 main public services has increased (from 78,1 % up to 81,5 %) as well as completely interactive services (from 59% up to 69,1%). This growth was influenced by increased accessibility of job search services (from 75% up to 100%), issue of birth and marriage certificates (from 31,7% up to 75%) and registration of a new legal entity (from 50% up to 100). In 2013 in Lithuania the accessibility of 20 main public services reach 91%. But adaptation

of the services according to the consumers or users needs (2014) is about 74 percent it show some gap and lack in understanding of customers needs

Conclusion

Remarkable growth of the number of general e-services, public e-services as well as e-government is noticeable which is related to the changes of age of services' consumers and implementation of e-government, however, due to different evaluation criteria when evaluating statistical data, by the percent style active and passive services' consumers, the peculiarities of definition of using public services are encountered – it is not exactly defined what level of usage of e-government, public e-services is talked about – interactive services of higher level.

While evaluating the regulation of socio-cultural factors of public e-services we encounter only with one more social factor which is defined as "digital isolation", although it is composed of many constituents only a small part can be ascribed to cultural aspect. It is rather high level of "voluntary" digital exclusion or isolation as the reason that 80 percent of households without Internet access specified that they have "No need" for it. It is still very high "digital isolation" depending on demographical or social status – age, incomes, residence place (rural or urban area), and inequality in skill in using IT.

Electronic democracy, citizens' involvement into decision making, accessibility of public data and reuse as well as socio-cultural aspect which in this case would be more cultural rather than social because it is related to country's political culture, citizens' participation, involvement into decision making. Existing examples of these decisions often refer to the experience of other countries rather than Lithuanian, used examples of e-democracy decisions which were not always successful, popular or even unused but depending upon socio-cultural peculiarities existing in the country they might be applied either successfully or unsuccessfully.

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INFLUENCE OF THE SELECTED DETERMINANTS ON THE DEVELOPMENT OF THE KNOWLEDGE ECONOMY – CZECH CASE STUDY

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Abstract: *Knowledge is one of the main sources of competitive advantage in periods undergoing a significant shift towards a knowledge economy. Therefore, the economic potential of each entity is determined by its ability to create, use and share knowledge. There are no standard, generally recognized methods that are able to determine the extent to which an economy is based on knowledge. Many renowned authors use patents to analyze and measure the output of the knowledge economy. The aim of this paper is to analyze the influence of selected determinants of the knowledge economy that affect its output, i.e., the number of patents in the Czech regions, by using original multiple linear regression models. Data for the analysis were obtained from the Czech Statistical Office's databases for the years 2007-2011. The results confirm the importance of the human factor during the process of patent creation. The role of increasing expenditure on research and development activities was proven to be insignificant in the Czech regions. In the Czech Republic, there is a lack of studies measuring knowledge economy and its determinants. Therefore, we provide an initial analysis of determinants influencing knowledge economy and some practical implications for policy makers.*

Keywords: *Innovation, Knowledge Economy, Knowledge Measurement, Multiple Regression, Patent.*

JEL Classification: *O11, O13.*

Introduction

Knowledge and the ability to transform it into innovation are becoming the foundation for individual regional and national economic systems. These often try to support the creation, acquisition and transfer of knowledge – both financially and non-financially. In this way, the economy often becomes dependent or based on knowledge. Regarding each government's limited financial possibilities, the question arises as to the effectiveness of such attempts (and support for such attempts) to create and develop a knowledge economy. There are no standard, generally recognized methods that are able to determine to what degree an economy is based on knowledge [12]. Various studies argue about whether economies' knowledge base is measurable or how to measure a knowledge economy's outputs, which are necessary for different types of economic analysis [13]. In many analyses, renowned authors have used an indicator based on the number of patent applications and registered patents in the given country [2,9,20]. In the Czech Republic, there are no studies evaluating to what degree Czech economy is based on knowledge and the determinants of the knowledge economy.

Therefore, the goal of this paper is to provide an initial analysis and evaluate the influence of selected determinants of the knowledge economy on the selected output – i.e., the number of patents in the Czech Republic's regions and provide some practical implications for policy makers not only in the Czech Republic. The analysis will be conducted by using a multivariate linear regression model constructed by the authors using data for the Czech regions from 2007—2011 provided by the Czech Statistical Office (period of time is dependent on the period for which te complete data sets are available). The remainder of this paper is divided in the following way. The first two sections are focused on the problematic of the knowledge economy and its measurement, not only in general but also focusing on the use of patents as an indicator of knowledge processes. The third section describes the methodology and analysis results. The last section comprises the research's concluding evaluations and provides practical implications for policy makers.

1 Patents as an Indicator of Knowledge Processes

Using patent statistics as an indicator of technological activity has been used in Western countries since the 1960's. At that time, economists had already begun to use the number of patents to investigate an entire range of relationships, for example, to analyze their relationship to (i) company size; (ii) investment activities; (iii) the degree and trend of innovators' activities [17].

Patents, including subsequent patents (patents that have developed from the original patents), provide a very useful way to measure innovation performance, because patent data can be used not only to monitor the activities of competitive companies, but also to create an evaluative system of research and development performance within companies and, not least, to help identify current trends in technology development [11]. For these reasons, patents are often used in various studies as an indicator for measuring the output of innovation activities (from the microeconomic perspective) or the knowledge economy (from the macro- or mezzo-economic perspective).

There are a number of studies that have analyzed other component aspects within this problematic. For example, Agrawal and Henderson [4] examined the extent to which patents can represent the size, direction and impact of knowledge effects from universities. Acs and Sanders [1] tested the role of patents using an endogenous growth model and confirmed that companies using patent protection are more motivated to invest in research and development and to generate more new knowledge. Similarly, the positive influence of new knowledge on entrepreneurial activity, innovation activity and growth was also confirmed by this study. Bottazzi and Peri [6] dealt with measuring companies' innovation output in regions by using the overall number of patents granted to manufacturers in the given fields. McAleer and Slottje [15] arrived at a simple new method for measuring innovation called the Patent Success Ratio (PSR), which determines the ratio of successfully awarded patents to the overall number of patent applications.

On the other hand, there are studies that criticize this means of measurement, primarily because not all innovations are patented. Naturally, it can only be speculated as to how many innovation outputs are patented and how many of these outputs are

not. Fontana et al. [8] posit the opinion that there are three types of reasons why inventors decide not to patent their outputs:

- it is not possible to patent the innovations – the inventor is convinced that it is not necessary to patent the given output;

- the innovation is patentable, but the innovator assumes that the inventive steps of his innovation processes are large enough to warrant a patent;

- the inventor decides not to patent their output, because they prefer to keep the given innovation secret.

Despite the above, it is still clear that the number of patents represents an important indicator of the knowledge economy's level and, consequently, of the innovation performance of a region's economic entities. It appears to be necessary to continue to investigate the factors that can be influenced by the public decisions of national or regional authorities. Three hypotheses were defined in order to achieve the paper's goals.

H1: The level of education of the population in the Czech Republic's regions has a positive influence on the number of patents registered by enterprises located in the Czech Republic's regions.

This hypothesis is derived from the assumption that increasing competitiveness is influenced by knowledge, which is primarily created and disseminated by universities, institutions from the tertiary education sector and, consequently, an increasing number of individuals with tertiary education. The next hypothesis H2 originated in conjunction with this assumption.

H2: An increase in the number of employees in research and development in the Czech Republic's regions has a positive influence on patent creation for inventors located in these regions.

This hypothesis develops the previous assumption and deals with the significance of the human factor in practice. Good human resource management can certainly predetermine the future success of individual companies and, thus, regions. Moreover, Dakhli and De Clercq [7] state that investment into the human capital of science and research workers represent a determinant of an increase in both productivity and competitiveness at the company level.

Financial support from public budgets is also considered significant; currently, this is very common in the Czech Republic and has been observed by a number of authors, for example [14]. Therefore, the influence of public support on patent creation in individual regions is tested in hypothesis H3.

H3: Increasing expenditures for supporting research and development in the Czech Republic's regions has a positive influence on the number of patent applications.

2 Methodology and Results

Data for analysis was acquired from the Czech Statistical Office's database for the Czech Republic's NUTS3 regions from 2007—2011 and from the Analysis of the Existing State of Research, Development and Innovation in the Czech Republic. A total of 11 variables were chosen for analysis (one output, i.e., dependent, and ten

input, i.e., independent); they are listed in Table 1. The variables are factors influencing the knowledge economy as used by the World Bank in the Knowledge Assessment Methodology (KAM). The knowledge economy indicators selected were subsequently used to compose regression models investigating their influence on patent creation in the Czech Republic's regions. The changes in variable values for 2007—2011 that were used in the analysis were calculated in percentages and are listed in Table 1, rounded off to the third decimal place.

For analyzing the relationship between variables, multivariate linear regression models were used. These models were created for the purpose of investigating the relationship between one dependent variable (the predicated variable) y and independent variables (predictors) x_1, x_2, …, x_n. The dependent variable was represented by the number of patents granted by the Industrial Property Office of the Czech Republic (IPO) to domestic applicants between 2007 and 2011. The independent variables were created by aggregate values for the Czech Republic's individual regions and are also listed in Table 1.

Tab. 1: The Dataset

Region	PAT	GDP	ZAM	EXP	TECHi	VZOR	TERC	CENT	POD	TECHe	NEZ
PHA	0.485	0.108	-0.001	0.012	0.624	0.658	0.420	0.070	0.098	0.844	0.846
STC	-0.052	0.074	0.078	-0.018	0.837	0.489	0.738	0.296	0.060	0.867	0.665
JHC	2.500	0.046	0.161	0.214	0.334	0.434	0.214	0.143	0.151	-0.162	0.683
PLK	-0.396	0.067	0.124	1.246	-0.430	1.824	0.542	0.369	0.528	0.909	0.581
KVK	-1.000	0.087	0.456	0.597	-0.164	0.823	0.108	0.000	-0.479	0.293	0.344
ULK	11.000	0.098	0.017	0.133	-0.233	0.439	0.375	0.171	0.044	-0.413	0.180
LBK	0.429	0.043	0.226	0.418	-0.458	0.618	0.599	0.257	0.937	40.778	0.563
HKK	0.164	0.142	0.285	0.321	0.463	0.223	0.156	0.270	0.081	1.450	0.592
PAK	0.000	0.130	0.096	0.263	-0.757	0.146	0.381	0.270	0.296	0.924	0.555
VYS	-0.167	0.129	0.198	0.451	0.088	0.057	0.313	0.318	0.296	1.158	0.676
JHM	1.595	0.171	0.441	0.951	6.224	0.505	0.438	0.386	0.206	1.415	0.417
OLK	0.125	0.183	0.149	0.407	0.069	-0.195	0.302	0.206	-0.147	1.374	0.689
ZLK	0.886	0.152	0.153	0.226	-0.432	0.813	0.329	0.321	0.015	0.266	0.553
MSK	0.270	0.174	0.437	0.787	0.655	0.269	0.319	0.370	0.710	0.507	0.163

Note: PHA = Prague; STC = Central Bohemia; JHC = South Bohemia; PLK = Plzeň; KVK = Karlovy Vary; ULK = Ústí nad Labem; LBK= Liberec; HKK = Hradec Králové; PAK = Pardubice; VYS = Vysočina; JHM = South Moravia; OLK = Olomoucký; ZLK = Zlínský; MSK = Moravskoslezský; PAT = overall increase in patents granted to applicants by the Industrial Property Office of the Cz. Rep.; GDP = GDP per capita; ZAM = the overall number of employees in R&D; EXP = overall expenditure on R&D conducted in the Cz. Rep.; TECHi = payments for importing technological service into the Cz. Rep.; VZOR = the overall increase in utility models granted by the Industrial Property Office of the Cz. Rep.; TERC = the number of individuals having completed tertiary education; CENT = the overall number of centers conducting R&D activities; POD = overall direct R&D support from the Cz. Republic's national budget (institutional and special-purpose; basic and applied research); TECHe = revenues from exporting technological services from the Cz. Rep.; NEZ = registered unemployment.

Source: Author's own analysis using the sources from Czech Statistical Office and [18,19]

In general terms, the most frequently used multivariate linear regression model takes the following form [21, 22]:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_n x_n + \varepsilon \tag{1}$$

where:

y is the dependent variable;

$x_1, x_2, \ldots, x_n$ are the independent variables;

ε is the error term creating variability in the variable y that cannot be explained by the linear effects n of the independent variables;

$\beta_1, \beta_2 \ldots \beta_n$ are called regression parameters and represent the unknown constants that should be established (estimated) from the given data.

Before composing the analysis, verification whether the data were not correlated was conducted by using Spearman's test. After fulfilling the first prerequisite and dismissing the possibility of multicollinearity in the model, the analysis itself was conducted. Formula of the Spearman´s test has following general form:

$$rs = 1 - \frac{6 \sum d_i^2}{N^3 - N} \tag{2}$$

Spearman´s Coefficient measures the strength of the linear relationship between two variables. Values of each variable are rank-ordered from 1 to N, where N represents the number of pairs of values (the N cases of each variable are assigned the integer values from 1 to N inclusive and no two cases share the same value). Difference between ranks for each case is represented by di.

During the course of the analysis, investigation also focused on the knowledge economy indicators' influence on further potential variables that could, according to the World Bank, be used as indicators for measuring the knowledge economy. Subsequently, an increase in GDP per capita and also registered unemployment were selected as given dependent variables. However, no significant results were attained for any of the models created. On the other hand, the model attained significant values for the dependent variable of patents.

The final regression model, whose values are listed in Table 2, records both the resulting set of knowledge economy indicators and the occurrence of a number of strong ties between the variables. The value of the correlation coefficient R of this model was measured at 0.981. The value of the coefficient of determination R2 achieved a value of 0.963, and the value of the adjusted coefficient of determination was 0.880. The model's p-value amounted to 0.015. The result of the p-value demonstrated that the model is reliable at a level of significance of $p < 0.05$ and allowed for the rejection of the null hypothesis about the insignificance of this model. The model's quality was verified using the Breusch-Pagan test, whose value was 0.309. Therefore, the null hypothesis was not rejected and the data are homoscedastic.

Overall, 9 of the 10 selected indicators were used in the resulting model (independent input variables). Only the EXP variable was excluded from this model – because of its impact in creating insignificant results. The model detected the significant influence of a total of 4 of the 9 (44 %) knowledge economy indicators on the chosen dependent variable, i.e., the overall increase in patents awarded by the Czech IPO by domestic applicants. The most significant relationships were identified for the ZAM, NEZAM and TECHi variables. These variables were significant at a level of $p < 0.01$. Another significant result was recorded for the TERC variable, which was significant at a level of $p < 0.05$. The results indicate the human factor's

219

strong influence in the patent creation process – both for the ZAM variable, representing the overall number of employees in R&D, and for the TERC variable, which denotes the number of individuals having completed tertiary education. However, the variables representing the provision of financial support and an overall increase in expenditure on research and development were proved to be entirely insignificant during the course of the analysis.

On the basis of the results listed above, it is possible to accept hypotheses H1 and H2. It was demonstrated that an increase in the number of individuals with tertiary education (TERC) as well as the number of employees at R&D workplaces positively influence the dependent variable and contribute to an increase in patent creation in Czech regions. However, hypothesis H3, which investigates the influence of expenditure and support for research and development, was rejected; a significant influence on the increase in granted patents was not seen for the Czech regions.

Tab. 2: The Resulting Model and Its Values

Variable	p	sd	t
ZAM	0.001***	3.454	-7.834
TERC	0.022**	3.165	-3.660
CENT	0.333	4.906	1.098
POD	0.416	1.558	-0.905
NEZAM	0.001***	1.772	-8.771
GDP	0.101	10.459	-2.119
VZOR	0.396	0.779	-0.949
TECHe	0.108	0.047	2.064
TECHi	0.007***	0.237	5.038

*Note: p = p-value; sd = standard error; t = t-statistic; ***significant at a significance level of*
*$p < 0.01$; **significant at a significance level of $p < 0.05$*

Source: own research

During the course of analysis, it was demonstrated that neither the EXP (overall expenditure on R&D conducted in the Czech Republic) nor POD (overall direct R&D support from the national budget) variables influence the dependent variable. For the variables representing expenditure on R&D, only TECHi (payments for importing technological services into the Czech Republic) attained significant results. For this reason, H3 was rejected.

Conclusions

Following the results of this research, we provide some practical implications for policy makers (not only in the Czech Republic). Recommendations and implications are designed with the understanding that the period for which the research took place, is far removed in time from the present.

It is clear, that human resources represent one of the most important determinants influencing knowledge economy (and also Patent creation). It is supported by the

significant results in previous section. Importance of determinants: (i) the overall number of employees in R&D and (ii) the number of individuals having completed tertiary education; confirms this assertion. Therefore, it is necessary to support education and research and development centers. On the other hand, it is not the rule, that increasing number of public subsidies and increasing number of employees/R&D centers leads only to better results. As it was shown, variables CENT (the overall number of centers conducting R&D activities) and POD (overall direct R&D support from the Czech Republic's national budget - institutional and special-purpose; basic and applied research) did not affect dependent variable – PAT: overall increase in patents granted to applicants by the Industrial Property Office of the Czech Republic. Therefore, policy makers should carefully decide which projects and centers they will support (from national or European funds) and which not.

For all these reasons, future research has been planned that will monitor the influence of R&D on the development of knowledge in regions – with respect to a longer time period in order to better record the effects of providing public support, because certain effects appear over a much longer time period. It is evident that not all inventions are created immediately after public support has been provided and that, in many cases, subsequent granting of patents can extend to a longer period of time. The researchers are also conscious of the current absence of resources from European budgets in terms of the analysis that has been conducted and therefore plan for their inclusion in the next investigation of this problematic.

Acknowledgement

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ALLOCATED SUBSIDY MEANS AND RISKS OF THEIR USING IN THE SLOVAK REPUBLIC

Elena Šúbertová

Abstract: *The highest priority of European Union countries is to restore economic growth and increase jobs without further indebtedness. European Fund for Strategic Investment (EFSI) is a key element of the investment plan for Europe. European structural and investment funds play a crucial role in job creation, and economic and social development in the regions. In this paper is evaluated the usage of all major types of subsidies received by Slovak agricultural businesses in regions of Western Slovakia, Central Slovakia and Eastern Slovakia. Allocated subsidies were further classified according to standard criteria so called grant titles, namely: national subsidies, rural development plan, direct payments to crop production, direct payments for animal production, and payments for disadvantaged conditions. At the same time based on the results we include financial results by region of Slovak Republic and the risks of their use for the year, 2014.*

Keywords: *Economic development, Region, Financial results, National subsidies, Direct payments, Risk.*

JEL Classification: *H53, Q18, M21.*

Introduction

Currently there is a problem of the use of subsidy funds in application of the common agricultural policy in Slovakia and European Union countries. Farmers have on one hand smaller space for the full application of the various management areas than large companies, especially for the smaller economic size and the limited resources available, on the other hand, mainly young farmers can benefit from several funds to start a business development. Agricultural enterprises should look for an approach that will enable full use of subsidies, promote entrepreneurship, and ensure effective management of the company and the region.

1 Formulation of issue

For the correct allocation of subsidy resources any establishment, including agricultural, is necessary to formulate business goals, set out a strategy to quantify the optimal adequate financial resources, including the allocation of subsidy funds and to properly identify business risks.

The link between strategies, design and entrepreneurial risk in small and medium-sized enterprises has been addressed in a scientific paper *Approach to Risk Management Decision-Making in the Small Business...* MYSKOVA, R. - DOUPALOVA, V. [8]. Post appropriately updated and enhanced the knowledge of the research published in various publications, such as *Risk Management in Small and Medium-sized Enterprises* of the authors ALQUIER, A. M. B., TIGNE, M. H. L. [1]

A detailed definition of the strategy in management theory was mentioned in the works of *Entrepreneurship: A Small Business Approach*. The authors BAMFORD CH. E. - BRUTON, GD the strategy has been defined as "the definition of long-term goals and objectives of the company, ways to achieve them and allocation of the resources needed to achieve these objectives" or as a "total concept of how the company organizes itself and all of its activities in order to successfully conduct its business, surpass its competitors, and deliver high returns to their owners ". [2]

The author BONDAREVA, I. characterized risk from the view of liquidity of business partners. [3]

Detailed risk management not only for companies but also other organizations has been processed by the authors SMEJKAL, V. - RAIS, K. [13]

SMITH, J. A. in the work *Strategies for Start-Ups* stated that „strategy of company usually includes rules and policies and strategic plan with the aim to create competitive advantage in market place.“ [12]

PAPULA, J.-PAPULOVÁ,Z. in book *Strategic thinking of managers* defined strategy as „ways, method, means, tools of achievement of previously stated goals, while there are multiple ways of realization“ [9].

RUMELT, R. P. – SCHENDEL, D.E. – TEECE, D. J. in post *Strategy: Sustainable Advantage and Performance* is defined strategy as „an area that covers five specific critical issues, beginning with the distinguishing feature of businesses and ending the possibility of measuring the effectiveness of strategies“[11].

The correct identification of risks in general, and specifically from the use of subsidies currently contributes significantly to the rapid and consistent application of information technology. The need to establish the exact criteria for assessing the activity of the company, including the risks and using new trends in business, it was noted in the publication ŠÚBERTOVÁ, E. - KINČÁKOVÁ, M. *Subsidy of entrepreneurship in small and medium sized enterprises* [14]. TOTH, M. analyzed the same situation for Slovak farmers in article *Self-employed farmer as the element of small business* [16].

 In the agricultural sector specifically dealt with the issue of support to enterprises, or regions in relation to the business results:

Detailed assessment of the development of agricultural support in Slovakia after joining the European Union until the end of 2012, noted author DURICOVA, I. [4]

Processing efficiency of investment decisions in agriculture in relation to financial resources was realized by the authors CHRASTINOVA Z. - BURIANOVA V. [6]

Pair of scientists MURA, L. - GASPARIKOVA, V. were implemented calculations of the optimal combination of production factors in SMEs regarding business opportunities abroad and risks of entrance to other markets. [7]

PECHROVA, M. carried out processed utilization of grants from the rural development program. Based on the analysis results concluded that there are only positive results. [10]

All these authors have contributed to the systematization of knowledge management, theory and economics. Nevertheless, it would be appropriate to answer

the question, how effective is the allocation of subsidy funds realized. On the provider side, whether the current criteria for allocation are sufficient for optimal use of additional resources. On the recipient side, whether it contributes not only to the development of the receiving entity, but also to a region. For this reason, we started to analyze the performance of individual regions to analyze the efficiency of the use of subsidies in the Slovak Republic in the selected sectors and to detect possible risks.

The goal of presented paper is based on the above:

a) Characterize revenues by activity in agriculture in three regions of Western Slovakia, Central Slovakia and Eastern Slovakia

b) To evaluate the use of donation funds for business development in selected sectors in the three regions of Slovakia

c) Indicate risks of redistribution of subsidy funds in agriculture and to submit suggestions for improvement.

2 Methods

The underlying data were drawn from the database of the Ministry of Agriculture Food and Rural Development for the year 2014 [16]. At present, these data from Green Report are exhaustive, because they contain data for 100% enterprises farming on land and in terms of complexity are sufficient to analyze the management of all active entities in selected sectors of agriculture in Slovakia. At the same time, we have relied on the results of the research projects of the National Agricultural and Food Centre (NPPC), which includes a sample survey to more than 565 enterprises involving more than 93% of the land [15].

For the analysis, we used both the general methods such as scientific abstraction, induction, deduction, comparative analysis, both standard statistical methods, including graphical methods.

3 Analysis of the problem

Slovak agriculture reaches from a long term low production compared to other countries in computation per one hectare of agricultural land (further ha a.l.). For example, SR had in 2008 only 0.5% share of production of EU28 countries', which was caused by lower financial support from EU funds - both in absolute and in per 1 ha a. l. This situation is essentially remaining unchanged. In 2013, the average agricultural production 1 204,6 EUR/ha a.l., which is about 52.2% of the EU average (2308 EUR / ha a.l.). More than 81% of the funds to support agricultural development is continuously being received by EU15 countries.

Total support for agriculture in the European Union was in 2013 at 51.7 billion Eur. In 2013 the allocation of subsidies was very differentiated, the highest grant per hectare of farmland received Malta, up to 1 545 EUR / ha a.l., the minimum conversely obtained Croatia, which had allocated only EUR 23 / ha a.l.

Newly adopted member countries support falls below the average EU 15. The highest recipients of aid are also the largest producers, namely France, whose share of the support received is 15.8% (share in agricultural production 17.7%). Germany is

the recipient of grants amounting to 14.1% (and the EU's agricultural production accounts for 13.1%).

Slovakia achieved a higher proportion of non-investment aid as compared with the legal self-employed farmers (further SEF), up to 23.3% of revenue share. The specialization SEF had a significant share of crop production from which the revenues were almost 5 times higher than those from animal production. For better results of SEF certainly contributed in addition to more profitable production structure and diversification of agritourist.

Tab. 1: Support to agriculture in selected EU countries in 2008 and 2013 in Eur/ ha a.l.

| Country	Year 2008	Year 2013	Year 2013 difference compared to the average EU15	Growth Index 2013/2008
Germany	384	437	+94	113,80
Poland	195	196	-147	100,51
Austria	519	555	+212	106,94
Slovakia	**239**	**247**	**-96**	**103,35**
Czech Republic	**369**	**334**	**-9**	**90,52**
EU15	**349**	**343**	**0**	**98,28**
EU28	348	299	-44	85,92

Source: own calculations.

3.1 Revenues in Slovak agriculture by region and by economic size enterprises

In this article, we will continue to deal with the evaluation of the results of sales by region of production. Region West Slovakia (the WSK) consists of: Bratislava Region, Trnava region, Nitra region and Region of Trencin. Region Central Slovakia (the CSK) consists of: Banska Bystrica Region and Zilina Region. The Region of Eastern Slovakia (the ESK) consists of: Presov Region and Kosice Region.

Revenues in individual regions per results of production are highly differentiated.

Fig. 1: Sales in the agricultural sector in selected regions of Slovakia 2014 in EUR / ha a. l. (In EUR / LU)
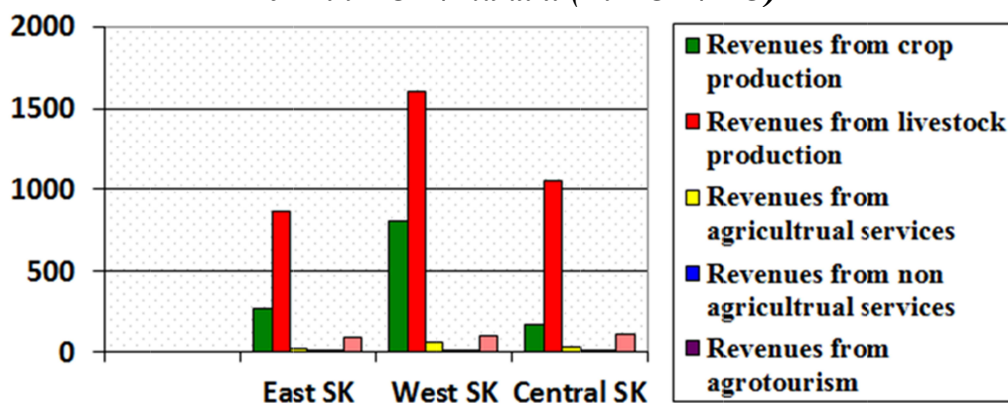
Source: own calculations

Region West Slovakia is dominant in revenues from agricultural activities and services. Region Central Slovakia reaches highest revenues from agritourist, although it falls short in sufficient revenues per hectare. The Region of Eastern Slovakia achieved about 54% higher revenues from crop production as Central Slovakia. In the Central and Eastern Slovakia is a great potential for regional development through agritourist. The problem in these regions is lower business capital and workforce quality.

Interestingly, in the Slovak Republic, the better is the ranking of livestock production companies, the higher are its overall results. Differences are nearly 370% between enterprises by their economic size.

In crop production, there is no longer a multiple differentiation of results, but substantial, amounts to 148%.

The opposite trend is in revenue growth from non-agricultural activities, agritourist and other services. This means, that companies, which deliver outstanding results in animal-husbandry are not engaged in agritourist, but rather are focused on production quality and the achievement of positive results without additional business risks.

Tab. 2: Revenues in the agricultural sector, according to economic size range of enterprises in Slovakia in 2014 (production of enterprises in thousands of Eur)

Size of business by production in thousands Eur\n\nIndicator per sector	25-100	100-500	500-1000	Over 1000	Difference max.-min.
Revenues from crop production	347,15	419,75	410,30	512,56	165,41
Revenues from livestock production	383,21	546,04	970,00	1418,22	1035,01
Revenues from agricultural services	46,27	48,60	28,41	39,43	-6,84
Revenues from non-agricultural services	19,04	9,77	21,84	9,55	-9,49
Revenues from agritourist	9,26	3,40	1,95	0,04	-9,22
Other revenues	247,60	139,13	67,87	79,18	-168,42

Source: [5], Own Calculation

3.2 Subsidies in Slovak agriculture by region and by economic size of enterprises

For development of the regions serves variety of programs to support regional development in general and in agriculture. Subsidies in selected sectors may be: National subsidies, Rural Development Plan, Direct payments to crop production, direct payments to livestock production and Payments for disadvantaged conditions.

The grant policy changes accordingly with the common agricultural policy and the economic policy of country. In each program period are changes both at the transnational level, and in Slovakia and in relation to the priorities of the state economic policy and in view of the possibility of the regions themselves.

Currently are in EU norms for the programming period 2014 to 2020. Negotiations about the system of support payments are very complicated and virtually came to an agreement within the EU until the end of 2013.

3.2.1 Subsidy under grant titles

In this article reported grants were recalculated in Euro per 1 ha a. l., the exception is an indication of direct payments in the livestock sector, where subsidies are converted in Euro per livestock unit (EUR/LU)

Fig. 2: Support to agriculture in selected regions of Slovakia2014 in EUR / ha a. l. (or in EUR / LU)
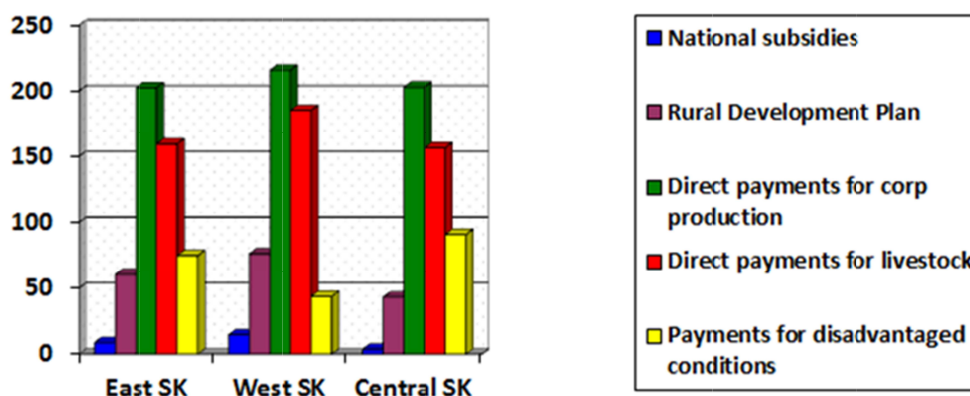
Source: [5], Own calculations

Region West Slovakia is dominant in the adoption of national subsidies as well as any other subsidies in addition to payments for disadvantaged conditions.

Region Central Slovakia is gaining higher subsidies for disadvantaged conditions, because it has the highest proportion of businesses in mountain areas.

3.2.2 Subsidies according to the interval of economic entity size

Direct payment for crop productions are showing stable and increased values for all types of entities, without the consideration of the size.

In livestock production, there is a connection between the size of the business entity and animal breeding, which is directly proportional to subsidies.

The biggest problem is with grants for development of rural areas.

The bigger the entity, the lower the amount of subsidies it receives in the relation to business results. This is because the grants are focused for establishing new, smaller businesses. Principally all grants could be set up for motivation of new startups which reflects in regions. Currently all managements of bigger size enterprises are under a pressure, because they don't have the same economic conditions for development as new small start-ups. In the table below are compared plans of development of countryside especially small start-ups. It is interesting, that deficiency of subsidies results to faster innovation procedures, that entities can stay competitive.

Separately are funded farms of graduates, because of generational change of self-employed farmers.

Tab. 3: Agricultural subsidies by the interval of the economic size of the business entity in Slovakia in 2014 (in thousands of production enterprises in Eur)

Size of business by its production Subsidy title	25-100	100-500	500-1000	Over 1000	Difference Max.-min.
National Subsidies	33,23	19,23	2,65	9,77	30,58
Rural Development Plan	220,53	115,29	67,14	29,06	191,47
Direct payments for crop production	202,88	203,53	205,83	211,31	8,43
Direct payments for livestock production	102,57	115,47	167,10	181,37	78,80
Payments for disadvantaged conditions	78,07	80,68	85,03	65,43	19,60

Source: [5], Own calculations

4 Discussion

Share of subsidies on revenues in agriculture is inversely proportional. The lower revenues are not in relation with the higher subsidies. The West region of Slovakia has about half of subsidies of East region of Slovakia.

Tab. 4: Revenues on sales of products and services and the share of subsidies in agriculture in selected regions of Slovakia for the year 2014 in Eur / ha a. l. and in %

Region Indicators	East Slovakia	West Slovakia	Central Slovakia
Sales of products and services in euro / ha a. l.	617,08	1 349,64	685,29
National grants (% of sales - below S)	1,42	1,09	0,55
Rural Development Plan (% S)	9,95	5,64	6,31
Direct payments for crop production (% S)	32,81	16,00	29,61
Direct payments for livestock production (% S)	25,83	13,71	22,82
Payments for disadvantaged conditions (% S)	12,13	3,21	13,26

Source: [5], Own Calculation

Non-agricultural activities and agritourist bring considerable risks. The causes of business risk can be external risks, e. g. adverse macroeconomic developments, especially low consumer demand, additional policy, tax policy and internal risks as result from the improper actions and decisions of the entrepreneur, such as the underestimation of crop insurance, etc.

Internal risks can be contained by the entrepreneur relatively quickly because the solution has a direct responsibility within the company, external risks such as subsidy policy is for companies much larger threat which must be settled by means of various measures as soon as possible.

Systemic risk can be broken down as follows: economic (increase in prices of inputs such as feed or fertilizer), financial (or example non-availability of credit at the start of business, high loan guarantees if they are ever obtainable), technological and technical (especially lower level equipment than its competitors, who can innovate technology), production (the lack of manufacturing capacity for new types of products), market (changes of preferences of the consumer, change of pricing by competitors), natural and climatic (natural disasters, such as floods and droughts), political (change in the political situation, changing individual state policies), legislation (frequent changes in tax policies, labor law) etc.

Individual risks do not work in isolation, but usually multiple at the same time, only depends on whether the company can act and mitigate the risks by implementing appropriate measures in a timely manner or close the business. For example, in Slovakia decreased the number of self-employed farmers by half after a change in agricultural policy and reduction of subsidies to the industry.

Conclusion

Slovak regions and their farms are constantly changing. The transformation process of privatization was virtually completed. Currently takes place simultaneously the application of the common agricultural policy and the daily competition for maintenance and / or growth of businesses and regions through the introduction of various development strategies with the usage of the subsidy funds. Subsidy funds should be primarily invested to acquisition of new techniques and technologies. Equally important are efficient processes in logistics food products, which have a short life. Set out goals are very difficult to achieve, in the absence of financial resources and in a slow gradual generational exchange.

Businesses and entire regions that had problems with effective management in agriculture had to be quick to cope with business risks. Slovak agriculture market is relatively small, and that is why every company, district and region is forced to constantly change and innovate in the process of structural changes. To the application of these processes may contribute subsidies, even though their number and extent is not consistent with achieving the outputs of the production and the services provided. On the other hand, it should be noted that more than two thirds of farms are profitable and loss-making enterprises in the regions are maintained mainly for other reasons, such as to stabilize the workforce, for environmental reasons and other reasons.

A significant inefficiency can be seen in the use of subsidies in the development of agritourist. It is a pity that regional organizations do not pay more attention to promotion of tourism through various events. Mainly Slovak countryside can offer domestic consumers and foreign tourists many local specialties and vertically merge farming to the food industry to a greater extent to tourism.

A significant problem for agriculture is business risk. The sector is effected simultaneously by multiple types of risks - from the outside constantly changing legislation, in particular subsidy policy, as well as rapid climate changes. Form internal risks could be mentioned particularly slow generational change and lower quality of graduates of vocational schools. Therefore, the number of businesses in agriculture is declining steadily. To overcome the accumulated problems in the

agriculture the sector will need a longer period. Because various of one time measures would be ineffective and would rather act unsystematically.

Acknowledgement

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MEASURING COMPLEXITY AND ECONOMIC REGIONAL RESILIENCE

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Abstract: The concept of economic regional resilience has been stemming from ecology many years ago and got both theoretical and empirical attention in recent years. Its popularity is still increasing. In particular, slightly different approaches of regional economic resilience seem to represent different interpretations of regional ability to prosper thought out different obstacles. Starting from definition of resilience, this paper aims at highlighting advantages and disadvantages of engineering, ecological and evolutionary approach towards resilience. This is in order to offer some insights into its measurement within the resilience analysis. In this paper we will describe an empirical application, in which the resilience of the Czech regional labour market at the level NUTS 2 in the period 2000 - 2014 is going to be investigated by use of an algorithm for business cycle detection and method for complexity of time series measurement. For this reason, we employed the Hurst and Lyapunov exponent as metrics of complexity. The results show the existence of a relationship between the Largest Lyapunov Exponent and the size of Index of Regional Sensitivity on Recession.

Keywords: Resilience, Engineering resilience, Ecological resilience, Evolutionary resilience, Spatial economics, Complexity.

JEL Classification: B52, O18, R10, R11.

Introduction

In recent years, regional resilience has been the subject of research in numerous studies, that on the basis of the impact assessment of a large spectrum of negative shock phenomena concluded on resistance (or non-resilience or vulnerability) of investigated regions. A comprehensive overview of the carried out empirical research provides post by authors Modica and Reggiani [16] and in detail acquaints the reader with differences and analogies in the concept of economic resilience. Over the years had formed three distinct conceptions of resilience, which differs in the angle of view on what is the fundamental nature of this ability, where the bearer is a territorially defined region.

Existing empirical research work with complexity mostly as with indicators applicable to quantify regional resilience in terms of "ecological" or "evolutionary" concept. Our goal is to verify the real usability of selected complexity measures in the context of economic crisis of 2008. Research hypotheses thus formulate, in other researches silently implied, existence of a relationship between the level of complexity and sensitivity of the region on the economic downturn. The result show that the success is greatly affected by the choice of the specific measure of complexity applied to the time series.

1 The economic resilience of the regions and its different concept

Despite the existence of a number of different definitions of economic resilience, it is possible to see the general nature of this concept in the ability to withstand the external deflection. Succinct definition of the economic resilience of the region offer, for instance, Hill et al., who defined the economic resilience as the ability of the economy of a region [8]: *"... to recover successfully from shocks to its economy that throw it substantially off its prior growth path and cause an economic downturn "*. Despite the basic consensus on the nature of the resilience, there are different concepts of this term, which may be seen as grasping the same from a different perspective.

A fundamental concept of the regional resilience is the so called "technical" concept, which is based on the ideas of the static balance sway with some outer event. An essential characteristic of this approach is to assess the ability of the region to "go back" to its original balance[12]. Through a large set of the latest empirical studies using this approach (mainly due to its easy comprehensibility), the application of this concept also met with considerable criticism, which gradually led to the development of the other two concepts. The first of these is the resistance observed from the environmental perspective, for which the author is considered Canadian environmentalist Holling [9]. The essence of this approach is the emphasis on the region's ability to resist external interference due to the existence of multiple equilibrium states, among which the region gradually changes.

Another approach, which is, in some studies regarded as just an extend analogy of the "ecological" concept, is referred to as "adaptive" (sometimes also "development" or "evolutionary") – see e.g. [14]. It was created in response to criticism by some authors (e.g. [15]), who sees in the first two concepts insufficiently covered aspects of the economy in the long term. The resilient economy of the region, according to this approach, in terms of its internal structure is constantly changing and preventively minimalize the effects of destabilizing phenomena. An adaptive approach to resilience is derived from the theory of "complex adaptive systems", which is the basic paradigm of "ecological" and "adaptive" approach. It is therefore not surprising that the appropriate tool for the measurement of resilience (with regard to these two concepts) in some empirical studies is the measure of complexity.

2 Methodology of research

The aim of the research described in this text is to provide verification of the real applicability of the selected complexity measures on time series for the purposes of the quantification of regional resilience in the context of the economic crisis of 2008. For the fulfilment of the objectives were laid down the following two hypotheses:

H1: A measure of the complexity of time series of regional employment in the phase of expansion before the onset of the economic crisis of 2008, measured by the largest Lyapunov exponent exhibits a stochastic dependency with the index of the region's sensitivity to the economic downturn.

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[12] For instance, it may be a return of the growth rate of employment in the region to an appropriate value before the crisis [14].

H2: A measure of the complexity of time series of regional employment in the phase of expansion before the onset of the economic crisis of 2008, measured by the Hurst exponent exhibits stochastic dependency with the index of the region's sensitivity to the economic downturn.

For the purposes of the validation of presented hypothesis, we used quarterly data of regional employment in the NUTS 2 regions of the Czech Republic in the period 2000-2014 (the data was obtained from a sample survey of the labour force [4]). The choice of the research period was motivated by the need of the research, i.e. the need to verify the formulated hypotheses. In order to ensure a meaningful analysis of the quarterly data, the data were first treated with an X 12-ARIMA filter that removes seasonal fluctuations.

With regard to the formulation of hypotheses, the next step of the analysis is to build the necessary indexes based on the dating of the tipping points. Methods of dating tipping points are used to identify alternating stages of growth (recovery, expansion) and decline (the recession). The detection of these checkpoints is a necessary prerequisite for determining the values of indicators C_{emp}, LLE, H (see below) from the time series based on knowledge of the business cycle (dated in the case of our time-series studies on the regional employment).

For these purposes, the Organisation for economic cooperation and development (OECD) compiled recommendations for the creation of indicators. The document [5] contains the recommended procedure for the identification of the economic cycle by Bry-Boschan algorithm [3] or its modified version for the quarterly data (BBQ algorithm). The purpose of the algorithm is to identify local minima and maxima on the Hodrick-Prescott smoothed series filter. In our study, with a view to the formulation of hypotheses, it was used for the detection of two phases (for regional employment growth stage prior to the start of the economic crisis of 2008 and the first phase of the regional employment decline due to the crisis).

The BBQ algorithm allows detecting the beginning and end of the phases of growth and decline.[13] The advantage of this automated processing is a fast and reliable detection of turning points in the analysis of several time series at the same time. The OECD document, however, warns against the identification of short intervals that divide a time series into too many sections, which can complicate the subsequent construction of the indicators. Therefore, it is recommended to check and optionally partially modify the results with regard to the construction of meaningful indicators.

In the following is presented the methodology for the determination of the magnitude of the region's sensitivity to the economic downturn. The index of the region's sensitivity to the economic contraction (**C_{emp}**), based on previous research (e.g., see [14]), is characterized by the size of the impact of the negative economic shock to the labour market of a given region to the same change measured, however, at the national level. For each region, the calculation is made according to the formula (1):

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[13] BBQ algorithm that was implemented within the framework of our research in the environment of R studio using BCDating library that, by default, operates with a minimum length of the cycle (15 months) and a minimum length of stages of growth or decline (5 months). Due to the use of quarterly data, the minimum cycle length was set at 5 quarters, and the minimum length of the phase at 2 quarters.

$$C_{emp} = \frac{(Z_{R(p1)}-Z_{R(t1)})/Z_{R(p1)}}{(Z_{N(p1)}-Z_{N(t1)})/Z_{N(p1)}}, \text{ where} \tag{1}$$

C_{emp} = The index of the region's sensitivity to the economic contraction (a dimensionless number)

$Z_{R(t)}$ = The level of employment in the region at time t (the number of persons in thousands)

$Z_{N(t)}$ = Level of employment at the national level in time t (the number of persons in thousands)

p1 = Time of the beginning of the downturn determined with BBQ algorithm (quarter)

t1 = End time of the downturn determined with BBQ algorithm (quarter)

The values of C_{emp} greater than one indicate a significant sensitivity to the region's economic shock (on the contrary, values less than one indicate less sensitivity and resistance of the region to economic shock compared to national levels).

It was also necessary to quantify the value of complexity of an examined time series. The choice of the appropriate methods for measuring the complexity was based on a lot of similar empirical studies (e.g. [16]). On the basis of research, for potentially suitable methods measuring the complexity was elected the greatest Lyapunov exponent and Hurst exponent. Both are related to the basic properties of complex systems (which include, for instance, self-similarity or non-linearity).

Hurst exponent (H) is used for the analysis of time series with long-term memory. Hurst exponent has been historically associated with Harold Hurst, who carried out an analysis of the level of the river Nile, more accurately, determine the optimum size of the dam based on historical data of precipitation and drought [10]. In the field of fractal mathematics, the Hurst exponent was generalized by Benoît Mandelbrot [12], which created a direct relationship to the fractal dimension (D). Generalized Hurst exponent measured behavioural randomness of time series [13].

The values of the Hurst exponent are from the interval < 0; 1 >, more specifically the values from the interval < 0; 0.5 > evoke a time series with long-term positive autocorrelation, and the value from the interval < 0.5; 1 > evoke a time series, in which values change regularly (oscillate between high and low values). The value of the Hurst exponent equal to 0.5 represents the non-correlated time series. Generalized Hurst exponent is defined as H(q), and it can identify the solution (e.g. using logarithm) of the following equation (2):

$$\frac{\langle |x(t+\tau)-x(t)|^q \rangle}{\langle |x(t)|^q \rangle} \sim \tau^{qH(q)}, \tag{2}$$

Where τ represents a time delay, t represents time and $x(t)$ individual values of time series. For the purposes of the quantification of this indicator is used the library "pracma" [2] in the R environment.

Another popular tool for analysis of complexity is the largest Lyapunov exponent (LLE), which is widely used in the analysis of non-linear time series. If the value of this indicator is positive, it indicates a situation where the time series shows signs of chaos. To calculate the largest Lyapunov exponent there are a number of methods, for example. [11] or [18]. For the purposes of this contribution, the largest Lyapunov

exponent was quantified using Kanz method implementations of libraries "tseriesChaos" in the R environment [1].

3 Results of the analysis

The following table (see Tab. 1) contains the tipping points detected by BBQ algorithm. Because of the length of the time series needed for the calculation of the LLE and H, it was necessary to find such period of growth immediately preceding the recession of 2008 and also was not broken with the period of decline for than two quarters.[14] The table contains, in addition to the period of detected phase, also index value C_{emp} for investigated regions.

Tab. 1: Tipping points and the values of the C_{emp} index for NUTS 2 regions.

The name of the region	The period of growth	The period of downturn	C_{emp}
Prague	2004Q3 to 2009Q2	2009Q2 to 20011Q3	1,066
Central Bohemia	2003Q4 to 2009Q1	2009Q1 to 20010Q1	0,770
Southwest	2004Q1 to 2008Q2	2008Q2 to 20010Q2	1,382
Northwest	2003Q2 to 2008Q3	2008Q3 to 20010Q1	0,889
Northeast	2004Q1 to 2008Q3	2008Q3 to 20010Q1	1,231
Southeast	2002Q4 to 2008Q4	2008Q4 to 20010Q1	0,968
Central Moravia	2004Q4 to 2008Q4	2008Q4 to 20010Q3	1,838
Moravia-Silesia	2004Q1 to 2008Q4	2008Q4 to 20011Q1	1,711

Source: Custom processing on the basis of a labour force sample survey [4]

Fig. 1: Relationship between degree of complexity (LLE) and C_{emp}
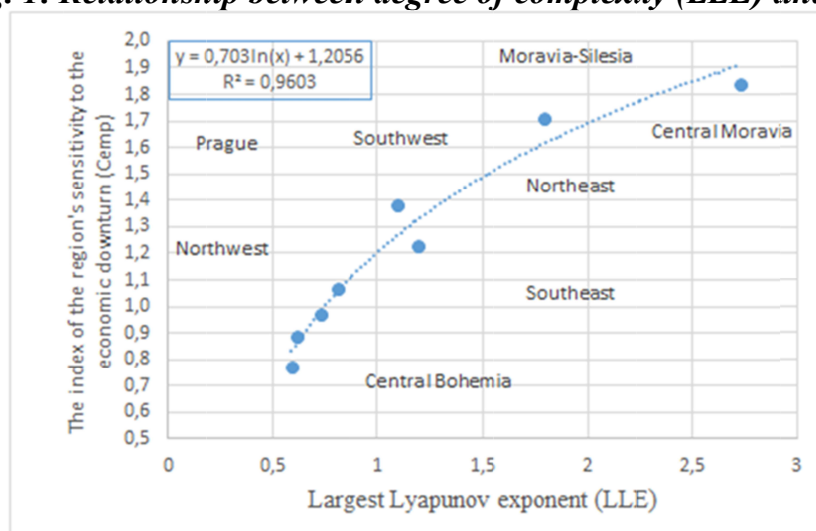
Source: Custom processing on the basis of a labour force sample survey [4]

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[14] Insignificant decrease in phase (two quarters long), which divided the several years of pre-crisis growth phase on the two shorter phases, were based on the recommendations of the OECD document ignored. It worked in the case of the regions of the Southwest, Northwest and Northeast, when in the years of growth (2004-2007) was identified a six-month phase of the decline in employment. By abstracting from this minor downturn, it was possible to achieve a sufficiently long time series needed for the calculation of the LLE and H and also especially the comparability of the indicators between regions.

Fig. 1 shows the relationship between the values of LLE and the size of the index C_{emp}. Distribution of points around the logarithmic curve and its index of determination determine evidence of the stochastic dependencies between the largest Lyapunov exponent and the index of region's sensitivity to the economic downturn. Based on these results, it is possible to consider, that between these two indicator exist strong non-linear relationship. Hypothesis H1 is therefore not possible to reject and therefore it is possible to consider its acceptance.

Fig. 2: Relationship between degree of complexity (H) and C_{emp}
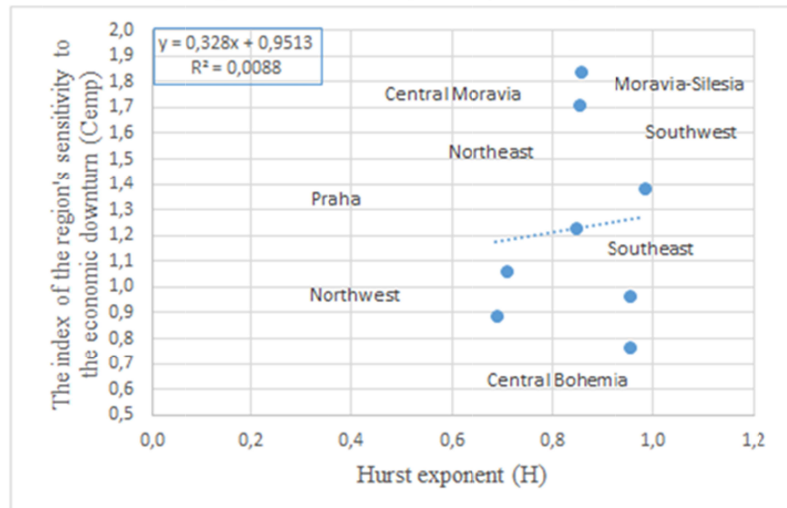
Source: Custom processing on the basis of a labour force sample survey [4]

The Fig. 2 illustrates the relationship between the size of Hurst exponent and C_{emp} index. Distribution points around the regression line or the index of determination do not show to the existence of a stochastic dependencies between the indicators. Therefore, hypothesis H2, based on these data, cannot be confirmed.

4 Discussion

The verification of the real usability of the selected measures of complexity for the purposes of the quantification of regional resilience in the context of the economic crisis of 2008 was the main objective of this study. The current studies mostly assume the relationship between complexity measures and economic resilience without adequate empirical validation. The results of our research verify the existence of a stochastic dependence between the LLE and C_{emp}, which is consistent with the results from other studies (e.g. [17]). The distribution of points in Fig. 1 shows the logarithmic relationship between indicators (in addition, the index of determinacy also shows relatively strong dependence). This finding leads to the conclusion that, in the case of LLE, it is possible to consider the complexity measure as an appropriate tool for the evolution of the economic resilience of the regions. Found non-linear relationship provide a who new perspective on the issue of regional resistance measurement (and not just with regard to empirical studies, which do not consider to test the stochastic dependency).

Furthermore, the reliability of the implementation of the BBQ algorithm was verified in the R language. With the exception of the above three NUTS 2 regions, where it has been necessary to abstract from the minor regional employment declines,

that due to the construction of indicators H and LLE must be ignored, the chosen approach seems effective primarily for a more extensive set of data.

The presented results are also interesting with regard to the relationship between the complexity of the economy and the size of GDP growth (see [7]). In that study, the proposed indicator ECI represents another of the alternative approaches to the measurement of complexity, i.e. it has an unusually strong positive correlation with an indicator of economic growth (even in comparison with a number of other indicators – see [6]). In the case of the LLE, it is also possible to consider this complexity measure to be a useful predictor of region's sensitivity on the economic downturn.

Conclusion

The text of the contribution focuses on the issue of three different concepts of the economic resilience of the regions. Builds on the previous empirical research based on the "ecological" or "adaptive" concept of regional resilience. The purpose of the research was to verify the assumption of the existence of stochastic dependencies between selected measures of complexity and sensitivity of the regions to the economic downturn. The results showed the existence of a relation between the values of the largest Lyapunov exponent (LLE), and an index of sensitivity to the region's economic downturn (C_{emp}). On the other hand, the relationship between the values of the Hurst exponent indicator (H) and C_{emp} has not been confirmed. The results show that the success of the quantification of regional resilience through complexity measure is highly subject to the choice of methods that are applied for measurement of complexity on time series.

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INTEGRATED RESCUE SYSTEM OF THE CZECH REPUBLIC AS AN AUTOPOIETIC ORGANISM FOR PREVENTION AND REDUCING OF RISKS AT EMERGENCY SITUATIONS

Dagmar Svobodová

Abstract: *The target, presented in the introduction of the essay, is to compare the fundamental cooperating constituents of IRS of the Czech Republic as autopoietic organisms for a prevention and reducing of risks at emergency situations. The first section describes the set of basic constituents of IRS CR as a social system. The second part introduces the theses of Maturana and Varela on the functioning of autopoietic variables, which are the operational closeness and self-creation of autopoietic organism in combination with Luhmann's thoughts on the functioning of the social systems. The third section compares the levels of time management of rescue works of the fundamental cooperating constituents of IRS of the Czech Republic during respond at an emergency situation by autopoietic variables. The fourth part discusses meaning of an election process, caused by autopoietic variables with regard to a coordination of rescue operations of the cooperating basic constituents of IRS CR as living autopoietic organisms. The conclusion confirms an importance of stabilization of the change process of fundamental cooperating constituent of IRS CR, which is impacted by autopoietic variables as a liaison welfare system for saving lives and protection of people's health during removal of consequences of emergency situations.*

Keywords: *Autopoiesis, Cooperation, Coordinating, Coordination, Integrated, Rescue, System.*

JEL Classification: *H01, H12.*

Introduction

A theoretical basis of the essay, which deals with a comparison of basic co-operating compounds of the Integrated Rescue System (IRS) of the Czech Republic (CR) is a theory on functioning of autopoietic organisms as the social systems. The aim of this essay is to compare the fundamental cooperating constituents of the IRS CR as autopoietic organisms for a prevention and reducing of risks of the emergency situations. A methodology of the essay is based on a comparative method by Lijphart [3, p. 683], which he applies as a method for exploring relationships between the variables, but not as a method of measurement. The autopoietic variables are in our case the operational openness and self-production of fundamental cooperating constituents of IRS CR. The comparative method is used to investigate the relationships of autopoietic variables in order to determine how they operate according to the level of time management rescue work during dealing with an emergency. The method monitors autopoietic variables according to their impact, how the basic constituents of cooperating IRS CR according to the level of time management of the rescue work in dealing with emergency situations not only differ, but also coordinate.

The comparison allows tracking changes caused by both autopoietic variables in the fundamental cooperating constituents of IRS CR according to the time management of rescue operations during the intervention. [2, p. 814] The method compares three levels of time management of the rescue operations (before - during - after) during the intervention according to the level of operational isolation (U) and self-creation (S) of the fundamental cooperating constituents of IRS CR. A level of their operational isolation (U) and self-creation (S) may be during the intervention low - medium - high. A set of fundamental cooperating constituents of IRS CR was established by Act No. 239/2000 Coll. and works as a liaison social system, which uses its own legislative powers and resources for saving lives and protection of people's health during removal of consequences of emergency situations. [1, p. 220]

1 A set of fundamental cooperating constituents of IRS CR as a social system

The set of fundamental cooperating constituents of IRS CR can be structured and monitored during the process of functioning as a social system in a concept of autopoietic living organisms for a prevention and reducing of risks of emergency situations. According to Luhmann [4], the autopoietic living organisms differentiate from the neighbourhood with whom they communicate, reproduce and create their own structures. They distinguish the internal and external aspects and spin off from the external environment. They are operationally closing themselves and inside reduce the complexity so that they establish own structures and own rules. A set of fundamental cooperating constituents of IRS CR as a social system in the concept of autopoietic living organisms for a prevention and reducing of risks of emergency situations communicates with the environment in clearly specified ways. For these reasons, they must reproduce and develop; otherwise it falls apart and blends with the surrounding environment. A set of basic cooperating IRS CR as a social system in concept of autopoietic living organisms for a prevention and reducing of risks must therefore independently monitor incidents of external environment in their surroundings and react accordingly. The fundamental cooperating constituents of IRS CR are structured on a basis of the guiding differentiation. In connection with the guiding differentiation they adopt as tools for a prevention and reducing of risks of incidents the stimuli from external environment, then they issue a decision, but only in the set manner and by designated rules. By that the social systems resemble living autopoietic organisms and their metabolism. The fundamental cooperating constituents of IRS CR are operationally closed and function by different ways. A condition for their proper functioning is therefore a coordination, coordination, where the interaction of basic co-operating constituents is important, among which are included the Fire Rescue Brigade of the Czech Republic (FRS CR), Police of the Czech Republic (PCR) and the Emergency Medical Service of the Czech Republic (EMS CR). The Fire Rescue Brigade of the Czech Republic (FRS CR) was established pursuant to Act No. 238/2000 Coll. Under the act, its mission is to protect the lives and health of citizens, the property from fires and providing assistance to citizens in emergency situations. During performing of the tasks the FRS CR cooperates with other essential constituents of the IRS, administrative authorities, government bodies, local authorities, companies and individuals, international organizations and foreign entities. An object of the cooperation is to establish the rights and obligations of the mutual

assistance and information during emergency situations. From a viewpoint of coverage, in accordance with the Annex to the Act No. 133/1985 Coll., the fire protection units are divided into four categories: At first, a unit of the fire rescue brigade of a region constituted from members of the fire rescue brigade designed for exercising of duty at stations of the fire rescue brigade of a region, at second, a unit of fire rescue brigade, constituted from employees of a legal entity or an business person, which do an activity in the unit as employment, at third, a unit of voluntary municipal fire rescue brigade composed of individuals who do not do an activity in the unit of fire protection as an employment and at fourth, a unit of volunteer firemen of a site, constituted of employees of a company or a business person, who do not operate the fire protection unit as employment. The Police of Czech Republic (PCR) was established by Act No. 283/1991 Coll. as armed security corps of the Czech Republic and according to Act No. 273/2008 Coll. the Police serves to the public. The task is to protect a safety and property of citizens, a public order, prevent crime, fulfil the tasks under the Criminal Procedure Code and the tasks relating to public order and security entrusted to it by law, or directly applicable regulations of European Communities or international treaties that are a part of the legislative. PCR is a subordinated to the Ministry of Interior (MoI CR). Within the PCR operates the services of transport, public order and the foreign police, aviation, security and pyrotechnic services, a service of criminal police and investigation, and other specialized services. The medical rescue service of the Czech Republic (MRS CR) is according to Act No. 374/2011 Coll. defined as a health service that on a basis of an emergency call provides the emergency pre-hospital emergency urgent care (EUC) to the citizens with severe health damage or in a direct threat of life. A part of the EUC system is the rescue flights, assured by a helicopter. EMS is composed of regional centres, a number of which is fourteen and they are located in the Czech regions and in the capital city of Prague. Their components are areas for a need of the emergency services, respecting the boundaries of former districts and outgoing stations. The outgoing stations are controlled by healthcare operational centres. Resorts of MRS CR are contributory organizations, which are established by the regional authorities.

2 A combination of these of Maturana and Varela with Luhmann's thoughts

For these reasons, the fundamental cooperating constituents of IRS CR can be compared according to the theory on functioning of autopoietic organisms, which were formulated by the biologists Maturana and Varela. The autopoietic variables of fundamental cooperating constituents of IZS CR are at a comparison of levels of the time management of rescue operations during an intervention is their operational closeness and self-production. Within formulated theory on functioning of autopoietic organisms, Maturana and Varela [5] state: 1) Autopoietic organisms as living organisms are operationally closed. The operational closeness allows them an autonomous functioning, which implies that they are able to deal mainly with contents that they create themselves. The autopoietic organisms are accompanied by energetic openness, without which they would not work well. 2) Autopoietic organisms as living organisms function optimally at all times. At a look on the living autopoietic organisms under a powerful microscope, we find that they are in a constant

motion. Every time something happens in them and a continual change takes place in them. 3) A balance of a living autopoietic organism ensures its continuous changing process that the autopoietic living organism chooses to preserve an internal stability and balanced structure. In combination with theses of Maturana and Varela [5] can also be affirmed the thoughts of Luhmann [4] on functioning of the social systems, since the theory of functioning of autopoietic organisms is suitable for coordination and cooperation between fundamental cooperating constituent of IRS CR. How are the fundamental constituents of cooperating IRS CR as autopoietic organisms coordinated by themselves, when in a time management of rescue operations during the intervention works a different level (low - medium - high) of their operational isolation and self-creation? The fundamental cooperating constituents of IRS CR provide a continuous standby duty for reporting on announcement of an emergency. During the intervention on a place of emergency, the fundamental cooperating constituents mutually coordinate and ensure cooperation of rescue operations during the intervention. A time management depends on a number of involved fundamental cooperating constituents, which are involved in rescue operations during the intervention. The time management during intervention works on tactical, operational and strategic levels. [6, pp. 14-15]

3 Comparison of levels of time management of rescue operations

On the tactical level, the intervention is coordinated by the commander, who is responsible for activities related to the rescue effort. Unless specified otherwise by special legislation, a manager of the intervention is a commander of the fire rescue brigade - a fireman. The fireman as a manager leads the rescue work and coordinates the cooperation of basic constituents of IRS CR directly on site of the intervention. On a tactical level of management of the rescue work, a crew of the commander of an intervention can be set up as an executive body. On the operational level, the cooperation of management is carried out in co-operation centres of fundamental cooperating constituents of IRS CR. The operational and information centres of the FRS CR are the operational and information centres of IRS CR with a coordinating role, because they ensure a cooperation of emergency lines 150, 155 and 158. They control the system of warning and informing citizens, they are the connecting and coordinating links between the site of intervention and the highest level of management of rescue operations and ensure a receiving on a line of emergency number 112. At the operational level of the management of rescue work, the operation and information centres of IRS CR summon at a request of the commander of the intervention a deployment of other constituents of IRS CR according to a degree of emergency plan IRS of the region. On the strategic level of management of the rescue work, into a cooperation of the fundamental cooperating constituents of IRS CR during an intervention gets involved the mayor of a town or municipal authority with extended power, a governor of the region or the MoI CR if they are asked for a collaboration and cooperation by a commander of the intervention. To facilitate a coordination of the basic co-operating constituents, they use the emergency management and emergency plans. An involvement of the governor of the region and the MoI occurs, when according to the alarm plan of IRS CR, the incident is classified by a highest level of alert. On the strategic level of management of the rescue services for a coordination of manners and a cooperation of all activities of the fundamental

cooperating constituents is used an emergency plan of the district. A combination of theses of Maturana and Varela [5] from the theory of functioning of autopoietic organisms with Luhmann thoughts [4] on functioning of the social systems, confirms that the fundamental cooperating constituents of IRS CR must be interconnected as a self-creating organization. The set than works as a social system, which has a character of a living autopoietic organism. For reasons of cooperation, the fundamental cooperating constituents of IRS CR reproduce both their coordination activities and their operational structure in a process of recursion. It can be assumed that the recursion process runs the way, that each fundamental cooperating constituent of IRS CR as an autopoietic organism performs a reproduction of itself. The cooperation and coordination of the fundamental cooperating constituents of IRS CR then affects their internal autonomy. The internal autonomy provides structural determination and affects the organizational structure of each of them, without losing the autopoietic self-organization and operational closeness with setting of the boundaries of external influences. The time management of rescue operations during the intervention then in essential cooperating constituents of IRS CR as in autopoietic living organisms is affected by various degrees of operational closeness (U) and self-creation (S) as autopoietic variables (AP). On the tactical level of management of rescue operations during an intervention, the rate of autopoietic variables is low, because before the intervention there are carried out the ongoing cooperative drills and a transfer of information between basic interacting constituents of IRS CR, including a preparation of rescuers on the workplace. On the operational level of management of rescue operations, the rate of autopoietic variables is during intervention middle, because during intervention the rescuers receive new information, saving lives and property of citizens takes place, including support for survivors, who can collaborate during the intervention. On the strategic level of management of the rescue operations is during intervention the rate of autopoietic variables high, because after the intervention, there is carried out the analysis of impact of the incident, assessment of organization and performance of rescue works, and an education for self-help of citizens.

Tab. 1: Time management of rescue activities during the intervention

Levels of time management	Before the intervention	During the intervention	After the intervention
Impact of AP/IRS CR	FRS CR	PCR	MRS CR
tactical - low	Cooperation exercise	Transfer info	Preparation of rescuers
operational - middle	New information	Rescue of property, lives	Support at intervention
strategic - high	Analysis of the incident	Evaluation of the rescue work	Education for a self-help of citizens

Source: [7, modified]

4 Discussion

The cooperation and coordination of fundamental cooperating constituents of IRS CR during the intervention raises a consumption of energy, which causes a deviation from the stability of a system and creation of disparate structures. The disparate structures can be during intervention seen as a new form of self-organization of fundamental cooperating constituents of IRS CR that change themselves and keep a stability by open flow of influences from the external environment. The disparate structures of cooperating constituents of IRS CR are far from stability, if during the intervention is exceeded their critical value, above which they do not return to their original state, but they aim towards to a new, unpredictable state. So what is for the fundamental cooperating constituents of IRS CR as living autopoietic organisms a sense of choice of change and what do they need by a cooperation of rescue operations during the intervention to solve? In connection with the choice and the solution, whether to accept the change, it can be recommended to the time management of rescue operations during the intervention to listen actively to the set of fundamental cooperating constituents of IRS CR as a social system in understanding of living autopoietic organisms. For the said reason, it is necessary to develop a mindfulness of rescuers and citizens, while there start to penetrate into fundamental cooperating constituents of IRS CR the new contents in order to strengthen a cooperation of their mutual awareness. It makes no sense to transfer the new information immediately, but only after finding what shall they communicate in fundamental cooperating constituents of IRS CR as autopoietic organisms for a task of prevention and reducing of risks of emergency situations. What does the set of fundamental cooperating constituents of IRS CR need to mutually communicate by the new information? A purpose of communication of new information in a time management of rescue operations during the intervention is to maintain an internal coordination and a balanced stability of all fundamental cooperating constituents of IRS CR as a social system. Behind the changing process that causes a temporary instability of fundamental cooperating constituents of IRS CR as autopoietic organisms is a need for the long-term systemic stability. According to Maturana and Varela the autopoietic organism will process only a content it creates individually. If new information comes into the fundamental cooperating constituents of IRS CR as autopoietic organisms, then the autopoietic variables can transform them into an energy, which IRS CR as a social system accepts and may create a new quality of prevention for a solving of emergency situations.

Conclusion

A target of this essay was to compare the fundamental cooperating constituents of IRS CR as autopoietic organisms for prevention and reducing of risks of emergency situations. The theoretical base of the essay was the theory of Maturana and Varela [5] on functioning of the autopoietic organisms in combination with Luhmann's thoughts [4] on functioning of the social systems. A methodology of the essay came out from the comparative method and followed a relationship of autopoietic variables that are an operational openness and self-production, how they affect the interaction and coordination of the fundamental cooperating constituents of IRS CR according to the

level of time management during rescue operations during an intervention at an emergency situation. Observing of the autopoietic variables was carried out according to causes that affect the change process during intervention at an emergency situation during development of the disparate structures of fundamental cooperating constituents of IZS CR. A relationship of autopoietic variables in disparate structures of fundamental cooperating constituents of IRS CR is yet not straightforward. If they operate at a time management of rescue operations during the intervention at tactical, operational and strategic levels, the fundamental cooperating constituents of IRS CR can be coordinated due to cooperation according to low, medium and high levels of their operational isolation and self-creation. At the same time there can be recommended the actions, which are important for coordination and cooperation of fundamental cooperating constituents of IRS CR as living autopoietic organisms for a prevention and reducing of risks of emergency situations. The comparison therefore allows to predict in the time management with use of autonomous means, to stabilize the change process of fundamental cooperating constituents of IRS CR as a cooperating social system in concept of autopoietic organism for saving lives and a protection of people's health during removal of consequences of emergency situations.

Acknowledgment

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QUALITY OF LIFE EVALUATION IN VISEGRAD GROUP AND PROGRESSION OF EVALUATION IN YEARS 2008 - 2014

Martin Šanda, Jiří Křupka

Abstract: This paper deals with the quality of life (QL) evaluation in Visegrad group (V4) and progression of evaluation in years 2008 - 2014 based on official Eurostat methodology for QL evaluation - QL indicators for the European Union (EU). The set is organised along the nine areas. The data presented here come from several sources from within the European Statistical System, in particular Statistics on Income and Living Conditions, Labour Force Survey), European Health Interview Survey, and administrative sources. QL is evaluated by the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method. The countries of V4 are evaluated by TOPSIS for each year and the result is a ranking of QL countries. Next result is progress of this ranking countries in years 2008 - 2014. This paper shows using software or programming tools for QL evaluation and advantage of this using. One of results is confirmation near cooperating countries of V4, their relationship at very good level and their cohesion between other Europe's countries.

Keywords: Indicators, Quality of life evaluation, TOPSIS, Visegrad group.

JEL Classification: C15, D89, H83, R58.

Introduction

The concept of QL is difficult to define and various authors and various organizations approach to the concept of QL it differently and a wide spectrum of quality of life definitions exists in the literature, for example [2], [7], [11], [13], [16]. For the QL evaluation it is necessary to use indicators, using which you can specific areas or issues of QL quantify. Any such assessment is complex, it is necessary to assemble the various indicators with regard to the subject and evaluation criteria [20]. Because it's very complicated issue, then is appropriate to "take the help of" software or programming tools such as expert systems, decision making models or just rule-based systems and using special methodologies and methods.

Main goal of this paper is a QL evaluation within the Visegrad Group and progression of this evaluation in the years 2008-2014. Next objectives are to determine the level of development of QL in individual countries and the conjunction of these results due to macroeconomic data, crises, happening in Europe or in the European Union. It will also be interesting to compare the results with other researches and evaluations.

1 Quality of life evaluation in Visegrad group

QL evaluation [11], [16] is not a simple matter and often can be this evaluation problematic in many regards, QL can be viewed as availability of options, from which an individual can pick during filling his life [15], [18]. This term refers to human

existence, comprehension of meaning of life itself of individual being. QL includes individual way of life (lifestyle), not only individual living conditions, but also living conditions of wider groups of society as a whole [17].

Ferrans developed in the 1990s a useful taxonomy of QL conceptualisations into six categories: normal life, social utility, happiness/affect, satisfaction with life, achievement of personal goals, and natural capacities. In addition to these six conceptual approaches, we also recognised utility and satisfaction with specific domains as possible conceptualisations. [7], [13]

QL is a dynamic concept and by Atanasová we can be said that QL is that which comprises: "Satisfaction with life, which is subjective and may fluctuate; Multidimensional factors that include everything from a degree of independence, housing and environment, physical health, psychological state, family, education, a sense of optimism to social relations; Cultural perspectives, personal expectations, and goals in life; Availability of physical, mental and social well-being; Personal level of acceptance of our current condition and our ability to regulate negative thoughts and emotions regarding this condition."[2]

Subjective QL [12] is the sum of each individual's subjective inputs, such as opinions, personal system of values, attitudes, adaption, manner of perceiving the environs, etc. Research of subjective QL of people is very complicated - every human life is unmatched and each person has their own individual notion. This unfortunately poses problems such as the willingness of respondents, their uncertainty in responses or their different system of values in job, in family etc. Objective QL [12] can be considered as specific, measurable generally living conditions and living standards achieved by an individual person or whole population. Among the factors influencing the objective QL belong a number of indicators such as average wage, access to health care, access to services and education, quality of the natural environment etc.

QL is evaluated by use of indicators. The evaluation of QL is a difficult thing. Number of similar opinions and approaches [20] exist regarding the relevant set of indicators and the concrete evaluation tools used for this area. For QL evaluation has created numerous methods with different indicators, such as: Active Ageing Index [1]; Economist Intelligence Unit Limited [6]; Eurofound [4]; Better Life Index [14], Czech Statistical Office includes among the QL indicators [3] "changes in demographic developments", and "security of inhabitants".

V4 reflects the efforts of the countries of the Central European region to work together in a number of fields of common interest within the all-European integration. The Czech Republic (CZ), Hungary (HU), Poland (PL) and Slovakia (SK) have always been part of a single civilization sharing cultural and intellectual values and common roots in diverse religious traditions, which they wish to preserve and further strengthen. Its activities are in no way aimed at isolation or the weakening of ties with the other countries. On the contrary the Group aims at encouraging optimum cooperation with all countries, in particular its neighbours, its ultimate interest being the democratic development in all parts of Europe. [21]

2 Methods and methodologies

For QL evaluation in V4 was selected methodologies used on Eurostat - Quality of Life indicators for the EU [5].

2.1 Selected methodology and indicators

This methodology includes a total of nine areas, which are described below. For the QL evaluation within V4 and its development in the years it was available for 32 indicators in seven areas in the years 2008 - 2014. Unfortunately, data were not available for all indicators, which this methodology includes. They were selected indicators, which were current or that were available at all of four countries. Selected indicators are described by the following way (**area**: indicator (unit)) [5]. Example of the data matrix for selected areas is in Tab. 1.

- **Material living conditions**: Mean and median income (purchasing power standard), At-risk-of-poverty rate (%), S80/S20 income quintile share ratio (quotient), Severely materially deprived people (%), (In)ability to make ends meet (%), Share of total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor (%), Overcrowding rate (%), Share of people living in under-occupied dwellings (%),

- **Productive or main activity**: Employment rate (%), Unemployment rate (%), Long-term unemployment rate (% of active population), People living in households with very low work intensity (% of total population aged less than 60), Fatal Accidents at work by economic activity (incidence rate), Average number of usual weekly hours of work in main job by economic activity (hour), Population in employment working during unsocial hours, Sundays, frequency is usually (%), Temporary contracts (%),

- **Health**: Life expectancy at birth (years), Healthy life years in absolute value at birth (years), Self-perceived health, good and very good (%), Self-reported unmet needs for medical examination, too expensive or too far to travel or waiting list (%),

- **Education**: Education attainment, Upper secondary, post-secondary non-tertiary and tertiary education (%), Education attainment, Tertiary (%), Early leavers from education and training (% of the population aged 18-24 with at most lower secondary education and not in further education or training), People that participated in education or training in the four preceding weeks (%),

- **Economic and physical safety**: Inability to face unexpected financial expenses (%), Population in arrears, debt (%), Homicide rate, Intentional homicide (Per hundred thousand inhabitants), Crime, violence or vandalism in the area (%),

- **Governance and basic rights**: Gender employment gap (difference between the employment rates of men and women aged 20-64), Gender pay gap in Industry, construction and services, except public administration,

253

defense, compulsory social security (average gross hourly earnings of male and female paid employees as a percentage of average gross hourly earnings of male paid employees),

- **Natural and living environment**: Pollution, grime or other environmental problems (%), Noise from neighbours or from the street (%).

Tab. 1: Example of data matrix for selected areas for year 2014

Indicator	CZ	HU	PL	SK
Mean and median income	11.091	7.559	9.56	9.806
At-risk-of-poverty rate	8.6	12.4	17.1	11
S80/S20 income quintile share ratio	3.5	4.3	4.9	3.9
Severely materially deprived people	6.7	24	10.4	9.9
(In)ability to make ends meet	9.3	22.8	10.7	12.6
Share of total population living …	9.2	26.9	9.2	7.0
Overcrowding rate	12.9	14.6	25.3	19.0
Share of people living in under-occupied dwellings	21.3	7.2	11.6	11.6
Employment rate	60.4	54.1	55.6	55.1
Unemployment rate	6.1	7.7	9.0	13.2
Long-term unemployment rate	2.7	3.7	3.8	9.3
People living in households with very low work intensity	7.6	12.8	7.3	7.1
Fatal Accidents at work by economic activity	2.37	2.22	1.75	1.69
Average number of usual weekly hours of work …	40.4	39.8	40.7	40.5
Population in employment working during unsocial hours	13.1	17.7	21.4	15.6
Temporary contracts	7.1	9.6	22.2	7.3

Source: [5]

For the QL evaluation in V4 and progression of evaluation in years 2008 - 2014 based on official Eurostat methodology for quality of life evaluation was been selected method TOPSIS.

2.2 Method TOPSIS

TOPSIS ranks the available networks based on their scores, with the highest being the best [19]. It is a multiple criteria method to recognize solutions from a limited set of alternatives. The fundamental rule is that the preferred alternative should have the shortest distance from the ideal solution and longest distance from the negative-ideal solution [9]. TOPSIS algorithm is applied to the network interface selection as follows [19], [10]:

- The value of each attribute in the matrix is normalized:

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{n} x_{ij}^2}} \tag{1}$$

- The matrix is updated with the normalized values.

- Each attribute in the matrix is assigned a weight w_i:

$$v_{ij} = w_j \cdot r_{ij}, \text{ where } \sum_{j=1}^{n} w_j = 1 \tag{2}$$

- Determine ideal and negative ideal solution.

$$A^+ = [v_1^+, \dots, v_m^+] \text{ and } A^- = [v_1^-, \dots, v_m^-] \tag{3}$$

- This step is to find the best and the worst value for each of the attributes, if the attribute is upward then the higher value is the best and if the attribute is downward then the lower value is the best.

$$v_i^+ = max \{v_{ij}, j = 1 \dots n\}, \ v_i^- = min \{v_{ij}, j = 1 \dots n\},$$

$$v_i^+ = min \{v_{ij}, j = 1 \dots n\}, \ v_i^- = max \{v_{ij}, j = 1 \dots n\} \tag{4}$$

- The distances for both best (d^+) and worst (d^-) cases are measured.

$$d_i^+ = \sqrt{\sum_{j=1}^{m}(v_i^+ - v_{ij})^2}, \ d_i^- = \sqrt{\sum_{j=1}^{m}(v_i^- - v_{ij})^2} \tag{5}$$

- The coefficient c is calculated based on distances d from the best and worst solutions, given by:

$$c_i = \frac{d_i^-}{d_i^+ + d_i^-} \tag{6}$$

- The case with the highest c value is selected (is the best).

In our case are variants (individual countries) ascending sort by values ci and we have solving the problem - ranking of V4 countries QL evaluation. TOPSIS method was used in this way in 32 indicators for all of V4 countries for each of the years 2008 - 2014. The following section presents the results for the CZ, HU, PL and SK in individual years and the progress status of countries within the V4.

3 Results

V4 QL evaluation results are shown in Tab. 2 – c_i is results of TOPSIS method and R_i is ranking of countries. As this table shows, the differences between countries are not significant and this fact promotes project of V4, important cooperation which all V4 countries support.

Tab. 2: Visegrad group's countries ranking 2008-2014

	CZ		**HU**		**PL**		**SK**	
	c_i	R_i	c_i	R_i	c_i	R_i	c_i	R_i
2008	0.506056	4	0.506611	3	0.507107	2	0.507235	1
2009	0.506535	3	0.502642	4	0.515101	1	0.507008	2
2010	0.506808	2	0.510376	1	0.506677	3	0.505017	4
2011	0.506672	2	0.513701	1	0.502361	3	0.499681	4
2012	0.506529	2	0.513983	1	0.506256	3	0.500283	4
2013	0.506725	2	0.517433	1	0.498229	4	0.500738	3
2014	0.506739	2	0.517080	1	0.500448	3	0.500518	4

Source: own construction

If we look at individual values in individual years, we can see the development of the Czech Republic and a relatively stable position in last years. We can show results better, then we will demonstrate facts on figure. Fig. 1 represents the values for individual countries of V4 countries in years 2008-2014. It is worth emphasizing the blue line of Czech Republic, which is also relatively constant over the years and they are the other countries that have different development (trend). In the long term the best results is reaching in Hungary.

Fig. 1: Values of variable c_i for V4 countries in 2008-2014
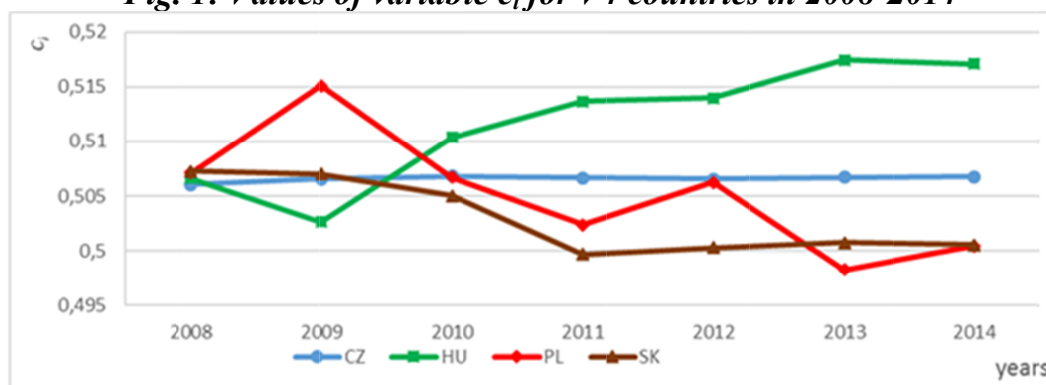
Source: own construction

4 Discussion

You can see trend of CZ and next countries of V4 in Fig. 1. This figure shows a comparison and progression of V4 countries in QL evaluation in years 2008 – 2014 and visualized progress of the ranking of countries within the V4 in 2008 - 2014 too. You can see that the difference between countries is small and this results support idea of V4 and good relationship within countries.

The figure shows changes in the years of global economic crisis around 2008 - CZ was not do well in 2008 and 2009, but unlike other states is trend of QL evaluation stable. Conversely HU after 2009 significantly improves and this trend holds until recent years, HU's good position confirms for example in its research Hajduová et al. [8], where are best from V4 too. In the opposite situation than HU, SK, the results

of which will improve until recent years. PL shows the biggest fluctuation of all countries.

In the following years the situation is improving and it will be interesting to watch this trend over the coming years 2015+ and follow up eg. effect of refugee crisis.

Conclusion

QL evaluation is very difficult problem and for solving of this problematic exist a lot of approaches and methodologies. This paper confirmed above said facts about QL evaluation and supports advantage of used rule-based systems, expert systems, multi criteria decision making systems and method of system engineering is useful for solving problems of QL evaluation.

This paper shows near cooperating countries of V4, their relationship at very good level and their cohesion between other Europe's countries, which is confirmed by the results of methods TOPSIS (small differences of V4 countries).

Possibilities for further development of this problem is compared with values of EU28 countries or compared with neighbouring states of V4. Certainly it would also be interesting to examine the long-term trend not only from 2015+, but also before year 2008. As an added incentive for editing and development this problem for greater sensitivity is question of the weight of individual indicators (eventually of areas). The next incentive can be added other approaches or methodologies, for example modification algorithm TOPSIS to fuzzy TOPSIS.

Acknowledgement

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THE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT POLICY IN LOCAL SELF-GOVERNMENT: THE CASE OF ŠIAULIAI CITY

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Abstract: *The paper analyses sustainable development situation in Šiauliai city between 2008 and 2013. In order to provide an integrated assessment of the situation, the analysis employed the method of calculating sustainable development indices, close to the Compass method, often applied in research practice all over the world. The calculated indices of economic and social development, environmental and institutional state in Šiauliai have shown changes in sustainable development during the period of 6 years. Integrated sustainable development index, obtained by summing up economic and social development, environmental and institutional state indicators, grew during 2008-2013 years about 25 percent. However, the global economic crisis of 2008 – 2010 decreased sustainable development of Šiauliai city. The city has been developing unevenly: its social and environmental indicators have been increasing, while economic and institutional indicators were on the decrease. Besides, Šiauliai city strategic planning has not been integrated with the system of sustainable development indicators. Conclusion and discussion provide generalisation of the research outcomes and possible sustainable development trends for Šiauliai city.*

Keywords: *Sustainable development, City, Social, economic, Environmental indicators.*

JEL Classification: *O21, P41.*

Introduction

Sustainable development is recognised as a universal concept, which unites most countries in the world for the common goal and interest: to integrate three most important areas – social, economic and environmental. For a long time sustainable development ideas have been shaped and evaluated at the global or national level; however, little by little the focus is drawn also to local self-government. The importance of including this level is emphasised in one of the most important global documents – Agenda 21 [2], in which Chapter 28 "Local authorities' initiatives in support of Agenda 21" emphasises that self-government institutions can essentially contribute to making efficient solutions and implementing actions as well as involving local community in the processes. The document states that it is cities that are unique centres of culture, architecture, social inclusion, economic development opportunities, knowledge, innovations and nature; at the same time, they more often encounter demographic, social, economic and environmental problems arising from the consequences of local activities (wrong solution making, planning and governance), which prevent them from achieving sustainability.

In Lithuania, the spread of sustainable development policy is associated with the National Strategy for Sustainable Development [13], which was adopted in 2003 and revised in 2009. However, it has been noticed that too little attention is paid to smaller administrative units and local self-government. The impact of the cities on the sustainable development of the country is usually difficult to predict and can be observed only due to the specificity of the outcomes of their activities. At the same time, poor involvement of local communities, state institutions, private sector and other interest groups in the processes of sustainable development of the country and solution of local problems has been noticed [6].

The article aims to analyse the implementation of sustainable development policy of Lithuania in Šiauliai city. It presents a new analysis of sustainable development indicators of Šiauliai city, which reveal changes in the development of the city, its major problems and opportunities; they also show how the sustainable development policy of Lithuania is implemented in Šiauliai city.

1 Statement of a problem

In 2000, 63% of Lithuanian population was living in rural areas, as opposed to 37% residing in cities. It is estimated that already in 2030, the situation is going to change radically, because the number of urban population is likely to reach 60%. Cities are increasingly exposed to various problems and global challenges, such as pollution, the growing need for energy, destruction of natural resources, increasing industrialisation, waste management, health problems and increasing social exclusion. All this makes it necessary to revise and change city governance in order to maintain their attractiveness, economic competitiveness, the wellbeing of the people and environmentally friendly sustainable development [8]. That is why municipalities, while planning the development of the city, more and more often base it on the concept of sustainable development.

In order to analyse the situation of sustainable development in Šiauliai city in the context of the Republic of Lithuania, the following problem questions were raised by the present research: How can the sustainable development of the city be evaluated? How is sustainable development policy implemented in Šiauliai city and how can this implementation be improved?

1.1 The concepts of sustainable and smart city

The concept of a sustainable city is usually understood as *a city,* designed with consideration of environmental impact, *where environmental (biological diversity, natural resources) aspects are given priority in the urban development policy*. In other words, urban development should not have a negative impact on the natural environment. A sustainable city has to preserve an equal balance among the following areas: economic activities, population growth, the development of social wellbeing, the provision of infrastructure and utilities services, and the use of natural resources.

The main elements of a sustainable city are oriented towards four areas: 1) social coherence – inhabitants' safety, provision of quality services for the citizens and meeting their needs, affordable housing, decreasing social exclusion; 2) economic coherence – competitive economy, adjusting to environmental changes, employment

of residents, attracting investment, safe and efficient use of natural resources; 3) environmental coherence – safe environment for the residents, clean air, water and soil, rich biological diversity, justified use of natural resources, urban expansion not interfering with the urban landscape; 4) administrative coherence – governance based on the integration of sustainable development areas, public institutions management skills, reciprocity and collaboration, involvement of local population in the processes of the city management and implementation of the concept of a sustainable city [3].

In the research literature and innovative strategies, one can often find the concept of a smart city, which is understood as a new style of urban development, geared towards sustainable growth, healthy economic activities without detriment to the natural environment and improvement of the quality of life [10]. A city can become smart provided it has an efficient investment in human resources, social capital, improvement of the quality of life, environmental protection, transport and modern technologies infrastructure, which stimulate its sustainable economic growth. A smart city includes numerous aspects: innovations, information and communication technologies, an infrastructure, sustainable development, community and governance. A smart city has six smart features: economy, people, governance, infrastructure, environment and living [9].

Although the concept and definition of a smart city is wider than that of a sustainable city, it can be stated that priorities of both smart and sustainable cities are similar. The key objectives are also similar: ensuring social wellbeing of the citizens, meeting their growing needs and developing economy without detriment to the environment, efficient use of natural resources, stimulating the development of a civic society, involving urban policy makers and researchers in urban development processes by choosing such a way of governance, which would meet the needs of all interested parties [8].

1.2 The importance of strategic management for sustainable urban development

The development of a sustainable or smart city would be difficult without a properly prepared governance system that would efficiently integrate political, social, economic and environmental aspects and would be able to adjust to innovative and dynamic environment. The research literature points out four key governance principles, which municipal authorities should follow: 1) continuous planning, geared towards improvement of social, economic and environmental conditions; 2) integration of sustainable development policy at all governance levels and with all interested groups; 3) ecological thinking regarding environment, natural resources, and biological diversity protection; 4) collaboration and cooperation, participation of society and adjustment of interests [7]. It is of particular importance that cities develop their governance models, incorporate them into strategic plans, which would contain clear and conceptually substantiated city governance elements and sustainable development targets [4]. It is important not only to plan strategies, in which economic, social and environmental interests are harmoniously integrated, but also to ensure an active participation of local population and interest groups in urban activities, also an ability to make innovative solutions and change their unsustainable habits and needs [7].

In 2015, the United Nations Conference on Housing and Sustainable Urban Development provided the following Smart Sustainability City (SSC) Cycle: 1) set the vision for your SSC venture; 2) identify your SSC targets; 3) achieve political cohesion; 4) build your SSC; 5) measure your city's progress; 6) ensure accountability and responsibility [1]. This strategic governance cycle supports the statement that without joint efforts, agreement, cooperation, partnership and communication, sustainable urban development is impossible; that is why it is very important to find a consensus among different interest groups. Besides, this process requires constant monitoring, attention and evaluation of the city development and its progress. It is of paramount importance for the local authorities to engage in transparent and open activities, to provide information and reports about planned and implemented activities and to encourage the community's involvement in governance processes.

2 Methods

There are about 500 ways of calculating sustainable development indicators and indices. Although the names of indicators and indices are very different, their essence remains the same; most often they can be consolidated into general systems according to the areas, corresponding to the sustainable development dimensions [14]. The main idea of calculating integrated sustainable development indicators is to include three main dimensions – environmental, economic and social. Although the variety of indicators is great, every indicator should be: 1) important; 2) easily understandable; 3) reliable; 4) useful; 5) measurable by conventional units; 6) allowing for changes and supplements [12].

Researchers often encounter with the problem that when data is collected on the national level, not all of them are presented also on the regional or municipal level. In such a case, the evaluation becomes less meaningful on the level of local self-government [11]. This problem is also important in Lithuania. The National Strategy for Sustainable Development [13] allocates 17 indicators for the dimension of environmental protection, 31 are for economic dimension and 27 for social dimension. It singles out development indicators of 9 territories, showing the situation in counties and municipalities. However, not all indicators can be found on the website of the Department of Statistics or other websites, besides, some indicators are provided only on the national level, without breaking them into those of counties or municipalities.

Selection of indicators: three experts in sustainable development from Šiauliai university were given a list of 84 indicators of social, economic, environmental and institutional dimensions of sustainable development of Lithuania; they were asked to rate the indicators of every dimension in terms of their importance. According to these ratings, 5 most important indicators were singled out in each of four dimensions.

Indices of all four sustainable development dimensions are aggregated according to the selected 5 most important indicators: $I_m = \sum_i a_i R_i$, where R_i is 5 indicators making up respective index, i changes from 1 to 5, a_i is the weight of the indicator making up respective index, equalizing the dimensions of indicators in such a way that the contribution of every indicator R_i to index I_m makes 20 percent ($m = S, E, N, I$). The integrated sustainable development index sums up four sustainable development

dimensions – social, economic, natural and institutional: $I=I_S+I_E+I_N+I_I$, where I_S, I_E, I_N and I_I are the indices of social, economic environment, natural state and institutional dimensions. Such methodology of calculating indices essentially corresponds to the conception of the Compass method [5].

Sustainable development indices in Šiauliai city were calculated in the period between 2008 and 2013. Tables 1-5 presents examples of calculating development index, when coefficients a_i were chosen in such a way that the basic values of all 5 indicators in 2008 were 5, while their total index was 25. In the following years, either an increase or a decrease of the basic values of the 5 indicators and index can be observed depending on the actual values of the 5 indicators. Having added up basic values of indices I_S, I_E, I_N and I_I in 2008, the value of the integrated sustainable development index $I = 100$ is obtained, the changes of which in the following years show the increase or a decrease of the general level of sustainability. All statistical data have been taken at the end of 2015 either from the website of the Statistics Lithuania or websites of respective ministries. The causes of changes in the statistical data have been explained by the six sustainable development experts from Šiauliai city municipality.

3 Problem solving

3.1 Calculation of sustainable development indices

Human resources have crucial importance for the sustainable development of Šiauliai city. That is why one of the most important development goals is to improve the social environment of the city and to meet the needs of its inhabitants by focusing on their employment, education and health protection. Table 1 shows the increase of the social development index by 44 percent between 2008 and 2013.

Tab. 1: Šiauliai city social development index (I_S) between 2008 and 2013

Social development indicators	Base I_S 2008	2009 I_S	2010 I_S	2011 I_S	2012 I_S	2013 I_S
Registered unemployment (15-64)	5	2.5	2.127	2.5	3.030	3.278
Employed population	5	4.584	4.095	4.087	4.104	4.315
Natural population replacement	5	6.481	3.926	5.219	6.150	4.086
Funds allocated for education	5	5.158	5.319	5.781	5.312	5.230
Funds allocated for health protection	5	2.155	4.701	18.245	16.762	19.131
Social development index (I_S)	**25**	**20.878**	**20.168**	**35.832**	**35.358**	**36.04**

Source: [15]

The decrease of the social development index I_S in Šiauliai between 2009 and 2010 was caused by the outcomes of the global economic crisis: a sharp rise in unemployment and a decrease in funds for health protection. However, in 2011 the funds for health protection were increased almost four times, which determined the increase of the general social development index. Substantial changes in the numbers of natural population replacement were caused by saltatory birth and death rates. Between 2011 and 2013, unemployment slightly decreased and employment rates went up. Furthermore, the decrease of unemployment and population numbers for the calculation of the social development index I_S was taken with an opposite symbol.

Thus the decrease of these indicators increases (improves) the value of the social development index.

Economic sector has always been one of the most important guarantors of prosperity of every city. However, the idea of sustainable development appeared due to the excessive economic impact on the environment and people's health. That is why in urban development it is important to adhere to sustainable development principles, i.e. in order to attract investment, it is not sufficient to orient oneself solely to the economic growth of the city and its competitiveness. Economic urban development has to guarantee a higher level of life for its citizens and social conditions with better prospects as well as clean environment.

Table 2 shows that social development in Šiauliai city lags behind its economic development because between 2009 and 2013 it did not reach the level of the base value of 2008 and decreased by almost 13 percent.

Tab. 2: Šiauliai city economic development index (I_E) between 2008 and 2013

Economic development indicators	Base I_E 2008	2009 I_E	2010 I_E	2011 I_E	2012 I_E	2013 I_E
Direct foreign investment per citizen	5	4.905	6.117	5.793	5.893	6.208
Material investment per citizen	5	2.78	2.212	3.612	2.654	2.86
Monthly wages (gross)	5	4.665	4.516	4.562	4.642	4.961
Funds allocated for economics	5	1.811	5.024	2.728	1.468	3.246
General work force (15-64)	5	4.908	4.549	4.450	4.350	4.503
Economic development index (I_E)	**25**	**19.069**	**22.418**	**21.145**	**19.007**	**21.778**

Source: [15]

The decrease of the economic development index I_E was determined by the outcomes of the global economic crisis: in 2009 in Šiauliai city material investments decreased almost two times and funds allocated by the municipality for economic development of the city decreased almost three times. This change was also determined by the number of projects financed by EU funds and being implemented at that time. By 2009, the implementation of EU investment projects in Lithuania between 2004 and 2006 had already finished, while most projects of the next financing period had not started yet. That is why project co-financing was not necessary. These two indicators, which have only slightly improved between 2010 and 2013, caused the general decrease of the economic development index I_E. However, wages have not increased, while general work force decreased by about 10 percent. It was only direct foreign investment per citizen that during the five-year period increased by 24 percent.

Clean, healthy and safe environment, preserving its ecological identity, is often named as the greatest asset and is one of the conditions of urban existence. Table 3 shows that Šiauliai city environmental development index between 2009 and 2013 grew by even 92 percent. This leap demonstrates an essential improvement in the environmental protection of the city.

Tab. 3: Šiauliai city environmental development index (I_N) between 2008 and 2013

Environmental development indicators	Base I_N 2008	2009 I_N	2010 I_N	2011 I_N	2012 I_N	2013 I_N
Total emissions to air from stationary sources per citizen	5	5.185	5.001	5.834	6.668	5.185
Total emissions of pollutants	5	5.217	5.171	6.200	7.267	5.644
Waste removed from illegal dumping grounds	5	5.358	10.624	7.631	18.798	31.048
Funds allocated for environmental protection	5	5.737	5.301	4.430	5.450	5.065
Air contamination by solid particles	5	1.774	1.057	1.666	1.571	1.122
Environmental development index	**25**	**23.271**	**27.154**	**25.761**	**39.754**	**48.064**

Source: [15]

The growth of the environmental development index I_N can be ascribed to substantial positive changes of the indicator of waste removed from illegal dumps. Between 2001 and 2008, a waste disposal system was created in Šiauliai region by using EU Coherence funds. Having closed all former dumping grounds in Šiauliai county, which did not satisfy environmental requirements, and having opened modern dumping grounds, one for all the county, satisfying the strictest environmental protection requirements of EU and Lithuania in Aukštrakiai instead, air pollution has been gradually decreasing since 2009. Besides, the new waste management system enabled installing modern waste collection points and container grounds in all seven municipalities of Šiauliai region since 2009. Owners of private houses were given free containers. People were encouraged to sort waste in order to decrease the amount of waste disposed in damps and increase recyclable waste. At the same moment, during the five-year period, all illegal dumping grounds were essentially cleared, which is proved by the increase of this indicator five times.

One of the most important indicators is air pollution by solid particles. The values of this indicator as well as the amounts of pollutants, to calculate the environmental development index I_N, were taken with a negative symbol. That is why the decrease of this indicator shows that air pollution by solid particles in Šiauliai city between 2009 and 2013 increased more than four times. It is difficult to determine the causes of such an increase. According to Šiauliai municipality specialists, air pollution is caused not only by local sources of pollution, but also by various air flows and other natural phenomena, such as wind, rainfall, air pressure and temperature. Air pollution increases during the heating season, because individual houses in Šiauliai city are mostly heated by solid fuels - firewood and coal. In specialists' opinion, the situation is likely to change by 2020 due to the implementation of a clean air quality programme, which is going to provide funds for decreasing air pollution and development of new control and protection instruments.

The rest three indicators of the environmental development index I_N did not change much between 2009 and 2013.

In order to efficiently implement the idea of sustainable urban development, it is necessary to guarantee participation of all institutions of the city governance levels, transparency of their activities, openness and accountability. Institutional dimension

of sustainable development is also important because it foresees and realises the main directions of sustainable development policy, while involvement and collaboration of municipal institutions with various organisations and society at large has a legally substantiated and direct influence on urban development.

The highest value of the institutional sustainable development index I_I 38.04 was only in 2009 (see Table 4). Later I_I did not reach its base value of 2008, while comparing I_I value of 2009 and 2013, it decreased almost two times. Between 2009 and 2013, the value of the institutional sustainable development index I_I decreased by 20 percent.

A big leap of the value of the institutional sustainable development index **I_I** in 2009 can be explained by a three-fold increase of the budget allocations for municipal activities. These expenses had to be increased because in 2009 the implementation of EU investment projects in Lithuania for 2004–2006 was finished, while most projects of the new period were not started yet. In 2010, Šiauliai city municipality started implementing a lot of investment projects of the new EU financing period of 2007–2013; that is why allocations from the budget for municipal activities could be substantially decreased. Between 2009 and 2011, the decrease of funds for general state services and NGO projects could be accounted for by the consequences of the global economic crisis. However, during this period municipal allocations for programmes had a tendency to increase. The increase of queries received by the municipality via email shows wider communication with the citizens, while the decrease starting from 2012 is connected with the new virtual technologies implemented by the municipality, especially direct communication via the Internet site and social networks.

Tab. 4: *Šiauliai city institutional sustainable development index (I_I) between 2008 and 2013*

Institutional development indicators	Base I_I 2008	2009 I_I	2010 I_I	2011 I_I	2012 I_I	2013 I_I
The amount allocated from the budget for municipal activities	5	15.769	2.667	2.876	3.116	3.340
Municipal allocations for various programmes	5	7.355	6.818	7.259	6.214	6.388
Queries received by municipality by email	5	7.378	5.034	6.770	4.860	4.34
Funds allocated for general state services	5	4.221	3.929	3.568	3.893	4.185
5. Municipal funds allocated for NGO projects	5	3.317	2.322	1.524	1.261	1.725
Institutional development index I_I	**25**	**38.04**	**20.77**	**21.997**	**19.344**	**19.978**

Having analysed the indices of four sustainable development areas of Šiauliai city, the overall integrated sustainable urban development index was obtained (see Table 5).

Tab. 5: Šiauliai city integrated sustainable development index (I) between 2008 and 2013

| Indices	2008	2009	2010	2011	2012	2013
Economic development	25	19.069	22.418	21.145	19.007	21.778
Social development	25	20.878	20.168	35.832	35.358	36.04
Environmental development	25	23.271	27.154	25.761	39.754	48.064
Institutional development	25	38.04	20.77	21.997	19.344	19.978
Integrated index I	**100**	**101.258**	**90.51**	**104.735**	**113.463**	**125.86**

Source: Tab. 2-5

Between 2009 and 2013, the integrated index I grew by almost 26 percent. That is why it is possible to state that the development of the city during the period was positive. However, sustainability was lacking, because although environmental and social development indices substantially increased, those of economic and institutional development decreased. Besides, during the analysed period, marked fluctuations were noticed in all four sustainable development areas.

3.2 Šiauliai city sustainable development vision

Having performed the analysis of strategic documents, statistic data, calculations of sustainable development indices, also interviews with 6 municipality experts, a diagram of Šiauliai city sustainable development vision has been proposed (see Fig.1).

Fig. 1: Sustainable development vision diagram
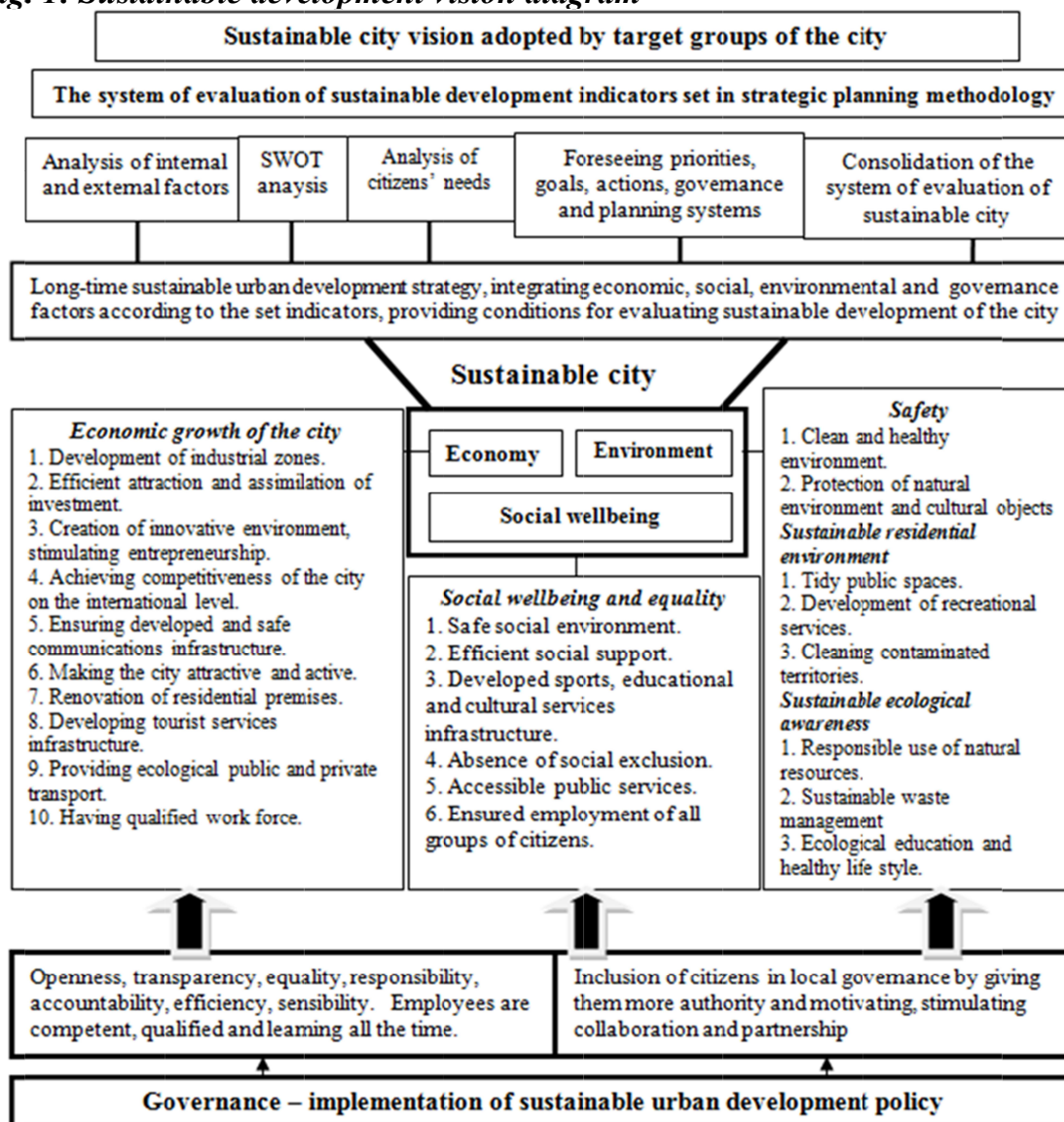
Source: Authors

The diagram singles out four sustainable development areas and their priorities. Most priorities are set in the economic sphere, because the city's social wellbeing depends on its attractiveness for investment, its competitiveness and entrepreneurship. Priorities of social sphere are geared towards wellbeing and equality, those of environmental sphere - towards safe and sustainable residential environment. In the sphere of governance, it is suggested to develop the governance system, the skills, abilities and competences of municipal employees, and to promote public and private partnerships, local and international collaboration by involving citizens in governance processes.

4 Discussion

The calculations of indices show general tendencies of the sustainable development of Šiauliai city. However, the choice of 20 sustainable development indicators out of 84, performed by the three experts in this research, has a major influence on the

calculation outcomes. Besides, it is doubtful if it is right to allocate the same base values for all the indicators in 2008. For instance, it is likely that air pollution by solid particles is a much more important indicator than waste removed from illegal dumping grounds. But in order to allocate different values for the indicators, a much more complex expert evaluation is needed. This research, as was mentioned in Part 2, uses one of the most popular methods of calculating sustainable development indices, namely, the Compass method.

It is suggested by the research for the municipalities to include into their strategic plans a system of evaluation of indicators reflecting the coherent development of the city: the system should analyse economic, social, environmental and governance progress of the city. Such evaluation system would help to simulate future prospects for the city, having assessed the impact of the aims, objectives and priorities of strategic planning on the sustainable development spheres.

The United Nations Resolution adopted by the General Assembly on 25 September 2015 "Transforming our world: the 2030 Agenda for Sustainable Development" [16] also recommends integrating strategic planning of the city with sustainable development analysis. The document sets 17 sustainable development goals. Goal 11 states: Make cities and human settlements inclusive, safe, resilient and sustainable. Target 11b of the goal prescribes: by 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change. How all this can be implemented is the question for the nearest future.

Conclusion

Sustainable development is one of the most important public policy priorities, implemented at the regional, national and local levels. Global documents state that most problems arise due to the after-effects of local activities and the irresponsibility of local communities. That is why the involvement of urban municipalities and communities in sustainable development processes and collaboration is viewed as one of the most important conditions for sustainable development. Strategic planning of the city, geared towards integration of sustainable development dimensions, can match quality meeting of the needs of the local population with the sustainable development of the city.

Šiauliai city municipality has no system of sustainable development indicators, which would allow evaluating the sustainability of the city. The research demonstrated that environmental and social development indicators have been growing, while economic and governance indices have been decreasing. Although the general sustainable development index of the city grew by 25 per cent between 2008 and 2013, uneven development of separate spheres shows the drawbacks of the sustainable development of the city. The sustainable development of the city is declared in strategic documents, but they lack a systemic analysis of sustainable development indicators. In order to achieve the sustainable development of the city, an integrated sustainable development strategy, in which economic, social, environmental and governance interests would be adjusted, is of paramount importance. Besides, the city lacks a community spirit, initiative and active participation in sustainable city

governance processes. The diagram of the sustainable development vision of the city, based on the outcomes of the present research, can help designing an integrated sustainable development strategy for the city.

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THE PERILS OF DRAWING FROM EUROPEAN FUNDS IN PUBLIC EDUCATION

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Abstract: *The article focuses on specific perils which are dealt with in public education when drawing from financial resources of European funds. The article analyses individual problems encountered by schools in the course of already finished programming period 2007-2013 and it also demonstrates particular absurdities when inspecting the drawing from the financial resources. In the first part, the perils of project management are introduced in general perspective, which is universal for any other project. However, the perils are specified from the perspective of European structural funds and education. In the second part of the article, examples of particular problems of drawing from European subsidies in the sphere of public education are published, with their consequences in case of projects financed in this way. The aim of the article is to draw attention to the possible menaces which are connected with receiving of European funds for applicants, or more precisely for recipients, and to outline ways (recommendations) how to prevent such menaces.*

Keywords: *Programming period, Project, European funds, Perils.*

JEL Classification: *O22, H43, G32.*

Introduction

When the Czech Republic joined the European Union in 2004, a plenty of opportunities presented themselves with which it was impossible to predict the effects they will bring for the individual economic entities. The chance to obtain some financial resources to implement its own project became very tempting. A plenty of applicants, eventually becoming the recipients, would not always perceive the risks related to such financial drawing. The programming period 2004-2006 marked the beginning of financial drawing for the Czech Republic being the full member of the European Union, yet it was not until the programming period 2007-2013 that completely new opportunities for projects emerged.

In the programming period 2007-2013 the Czech Republic was allowed to draw up to 26.7 billion euro from European funds. In addition, the Czech Republic was obliged to fund up the rest of the money from the state budget. The Czech Republic established a scheme of programming documents together with institutions to request financial resources from the European Union – just as other members of the European Union did. The basic programming document of the Czech Republic for drawing funds from EU in the period 2007-2013 was presented by the **National Strategic Reference Framework** [5]**.** In most cases the co-financing agreement was in a ratio of 85:15 (EU: Czech Republic). The applicants, or rather recipients representing the public sector, never had to be concerned about co-financing using their own financial resources, whereas for the private sector it was an issue.

Such experience might have created an illusion that the money from the European funds can be used almost to anything, which often resulted in a very lax attitude towards the financial administration of the projects. The major part of the problems that the recipients face when drawing European funds are in fact of a financial character. There were other problems too, resulting not as much from the false system of European funding, but more from the regulations on the national level of the Czech Republic that seemed to be too strict. Before presenting the individual problems and risks in the following chapter, it is necessary to point out one frequently neglected fact.

The monitoring bodies both in the Czech Republic and the European Union, and the managing bodies of the individual operational programmes as well were never really interested whether there was any successful achievement with the project or whether a positive shift was accomplished. It was all merely about monitoring the indicators, oftentimes badly adjusted, that converted everything to numbers instead of allowing for the quality or added value that was created compared to the starting point of the projects. We believe that it is a big pity, since a huge amount of work, not noticed at first sight, has been sidelined.

1 The risk management of the European funds

In this chapter we will demonstrate in general the basic perils of the project management both related to drawing money from European funds as well as to the national grant schemes. The perils might be either predictable and easily influenced, or hard to influence [10]. When dealing with drawing money from European funds we usually encounter the first group of perils, although the perils from the second group were also noticed. One of the perils which is hard to influence is for example a change of legislation in the field of tax laws, namely a change of VAT. When preparing the project, it was assumed there will not be a change of VAT.

The risk management plays the key role in the project management. Provided it is set up effectively from the very beginning of each project, each recipient should then be protected by the organization´s inner control system. When drawing financial resources from European funds, the recipient must also follow the documentation of the relevant operational programme. It is a recipient´s manual in which the mechanisms of the financial management in relation towards the provider are determined.

Even if the project is well-planned, the perils cannot be eliminated. The pressure to reduce the costs, the deadlines of individual parts of the project or quality demands all make it more difficult to achieve the intended project objective. The typical features of a risk situation [8] are incomplete information and a chance that the original plans will not be as expected. Thus the main role of the risk management is to secure as much information as possible and minimize the uncertainties during the scheduling and management process.

The project management of public projects is specific in some ways [12]. These specifics are related to the formal law regulations regarding the activities of the concerned subject within the public sphere, or laws and regulations that adjust the

ways of financing of the public project, including the public control of all public projects. Now we will successively present the individual key perils.

2 Portfolio of the perils of European funds

From the recipients´ perspective the most serious perils are those that are connected to the public contract implementation. In this connection the basic peril is the **problem of contract specification** under the terms of the tender for the supplier of goods or services. The overwhelming majority of cases show an incorrectly defined specification for computer and presentation technology supplies, which is frequently the subject matter of the tender at schools, and thus it results in the problem with the transparency of the tender. Persons without an appropriate technical education, mainly in the field of IT, might unintentionally state the manufacturer of the required component (see the Appendix 2). The basic recommendation here is to fully assess the specifications of the public contract by the provider of the subsidy and point out some potential discrepancies in the public contract before making it public. This will naturally lead to a time delay, but many future problems might be prevented.

The next peril for the recipient when detecting incorrectly defined public contract is the subsequent public administration control. First the suspicion of a discrepancy is articulated and the incentive is presented to the relevant local Financial Administration (FA) to investigate the suspicion. It is called a suspicion of **a budget discipline violation.** We do not have any objections regarding the control mechanism itself that abides the lawful legal regulations of the Czech Republic. The problem arises when the relevant local Financial Administration is obliged to look into the quality of the results / outputs of the projects, while such an activity being highly qualified cannot be performed without an expert opinion. Several absurdities may also occur when performing the public administration inspection and the financial manager of the project incorrectly debits the amount for the goods or services of the project, which strictly speaking is an expense by all means. It is usually a mistake amounting to halers or crowns, when the sum of the money charged is rounded up to the whole crowns whereas the amount reimbursed from the project account is not rounded up including the difference in halers. Even in such case the managing body of the relevant operational programme submits an incentive to the relevant local Financial Administration to have it investigated.

Then an absurd situation may occur when the Financial Administration assigns an inspection group that investigates "a financial loss" amounting to 0.66 CZK (see the Appendix 1), even though the recipient has immediately rectified and explained the situation to the provider. From the economic point of view, the costs to investigate this matter exceed many times the amount being the subject matter of such an inspection. For future it would be better to specify precisely the financial limit with which it would be efficient to perform the public administration inspection at all, which would also call for a change of relevant regulations in this field, especially Act no. 320/2001 Coll., on financial control in public administration as subsequently amended [13].

Another peril is an **ordered payment of financial resources** in case when the public administration control proves a malpractice case on the part of the recipient of the European subsidy. The Financial Administration then orders the payment

including the ineligible amount stating the due period. The majority of public schools must deal with such situation on their own no matter who their founder is. The school is obliged to follow the Principles of management of state-funded institution and inform its founder about each occurrence of such malpractice. In most cases the founder cannot help the school in any possible way. Thus the school must cover all amounts from its own financial resources, which may lead to the reduction of the income resources and other operating costs. Ideally, the school might be allowed to cover the amount using financial resources from its supplementary activities and thus its main activity is not affected. The only thing possible is to convince the founder to assess each case individually, the modification of the Principles of management of state-funded institutions is not to be expected.

Almost every school came across **the peril of securing the pay-as-you-go funding** when implementing its projects. Such risk arises not only with financially demanding projects. The recipient is obliged to secure its own financial resources to cover the activities for which there are no funds from the subsidy any more when the deposit obtained at the beginning of the project was already spent. Usually the small state-funded institutions had to deal with the dilemma whether to apply for a loan or request the founder for an extra subsidy. In case of the loan there are several perils. The first one is related to the payment of the interest, when the school must carry the whole burden since the interest cannot be refunded afterwards using the European funds. The second peril is related to the expenses when some of them might be stated as illegible and thus non-refundable and the school will have to cover not only the interest but also these illegible expenses, the so called ordered payment.

An analogous peril apart from the pay-as-you-go funding is the **peril of delayed payments on the part of the provider of the subsidy.** To secure a better financial coverage, the interests from the loan should be reimbursed directly from the subsidy provided. Such suggestion would have to be discussed by the European Commission and each project would be obliged to state such cost item in its budget, which is currently almost impossible to do. Moreover, it would be very difficult to estimate in advance the level of the interest rate and assess the sum from which the interest would be calculated.

Another category of perils – also closely connected with financing, includes **the peril of securing the sustainability of the project after its ending**. The programming period 2007-2013 was specific in that the majority of the projects were obliged to secure their own financial resources in the so called sustainability of the project for the next five years after the financing from the European funds was finished. During this five-year period of time every recipient is obliged to secure the sustainability of the chosen activities which he or she had made a commitment and is included in the relevant article of the Decision of the fund provision. The costs for these activities are covered solely by the recipient. Some of the schools failed to pay attention to the issue of sustainability at the early stage of the project preparation and failed to cover the expenses using the operating costs of the state-funded organization. When the provider of the fund discovered that the activities were no longer implemented, this fact was reported to the local Financial Administration to look into it. The next step taken was similar as when suspecting the budget discipline violation.

Some of the recipients were obliged to return a certain percentage from the subsidy which would take them several years even after the termination of the project. In the present programming period 2014-2020 no sustainability is required any more.

3 Examples of bad practice

In the previous chapter possible risks connected to the drawing from the European funds were explained in the general perspective. Whereas in this chapter the attention will be paid to the actual **examples of the so called bad practice**, when the institutions of public education were not successful in drawing from the European funds due to the fact that they acted in such ways that led to a risky situation. We are stating here the particular examples of the concerned public schools and the particular problem that occurred during the project controls.

The principles of transparency were violated during the tender called „The school to the power of two" within the project „EU Money to Schools". The Hnojnik Primary and Kindergarten School set the evaluation criteria without specifying how these criteria would be evaluated. The inspection of the Financial Administration of the Moravian-Silesian Region detected the **budget discipline violation** when the contracting authority was obliged to perform all acts unambiguously, clearly and understandably when setting the tender [14]. The school was obliged to return just 25 % from 686 thousand CZK and the same amount of money as a penalty as the inspection of the Financial Administration was carried out within the duration of the project. Should the inspection detected this problem after the project had ended, the school would have to return the whole amount of the subsidy.

A great deal of projects failed due to their **non-transparent project documentation processing**, as a lot of schools asked the companies to process the tender for them while the same companies then took part in the tender. The schools, or more precisely their founders, deprived themselves of the chance to choose the best bid, as the contract conditions were „tailored" to the company that was assisting the one or the other school. The schools thus violated the internal rules for providing European subsidies [1]. Both Ústecký and Karlovarský Regions allegedly committed a mistake the same way when distributing funds from the development operational programme for the North-West Cohesion Region in the project of a new building of the Integrated Secondary School of Technology and Economics in town of Sokolov. The regional administration assessed the bids not only by their price, but also by the ability of individual company to harmonize the construction with the daily operation of the school, and thus the criterion of the tender was subjectively influenced to a great extent and was not described in the project sufficiently. The subsidy itself was examined by the European Anti-fraud Office. The European Commission made a financial adjustment and the amount of the subsidy was reduced [6].

A construction of a new kindergarten in Poběžovice in Domažlice region was also involved in **the correction of the European subsidy** amounting to 12 million CZK. In this case the city as the founder of the school made a mistake when the tender for the construction of the school was prepared when setting a criterion which could have been discriminating. The criterion that was incorrectly set is **the so called index of credibility for the companies** that are applying for the contract. Here Poběžovice

municipality allegedly set the index level too high and thus discriminated companies that could not reach it. It has to be also stated that this financial correction was assessed by the Regional Council of the South-East Cohesion Region. The Office for the Protection of Competition also looked into this matter but did not find anything faulty. Yet the Regional Council is not obliged to accept the verdict of the Office for the Protection of Competition, and it actually did not accept it in this case [16].

The Primary School in Veřovice municipality in Novojičínský region allegedly **behaved in a discriminatory manner when setting criteria of the tender** for requesting the funds to purchase modern teaching aids from the Operational Programme Education for Competitiveness. The inspection of the Ministry of Education, Youth and Sports found irregularities in the tender for a technical equipment supplier. The Financial Administration ordered the school to return the subsidy amounting to 420 thousand CZK together with 200 thousand CZK as a penalty [17;3].

A faulty billing of the European subsidy was detected in case of the Nerudova Primary School in Říčany. In this case, the final amount of the provided subsidy was wrongly rounded up during the final billing of the project on purchasing classroom equipment. It is absurd that the value of this failure was only 40 halers, when the Central Bohemia Region as the responsible body for the European subventions billed in its final invoice 40 halers less and thus this money was missing in the final billing of the project [7].

Due to the **failure in the accounting** of the educational project, the Integrated Secondary School in Cheb was obliged to return circa 3.4 million CZK from the European subsidy. The discrepancies were detected by the inspection of the Karlovy Vary Region. It was found out that nonstandard operations occurred in the project accounting and some proportion of finances was used in contradiction to the project documentation [15].

Another frequent risk of failure of the European projects is **not observing the period of sustainability** which has been repeatedly pointed out by the Supreme Audit Office [11]. For example the Primary School Pecka near the Giant Mountains guaranteed sustainability when using the European funds to convert the school building to be barrier free and reconstruct some of its vocational classrooms. Here the problem occurred when the building with the reconstructed classrooms for which the school obtained the subsidy had to be closed down due to the lack of students [2]. Generally, the risk of „non-sustainability" is a big threat for small schools in municipalities where population number and natality is decreasing and schools are not able to meet the obligations regarding their sustainability.

Another example of **violating sustainability conditions** is the project of the Ministry of Education, Youth and Sports to create centres for support of inclusive education at primary schools for more than 133 million CZK. In this project nine regional centres for support of inclusive education were closed down without any compensation after the project had finished. Another problem is funding of projects during the period of their sustainability, which is usually covered by public body (founder) and thus it is not directly funded by the European funds any more. This risk

has been widely debated in the media in context with several research and development centres that were funded by costly projects of the Operational Programme Research and Development for Innovations. Based on the inspection of the Supreme Audit Office of the Czech Republic five out of eleven centres are being confronted with breaking the condition of sustainability, as they are failing to find some other financial sources, primarily in the application sphere. The attention has to be paid to the practical and effective utilisation of the research results of the projects even after their termination, which means that the EU subsidy should not only support the project itself but also its long-term improvements in the given sector. And this fact was omitted during the submissions of the project proposals [11].

A malpractice when selecting the supplier happened when the Secondary School of Nymburk allegedly committed a mistake when organizing a trip to England together with language courses for teachers and primary and secondary students from schools in Nymburk region under the Operational Programme Education for Competition under the patronage of the Ministry of Education, Youth and Sports. The mistake was caused by addressing only 4 instead of 5 potential suppliers, and thus the obligation to address more bidders was violated. This was rather a formal mistake, not an irregular use of European funds. The Council of the Středočeský Region exempted the school from returning 75 % of the amount (Region is the founder of the secondary school) and school was obliged to return the remaining 25 % using its own resources [4].

A mistake while drawing the European money has been also done by Dymokury municipality in Nymburk region. The Masaryk Primary School received money from the project „EU Money to Schools" (around 1 million CZK), but was obliged to return some part of it (approximately 347 thousand CZK) due to the **adjustment of the original contract for work** with the company providing the purchase of interactive boards and computer room equipment. An amendment of the contract, even with a good intention, means violating the rules that were set when implementing the European projects. The contract was adjusted so that the school would not be behind with the payment and thus avoid sanctions that would have to be paid from the school´s own resources, as the money from the Ministry of Education, Youth and Sports had not been credited yet [7].

It is quite treacherous if the third persons want to enrich themselves from the European funds. Such situation caused the failure of the project „EU Money to Schools" in Ploskovice in the Ústecky Region. The local primary school purchased rather costly computers for 700 thousand CZK and by drawing money from another project called „Step by Step" allegedly equipped classrooms for social science for almost 5 million CZK. The new management of the school tried to terminate the second project by mutual agreement being aware of the overpricing, but failed to do so. There was no manager of the project and no monitoring report, so the Region withdrew from the contract due to a breach of the contract obligations and the school was obliged to pay back the deposit of almost 1 million CZK together with the sanction. As was found out by European inspectors, some of the city councillors and regional politicians across the political spectrum „were making money" from the projects in the same way [9].

Conclusion

Drawing from the European funds opened new horizons for the Czech educational system. However, some of the school failed to take it seriously or were not aware of possible threats that are linked to the administration of the European subsidies. The last programming period showed a set of risk situations in a wide spectrum. These perils and mistakes should be taken as a lesson to be learnt for schools that are interested in drawing from the European funds in the programming period 2014-2020.

The contribution was aimed to describe these risks and pointed out the necessity to pay an increased attention to the quality of the project management which should always respect the principles of the risk management.

Acknowledgement

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Annexes

1) The inspection of the completed project of the university in the Moravian-Silesian Region in 2012

Overview of inspections after the completion of the project

The name of subject that does/did the inspection:	Ministry of Education, Youth and Sports, department of controls, the Financial Administration of the Moravian-Silesian Region
Name of inspection:	Public administration control
Date of start of inspection:	October 10, 2012
Date of end of inspection:	October 10, 2012
Corrective measures completed:	Yes
Description of corrective measures:	On the basis of findings non-eligible costs were identified amounting to 0.66 CZK, VAT included. This was dealt with after the completion of the inspection as a suspicion of a discrepancy and was submitted to the relevant financial administration under the internal number..... The report on tax control number..... from the Financial Administration of the Moravian-Silesian Region is attached.

Source: Own processing and adjustment: Benefit 7 Application (cit. 2016-09-07)

2) Findings of the inspection group regarding the project of the primary school in the Moravian-Silesian Region in 2013

Based on the performed inspection it was found out that the processor AMD Athlon^{TM} Dual-Core/Triple-Core was required for the IT set by the taxable entity, that is a processor of the particular producer and of the particular type.

Due to the exact specification of the IT set, the taxable entity was not in accordance with the Article 7.5.3. of the Public tender, the part Basic definition of the field assigning public tenders of the Guide for applicants and recipients No. 1.4 of the Operational Programme Education for Competitiveness. The guide states that it is inappropriate when announcing the tender opening, or more precisely the Call for Proposals, to state requirements or references to business companies, titles or names and surnames, specific labelling of goods and services that are related to a particular person or its organization segment, invention patents, utility models, industrial models, trademarks or origin labelling, if this could lead to advantages or exclusions of some of the applicants or certain products.

By this behaviour the taxable entity did not abide the provisions of the part II – The obligations of the subsidy recipient, point 1 and 5 of the decision - when assigning tenders within the project the recipient is obliged to observe the rules of the public tender that are described in the Guide for applicants and recipients No. 1.4 of the Operational Programme Education for Competitiveness. As a consequence of the budget discipline violation, according to the part IV – Penalties and payments, point 2, paragraph 5 of the decision, the recipient is obliged to return the amount equalling the value of the tender to which the budget discipline violation is related to, thus the amount is 399 903 CZK.

Source: Own processing and adjustment: Protocol on acquaintance of tax subject with control results 7 (cit. 2016-09-07)

THE ROLE OF SOCIAL ENTERPREUNERSHIP IN PUBLIC ADMINISTRATION

Mirka Wildmannová

Abstract: *Social enterprises are becoming a powerful and effective tool for the employment of disadvantaged people in the labour market and are an effective took of state and local governments in the fight against social exclusion, rising unemployment and segregation of excluded localities. The Czech Republic is among the countries that discover the benefits of social entrepreneurship, especially at the regional level. Experience from abroad clearly indicates the positive impacts of social entrepreneurship on the national economy.*

The paper aims at identifying the main barriers to the activities of social enterprises. The conclusions are drawn on the basis of a questionnaire survey conducted in social enterprises. The paper investigates mutual relations and the role of social entrepreneurship in the segment of social economy and public administration.

Keywords: *Social economy, Social policy, Public administration, Social enterprise.*

JEL Classification*: L31, M14.*

Introduction

Structural unemployment, social exclusion, wage differentiation and other issues related to social policy and the urgency of a more active integration policy - these are problems that the society is forced to react to and find a solution in expert discussions. One of the alternatives to deal with the social problems of unemployment is social economy and social entrepreneurship. It is an alternative and a complementary option to handling social issues - social exclusion, exclusion from the society, economic problems - unemployment, low purchasing power of some groups of inhabitants, environmental problems - sustainable and regionally balanced development. The concept of social entrepreneurship is supported by the in a number of countries. The Czech social entrepreneurship act is now commented on. Above all, it is about the recognition by the society itself in the form of support, regulation and legislation on the part of public authorities.

1 Outlining the issue

The Czech Republic is one of the countries that are discovering the potential benefits of social enterprises. As mentioned above, the social entrepreneurship act is now in the comment process. Non-profit sector has not been transformed to other legal entities yet. The experience with a well developed social economy sector from abroad (Italy, Sweden, France, Finland etc.) clearly identifies positive impacts of social entrepreneurship on national economies, public economy and the society as such.

1.1 Theoretical definition of the subject matter

In terms of the third sector, the social economy is considered as an alternative to the public sector and the market. The traditional European concept implies connections with associations and cooperatives, unions and foundations that employ people from disadvantaged social groups. The society highlights the economic, social and local importance. [4]

The topic of social economy appeared for the first time in 1967 during the World Exhibition in Paris and the concept started being developed around the principles and ideas of social justice and solidarity. In 1980, the Social Economy Charter was drafted and France became the cradle of social economy. The Charter defines the main shared values of stakeholders involved in social economy as a democratic principle of decision-making, principle of free participation of members in the organisation, principle of utilising profits in favour of the members' interests or interests of the social economy organisation. [1]

The European Commission has supported the social economy and entrepreneurship mainly in terms of defining and developing four pillars of social economy. In 1989, the European Commission published a report on social economy *"Social economy enterprises and implementation of internal market without borders."* In this period, the Directorate General of the European Commission was established and the European Parliament set up a parliamentary group for the social economy. [14]

Since 2008, the social policy stakeholders have joined forces (CEP - CMAF - European Standing Conference of Co-operatives, Mutual Societies, Associations and Foundation) within the European Standing Conference of Cooperatives, Mutual Societies, Associations and Foundations and established *Social Economy Europe*. The aim was to draw up the European Charter of Social Economy. The Charter defines four forms of social enterprises: cooperatives, mutual societies, associations and foundations. [12]

The European concept of social economy is based largely on studies conducted by the research companies EMES and CIRIEC. Both these companies define the social economy through entities established on the basis of a combination of legal-institutional and normative approach. The principles in both definitions include private character of the entities, autonomous decision-making, economic activity and the possibility of redistributing profits. [5]

1.2 Social entrepreneurship

The definitions of social enterprise and social entrepreneurship are not uniform. According to Hunčová (2007), the concept of social enterprise is built upon on partnerships between the public and private sectors in providing public services and promoting public employment policy. [6]

Danish Technological Institute (DTI), which is actively involved in social innovation, defines social business as "a business with primarily social objectives where economic profit is primarily reinvested in the business for the same purpose or in the development of the local community and therefore is not intended to maximise profits for owners and shareholders".[3]

The social enterprise is a business that wants to do things in a different way, with other motivation values. Social enterprise is not automatically every employer identified as such. Neither is it every socially responsible company as it is often established for profit, nor socio-therapeutic workplaces which primarily focus on services for their clients. [8]

Social enterprises try to meet the local needs using local sources, they enter into local partnership initiatives and contribute to local development. [9]

1.3 Legal environment

In the individual EU countries there is no uniform model of European social economy law. Social economy is legally recognised in selected EU countries. [7]

Tab. 1: Overview of countries with social economy and social entrepreneurship legislation

Country	Legislation adopted in	Name of law
Finland	2003	Act on social entrepreneurship
Lithuania	2004	Act on social entrepreneurship
Slovakia	2004	Definition of social enterprises under Act No. 5/2004 Sb, on services in employment
Italy	2005	Act on social entrepreneurship
Poland	2006	Act on social cooperatives
Belgium	2008	Regional decree on social economy
Spain	2011	Act on social economy
Greece	2011	Act on social economy and social enterprises
Slovenia	2011	Act on social entrepreneurship
Portugal	2013	Act on social economy
France	2014	Act on social and solidary economy

Source: [12]

Social enterprises are subject to regulations introduced by a number of laws; however, none of them defines the term social entrepreneurship. Social enterprises are mainly focused on creating jobs for disadvantaged people.[16] Once the Czech Republic was established, the law took over regulation concerning non-profit sector

entities (civic associations, foundations, churches) and the conditions for doing business and manage assets underwent only partial changes. It can be stated that the law of the Czech Republic does not prevent from social enterprises but des not promote them either. There are no rules set for social entrepreneurship such as the rules of profit. [13]

According to Vyskočil, social enterprises are governed mainly by the following acts:

- Act no. 89/2012 Sb., Civil Code

- Act no. 90/2012 Sb., On Business Corporations

- Act no. 563/1991 Sb., On Accounting

- Act no. 455/1991 Sb., On Trades (+ Act on doing business in tourism etc.)

- Act no. 262/2006 Sb., Labour Code

- Act no. 137/2006 Sb., On public procurement

- Act no. 435/2004 Sb., On employment. [17]

2 Methods

This paper aims at identifying the main barriers to the activities of social enterprises. The paper investigates mutual relations and the role of social entrepreneurship in the segment of social economy and public policy.

To identify the main barriers to the activities of social enterprises a questionnaire survey was used. The form was distributed to 100 social enterprises, the selection was random and use was made of the Directory of social enterprises on the České sociální podnikání.cz website registering 230 social enterprises (as of 31st August 2016). Registration in the Directory of social enterprises is voluntary and therefore the exact number of social enterprises in the Czech Republic currently operating can not be determined. The questionnaire survey was carried out in spring 2016, response rate was 30%. The online questionnaire contained 10 questions, of which some questions were open. The questions concerned mainly the legal form of the enterprise, reasons for selecting the legal form, strengths of social entrepreneurship, problems with entrepreneurship, funds used for business operations (various loans, operating subsidies, grants, donations etc.), opinions on the legislation, employment of disadvantaged groups and support by public administration and the state.

3 Results

The questionnaire was anonymous, the responses were subsequently evaluated with the results presented below.

As regards the interviewed entities, the prevailing legal form was commercial company (48%). The respondents indicated that they wish to be a "normal" business which means that they prefer the legal form of commercial companies.

As regards employment, they clearly indicated that they employ disadvantaged groups (this was the response provided by over 70% of respondents), mainly people

with disabilities and the long-term unemployed. The respondents identified the social dimension of their business as a strength.

As regards financing, the answers were identical: most of the social enterprises receive contributions for their employees (45%), which explains the answer to the question about the strong aspect of social entrepreneurship - employment of disadvantaged people. Other major funds are in the form of their own resources. The respondents often mentioned the discrepancy between operating and investment subsidies. As the main source of funding they reported EU funds (54%) and grants from other entities (24% - in the same proportion they answered that they did not receive any subsidies).

As regards the profit over the past year of doing business a total of 70% of all respondents answered positively. This indicates that social entrepreneurship develops in a positive direction and it proves viability of this kind of business.

The respondents most often apply the Employment Act, tax law, hygiene regulations, Trade Licensing Act, Civil Code, Business Corporations Act and standards concerning the physically handicapped.

The question of what change or support from the government the respondents would appreciate was answered as follows: clear definition of social entrepreneurship, better financial support, tax incentives, changes in public procurement and public awareness raising and promotion of social entrepreneurship.

4 Discussion

What role is played by public administration in social entrepreneurship?

As part of the theoretical definition of social entrepreneurship the following definition was adopted "*the concept of social enterprise is built upon the partnership between the public and private sectors in providing public services and promoting public employment policies*" [6]. This indicates that the process of social entrepreneurship must be implemented in partnerships between social business and public administration. This was confirmed in the questionnaire survey where the most employed group was disabled people. This is also confirmed by another survey conducted at the Faculty of Economics and Administration in spring 2014 where the respondents were beneficiaries - social enterprises within Call 30 "Social Economy". The respondents here most frequently employed people with disabilities. The businesses receive contributions for these people from the labour offices. There is a clear line of cooperation with labour offices and search for suitable job seekers. The most commonly employed group of people with disabilities is people with physical disabilities.

Another role of social entrepreneurship is the social dimension. It's not only about employing the excluded people in the labour market, but mainly about redistribution of profits back into the organisation. Here the social enterprises may redistribute their profits into investment processes or into staff training.

A concrete example of cooperation between social enterprises and public administration is the development strategy of the South Moravian Region. The short

implementation plan titled "Human Resources Development Strategy of the South Moravian Region 2016 - 2017" states that incubators for social enterprises will be established with this activity managed by the Chamber of Social Enterprises (association of legal entities) and the co-operating entities being the South Moravian Region and municipalities [15]. Further cooperation is envisaged with the South Moravian Innovation Centre, which is a Europe-wide recognised authority in the field of innovation and incubation processes in the Czech Republic and the Brno university.

The main stakeholders affecting social enterprises are public administration, the European Union and the nonprofit sector. The most engaged entity is the public administration. The problem is on the part of the state as social economy is not defined and what is also missing is allocation to a respective government department. Currently, the social economy and social entrepreneurship falls under the Ministry of Labour and Social Affairs - social benefits, under the Ministry of Industry and Trade -economic benefits and the Ministry for Regional Development - local benefits. This issue is also handled by the Government Council for Non-Governmental Non-Profit Organisations and the Agency for Social Inclusion [2]. In terms of the concept of setting up the social entrepreneurship, the main role must be played by the state and public administration, which will define legal criteria for social enterprises. All this must respect the socio-economic trends resulting from the development in Europe [18]. Consequently, the public sector will establish the environment for social activities within the context of regional and local policies - for the establishment, support and development of social entrepreneurship.

Another outstanding issue related to social entrepreneurship is the very absence of a social entrepreneurship act. Most of the respondents in our survey confirmed the need for statutory regulation of social entrepreneurship associated with better systematic financial support, tax reliefs, etc. The same results were obtained from the questionnaire survey conducted by P3 in 2015: 80% of respondents expressed a positive attitude to the adoption of the social entrepreneurship act. [13]

Currently, the act is being drafted in the Czech Republic. Along with the preparation of the social entrepreneurship act, the development strategy of social entrepreneurship in the Czech Republic is being drawn up by the Ministry of Industry and Trade. The future social entrepreneurship act applies especially to SMEs. This was also confirmed by the survey where the respondents were mainly small businesses. The social entrepreneurship act has also impacts both on public budgets and business environment. The social entrepreneurship act should not create a new legal form, it only sets the characterisation to be met by the natural or legal business entities that wish to enjoy the status of a social enterprise, or the integration social enterprise, and benefits arising from such a status.

The development of the legal environment for social entrepreneurship will contribute to the development of social economy. The legal regulation of social enterprises and the subsequent definition of specific benefits for these businesses will encourage the initiative of individuals and communities related to the establishment of social enterprises in order to actively address problems in their municipalities and regions. The development of social enterprises will also contribute to the employment of disadvantaged people in the labour market and will address problems associated

with poverty and social exclusion. Last but not least, the clear legislative basis for the characterisation of social enterprises can also facilitate decision-making of financial institutions whether these enterprises should receive financial support, e.g. loans and credits under certain favourable conditions. [11]

Conclusion

The paper focused on identifying the main barriers to the activities of social enterprises. These barriers were identified on the basis of a questionnaire survey in a group of social enterprises. Based on the responses we examined mutual relationships between social enterprises and public administration.

The main barriers to the development of social enterprises are the non-existence of the social entrepreneurship act – the organisations are primarily business corporations (predominantly limited companies), insufficient determination of whether the business is an integration social enterprise and what criteria should be fulfilled. Social enterprises are not supported by public processes - such as socially responsible public procurement. What is also missing is a system of financial support for social enterprises.

The discussion shows that this does not concern only the social sphere but social entrepreneurship consists mainly of business environment and support for local initiatives. All this should be reflected in the drafted social entrepreneurship act that would be appreciated by a majority of the survey respondents. In parallel with this act it would be advisable to develop an interconnected network of all stakeholders: i.e. public administration, business sector and local stakeholders.

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PARETO CHART: A TOOL TO EVALUATE DEVELOPMENT OF REGIONAL DISPARITIES

Pavel Zdražil, Petra Applová

Abstract: This paper seeks to demonstrate how the Pareto chart can be used as a tool to evaluate development of regional disparities. The introduction of the chart is followed by its application to the regions of Visegrad Group states. The σ-convergence approach has been used as a benchmark to examine the estimates arrived at using Pareto chart. The results found that Pareto chart has a good predicative ability, since all conclusions of its application on regional disparities development have been confirmed by σ-convergence analysis. Moreover, the chart includes additional information about changes in some sample sections, growth, and eventually order. This extra information may be used to develop more comprehensive conclusions about changes in disparities over time. Furthermore, interpretation of the chart is very easy and calls for no extra knowledge acquisition in its use, which is an advantage for other fields' researchers, bureaucracy and political decision makers, and both expert and non-expert public. With all that in mind, we guess the Pareto chart is a very interesting tool to evaluate development of regional disparities, which can be used as the sole source of information or as a complement to another approaches of disparity measurement.

Keywords: Disparity measurement, Pareto chart, Visegrad Group, Development.

JEL Classification: R12, O47, Y10.

Introduction

The long-term existence of significant socio-economic disparities across societies led towards quite logical attempts of analytical quantification during the development of economically oriented disciplines, while the quantification is a prerequisite for disciplines' effective directing. The reason for the interest in the issue of disparities is obvious, since economic systems burdened by high inequality are seriously limited by this handicap, and cannot fully realize their growth potential, thus effectively facing a significant obstacle to their own development [1]. Restrictions on economic performance is then also, of course, reflected in other related, and for society, highly sensitive areas, one of which the level of living standards of the population may be mentioned in particular [15]. In this context, however, we cannot completely forget some positive effects generated by disparities - but just because of the existence of certain, however "reasonable" differences, can be regarded as a stimulus and factual condition for progress [6]. In other words, socio-economic disparities should only be regulated, not entirely eliminated in order to the growth and development of any territorial unit burdened with them. Knowledge of the extent and development of disparities can literally be described in the best way as a cardinal prerequisite for development, as the realization of any activity with the aim of their influencing may not be desirable for growth and development, and moreover these activities are

usually associated with spending a considerable amount of economic resources, whose economic efficiency and effectiveness is necessary to systematically evaluate [9].

1 Statement of a problem

Although the issue of disparities is a long-term and global problem at the general level, an important impulse, which in the development of their studies in the last decades has significantly been contributing, is the effort to achieve solidarity across EU countries and regions. The availability of a sophisticated analytical apparatus for estimating regional disparities is an essential prerequisite for the formulation of successful regional policy, as well as an evaluation of its application capabilities, and necessary continuous correction. Within the theoretical and practical applications, and over time, some basic directions came into existence, through which we can approach regional disparities for evaluation. Although the methods used under these directions are generally oriented towards a single goal – to quantify the disparities development – followed on from the same neoclassical postulates – particularly the natural tendency of economies to a state of their long-term equilibrium – and generally they very often agree in results, it being necessary to remark the ways their implementation substantially differ. In terms of the most common approaches to economic disparities evaluation it would probably be possible to indicate the following directions:

- β-convergence, which is based on the assumption of the inverse relationship between the level of production and long-term growth, while generally using estimations through various forms of linear, or linearized, regression models [11, 3, 2];

- σ-convergence, which is also based on the assumption of the neoclassical natural tendency of economies to a common long-term equilibrium, while generally lying in the evaluation of dispersion or variability across a reference sample [2, 3];

- data distribution analysis by means of using non-parametric estimations of the shape of density function, usually based on the description of Markov chains, or transition probability matrix [14];

- econometric approaches based on the analysis of deterministic and stochastic trends' components of time series through cointegration analysis [4, 13].

Methodological variability, on the one hand, allows selection procedures due to a different extent of the accentuation of relevant variables more suitable to the specific objective evaluation; on the other hand, this freedom attributes a certain degree of entropy to the results of the evaluation, because the choice of specific methods is subjective to a large extent, while the analogy of their results is not universal. Concerning the abovementioned theoretical measurement directions of disparities development, it can be generally stated that, in principle, it is not about the approaches that would have mutually substituted, but it is rather about the complements, since the advantages of one group of methods can be generally considered as the disadvantages of another one, and vice versa. For example, in β-convergence and σ-convergence concepts, we may mark as crucial advantages the

lower knowledge requirements of mathematical and statistical apparatus, the calculation (un)demanding and easy interpretation of results. On the other hand, the results of these methods are basically just summary characteristics describing a given territorial unit, which completely abandons the provision of detailed information about their own composition, and thus about causes of the development in terms of changes within the sample regions. Analogously opposite conclusions can then be developed towards methods for disparities evaluation by means of analyzing the data distribution and econometric models, which usually provide "complete" information that is possible to de-compose to the level of individual regions, or pairs, and therefore identify the partial causes of development tendencies. These methods are then logically more demanding, particularly when their interpretation requires a deeper methodological knowledge of both the presenter and the recipient's side.

Given approaches may also be considered in certain exaggeration as opposite poles however, lacking the "middle way" between them, which would offer simplicity and easy interpretation, yet maintain sufficient information for a basic partial analysis. The method, which would have offered the usability potential not only in the context of empirical studies, but the results would have been, without necessity of more detailed study of partial steps, clear enough also for inexpert audiences from other fields, like the political-bureaucratic apparatus, but also the wider public. The authors of this paper assume that the so-called "Pareto analysis" or "the Pareto chart" could be an instrument suitable for the number of the abovementioned points, as well as serving as a suitable form of evaluation of the development of regional disparities.

In connection to the abovementioned, the aim of this paper is to demonstrate the usability of an alternative approach to the evaluation of the development of regional disparities, specifically of the application of the Pareto chart, and assess its usefulness as a tool which through graphic expression to some extent is able to combine the advantages of the undemanding and simple interpretability, as well as preserving information useful for a more detailed evaluation of specific causes of development for the disparities of the whole unit.

2 Methodical

As already indicated, this paper orients its focus on the evaluation of the advantages of regional disparities by using the Pareto chart, so it is certainly quite appropriate to specify this tool. Generally, the Pareto chart is designed as one of the seven basic tools of quality improvement defined by Kaoru Ishikawa [7]. In the Juran defined concepts [8] Ishikawa used, a diagram is essentially an application of the famous Pareto 80/20 rule, which has been interpreted by using a combination of column and line graphs simultaneously capturing the sequence, frequency and cumulative relative frequency within a given sample. In the field of quality management, this diagram is often used as a tool for simple error analysis. Its application, however, downright offers itself in the regional disparities evaluation since the used cumulative relative frequency (line graph) is nothing else than the inverse expression of the notoriously known Lorenz curve [10], commonly used in economics to demonstrate wealth distribution in society. In combination with a (column) graph of aligned absolute frequencies, or when applying weighted values

in the field of regional development (e.g. per capita), it can then be easily read from the graph how individual parts of the sample, or even specific regions, diverge from one another.

The disparities development evaluation through the Pareto diagram then lies in the visual comparison of two or more periods. This crucial advantage of the approach is, however, its most significant drawback to some extent. Although the Pareto chart can be described as clear for comparing a single, two or three periods, its clarity undoubtedly decreases with a growing number of the compared periods within a single field of the graph. Other apparent disadvantages arising from the principle of visual comparison is a limited ability to estimate the extent of disparities, as well as the evaluation of their development in the case that in terms of the partial convergence and divergence tendencies, the individual parts of the sample are fundamentally differentiated. On the contrary, a great advantage of diagram application while comparing can undoubtedly mark the information content not only concerning the changes in disparities, but also the values of the monitored indicator and their changes, or extreme values, growth, etc., which other methods of disparities evaluation usually do not provide directly.

For the purposes of achieving the defined targets, the usability of the Pareto chart will be demonstrated on the disparities development indicator of GDP per capita (in purchasing power parity) between the NUTS II regions of the Visegrad Group countries, a total of 35 regions, of which 8 are Czech, 7 Hungarian, 16 Polish and 4 Slovak. The development was evaluated between 2000 and 2014, using source data from the Eurostat database [5]. In order to evaluate the usability of the Pareto chart method for evaluating the development of regional disparities, the findings will be confronted with the results of the disparities measurement through σ-convergence, namely by monitoring the development of the coefficient of variation. For the purposes of this paper there appears from the four abovementioned directions, the use of σ-convergence, as the "benchmark" method, seeming the most suitable because β-convergence is a formally necessary, but not sufficient, condition for σ-convergence [12], while in comparison to the analysis of the distribution by using non-parametric estimates and econometric methods, it is a very simple and easily interpretable method, not necessary to extensively delimit now. The coefficient of variation is then chosen because of its good information value, comparability and customary use in solving disparities development by using the variability in many relevant studies [16, 12].

3 Results and discussion

Disparities development in GDP per capita of regions in the Visegrad group countries in the period 2000-2014 is shown in Fig. 1. Already at first sight it is clear, that thanks to the lines expressing distribution through the cumulative relative GDP per capita, the extent of regional disparities when comparing the years 2000 and 2014 has not change so much, when their deviation from the line of equal (uniform) distribution (gray-dashed) remained approximately at the same level. The area between the lines of equal distribution and real distribution can be marked as the range of disparities, or it is equal to the Gini coefficient, which can also be used as one of the

methods of evaluating disparities in terms of σ-convergence approaches. The differences in regions disparities located between individual quartiles (Q) can be easily read from the curves and these differences are mostly very similar in both years being compared. There is a higher deflection of the curves between the most developed region and Q_3, as well as clear evidence of a relatively higher range of disparities among the regions with higher GDP per capita between Q_3 and Q_2. Furthermore, there is a convergence of both lines to the line of equal distribution in the Q_2 and Q_1 range, as well as in the bottom quartile (between Q_1 and the least developed region) which is the sign of a relatively lower range of disparities between the less developed regions.

From the comparison of lines in the real distribution of GDP per capita, it can then be easily deduced that while the disparities ranging in the bottom half of the sample remains unchanged because of the practically identical shape of the curves in both reference years, there were some changes in half of the developed regions (between the most developed region and Q_2) that are rather obvious even though they are based on visual inspection. Specifically, due to higher deflection (black dotted) line, which expresses disparity in 2014, it being clear that the disparities range between the most developed regions is higher in comparison with 2000 (solid orange line). Likewise, it is obvious that this trend is then reversed when the curve of the year 2014 converges to the curve of the equal distribution and is closer than the curve of the year 2000, while this reduction in the range of disparities is most noticeable between Q_3 and Q_2.

Fig. 1: The Pareto chart of disparities in GDP of the Visegrad Group regions (2000 and 2014)
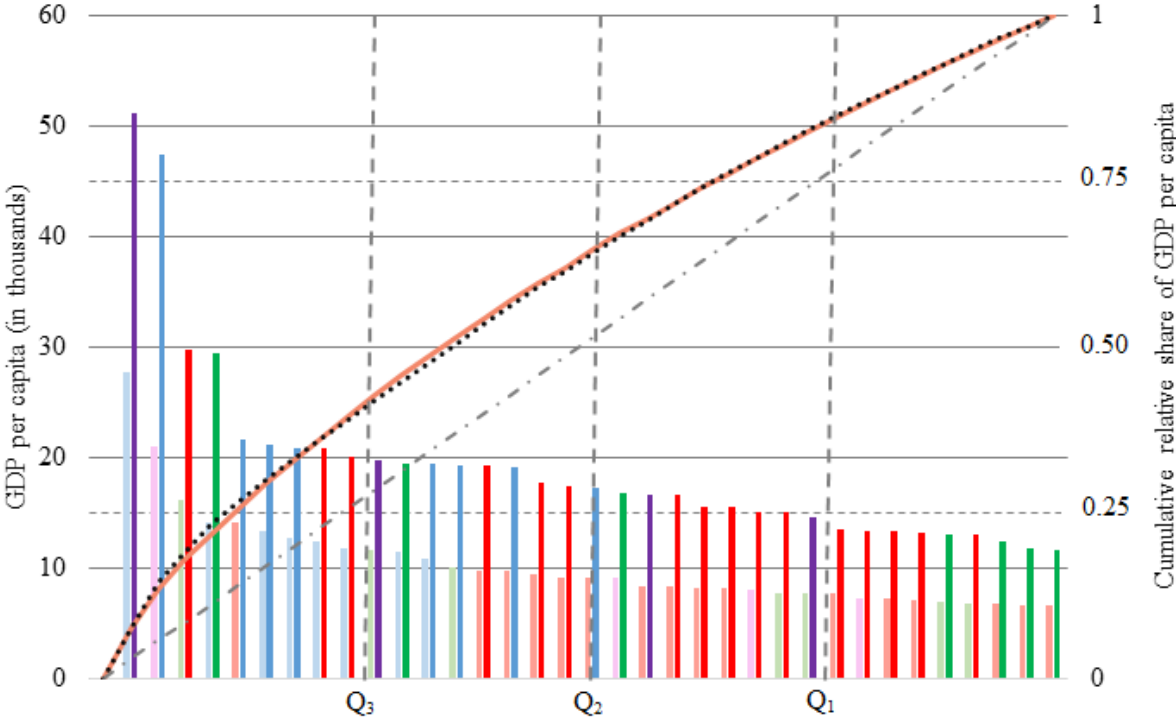
Legend: lighter colors in the columns express the GDP per capita in 2000 (blue – Czech, green – Hungarian, red - Polish, purple - Slovak regions; deeper colors represent the situation in 2014 (shades analogically), full (orange) line indicates the cumulative relative share of GDP per capita in 2000; (black) dotted line analogically for 2014; (grayed out) dot-dashed line represents the situation of an equal distribution of GDP per capita among all regions; Q_1, Q_2 and Q_3 indicate quartiles.

Source: own calculations based on [5]

The absolute values of regional GDP per capita, shown in the diagram in columns, confirm these findings. The differences between the values of (deeper) columns that represent 2014 as compared to the (lighter) columns in 2000 are more pronounced at first glance among the most advanced regions. Likewise, it can be concluded that disparities among regions in the Q_3 and Q_2 range relatively decreased due to GDP growth while the distribution changes are barely visible in the regions located between the median (Q_2) and the least developed region. Although it is possible to assume from visual comparison in this case that the absolute differences are slightly higher, when considering the growth factor, which is also evident from the diagram, it is obvious that the change of the disparities range will be practically minimal in a relative statement. Just the information about changes in the GDP per capita values is such a major benefit, which allows the inferring of more complex conclusions from a Pareto chart about regional development, not only of changes in disparities, but also in terms of changes in economic performance, or lost growth. The diagram also shows that the deviation of the four most developed (metropolitan) regions significantly grew from other ones.

As shown in Fig. 1, it is clear when evaluating a lower number of regions, that it is possible to monitor changes in disparities within the partial groups to a certain extent thanks to the color resolution of columns. In terms of the development of regional disparities within each country, it is then possible, due to significantly diversified growth, to quite safely state that between 2000 and 2014 there was a divergence between the regions of Slovakia (purple). The changes in position within the sample and acquisitions of different size are less obvious for other countries, and therefore it is not possible to derive reliable conclusions for the development of their internal disparities. Furthermore, it is possible to see that Slovak regions are associated more with higher growth, causing their movement to the left in the diagram, or towards the developed regions. Similar tendencies are also evident with Polish regions (red). The opposite tendencies, or the fall in ranking, are again visible in Hungarian regions (green), four of them located among five of the least developed regions in 2014. Downward tendencies are also visible in some Czech regions (blue), even though they all were located in the middle of more developed regions in 2014.

3.1 Validation of results through σ-convergence

As mentioned, to evaluate the relevance of the conclusions arising from the visual evaluation of the disparities development through the Pareto chart, the coefficient of variation is used, which falls within the so-called σ-convergence approaches. The results of the analysis of the regional disparities development of the Visegrad Group (V4) through this approach are presented in Tab. 1.

	2000	2014		2000	2014
V4	41.42%	44.36%	**V4**	41.42%	44.36%
Q_4 to Q_3	31.00%	39.01%	**CZ**	36.28%	39.71%
Q_3 to Q_2	8.93%	5.10%	**HU**	32.85%	36.73%
Q_2 to Q_1	5.51%	5.52%	**PL**	20.87%	24.58%
Q_1 to Q_0	4.68%	5.17%	**SK**	49.41%	58.30%

Within all regions of the Visegrad Group it is noticeable that actually there is only little change in the range of disparities (from 41.42% to 44.36%). In terms of development within individual sections bordered by quartiles it is then confirmed that indeed there was the most dramatic increase in disparities (8 percentage points) among the most developed regions, while there was some decrease (by about 3.8 pp) in the regions between Q_3 to Q_2 on the contrary. At the same time, the conclusion to the same extent of disparities in half of the less developed regions confirms, while in the Q_3 to Q_2 range there was virtually no change recorded, and the change among the least developed regions reached only 0.5 pp. In the context of countries it is obvious that the confirmation of the conclusion on a change of range of regional disparities among Slovak regions, as based on analyzes using the σ-convergence, it is evident that the value of the variation coefficient increased from 49.41% to 58.30%. Changes in other countries are then indeed minimal, or up to 4 pp among regions of the Czech Republic, Hungary and Poland, which further confirms the presentation of the visual evaluation of disparities based on the Pareto chart.

Conclusion

The intention of this article was to show the possibilities of the alternative evaluation of the development of regional disparities, whose credible quantification is the alpha and omega of every modern regional policy. As a possible contribution to the filling of a certain "vacuum" between nowadays conventionally used trivialities, but information-sparse attitudes, and vice versa highly sophisticated, but also demanding and more difficult to interpret approaches for measuring disparities, there was introduced the method called Pareto chart. The aim of the paper was to demonstrate and assess its usefulness for the evaluation of the development of regional disparities.

Due to the above-discussed facts it can probably be said that the comparison of the conclusions about the development of disparities based on the Pareto chart analysis and the results of the disparities analysis made with σ-convergence access clearly confirmed that a Pareto chart can be used as a sufficiently qualified tool to evaluate the development of regional disparities, which joins the advantages of simplicity and ease of interpretability, while retaining information useful for sub-base analysis of the causes of the development of these disparities in terms of changes within the sample of regions. The developed conclusions based on the Pareto chart was not in any way inconsistent with the results obtained through the σ-convergence access, moreover, the diagram displays other useful information such as growth, extreme values, and even changes in the positions of specific regions. Thanks to these parameters, it is possible

on the base of this chart to attain a more comprehensive view of regional development within a particular territorial unit.

However, it must also be noted that the assessment of regional disparities using Pareto chart could mean certain difficulties arising from visual assessment. There can be designated opacity that is predictable while assessing multiple periods within a single field of the graph. Another limitation of interpretation, closely related to the imperfections of the human eye, is the very difficult identifiability, or non-identifiability, of very small changes. Within this study, based on the comparison of interpretation of the Pareto chart with the σ-convergence results, it can be said that the boundaries of differentiability was around 4 pp. The question is how important is such a relatively small change when drawing conclusions about the development of disparities, but it can be assumed that the differentiability border will vary according to the particular sample regions. It should also be noted that it is a tool for assessing the development of disparities, but not a tool to quantify its extent. In more complex analyses it would undoubtedly be appropriate to add one of the other methods, whose ambitions lie precisely in estimating values.

To conclude, it is a very interesting alternative assessment of regional disparities, which undoubtedly has, either individually or as a suitable complement to another technique, a potential usefulness not only in professional scientific studies, but may with clarity via graphical interpretation be understandable enough to inexpert audiences from different disciplines, decision makers from within the political-bureaucratic apparatus, and also the broad professional and unprofessional public.

Acknowledgement

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THE IMPORTANCE OF CROSS-BORDER COOPERATION ON REGIONAL DEVELOPMENT: EVIDENCE FROM THE EUROREGION, NEISSE

Pavel Zdražil, Grażyna Kozuń-Cieślak

Abstract: *This paper aims to focus on the importance of cross-border cooperation in respect of regional development. We aim to examine whether the regions of the euroregion, Neisse, experience different patterns of development in economic performance compared against both the neighbouring regions in their country, and to their country itself. The methodological framework is based on correlation analysis of volumes, where the non-stationary issue has been examined via the ADF unit root test. The results showed that the initiatives of the cross-border cooperation appear to be vital instruments of the European Union cohesion policy in the case of the euroregion, Neisse, but at the same time, are very ambiguous as well. The Czech and Polish regions of Neisse seem to be influenced by the 'cross-border cooperation factor', since they differ from the benchmark entities; however, no obvious differences have been found to occur on the German side of the border. Furthermore, the figures obtained show that the growth rates of the Czech and Polish regions of Neisse were slower than in their neighbouring regions and respective countries. In summary, we may suggest that some linkages within the euroregion, Neisse, do exist, but we may ask whether their existence is unfavourable or whether their potential is or is not used in the best way possible.*

Keywords: *Cross-border cooperation, Neisse, cohesion, Euroregions, Regional development.*

JEL Classification: *R11, O47.*

Introduction

Cross-border cooperation among different regions is influenced by the long-term and ongoing goals of the European regional policy since it falls under the European Territorial Cooperation objective. It follows the strategic aims of the European Union (EU) cohesion policy while it seeks to *"promote a harmonious economic, social and territorial development of the Union as a whole"* [6]. To reach this goal, it is focusing on reducing national borders within EU, and between EU and some adjacent countries, by supporting joint actions and policy exchanges between national, regional and local actors involving at least two countries [7]. Even though its importance is considerably lower than the main objectives (currently, investment for growth and jobs) within EU regional policy budget (for the period of 2014-2020, it is about 2.5% of the total amount) [8], the EU still provides a wide range of tools to support this kind of regional development.

The well-known instruments of cross-border cooperation are, probably, the euroregions and European Groupings of Territorial Cooperation (EGTC) which

enables extending of support from local initiatives, i.e., shifting the aim of a policy of cohesion from territorial unit NUTS 2 to a lower regional level. The cross-border cooperation is important especially for the field of spatial planning in border areas [5] and also security issues [2], but some studies argue that, in particular, small-sized cross-border initiatives do influence regional development significantly [12]. Today, the Association of European Border Regions lists about 200 euroregions, and the Committee of Regions lists about 60 that exist under EGTC, and about 10 EGTC under construction [1; 3]. Furthermore, many of those regional groupings are situated in the 'new' member states from Central and Eastern Europe that joined the EU in 2004 or thereafter. Since the regions of these countries usually belong to the less developed areas in the EU [13], we may ask whether the factor of euroregion, or EGTC, is able to significantly impact the development of the regions involved in such groupings, and contribute to the European cohesion.

1 Statement of a problem

Keeping all of the above in mind, this paper seeks to examine the importance of cross-border cooperation on regional development, laying heavy focus on economic performance. Being limited from many angles, viz: (I) the cross-border initiatives being based on a very large range of reasons and motivations, moreover, there are no rigid criteria to define the platforms for cooperation, e.g., 'euroregions' [11]; (II) the shift towards a lower regional level enables the possibility of involvement of small districts and municipalities, where economic performance statistics are unavailable; (III) the initiatives for cooperation are founded continuously, i.e., the large time bias can occur by comparison of results; (IV) cross-border cooperation initiatives are founded on a voluntary basis, hence, the range of cooperating area is often unstable (changing in time), etc., we decided to reduce our analysis only to one cross-border cooperation initiative, where none of the above issues are of any significance. Since we found a case where the assumptions of insignificance fit fairly well, our attention is now drawn toward the euroregion, Neisse, which is the oldest euroregion in Central and Eastern Europe, established in 1991 [9], whereas, we can employ NUTS 3 regions data as an analysis input.

In keeping with the facts outlined above, the aim of this paper is to examine whether the parts (regions) of euroregion, Neisse, experience different development patterns in economic performance, compared with both the neighbouring regions in their country and to their country itself. Because if so, one can assume that the cross-border cooperation initiatives are very critical instruments of EU cohesion policy, even down to its modest budget; and, hence, its growing share within the budget [6] is fully justified.

2 Methods

This analysis has been conducted using the application of following assumptions and methods. We examine parts of the cross-border euroregion, Neisse, on all sides of the borders. Neisse covers the area of two territorial units NUTS 3 on the German side (DED2C - Bautzen and DED2D - Görlitz), but on the Czech and Polish sides, the euroregion is formed by municipalities that do not reflect borders of any region

wherefrom data for our analysis can be collected. Hence, we substituted the Czech part of Neisse with a NUTS 3 region CZ051 - Liberec Region, and the Polish part with a NUTS 3 region PL515 - Jeleniogorski. One can say that both substituted regions cover most of the area and population of municipalities involved during the period under study, therefore, the bias may be acceptable for our study. Besides, a similar approximation is pretty logical by examinations of the euroregion's development. To compare the development of the regions of Neisse, we use their respective countries as a benchmark, i.e., CZ - Czech Republic, DE - Germany and PL - Poland. Furthermore, we use the neighbouring NUTS 3 regions within the same country also as a benchmark (CZ020 - Central Bohemian Region, CZ042 - Usti nad Labem Region, CZ052 - Hradec Kralove Region; DE40B - Oberspreewald-Lausitz, DE40G – Spree -Neiße, DED21 - Dresden, Kreisfreie Stadt, DED2E - Meißen, DED2F - Sachsische Schweiz-Osterzgebirge; PL432 - Zielonogorski, PL516 - Legnicko-Glogowski, PL517 - Walbrzyski, PL518 - Wroclawski).

We study relationships in per capita Gross Domestic Product (expressed in Purchasing Power Standard, PPS) between pairs of regions, and between particular regions and their respective countries. The data have been linked from the Eurostat database [10] and covers the period of 2000-2013. We employ the correlation analysis of volumes, based on Pearson's R, to examine direction and significance of the relationships between regions. As long as we are using correlation analysis of volumes, we have to deal with the issue of non-stationary to avoid the spurious series correlation problem. We used the augmented Dickey-Fuller (ADF) test [4] that examines the null of a unit root, i.e., non-stationary; which found that our data are non-stationary. Furthermore, we found that the non-stationary issue can be overcome by conventional series transformation in its 2nd logarithmic difference (1). This transformation helped us to stabilize the variance and mean of examined time series for one side, and on the other side to eliminate trend.

$$\ln dd \, X_{(t)} = \left[\ln X_{(t-2)} - \ln X_{(t-1)}\right] - \left[\ln X_{(t-1)} - \ln X_{(t)}\right] \qquad (1)$$

where ln dd $X_{(t)}$ is 2nd logarithmic difference of value in time (t); $X_{(t)}$ and $X_{(t-n)}$ are values in time (t) and (t-n), respectively.

As one can see from Table 1, all the transformed volumes are stationary at the significance level of 0.05; hence, data transformed via the formula (1) are not burden for any more distortions and may be used as an input for following correlation analysis. Even though the null of non-stationary cannot be rejected at the significance level of 0.05, we have to point out that our required significance level is 0.10.

Tab. 1: ADF test results of series transformed in its 2nd logarithmic difference

reg.	CZ051	DED2C	DED2D	PL515		CZ	CZ020	CZ042	CZ052	DE
p-v.	0.03	0.02	0.01	0.00		0.02	0.02	0.01	0.01	0.03
reg.	DE40B	DE40G	DED21	DED2E	DED2F	PL	PL432	PL516	PL517	PL518
p-v.	0.03	0.00	0.01	0.00	0.00	0.02	0.03	0.05	0.01	0.02

Notes: reg. = region; p-v. = probability of null of non-stationary; the parts of euroregion, Neisse, highlighted in grey.

Source: authors' own work based on [10]

3 Analysis, results and discussion

Now, after dealing with the non-stationary issue, the examination may lead to being processed by the correlation analysis of volumes. Firstly, we focus on relationships between the regions within Neisse. The results shown in Table 2 suggest that the development of per capita GDP correlate between the Czech and German regions of Neisse, and between German regions. However, the Polish region does not match these conclusions when no relationship was found to be significant between PL515 and the other regions of Neisse. In addition, all the significant relationships were positively correlated, which one can interpret as direct impacts of development.

Tab. 2: Correlation analysis results - regions of Neisse

Relationship	R	p-v.
CZ051 - DED2C	0.67	**0.02**
CZ051 - DED2D	0.55	**0.06**
CZ051 - PL515	0.33	0.30
DED2C - DED2D	0.49	**0.10**
DED2C - PL515	0.28	0.38
DED2D - PL515	0.43	0.17

Notes: R = correlation coefficient; p-v. = probability of null of no relationship; bolded figures = rejection of null, i.e., significant relationship; the parts of euroregion, Neisse, highlighted in grey.

Source: authors' own work based on [10]

Furthermore, as seen from Table 3, we found that all the regions in our sample, except one (PL515), follow the development of their respective countries in per capita GDP. Basing on these results, we may assume there are no obvious differences between the particular regions of Neisse and both respective countries and neighbouring regions. Additionally, from this point of view, it looks like participation in the euroregion, Neisse, highlights no pros or cons in the economic performance of regions.

Tab. 3: Correlation analysis results - regions and their respective countries

Relationship	R	p-v.	Relationship	R	p-v.
CZ051 - CZ	0.67	**0.02**	DED21 - DE	0.85	**0.00**
CZ020 - CZ	0.80	**0.00**	DED2E - DE	0.95	**0.00**
CZ042 - CZ	0.73	**0.01**	DED2F - DE	0.88	**0.00**
CZ052 - CZ	0.93	**0.00**			
			PL515 - PL	0.48	0.11
DED2C - DE	0.64	**0.02**	PL432 - PL	0.93	**0.00**
DED2D - DE	0.67	**0.02**	PL516 - PL	0.73	**0.01**
DE40B - DE	0.65	**0.02**	PL517 - PL	0.71	**0.01**
DE40G - DE	0.65	**0.02**	PL518 - PL	0.85	**0.00**

Notes: R = correlation coefficient; p-v. = probability of null of no relationship; bolded figures = rejection of null, i.e., significant relationship; the parts of euroregion, Neisse, highlighted in grey.

Source: authors' own work based on [10]

At the next step, we focus our attention on relationships between the regions of Neisse and their neighbouring areas. With the summary of results shown in Table 4, one can draw some very interesting conclusions. On the Czech side, the Neisse region, CZ051, does not correlate with the neighbouring regions, except CZ052; but at the

same time we found significant relationships of correlation among the non-Neisse regions. Very similar results have been found in Poland, where the Neisse region, PL515, does not correlate with the neighbouring areas, while most of non-Neisse regions do correlate, one with another (in 4 of 6 cases). Nevertheless, the situation among the German regions differs, since significant relationships of correlation unambiguously prevail in both the Neisse and non-Neisse regions.

Tab. 4: Correlation analysis results - regions and their intranational neighbours

Relationship	R	p-v.	Relationship	R	p-v.
CZ051 - CZ020	0.49	0.11	DE40B - DED2E	0.51	**0.09**
CZ051 - CZ042	0.31	0.32	DE40B - DED2F	0.59	**0.04**
CZ051 - CZ052	0.58	**0.05**	DE40G - DED21	0.62	**0.03**
CZ042 - CZ020	0.53	**0.08**	DE40G - DED2E	0.66	**0.02**
CZ052 - CZ020	0.69	**0.01**	DE40G - DED2F	0.53	**0.08**
CZ052 - CZ042	0.68	**0.02**	DED21 - DED2E	0.72	**0.01**
			DED21 - DED2F	0.78	**0.00**
DED2C - DED2D	0.49	**0.10**	DED2E - DED2F	0.81	**0.00**
DED2C - DE40B	0.86	**0.00**			
DED2C - DE40G	0.07	0.83	PL515 - PL432	0.44	0.15
DED2C - DED21	0.40	0.20	PL515 - PL516	0.23	0.47
DED2C - DED2E	0.51	**0.09**	PL515 - PL517	0.43	0.16
DED2C - DED2D	0.67	**0.02**	PL515 - PL518	0.48	0.12
DED2D - DE40B	0.53	**0.08**	PL432 - PL516	0.71	**0.01**
DED2D - DE40G	0.66	**0.02**	PL432 - PL517	0.56	**0.06**
DED2D - DED21	0.76	**0.00**	PL432 - PL518	0.72	**0.01**
DED2D - DED2E	0.46	0.13	PL516 - PL517	0.49	0.11
DED2D - DED2F	0.66	**0.02**	PL516 - PL518	0.55	**0.07**
DE40B - DE40G	0.26	0.41	PL517 - PL518	0.44	0.15
DE40B - DED21	0.49	0.11			

Notes: R = correlation coefficient; p-v. = probability of null of no relationship; bolded figures = rejection of null, i.e., significant relationship; the parts of euroregion, Neisse, highlighted in grey.

Source: authors' own work based on [10]

Keeping the above-mentioned findings in mind, we suggest that the German regions of Neisse, i.e., DED2C and DED2D, experience no noticeable difference in per capita GDP development compared with their neighbouring German regions, and Germany as a country. On the other hand, the Czech and Polish regions of Neisse mostly differ from their neighbouring regions in economic performance. Besides, the Polish region is the only one in the entire sample that does not correlate with its respective country. These simple facts lead us to the conclusion that involvement in the euroregion, Neisse, may influence the economic performance of the Czech and Polish regions, while the German regions remain rather uninfluenced by their Czech and Polish counterparts. This conclusion seems stronger for the Czech region since significant correlation relationships with both the German regions of Neisse have been found. Moreover, even though the per capita GDP of the Polish region does not correlate with that of the other Neisse members, the Polish region differs very unambiguously from its benchmarks on the Polish side of the border in both neighbouring regions and Poland as a country.

Conclusion

This paper sought to examine the importance of cross-border cooperation on regional development based on the evidence from the euroregion of Neisse. By employing the correlation analysis of volumes, it found that development of per capita GDP in the regions of Neisse differ significantly from its neighbouring areas in Poland and in the Czech Republic. Furthermore, no obvious differences in development have been found between the German Neisse and non-Neisse regions. With these findings in mind, one can probably interpret the results as follows: the cross-border cooperation initiatives seem to be a very important instruments of EU cohesion policy in the case of euroregion Neisse, but very ambiguous as well. Owing to the findings of no obvious impact of Neisse on German regions, along with some impact on both less developed regions in the Czech Republic and Poland, one could expect the relatively more developed regions of Germany would help to promote the economic performance of the less developed regions. However, the real figures do not confirm this assumption, since the benchmark entities' growth was faster between 2000 and 2013 than the regions of Neisse in both the Czech Republic and Poland (see Table 5). In addition, the German regions of Neisse do not show any unambiguous deviations from their benchmarks.

Tab. 5: GDP growth between 2000 and 2013

reg.	CZ051	DED2C	DED2D	PL515		CZ	CZ020	CZ042	CZ052	DE
2013/ 2000	1.34	1.56	2.07	1.82		1.57	1.40	1.47	1.46	1.42

reg.	DE40B	DE40G	DED21	DED2E	DED2F	PL	PL432	PL516	PL517	PL518
2013/ 2000	1.71	2.27	1.59	1.57	1.55	1.95	1.88	2.32	1.83	2.44

Notes: reg. = region; 2013/2000 is the ration of per capita GDP of selected years; the parts of euroregion, Neisse, highlighted in grey.

Source: authors' own work based on [10]

In summary, the factor of cross-border cooperation seems like an important instrument, but, in our case, this is without any provable promotion of economic performance in the less developed regions. Hence, the eligibility of growing expenditures on cross-border cooperation is ambiguous, since its effectiveness has not been approved by our results. However, based on our analysis, we cannot evaluate whether the effect of Neisse is rather positive or negative, i.e., whether the regions would develop less favourably without the 'cross-border cooperation factor', respectively; since our analysis focused on other issues. We may only speculate whether the existence of connections found is unfavourable or whether their potential is or is not used in the best way possible.

We can probably say that this paper enlightened us with an important lesson which should be kept in mind, by shaping regional and developmental policies at both national and EU levels. Even though we examined only one example of cross-border cooperation initiatives, we may suggest that the findings will be relevant to many other initiatives as well. In addition, the paper presented a few important questions which call for further research. At the least, we have to point out that our analysis is limited,

and should be extended, by examining more euroregions, or other kinds of cross-border cooperation initiatives.

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the city provides higher and specific level of services. City also represents a natural center of innovations. It has better conditions for generating and accepting innovations (knowledge, technology, and institutions). Cities are the source of agglomeration economies [2].

City, as well as the region, is exposed to competition. It has to compete mainly for investors, visitors and residents. Results of this competitive struggle influence an amount of financial resources that city can acquire and use for generating its development. In order to be successful, city has to provide good conditions for life and business.

Financial resources represent the crucial factor for generating the city development. They are related to the size of the city. We assume that the size of a city influences its financial condition. Bigger cities have better preconditions to acquire financial resources and to generate their own development.

The main aim of this paper is to evaluate financial condition of Slovak cities for generating their own development. The paper is structured as follows. Firstly, we describe and evaluate theoretical concept of financial condition and its indicators. Secondly, we analyze financial condition of Slovak cities according to various size categories. Finally, we summarize the results and draw conclusions.

2 Methods and data

Financial condition of a city is measured by a system of indicators. In this paper, we use five indicators based on methodology described by Kožiak [1]. These indicators are:

- Balance of current account,
- Balance of capital account,
- Debt financing,
- Immediate liquidity,
- Net assets.

Balance of current account represents the difference between current revenues and current expenditures. It indicates the ability of a city to generate savings from its current budget. Positive value means that a city is able to create savings, which can be used for development or debt repayment. Negative value indicates that a city is not able to cover its current expenditures by current revenues.

Balance of capital account represents the difference between capital revenues and capital expenditures. It indicates whether a city invests more than it earns from the sale of its property. Negative value means that a city invests more resources than it acquires from capital revenues.

the city is a self-govern unit, which in terms of statutory legislation provides competences for its inhabitants [6]. In its self-govern activities, the city has a unique role – it coordinates the interests and needs of its citizens. The importance of the city lies primarily in allowing to various actors to realize economic interactions between them more intensively. In the context of managing a mutual area for all actors, there rises a question, whether cities can manage their development more cost-effectively than municipalities. Respectively the question is, whether cities can allocate resources to their development in order to increase the attractiveness for business environment and quality for citizens more wisely, then municipalities [1].

For investigating the problem, we formulated two hypotheses:

1. *Cities have better indicators of financial condition than municipalities.*

2. *The best values of financial condition have cities over 50 000 inhabitants.*

1.1 Indicators of financial condition

The comparison of financial condition is realized on the basis of six indicators that characterize financial management, debt policy and property. Used data were taken from the public accessible database of the Institute for Economic and Social Reforms (INEKO) [5].

1. The balance of current account (BCuA)

This indicator informs whether the municipality can cover its current expenses, which are intended for a normal, usual operation of the government from their current revenue. If the indicators value is positive, the government of the municipality has available sources for financing its capital needs. The indicator is calculated:

(1) BCuA = (current revenues – current expenses) / current revenues

2. The balance of capital account (BCaA)

This indicator informs whether the municipality government managed with surplus of deficit in terms of the capital account. It tells us how the government can cover its capital expenses (investments, which increase the value of municipality's property) from its capital revenues (from the sale of its property, its own business, transfer from its reserve fund, received loans or grants). The indicator is calculated:

(2) BCaA = (capital revenues – capital expenses) / capital revenues

3. The total debt (TD)

This indicator has a legal criterion which municipalities cannot exceed, if they want to receive repayable funding sources for the fulfilment of their tasks. According to the Regulation 583/2004 on financial rules for local governments, if the total amount of municipality's debt exceeds 60 percent of the current revenues from previous year, the municipality cannot apply for repayable sources. The indicator is calculated:

(3) TB = (bank loans + long-term liabilities – loans from the State Housing Development Fund) / current revenues from previous year

4 Debt service (DS)

This indicator informs about the amount of expenses that the municipality has to pay in connection with the repayment of its debt. According to the Regulation 583/2004 on financial rules for local governments, if the amount of annual instalments of repayable funding sources does not exceed 25 percent of the current revenues from previous year, the municipality can receive repayable funding resources for the fulfilment of its tasks. The indicator is calculated:

(4) DS = (repayment of the principal + interest payments) / current revenues from previous year

5 Immediate liquidity (IL)

This indicator informs about the extent to which the available funds on the financial accounts of municipalities are sufficient to repay short-term liabilities. It is relevant to the financial stability of the government in dealing with short-term crisis and emergencies. The indicator is calculated:

(5) IL = financial accounts / short-term liabilities

6 Net assets (NA)

This indicator informs about the amount of municipality's assets (after subtraction of debt) relative to current revenues. Increase in assets and the ability of its efficient use is a manifestation of good managing and maintain a good financial condition because the government does not only manage its property, but it also has to maintain and increase its value. The indicator is calculated:

(6) NA = (fixed assets + financial accounts – (bank loans + long-term liabilities – loans from the State Housing Development Fund)) / current revenues from previous year

2 Methods

The objects of the examination were all municipalities of the Slovak Republic in the time period between years 2009 and 2014. The full set consisted of all 2930 municipalities. 138 of them possessed the statute of a city. All cities were further divided according to their population size into 3 groups:

1. Group no. 1 – small cities with population up to 20 000 inhabitants (together 98 cities)

2. Group no. 2 – medium-sized cities with population between 20 001 and 50 000 inhabitants (together 29 cities)

3. Group no. 3 – large cities with population over 50 001 inhabitants (together 11 cities)

To evaluate the development of individual indicators for each defined group of municipalities were used a method of arithmetic average [7]. To determine the average value for each indicator and for each group during the observed time period, it was used following formula:

(7) Arithmetic average $= \dfrac{x1 + x2 + x3 + \cdots xn}{n}$

In which the letter x is the value of the indicator for a particular municipality and the letter n is the number of all municipalities in observed group. For comparison of the development of each group of municipalities in terms of time period, it was used a method of chronological average. The used formula was:

$$\text{(8) Chronological average} = \frac{\frac{y_1+y_2}{2}+\frac{y_2+y_3}{2}+\ldots+\frac{y_{t-1}+y_t}{2}}{t-1}$$

Where the letter y is the value of a particular municipality in one year and the letter t is the total sum of years that were used during the observed time period. In this case, $t = 6$. To meet the aim and to test hypotheses it was used a method of comparative analysis.

3 Problem solving

The evaluation of results consists of two parts. In the first part, results are compared between municipalities and cities and in the second part, results are evaluated according to the structure of chosen group of cities.

Fig. 1: The development of the indicator BCuA for all municipalities and cities in €
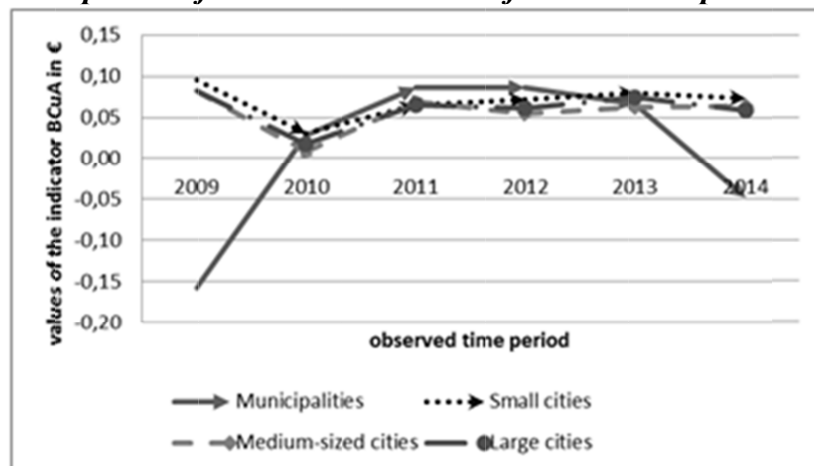
Source: Own elaboration based on [5]

The majority of municipalities (cities included) from the year 2010 operated with surplus in their current budget, and therefor they could create resources, for example in their reserve fund or in another capital account. The excess up to 10 percent corresponds to the creation for reserve fund [10]. Figure 1 shows that more stable managing of usual administration can be rather done by cities, than municipalities. The biggest surplus was observed in the group of small cities. Extreme values reached city of Leopoldov (small city), which managed its largest surplus in the current budget – with the average value of the indicator +0.25. The highest deficit on the current account created Trebišov (medium-sized city) with a value of the indicator -0.02.
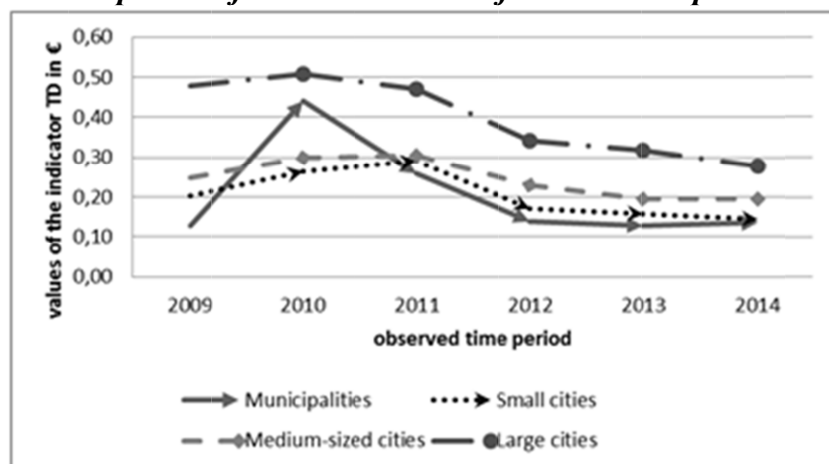
Fig. 2: The development of the indicator BCaA for all municipalities and cities in €
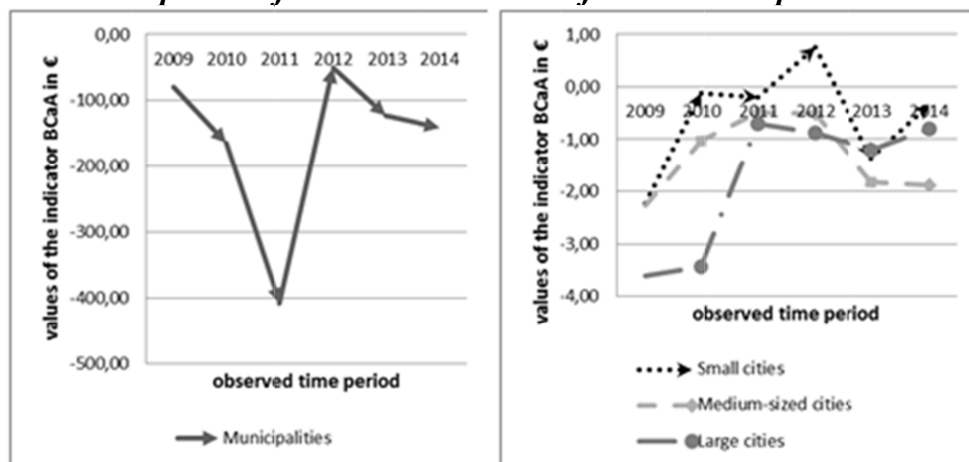
In comparison between capital accounts it can be said that cities were able to spend resources for investment more stable compared to municipalities (Look at Figure 2). Deficit management of municipalities corresponds to debt service, which is highest for municipalities in the year of 2011 (Figure 4). The highest capital deficit reached Rajecké Teplice (small city) -122.31 and the lowest capital deficit had Skalica (small city) -0.04.

Fig. 3: The development of the indicator TD for all municipalities and cities in €

From the development of total debt (Figure 3) follows that cities are in bigger debts than municipalities. This represents a restriction on possible further reception of repayable finance resources to perform its tasks, including resources for development [9]. At the amount of debt has to be looked in the context of usefulness of individual loans and its ability to reimburse those loans. Figure 4 indicates in all three groups of cities that the amount of debt service was below 15 percent. The most indebted city with population over 50 000 inhabitants was Žilina (large city) with a value of 0.86 and the lowest debt had Tvrdošín (small city) with a value of 0.01.
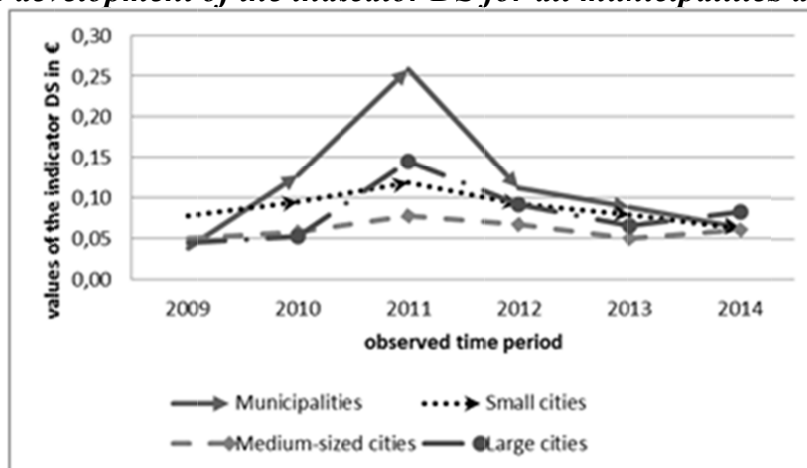
Expenses on debt service were between municipalities and cities comparable. Significant is the year 2011, when municipalities financed their usual administration by resources from the capital budget. They take loans to ensure the financing of current expenses. This was a response to the development of economic crisis which manifested by a significant reduction of income from personal income tax which represents the highest source of income for municipalities. Its fall in 2010 caused massive taking loans which reflected in their current expenses [10]. In observed time period the city of Svätý Jur (small city) had no expenses on debt service and the highest expenses had the city of Veľký Šariš (small city) with a value of 0.38. It means that the debt service accounted for 38 percent of operating expenses.

Fig. 5: The development of the indicator IL for all municipalities and cities in €
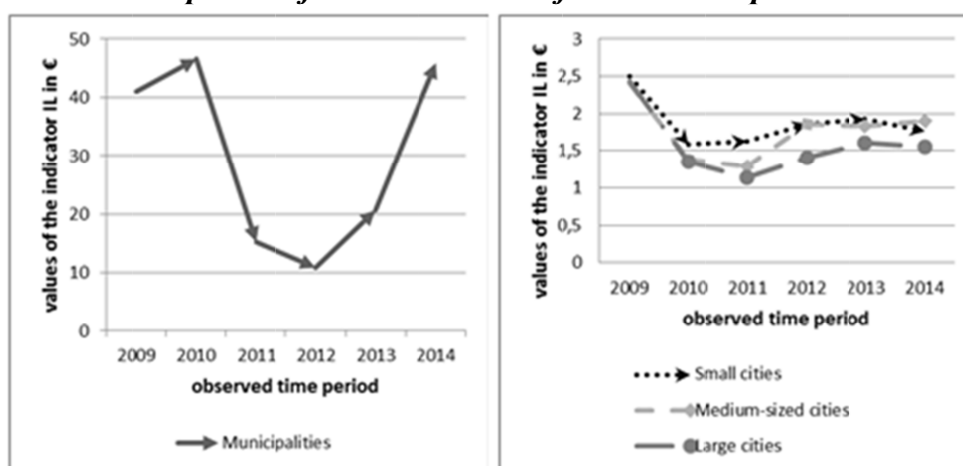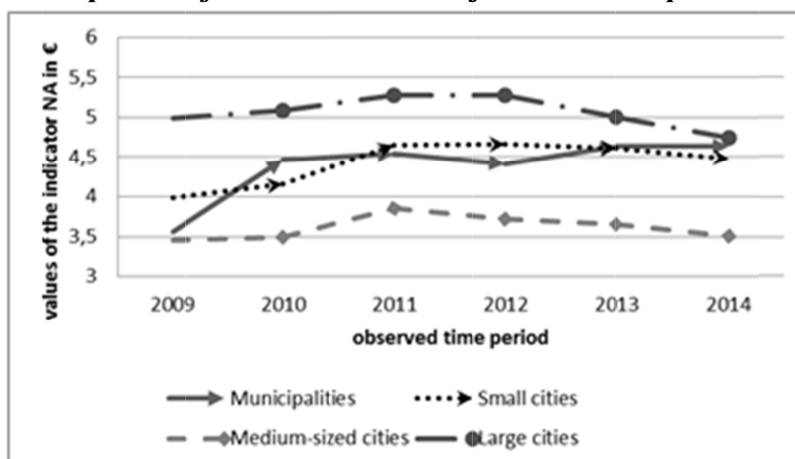

Source: Own elaboration based on [5]

From the development of the immediate liquidity (Figure 5) we can conclude that municipalities have on their financial accounts sufficient funds to cover short-term liabilities (short-term loans, loans). Regarding to situations between different groups of cities, they are at comparable level. Trend curves present significant impact of the crisis on municipalities which have exhausted their resources held on their accounts including reserves. The decline in liquidity can be seen between years 2010 and 2011. Among groups of cities, the most favourable values of this indicator achieved Svätý

315

Jur with an average value of 16.15. The lowest average value was recorded in Handlový (small city).

Fig. 6: The development of the indicator NA for all municipalities and cities in €

An interesting development was in the indicator of net assests. The richest category was represented by largest cities, there were followed by small cities, municipalities and the poorest category was medium-sized cities. Values of this indicator could be also affected by economic crisis, because municipalities were spending their resources stored on their financial accounts and from reserve funds. In this observed time period, best values were reported by Banská Štiavnica (small city) -8.93 and the lowest values were reported by Čierna nad Tisou (small city) with a value of 1.04.

4 Discussion

Values of financial condition during the observed six year time period shows the most unbalanced development in the category represented by municipalities. This finding proves their significant dependence on the state budget. The significant decline in income from the personal income tax destabilized the balance of capital expenses, increased their debt and payments for debt service. As a result of these facts, municipalities lacked resources from their reserves and could not solve crisis situations or emergency situations. Subsequently they were able to invest into their own development smaller amounts of resources. This confirmed the first hypothesis, that cities have better values for indicators of financial condition than municipalities.

On the one hand cities have more debts than municipalities, what represent a limit for receiving repayable funding sources that could be invested in their development, but on the other hand cities manage their resources more balanced than municipalities (indicators of the balance of the current account and capital account proves that). Large cities spend the largest amounts of capital expenses for the development with the highest net asset values. Their debt service is under 15 percent which does not present a significant burden on the ability to repay their debts. However, on the results we have to look in a context of the structure and maturities of loans. Unfortunately during analysing this dataset, we didn't have these particular data. Medium-sized cities present the lowest values for debt service, as well as for the net asset values and the current account balance, although their debt ratio is around 20-30 percent. Small cities

have best results in financing their development from their own resources with sufficient capacity in unused potential sources, for example in received loans. But their small value of assets can limit the amount of potential loans. The category of small cities among the other categories has better values in the majority of indicators (the balance of capital accounts, debt service, immediate liquidity and net assets).

Based on the results we can conclude that the second hypothesis was confirmed only partially. Large cities generate the highest amounts of capital expenses and have the highest amount of net assets, but the financing is based on loans. To confirm this hypothesis, it would be necessary to analyse a longer time series with more specialized data, but for this particular structure of the indicators, the data were not available.

Conclusion

The assessment of the financial condition of municipalities and cities helps to evaluate the effectiveness of local government policies to protect and improve the financial situation to ensure its sustainable development. On the basis of relevant indicators it serves for identification various problems, for analysing causes and determines precautionary steps that might contribute for better planning and creation of financial resources. At the same it will also respond to changes in social, economic and demographic processes on its territory. Used analyses represent one of the approaches for assessing the financial condition of municipalities and cities in the Slovak Republic in respect of the ability to financing its development. These analyses did not reflect any local circumstances that could affect their financial conditions. Appreciation of local specifics, respectively measurement of significant factors of financial condition provides a space for further exploration with the ambition to formulate appropriate financial policy for municipalities and cities for ensuring the sustainable development.

Acknowledgement

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