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CONTENT

PREFACE

We are pleased to present the proceedings of the 13th international scientific conference Hradec Economic Days 2015, held by the Department of Economics and the Department of Management at the Faculty of Informatics and Management, University of Hradec Králové on Ferbruary 3 – 4, 2015.

Since its first year, the ´Hradec Economic Days´ conference has undergone dynamic development, and has been positively received by participants, as well as the Faculty and University management, which has been very motivating for the organizers. A significant achievement and a sign of recognition was the indexing of the Hradec Economic Days 2005 – 2011 conference proceedings in the CPCI (Conference Proceedings Citation Index) database on the Web of Science. We are making every effort to ensure that the proceedings from the following years are included in the database as well.

Apart from the increase in the number of participants, the hosting faculty also appreciates the quality of submitted papers, as well as the fact that the speakers at the Hradec Economic Days include leading professionals and researchers from universities and other types of institutions.

It has become a tradition to prepare the conference proceedings of reviewed papers, edited by Ing. Pavel Jedlička, CSc. They include the total of 263 papers, out of which 92 are written in English, 137 in Czech, 27 in Slovak, and 7 in Polish. The authors of the papers come from the Czech Republic (193), Slovakia (38), Poland (31) and Bulgaria (1). In terms of home institutions, the participants represent 32 Czech, 13 Slovak, 15 Polish universities or institutions, and one Bulgarian institution.

The papers are divided into and discussed in eight sections:

I. Current issues in banking and financial markets

II. Macroeconomic context of regional development

III. Tourism economics

IV. Enterprise economics and management

V. Economics and management of regions and enterprises

VI. Ekonomia i zarządzanie regionów i przedsiębiorstw

VII. Mathematical models in economics

VIII. Modern trends in management

The HED conferences are organised with the aim to present the results of research in the fields of economics, business economics, management, tourism and mathematical models, to provide a platform for encounters of experts in related fields, to enable making contacts, which is essential for submission of common research projects. The 2015 HED conference aspires to meet all of these goals, too.

Our acknowledgements go to all the conference organisers.

Hradec Králové, January 6, 2015

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DOES HEXACO-60 PERSONALITY TEST PREDICT DECISIONS IN DICTATOR GAME?

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Abstract:

Objective: Study examines the relation between human behavior in the Dictator game known from the behavioral economics (supposed to simulate altruistic decision) and the underlying psychological processes as measured by the personality inventory HEXACO based on 6 personality dimensions: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. *Method*: Data were collected by the paper-based questionnaire. Ordinal logistic regression was used to model the relation between personality traits and Dictator game decisions. *Sample*: Undergraduate students of business, N= 157.*Findings*: The amount of money allocated to the other person in the Dictator game was significantly predicted (p < 0,001) only by two personality dimension: Honesty-Humility and Emotionality.

Introduction

From the 1960-ies, researchers in experimental and behavioral economics focus on a wide range of economic and social phenomena [5, 1; 16, 1345]. The important field of research in experimental economics focuses on social preferences and values including altruism, economic justice, equality and cooperation. In this field of research, experiments such as Dictator game, Ultimatum game, Trust game, as well as the Prisoner's dilemma are extensively used[4, 210–211].Recent trends in experimental/behavioral research combine experiments with the tools originally used only in the psychological research or neuro-science, where performance in experiments

as dictator or ultimatum can be traced to the level of hormonal level[20,1], [21,1] or to the level of brain activity [6, 24–33].

In our study, we take inspiration from research where the HEXACO personality inventory was used to study psychological process underlying the decision-making in the classical economic experiments such as Dictator/Ultimatum game [8, 516–519; 7, 598–603], Prisoner's dilemma [22, 286–295] or Free riding behavior[9, 245–254]. In concordance with this research, we want to find which personality traits (as measured by HEXACO inventory) reasonably predict the Dictator game decisions. According to the previous research [7], out of the six HEXACO personality traits, only one (*Honesty-Humility*) predicts the Dictator game results. This finding is relevant for the economical meta-theory because it disputes the *homo economics* concept.

1. Methodological concepts, sample, approach to data analysis

The sample consists of undergraduate students of business from Brno, Czech Republic (N = 157; females 68.8 %, age 21–22) who filled a paper-based questionnaire and underwent the Dictator game in the form of a quasi-experiment (with a fictive receiver). HEXACO inventory is a six-dimensional personality model [1; 2]and to the widely used personality tests based on five dimensions such as Big Five, Hexaco adds a new dimension of "Honesty-Humility" also known as h-factor. H-factor is proven to predict ethical behavior at workplace [12, 13], job performance in the healthcare services [10] as well as the set of "negative" traits known as the dark triad [14]. In our study, we use the shortened, 60-items version of Hexaco [3] translated to Czech by one of co-authors (P. Ziaran).

Procedure: In the dictator game, the player (allocator) decides how much money allocates to him-/herself, whereas the rest of the sum is received by the other player. The receiver has no opportunity to influence the decision [5, 6, 11, 17, 18]. This method can be used also with the fictional receiver [8, 599-560]. The question in the questionnaire was formulated as follows: "How much out of the sum of 1000 money units would you assign to yourself? The rest of the sum will be paid to the opposite site."Theoretically, the results (i.e. the amount of money the player assigns him- or

herself) are measured on the interval scale. However, in our case, participants assigned rather discrete sums of money, with only few exceptions. Because of this, we decided to divide these results into 3 ordered categories (Tab. 1). Because of the ordinal measure of the dependent variable, ordinal logistic regression model is used.

The HEXACO-60 inventory is constructed as 6-dimensional and is composed of 60 five-point rating scales. Because of the essentially ordinal character of the rating scales, the operations based on addition cannot be implemented correctly. That is why we do not follow the traditional method of dimension-scores calculation based on the rating scale means. Instead, we fitted 6-dimensional rating scale item response model using the ACER ConQuest 2.0 [19]. Weighted Maxim Likelihood (WLE) method was used for individual score estimation in particular dimensions.

TAB. 1: Ordinalization of assigned sums in both economic games

Dictator game results				Dictator game - ordinalized results			
	Freq.	Percent	Cumul. percent		Freq.	Percent	Cumul. percent
Valid 500	33	21,0	21,0	Valid Less than 650	59	37,6	37,6
550	2	1,3	22,3	650 to 800	46	29,3	66,9
600	24	15,3	37,6	More than 800	52	33,1	100,0
650	9	5,7	43,3	Total	157	100,0	
669	1	,6	43,9				
700	18	11,5	55,4				
750	4	2,5	58,0				
800	14	8,9	66,9				
850	1	,6	67,5				
900	11	7,0	74,5				
950	2	1,3	75,8				
999	1	,6	76,4				
1000	37	23,6	100,0				
Total	157	100,0					

Source: authors

2. Results

2.1. Hexaco personality test

We may consider the model-data fit to be reasonable good; only 14 items indicate poorer fit with the in fit and outfit statistics |T| > 3, what could be explained also with the rather small sample size (N = 157). The descriptive statistics of the HEXACO-60 dimensions are shown in Tab. 2.

TAB. 2: Descriptive Statistics of the HEXACO-60 dimensions

	N		Mean	SD	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis
	Valid	Missing						
Honesty-Humility	157	0	0,120	0,631	0,191	0,194	0,602	0,385
Emotionality	157	0	0,450	0,716	-0,171	0,194	-0,466	0,385
Extraversion	157	0	0,283	0,606	-0,009	0,194	-0,290	0,385
Agreeableness	157	0	0,013	0,539	0,174	0,194	1,300	0,385
Conscientiousness	157	0	0,404	0,473	0,588	0,194	0,469	0,385
Open to experience	157	0	0,057	0,459	0,086	0,194	-0,468	0,385

Source: authors

In our study, we modeled the possibility to predict the amount of money assigned in the in the dictator game using the HEXACO dimension scores. The test of parallel lines appeared to be insignificant ($\chi^2(6) = 8,38$; $p > 0,21$) what indicates that the proportional odds assumption is fulfilled. In this model, both dimensions Honesty-Humility as well as Emotionality, influence the sum significantly and negatively (Tab. 3):

TAB. 3: Parameter estimates in the ordinal logistic regression model

		Estimate	SE	Wald	df	Sig.	95% CI Lower Bound	95% CI Upper Bound
Threshold	[dictator_ordin = 1]	-1,415	,291	23,689	1	,000	-1,985	-,845
	[dictator_ordin = 2]	,229	,266	,742	1	,389	-,292	,749
Location	Honesty-Humility	-1,296	,308	17,694	1	,000	-1,900	-,692
	Emotionality	-1,102	,266	17,194	1	,000	-1,622	-,581
	Extraversion	-,100	,276	,131	1	,717	-,640	,440
	Agreeableness	-,483	,312	2,388	1	,122	-1,095	,130
	Conscientiousness	-,109	,401	,074	1	,785	-,896	,677
	Open to experience	,219	,416	,279	1	,598	-,595	1,034

Source: authors

3. Discussion

In the Dictator game, all of the participants retained more than half of the whole amount of money. However, the higher scores in *Emotionality* as well as in *Honesty-Humility* the participants had, they tend to offer significantly more money to the other person. These two factors were the only significant predictors of altruistic/generous tendencies. The other four personality dimensions of Hexaco test (Extraversion, Consciousness, Agreeableness and Openness to experience) do not have a sufficient explanatory power.

We can conclude that altruistic/generous behavior is related to two personality traits of Honesty-Humility and Emotionality related to the capacity to be empathic and sensitive to the needs of others. Persons with high scores on the *Emotionality* scale experience fear of physical dangers, anxiety in response to life's stresses, feel a need for emotional support from others, and feel empathy and sentimental attachments with others. *Honesty-Humility* is the second significant predictor of the altruistic/generous offer. Persons with high scores avoid manipulating others, feel little temptation for breaking rules and have little interest in excessive wealth and elevated social status [3].

These findings are consistent with the [8, 516-519], who proved an identical relation between the score in Dictator Game and Honesty-Humility dimension. Similarly the research showed that individuals with higher level of greediness allocated themselves significantly higher amount of money [6]. The research also showed that the less power the receiver had in the negotiation, the higher sum the player allocated to him-/herself [18].

Interestingly, personality dimension such as Conscientiousness or Agreeableness do not show any significant relation with the altruistic/generous behavior expressed in the Dictator game. Hence, if somebody is an agreeable and indulgent person, it does not directly imply his or her generosity. The same holds also for a conscientious, diligent and well-organized person.

Conclusion

The above mentioned findings prove the importance and pertinence of the new personality trait Honesty-Humility introduced by the HEXACO by Ashton and Lee [1; 2]. This trait is clearly distinct from other personality traits what might appear related to it (i.e. Agreeableness or Consciousness). HEXACO concept thus provides higher precision in describing dimensions of human behavior when compared to previous personality tests based on five dimensions as Big Five and the Five Factor Model. The research also confirms the usefulness of this research approach integrating behavioral/economic experiment with personality tests what enables to study psychological process underlying the decision-making related with altruistic behavior.

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CASH FLOW MANAGEMENT MODEL OF PAYMENT INSTITUTION ON THE BASIS OF SYSTEM APPROACH

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Abstract:

This article deals with the problems of cash flow (CF) management in payment institution (PI). It shows current position of PIs, their business partners and competitors in the dynamic changing situation on international markets. Main point of view is on client's behaviours, market events, their predictability and effect on CF. Improvement in this area means reduce costs and timely settlement on banking transactions. The model of CF management works with the real business data set and therefore data had to be anonymized.

Introduction

World economic crisis, which start in 2008, becomes thread and opportunity concurrently for many firms. This also applies to companies in financial sector in small country like Czech Republic (CR). In years 2009 – 2013 it significantly grown PIs for example [1, 2, 10]. These institutions [12] use efforts of importers and exporters to save costs on exchange commission. The CR is strongly open economic, where many producers or traders must deal with exchange, primary on currency pair Euro – Czech crown (CZK)[4]. There are few common ways to save are [5]: Making less high volume transaction with lower margin; Create balanced foreign currencies CF [6]; Use financial derivatives like forwards to ensure exchange rate [7]; Monitoring offers from more financial institution. Last one means opportunity for PIs that are more operative than huge bank houses [9]. Therefore these institutions quickly increased in recent years. The market situation is now more competitive and favourable for client and lead to lower

margins and improving services for the clients. On the other side exchange institutions have to reduce costs by development and optimization of human sources, try to reduce costs on banking transactions and CF management.

1. Problem formulation

A system approach is necessary for improvement of CF [3, 8]. There are so many factors that use of classic methods like statistical analysis, regression or linear programming are very problematic. Primary inputs with strong influence to CF are: Development of market i_1; Effect of exchange rate changes on the volume of transactions i_2; Client structure and trends of business transactions on individual accounts (Market background) i_3; Behaviour and needs of 'special' clients i_4; Influence of date – annual and week cycles, effect of Christmas, Eastern and holidays i_5. Problems are not only different and variable weights of inputs but also their predictability. Some of them are known very good (i_1 and i_5), some are really good predictable (i_3) but last of them (i_2 and i_4) are very hard predictable. It is a reason why institution primary use CF management experts and statistical and other methods have a role of expert support. From the view of PI it is possible to distinguish four types of markets: new, growing, developed and descending (see Tab. 1). Linguistic values are used because it depends on the size of PI. The table shows primary behaviour of background. It means that negative impact of predictability or special clients on CF can be observed in some banks or currencies, not through whole market. Next reason is that developed market shows sometimes signs of unpredictability.

TAB. 1: Market differences

Market	Nr. of transaction	Volume of market	Predictability of background	Effect of special clients
new	few	small	unpredictable	huge
growing	plenty	middle - high	bad	big
developed	plenty	middle - high	good	middle
descending	medium	middle	good	small

Source: authors

One of that reasons is currency market events. Correlation analysis showed great impact among volatility of currency and volume of transactions, margin or profit. Correlation coefficients are in the Tab. 2. Difference between buyers and sellers is different needs of

market participants. Sellers are already importers (traders) which do not want to keep goods in warehouse. So they change currency in week's cycles. Buyers are on opposite site (exporters – manufacturers). They can keep foreign currencies and wait for the best moment for exchange and are more typical month cycles of exchange.

TAB. 2: Correlation between daily change of rate on Euro and selected business parameters

Clients	Volume	Profit	Nr. of transactions
CZK sellers	-0.32797	-0.33327	-0.20618
CZK buyers	0.893825	0.929612	0.763844

Source: authors

The Fig. 1 shows reaction of buyers and sellers on Czech National Bank (CNB) intervention in Nov. 7, 2013. Left scale is difference between higher and lower position variation range of CZK in one day. This event was not expected by markets despite signs from CNB. It meant a significant increase in turnover and profits for payment institution which offset the higher costs on CF. Since then analysts attach reports from CNB more importance. On the contrary, speculative attacks are still totally unpredictable. Fortunately, their influence is in halers (penny) rather than in tens of halers.

FIG. 1: Volume of sellers and buyers of CZK in November 2013
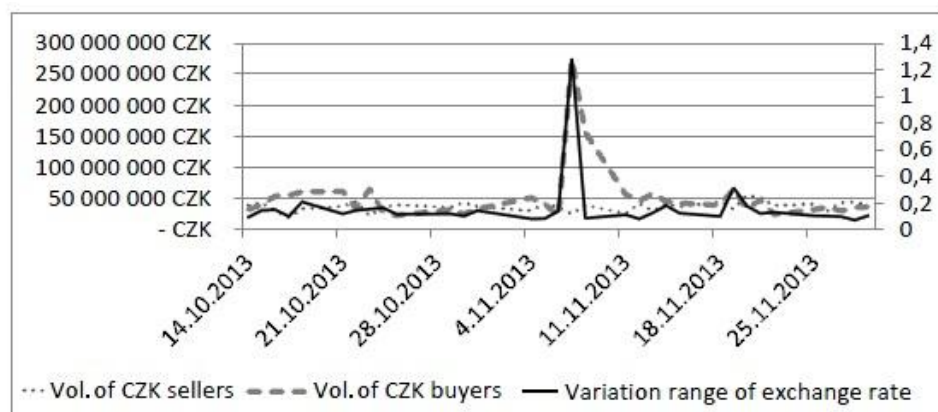
Source: authors, processed based on business data of PI and data from CNB

On the other side there are events which can be simple predicted by look into calendar: Christmas, Eastern, holidays etc. These events mean special behaviour of clients in period around these feasts and for example Christmas and Easter are also points that

mark the end of one period and the beginning of a new period of the annual cycle. For example, Polish Easter is celebrated more than in other countries it is possible to trace them during a large increase in currency exchange. It is shown in Fig. 2.

FIG. 2: Requirements for sales of PLN around Eastern 2014
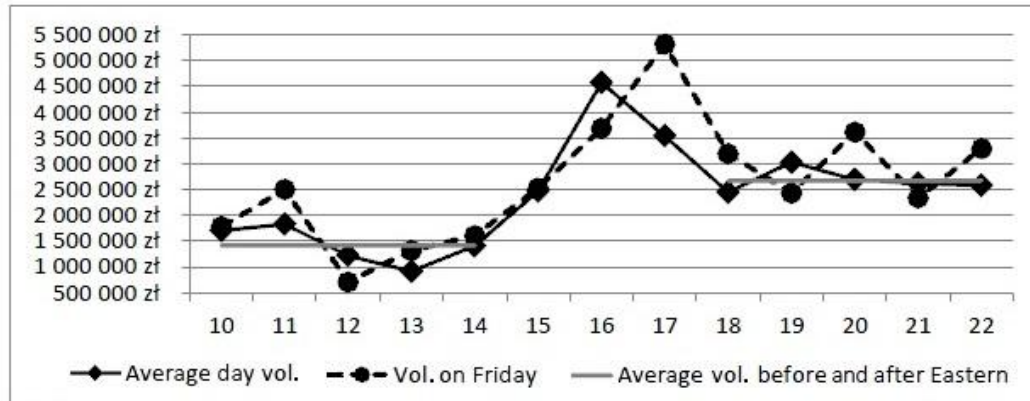
Source: authors

Another risk for CF are called 'special' clients (currency exchange, international traders), i.e. clients with large turnovers and already specific requirements as speed of settlement, lower margin, monitoring the movements of exchange rate. When this client starts to trade, he can change the situation on accounts in bank, where he make the trade. We can see results in several banks and accounts in Tab. 3. In the PL bank 1 several special clients strengthened the trend of PLN surplus and shortage of foreign currency. In the PL bank 2 change these clients the character of bank from typical bank for exporter to typical bank of importers.

TAB. 3: Special clients and its influence on CF in banks

Bank	Currency	Result	Result without special clients	Ratio of Transaction	Nr. of observations
PL bank 1	EUR	- 35 348 998	- 7 128 838	54.29%	150
PL bank 1	PLN	293 045 855	136 480 481	65.95%	150
PL bank 1	USD	- 45 254 177	- 4 563 647	86.77%	150
PL bank 2	PLN	78 876 595	- 101 286 654	57.15%	150

Source: authors

2. Model design

Scientific articles are primarily devoted to CF management under uncertainty on international markets [6 - 8]. On the side of PI there is a problem with the time. Transfer of money from one bank to another takes one day. For faster processing the PIs must pay urgent surcharge and even this solution has its cut of time. It is necessary to estimate the client's need day before and this estimate next day edit along the evolution of the situation. Therefore PI needs system solution. When the system approach is use for CF management, it is possible to identify vector of inputs $i = \{i_1, i_2, \ldots i_5\}$, some algorithms (methods) in process and output vector $o = \{o_1, o_2\}$ where o_1 is absolute cost for CF management and o_2 represents relative cost, it means o_1/profit. Some of them can be statistically described, other depend on the estimates of experts. The quality level of model is thus dependent on the processing uncertainty statements of the experts. This concerns both the description of the individual input and degree of interaction and multiplication between the different inputs. Therefore is suitable to use the hybrid approach it means fuzzy and neuro-fuzzy approach.

FIG. 3: Model of CF management

Inputs
• Vector $i = \{i_1, i_2, i_3, i_4, i_5\}$

Process
Current solution:
• Expert evaluation
(it works on the basis of support in standard table and database system)
Proposed solution:
• Case-based Reasoning System
• Dynamic Case-based Reasoning System with Fuzzy sets
• Neuro – fuzzy system with simplified model

Outputs
• Vector $o = \{o_1, o_2\}$
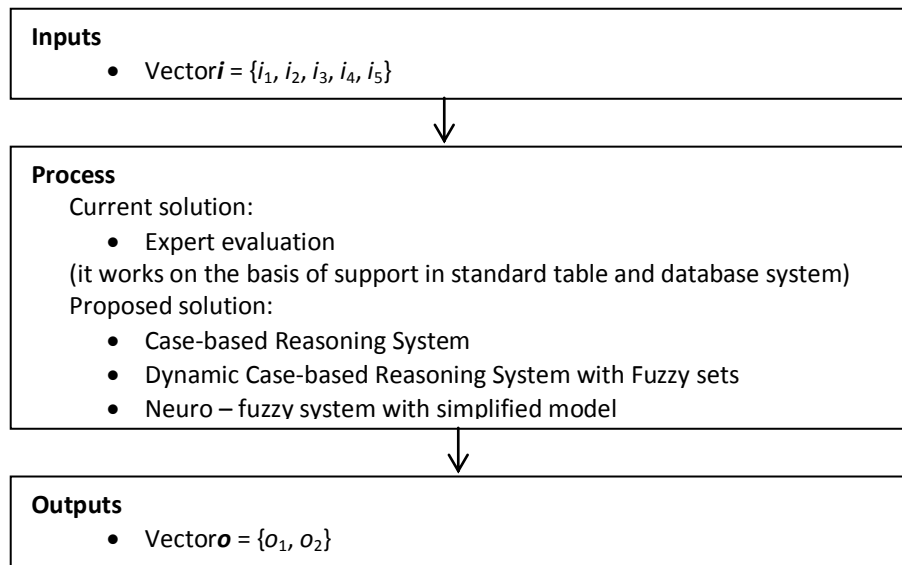
Source: authors

3. Discussion

An uncertainty of information and inaccuracy of leading indicators (expert opinion - evaluation and statement of CNB) are a prerequisite for the use of fuzzy sets as measuring of some inputs. Other can be measure by statistical methods. The influence of data is determined based on previous experience. All these approaches can be used in Case-based reasoning. Due to the ongoing acquisition of special clients must be continuous updating of the data base with new dataset. It will also be necessary to provide additional information in situation of non-standard or not included cases in the data base. On the other side there is possible to use neural - fuzzy approach[11]. There is a problem with the complication of model which poor intelligibility for humans and more calculations for machines. Even worse is finding errors when the model of dynamic system begins to exhibit high error rate. Therefore it would be necessary to simplify the model. The aim is to optimize the cost with compare to profit, it means to find minimum value of o_2. Evaluation of this function is relatively easy so there is no need for specific approach.

On the basis of comparison the earlier approaches to CF management, it is possible to trace two major differences. The first is the rapid acceleration of payment during the last two decades. From the days become hours or minutes. This has resulted in increased demands on the speed of decision. Any support that is not capable of responding to the situation in real time loses its value-added. In addition, after the crisis years of 2009 - 2013 increased regulation of the financial sector, this carries more responsibilities. The second difference lies in the fact that most of the professional work of CF management is not based on the perspective of financial institutions but manufacturing or logistics companies.

Conclusion

The aim of the paper was the analysis of information's from dynamic changing markets and possibilities of creating model. This model should be satisfied the conditions of the systems approach. Due to the uncertainty and imprecision are offered use of hybrid systems with soft computing.

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REGIONAL DISPARITIES EVALUATION USING ENTROPY AND TOPSIS METHODS

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Abstract:

Applying the multicriteria decision making methods (MCDM) the paper solves the problem of an alternative approach to quantitative evaluation of the regional development. This paper proposes a combined entropy weight and a TOPSIS method for regional disparities evaluation. The information entropy is used to derive the objective weights of the regional indicators and the TOPSIS method is employed to rank the NUTS 2 regions in Visegrad Four countries (V4) according their socio-economic development. The results of the analysis confirmed that the regional disparities between NUTS 2 regions with capital cities (Praha, Bratislavský kraj, Közép-Magyarország) and other regions existed in the year 2004 and have persisted till the year 2012 when they were strengthened by the impacts of the economic crisis.

Introduction

The economic, social and territorial disparities in the level of regional performance are a major obstacle to the balanced and harmonious development of the regions, but also of each country as well as a whole European Union (EU). This is reason the elimination of the disparities with the support of the regional development is a primary objective of the EU's development activities. There is a general belief that differences should be kept in the sustainable limits especially since new member states (including V4 countries) have joined the EU in the year 2004. Their admission has been associated with an increase in the regional disparities that have negatively affected the EU's competitiveness and cohesion. To create a suitable methodology that enables to identify the actual level of regions' socio-economic development is the most important condition for developing of

an effective regional policy. Therefore, the quantitative evaluation of the regional disparities in the EU is actual and important topics of many discussions and research studies. However, the attitude of the researches to the measurement and evaluation of the regional disparities is not uniformed. Most existing approaches use several disparities indicators that are processed by less or more sophisticated mathematical and statistical methods. Alternative and not broadly extended approach in the field of regional economics represents the multicriteria decision-making methods (e.g. AHP, TOPSIS, VIKOR, DEA), see e.g. [3], [4], [6], [7]. MCDM methods help to decision maker organize the problems to be solved, and carry out analysis, comparisons and rankings of the alternatives.

The aim of the paper is to define the rank and the mutual positions of NUTS 2 regions in Visegrad Four countries reflecting their socioeconomic development in the period 2004-2012 by utilizing MCDM method of TOPSIS which is based on entropy. Using the quantitative multidimensional characteristics and methods can lead to more precise evaluation of the socioeconomic development and disparities among regions.

1. Methodology

The entropy is employed to derive the objective weights of the evaluation criteria. The TOPSIS method (the Technique for Order Preferences by Similarity to an Ideal Solution) is employed to rank the regions according their level of development.

1.1. TOPSIS method

TOPSIS method is based on the determination of the best alternative that comes from the concept of the compromise solution. The compromise solution can be regarded as choosing the best alternative nearest to the ideal solution (with the shortest Euclidean distance) and farthest from the negative ideal solution [7]. The procedure of TOPSIS method includes the following steps. *The first step* is to construct the decision matrix. Given a set of alternatives, $A = \{A_i \mid i = 1,\ldots, n\}$, and a set of criteria (attributes), $C = \{C_j \mid j = 1,\ldots, m\}$, where $Y = \{y_{ij} \mid i = 1,\ldots, n; j = 1,\ldots, m\}$ denotes the set of performance ratings and $w = \{w_j \mid j = 1,\ldots, m\}$ is the set of weights for criteria. Procedure that converts all the criteria so that all of them were either minimization or

maximization is often implemented before the execution of TOPSIS method. *The second step* is to calculate the normalized decision matrix according to formula:

$$r_{ij} = \frac{y_{ij}}{\sqrt{\sum_{i=1}^{n} y_{ij}^2}}, \tag{1}$$

where i= 1,...,n; j = 1,...,m. With regard to the defined weight of criteria, *the third step* is to calculate the weighted normalized decision matrix expressed as $v_{ij} = w_j \cdot r_{ij}$, where

i= 1,...,n; j = 1,...,m. *The fourth step* includes the determination of the positive ideal solution $H_j = \max(v_{ij})$ and the negative ideal solution $D_j = \min(v_{ij})$. *The fifth step* is to calculate the separation from the ideal d_i^+ and the negative ideal solutions d_i^- between alternatives. The separation values can be measured using the Euclidean distance, which is given as:

$$d_i^+ = \sqrt{\sum_{j=1}^{k} \left(v_{ij} - H_j\right)^2}, \tag{2}$$

$$d_i^- = \sqrt{\sum_{j=1}^{k} \left(v_{ij} - D_j\right)^2}, \tag{3}$$

The last step includes the calculation of the relative closeness to the ideal solution and ranks the alternatives in descending order. The relative closeness of the *i*-th alternative A_i is expressed as:

$$c_i = \frac{d_i^-}{d_i^- + d_i^+}. \tag{4}$$

1.2. Entropy

In information theory, entropy is a general measure of the uncertainty. It is represented by a discreet probability distribution, in which broad distribution represents more uncertainty. When the difference of the value among the evaluating objects on the same indicator is high, while the entropy is small, it illustrates that this indicators provides more useful information, and the relative weight of this indicator would be higher and vice versa [8] . The procedure of entropy includes the following steps. *The first step* of

entropy is to get the normalized decision matrix $R = (r_{ij})_{m \times n}$, where r_{ij} is the data of the j-th evaluating object on the indicator, and $r_{ij} \in [0,1]$. If there are benefit indicators then r_{ij} is calculated as [8]:

$$r_{ij} = \frac{x_{ij} - \min_j \{x_{ij}\}}{\max_j \{x_{ij}\} - \min_j \{x_{ij}\}}, \qquad (5)$$

While there are cost indicators then r_{ij} is calculated as:

$$r_{ij} = \frac{\max_j \{x_{ij}\} - x_{ij}}{\max_j \{x_{ij}\} - \min_j \{x_{ij}\}}, \qquad (6)$$

The second step is to calculate entropy value H_i. In the m indicators, n evaluating objects evaluation problem, the entropy of i-th indicator is defined as:

$$H_i = -k \sum_{j=1}^{n} f_{ij} \ln f_{ij}, i = 1,2,...,m, \qquad (7)$$

in which $f_{ij} = \dfrac{r_{ij}}{\sum\limits_{j=1}^{n} r_{ij}}$, $k = \dfrac{1}{\ln n}$, and suppose when $f_{ij} = 0$, $f_{ij} \ln f_{ij} = 0$, $\qquad (8)$

The third step is to determine the weight of entropy of i-th indicator that could be defined as:

$$w_i = \frac{1 - H_i}{m - \sum\limits_{i=1}^{m} H_i}, \qquad 0 \le w_i \le 1, \sum_{i=1}^{m} w_i = 1. \qquad (9)$$

2. Application of entropy and TOPSIS methods and empirical results

The alternatives are total 35 NUTS 2 regions in V4 (8 in the Czech Republic, 7 in Hungary, 16 in Poland, 4 in Slovakia). These alternatives are evaluated by 16 indicators (criteria) of the regional disparities within economic, social and territorial dimension, see Table 1. These indicators are the most frequently used indicators of the regional disparities monitored within Cohesion Reports published by the European Commission see [1], and available in the Eurostat database.

TAB. 1: Selected indicators (criteria) for disparities evaluation in V4 regions

Dimension	Indicators	Abbreviation	Unit
Economic	Gross domestic product at market prices	GDP	PPS per inhabitant
	Gross fixed capital formation	GFCF	million Euro
	Total intramural R&D expenditure (GERD)	GERD	% GDP
	Patent applications to the European Patent Office (EPO)	EPO	number million per inhabitant
	Employment in technology and knowledge-intensive sectors	ETK	%
Social	Employment rate from 15 to 64 years	ER15-64	%
	Employment rate of older workers from 55 to 64 years	ER55-64	%
	Unemployment rate from 15 to 64 years	UER15-64	%
	Persons aged 30-34 with tertiary education attainment	TE30-34	%
	Early leavers from education and training	EL	%
Territorial	Density of motorway	DM	km/1000 km^2
	Density of railway	DR	km/1000 km^2
	Victims in road accidents	VRA	number per million inhabitants
	Life expectancy	LE	the mean number of years
	Infant mortality rate	IMR	%
	Hospital beds	HB	number per 100 000 inhabitants

Source: [1], [2], author's processing

The final values of criteria's weights are shown in Table 2. Among all indicators, indicators density of railway and GDP per inhabitant had the biggest importance.

TAB. 2: Weights of criteria based on entropy in the years 2004 and 2012

Indicator/year	2004	2012
GDP	0.0915	0.0980
GFCF	0.0784	0.0832
GERD	0.0749	0.0638
EPO	0.1227	0.0666
ETK	0.0671	0.0736
ER15-64	0.0499	0.0528
ER55-64	0.0727	0.0674
UER15-64	0.0403	0.0394
TE30-34	0.0464	0.0409
EL	0.0284	0.0180
DM	0.0779	0.0807
DR	0.1247	0.1519
VRA	0.0189	0.0185
LE	0.0421	0.0355
IMR	0.0477	0.0560
HB	0.0164	0.0538

Source: author's calculation, 2014

Together with determined weight of criteria, the TOPSIS method is applied to rank all NUTS 2 regions in V4 based on the level of economic, social and territorial

development. Table 3 shows and compares the final value of the ranking index c_i in the years 2004 and 2012. The highest ranked region is the closest to ideal point and farthest to negative point.

TAB. 3: Comparison of V4 regions' ranking in the years 2004 and 2012

Code	Year / Region	2004 c_i	2004 Rank	2012 c_i	2012 Rank	Code2	Region2	2004 c_i	2004 Rank	2012 c_i	2012 Rank
CZ01	Praha	0.6613	1	0.6282	2	PL21	Małopolskie	0.1827	14	0.2224	15
CZ02	Střední Čechy	0.3538	4	0.3332	5	PL22	Śląskie	0.1773	15	0.2920	8
CZ03	Jihozápad	0.2036	9	0.2137	17	PL31	Lubelskie	0.1299	25	0.1532	28
CZ04	Severozápad	0.1593	20	0.2044	19	PL32	Podkarpackie	0.1293	26	0.1612	26
CZ05	Severovýchod	0.2836	7	0.2396	12	PL33	Świętokrzyskie	0.1424	23	0.1734	24
CZ06	Jihovýchod	0.3011	5	0.3539	4	PL34	Podlaskie	0.1074	29	0.1228	34
CZ07	Střední Morava	0.1868	13	0.2296	13	PL41	Wielkopolskie	0.1427	22	0.1844	22
CZ08	Moravskoslezsko	0.1910	11	0.2399	11	PL42	Zachodniopomorskie	0.0855	34	0.1290	33
HU10	Közép-Magyarország	0.6308	2	0.6011	3	PL43	Lubuskie	0.1749	17	0.1423	30
HU21	Közép-Dunántúl	0.2563	8	0.3281	6	PL51	Dolnośląskie	0.1509	21	0.2278	14
HU22	Nyugat-Dunántúl	0.1913	10	0.2497	10	PL52	Opolskie	0.1385	24	0.1519	29
HU23	Dél-Dunántúl	0.1287	27	0.2793	9	PL61	Kujawsko-Pomorskie	0.0892	33	0.1341	32
HU31	Észak-Magyarország	0.1897	12	0.2185	16	PL62	Warmińsko-Mazurskie	0.0790	35	0.0823	35
HU32	Észak-Alföld	0.1765	16	0.1806	23	PL63	Pomorskie	0.1040	30	0.1690	25
HU33	Dél-Alföld	0.1632	19	0.2034	20	SK01	Bratislavský kraj	0.5548	3	0.6556	1
PL11	Łódzkie	0.1129	28	0.1950	21	SK02	Západné Slovensko	0.1660	18	0.2126	18
PL12	Mazowieckie	0.2949	6	0.2969	7	SK03	Stredné Slovensko	0.1029	31	0.1355	31
						SK04	Východné Slovensko	0.0917	32	0.1593	27

Source: author's calculation, 2014

3. Discussion

The comparison of the regions' ranking indicates the trends in the level of the regional development. The wide range of the index c_i (an interval 0.6-0.07) shows that the significant socioeconomic differences between NUTS 2 regions can be identified in V4. In the year of V4's entry the EU, the shortest distance from ideal solution was achieved by three regions with capital cities - Praha, Közép-Magyarország and Bratislavský kraj followed by region Střední Čechy. These regions were ranked on the top four positions and in comparison with other regions their best ranking has predominated till year 2012. These regions achieved the highest level of socioeconomic development that implied the visible differences among regions with capital cities (with exception of region Mazowieckie which was ranked on sixth position) and the rest of V4 regions. On the other hand, Polish regions Warmińsko-Mazurskie, Zachodniopomorskie, Kujawsko-Pomorskie and Slovak region Východné Slovensko were the farthest from ideal solution and they were ranked in the last positions. Overall, Polish regions had the worst starting positons in the level of regional development at the beginning of EU entry. On the

contrary, Czech regions can be considered as more developed compared to others. Although the research studies demonstrate that the regional disparities were reduced in the year 2000-2011, e.g. [1], [5], the impacts of the economic crisis affected the regions' ranking in the year 2012 even though in the different size. The rank of regions Praha, Közép-Magyarország and Bratislavský kraj was changed but they were still considered as most developed. The dominance of these regions resulted from the capital cities where the great mass of public institutions and the private sector is concentrated. On the other hand, it is necessary to take into account the statistical effect that can overvalue some indicators of economic performance. Small changes can be observed also by regions on the last positions where the crisis deepened the low level of development. Polish regions Warmińsko-Mazurskie, Zachodniopomorskie, Kujawsko-Pomorskie together with region Podlaskie showed the farthest distance to ideal point while region Východné Slovensko recorded the improvement in the development. In the eight year period, the weakening of four Hungarian regions was recorded resulting in worse positions. Also half of Czech regions as well as almost half of Polish regions got worse positions in the year 2012 in comparison with the year 2004. In the year 2012, the convergence to ideal positions or the same positions can be observed by Slovak regions.

Conclusion

The results of TOPSIS analysis showed that there was the different level of regional development in V4 at the beginning the EU entry. The analysis confirmed that NUTS 2 regions with capital cities (Praha, Bratislavský kraj, Közép-Magyarország) have had significant and different socioeconomic positions from the other regions in V4 in year 2004 and these differences have persisted or rather increased in the period of the economic crisis. The regional disparities have also persisted between Czech regions on the one hand and Hungarian, Polish and Slovak regions on the other hand.

In the absence of the mainstream in methodological approach to regional development evaluation, the presented multicriteria evaluation can be considered as a suitable alternative. Adopting the entropy to determine the weight can be better to eliminate the subjectivity of the weight (e.g. in comparison with AHP method). The main advantage of TOPSIS is that its user could directly input judgment data without any previous

mathematical calculations and locate both the ideal solution and the negative ideal solution easily.

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COST MANAGEMENT WITH IMPLEMENTATION OF DIFFERENT MANAGEMENT METHODS

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Abstract:

Cost management is a specific area not only of management accounting but mainly from the comprehensive management control. It is demonstrated and verified on aconcrete manufacturing company that the implementation of basic management techniques, such as the Balanced Scorecard (BSC), Activity Based Costing/ Management (ABC/M), Business Process Management (BPM), does not necessarily guarantee underpinning of all influences that can affect the cost management. Therefore, a proposal was made in the article on amendments to other management methods such as Business Continuity Management (BCM), Change Management (CHM), risk management (RM), Performance Management (PM), which creates a complex management system of cost management and performance.

Introduction

Cost management in the company is very challenging managerial area. That management would be able to capture a large number of internal and external factors and variables, and thus control costs right, it is necessary to work with different managerial methods that make this job easier and more accurate. The aim of this work is to show that the continuous cost management requires a combination of several management methods.

1. Methodology and research

By research in articles and literature was found that major part of larger companies use only one, two or maximum three management methods, small and medium-sized

companies use none and the cost management is done intuitively, without a deeper analysis and implementation corrections. In a specific company, where in the first phase were implemented basic management methods for the cost and performance control, such as the Balanced Scorecard (BSC), Activity Based Costing/Management (ABC/M), Business Process Management (BPM), has been verified that not even set of these methods is sufficient for capturing all acting influences. Therefore, in the final part all the shortcomings were taken into consideration, and new model with connection and articulation of other management methods, such as Business Continuity Management (BCM) Change Management (CHM), risk management (RM), Performance Management (PM) has been designed.

The research witch was done in Cranfield university in 2003 describing a possibility to connect several methods of management. There was found out that 46% of organizations implement an official process of management of productivity. Totally 25% of these organizations use as its main system of management of productivity the form of the complete quality management (TQM – Total Quality Management) and the rest of them use BSC [5].Another research describing using methods of management was done in Asociation Small and Midle Companies in Czech Republic in 2011 [10].

- 1st Question – Do you know modern methods of management?

FIG. 1: Knowledge management methods
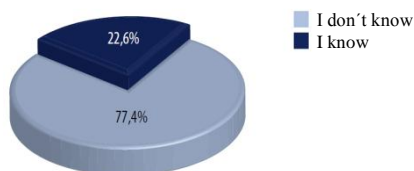
Source: AMSP research [10]

- 2nd Question – Do you have in firm any methods of management? Which?

FIG. 2: Use of management methods into firm
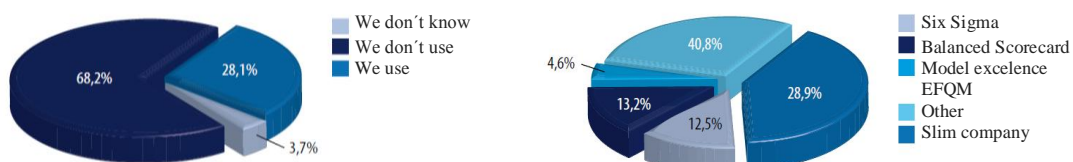
Source: AMSP research [10]

- 3rd question – do you plan implementation any methods into you firm.

FIG. 3: Plan implementation any methods into firm

Source: AMSP research [10]

The companies can choose from a lot of instruments for the management and improvement of company´s running these days, but none of them does not cover complex view. Nobody knows, which system and instruments shall be use and how to connect it with another instrument to be efficient and do not increase the bureaucracy.

In the Czech Republic is worse, according to the research which was done in 2004 at University of T. Bata in Zlín [8], from 140 industrial companies:

- 51% did not deal with ABC Management at all
- 18% applied with this ABC Management method, later on they rejected (the reasons are mostly the same – old IS, too much complicated methods, minor overhead costs, too many range of products)
- 23% think about ABC Management
- 3% are in the phase of implementation of this method
- 5% of the companies used ABC Management method actively

There is not possible to move the company forwards dynamically only with the method of ABC management and BSC and manage the company on a long-term basis. The experience in the company beginning in 2012, when was started to work with methodology for strategic management Balanced Scorecard. But in during the year it was found out for business as insufficient. In August it was started to implement ABC Management for lack of information about cost of products. After a few months it was found out that without map of processes is impossible implement ABC Management successfully and launch new method of management, now for optimization of processes Business Process Management.

FIG. 4: Merging methods BSC ABC/M and BPM

BSC : method for strategic management of firm
BSC + measurement of key firm area
BSC – insufficient for achieve continuity of firm
ABC/M + dividing cost on processes/activities
ABC/M – without map of processes is insufficient
BPM : method for management of processes
BPM + to achieve of optimization of processes
BPM – without information about risk
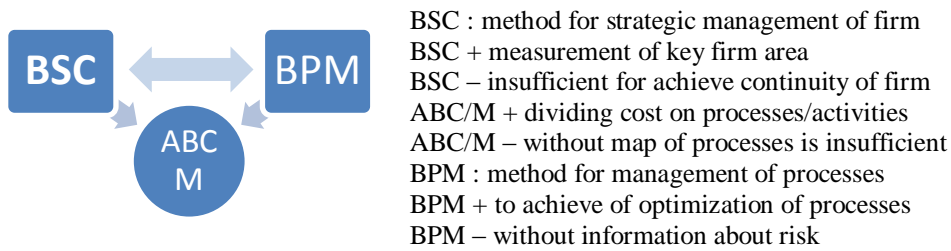
Source: Own

The situation in the companies is worse from the point of view to access to risks and its prevention, as well as methods application for example Business Continuity Management, which could protect the company against unreadiness to any incident (external or internal). Companies´ managements do not pay attention to this matter, which they should and last depression has already confirmed this.

2. Results

At application of ABC management, there is necessary to focus on ABC calculation. In our business we confirmed above mentioned problems and due to we decided to apply new method of management. Making use of this system is important primarily to apply ABC calculation and BPM together. If it comes out of the fact that all processes are (will be) mapped in the company, then there is possible gradually to quantified/do parameter single steps in processes according cost area. It was found out during this year insufficiency this step and must to increase into next areas:

- Customer
- Product
- Risks
- Personal
- Continuity

The basic principle of ABC calculation is a fact, which arises from so called Paret´s rule, which says that 80% of all procedures are caused only 20% of inputs and vice versa. Looking at several important indicators from the above mentioned areas, there is possible to get the response for the questions which the companies look for e.g.:

- 80% of consumption is included in 20% of items
- 80% of incomes you will get from 20% customers

There is possible to see, in an example of one manufacturing company influence on implementation next method for management – Business Continuity Management.

Strategy of low costs

Each product must to have technological procedure (TP). What is necessary to have in TP? Definitely:

- **Detailed** description all steps in process production of product,
- **Quality** parameter on each step (e.g. machine time, operating time, consumption power, tools and materials, consumption working time, risks, parameter of continuity etc.),
- **Complexity of data**
- **Integrity of data**
- **Connection among processes**
- **Audit of data on regular base**

Every product has to have defining its technological procedure. Within TP there is possible to behave very effectively and on the basis of data to deal with steps which are the most important for customer or the company. It has to decide which products are most important for our clients and prepare database of production in this year. Results output of this database in table 1.

TAB.1: Analysis of the products in the financial statements

	1-Micro V-V-V-Z	2-Small V-V-V-Z	3-Middle V-V-V-Z	4-Big V-V-V-Z	5-Special V-V-V-Z	Sum
⊞Product A	293 852	21 133 928	7 895 069	7 975 813	16 641 949	53 940 610
⊞Product B	1 475	94 534	18 201	86 331	825 727	1 026 268
⊞Product C		1 504 697	643 761	701 825	1 986 325	4 836 608
⊞Product D		366 519	93 032	232 418	885 281	1 577 250
⊞Products E-R	16 221	63 198	42 936	190 638	172 077	485 071
Sum	311 548	23 162 876	8 692 999	9 187 024	20 511 360	61 865 806

Source: Own

From the base of low cost strategy is obvious that there is important to deal only with product A. Another method, which must be applied, is Change Management (CHM).

There is not able to stay only at analyzed data, there must be ensured their realization and dragging into successful end. It is important to count with these arguments. There is also necessary to emphasize on these contribution:

- increasing of clarity in all activities and processes,
- clearly defined responsibilities, which should start proposals for increasing of economy of particular departments from,
- update data de-fact in real time and eliminate duplicity and information ballast,
- reduction and decreasing activities and processes, which do not have added value,
- change of thinking in people´s behaviour and access to the company (connection with valuating and motivating system)

The change is one of the biggest problem of the Czech companies (not only in Czech companies, of course). Most of changes are wrecked on unwillingness not only of employees but also top management, alternatively of owners to persist on changes implementation. In the view of the fact that there are not so many changes, it is recommend to single out a person, who will be responsible for planning, coordination, monitoring and evaluation of all changes. John Kotter [6] published in his book Supervision of change that 70% of change activities in organization and business, finishes by failure.

The changes are very risky and primarily must generate three changes inside into company´s strategy:

- **The first** is the area of increase of clients (one of the area of BSC), where has to come to pass the change of ratio of clients ´number to the total turnover of the company. If this aim is not fulfilled and in a case of an unexpected leaving one of the clients, there can have a tragic impact to fulfilment of yearly aims but also to company´s existence.
- **The second** area is aspect which influences change´s implementation is qualified worker not only in manager position but also in working position. Some working professions are unavailable at working market at present, which has a negative impact to company´s management and fulfilling of strategic aims.

As well as in the Czech Republic also within EU market, Japan; there is a fast decline of young people who will be in disposal for working career and the companies should prepare for this risk now [2].

- **The third** area is the communication towards employees and projection of the first step into their KPI (Key performance Indicator), what are efficiency indexes of methods of Performance Management (PM) which should have been on the table of each employee incl. top management and know them by heart.

It is evident that without implementation Risk Management and Performance management is impossible to be effective. First of all, Risk management can decrease curve needless of cost and prevent of escalation of risk. Secondly, Performance Management must be crucial area each of company. Research on theme Performance Management has been conducted in the firm [11]. Research confirmed that the firm doesn´t perform all activities of the process of Performance Management.

FIG. 5: Merging methods BSC ABC/M and BPM

		Total		hall 3	soft	hard	TAS	product Divison	3 s h TAS
4	Is really defined process and activities of performance management?	NO	-58%	-67%	-73%	-67%	-30%		
5	Have a discussion on your performance with management?	NO	-71%	-76%	-84%	-67%	-59%		
11	Do you have agreement with boss about your KPI in phase preparing firm goals?	Probably NO	-28%	-48%	-45%	-33%	11%		

Source: Own research [11]

In the company there was done changes in the area of management by implementation of method BPM (update of manufacturing process including all TP) and BCM (installation of backup machines), which led to unrolling above stated ABC calculation to these areas and meant another contribution/multiplication effect for the company in the way of shortening time as well in production´s preparation (technological procedures and planning) as well in production itself. Therefore, in the final part all the shortcomings were taken into consideration, and it is designed a new model with connection and articulation of other management methods, such as Change

Management (CHM), risk management (RM), Performance Management (PM) has been designed.

FIG. 6: Proposal for merger managerial methods
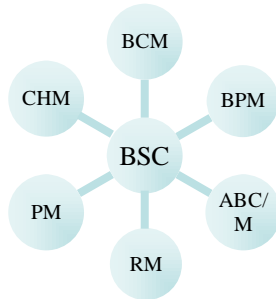
Source: Own

3. Discussion

The result is that ABC itself is not sufficient for costs management and continuity of the company. There is arisen from the article that no company is able to get along without connecting other methods in long-time horizon, which have been already started to use or implemented at least. For further period there is important to make analysis not only with the method ABC but also BSC, BPM, RM, BCM, esp.:

- permanently in advance defined time cycles
- results analyze and include them into change´s management
- check all in compliance with strategic aims of the company

On the basis of the study we discussed sequence of particular methods of management and frequency range of their application in the company. According to a discussion there was followed, that if we could define progression of particular methods of management, it should sound following:

1. **Balanced Scorecard** – as an instrument of strategic management and possibility to define aims, strategy, KPI for key parts in the company: Customers, Finance, Processes, Human resources
2. **Business Process Management** – its output should be processed matrix of the whole company
3. **ABC Management**
4. **Business Continuity Management**

5. **Performance Management**

6. **Risk Management**

7. **Change Management/Project Management**

We have to say on the base research ASMC question 3 and our existing results from the firm is necessary to do.

Conclusion

The article deals with the issue of merging multiple management methods for continuous cost management in manufacturing enterprise. From the application, which was implemented in the company management system, was found that the merged system consisting of a Balanced Scorecard (BSC), Activity Based Costing/ Management (ABC/M), Business Process Management (BPM) does not affect all of the management costs and performance risks, it is therefore necessary to eliminate the effects of internal and external system and supply the method of Business Continuity Management (BCM), Risk Management, Change Management (CHM) and Performance Management (PM) to meet additional requirements on the complexity of the system. The methodology and implementation process will be handled in a separate dissertation of this topic.

The aim, to show that the continuous cost management requires a combination of several management methods, which should eliminate all negative influences, was met.

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EVALUATION OF INNOVATION PERFORMANCE OF THE BUSINESS NETWORKS

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Keywords:

evaluation – quantification – innovation – innovation performance – business networks

Abstract:

In a competitive environment businesses are looking for opportunities, not only the continuance in the market, but also the potential for further development. Cooperation of businesses by their involvement in business networks appears to be a suitable tool to maintain market position in the market and to increase their innovation performance. In order to be able to evaluate the participation of enterprises in business networks, it is necessary to monitor and evaluate the performance of the business network. The performance of the business network is defined as a characteristic which defines the way business network performs its activities aimed at achieving the common objective of the enterprises concerned. The aim of this paper is to outline the issue of evaluation of business networks and their innovation performance.

Introduction

Innovation in the global economy is the key for certain countries and regions. On the basis of innovative activity these may occur in all sectors of the national economy. Innovation activities can be defined as a two-step process where at first the creation and diffusion of knowledge occur and then this knowledge is transformed into innovation. The entrepreneur is the key element in the second part of this process. Innovation starts with knowledge, which is either brand new or new onsite (in the country, the region, in a market). Research and development is the key factor in the process of creating new knowledge. Despite the fact that research and development itself is not innovation, it is

an important requirement for the realization of innovation and innovation activities, warn [2].

Innovation processes are considered as key elements of economic, social and regional development. This is an important factor in the growth of businesses because it includes the added value that is appreciated by customers in the market. Innovation is the result of creative activity and it is a particularly important factor in the competitiveness of an enterprise [8].

Innovative SMEs have a very important role in the economy of each country, since they significantly contribute to the development of new products, technologies, services, and cooperating with large enterprises, their flexibility allows them to introduce innovation into practice relatively quickly [4]. Innovative entrepreneurship appears not only in the creation of new products, services or technologies, but also in creating previously unknown, unused ways to organize production and management using traditional factors of production and their new combinations [3].

A typical feature of an innovative business is a consistent screening of advanced knowledge in the work of all parts of an enterprise so as to achieve a high level of added value of products or services in a higher quality but at more affordable prices than those offered by competitors [10]. Experts agree that an innovative enterprise is a small or medium sized enterprise supporting new ideas which are transformed to new products and services through innovation, and then they are launched in the market [11].

The issue of business networks is not a new topic in our country. It is gaining more importance in the period of the ongoing economic crisis, when all elements of businesses automatically experience greater pressures. Performance improvement management targets to achieve its goals for example with teamwork of business networks, monitoring the market and important partners so that the specific business network gained ascendancy over its competitors. Experiences from practice have confirmed the necessity of the existence and needs of business networks.

Slovakia's economic policy is aimed at the active promoting and developing of new forms of enterprises [6]. According to the results of the Innovation Scoreboard, Slovakia has not achieved the necessary level in creating and implementing innovations for a long time [7]. Much greater emphasis should be placed on continuous assessment of the innovation performance of progressive businesses.

1. Objective, Materials and Methods

The aim of this paper is to outline the issues of the evaluation of business networks and finding out their innovation performance. This paper is a partial outcome of the research project VEGA 1/0381/13 called "Evaluation of the innovative potential of entrepreneurial networks in the early stages of its functioning". Processing the analyzed issues required focusing on factual materials from primary and secondary literature sources. The primary sources consisted of the ongoing results of our research and the secondary sources consisted of the work of domestic and foreign experts. When writing this paper, we used descriptive statistics and a graphical apparatus.

2. Results

Assessment of the innovation performance of business networks has been a frequent topic of various experts in various scientific conferences. Some of them are specifically focused on this issue [5]. Performance management is a holistic, sophisticated and integrated approach to managing the entire business network and a business itself. Performance quantifying means the ability to measure the effectiveness and efficiency of business activities focusing on the aspects of innovation. Thus, the chosen concept respectively the system of performance measurement provides managers sufficient relevant information to make proper management decisions. The concept of evaluation of innovation performance of business networks can be aimed at some partial sections, such as:

- business management,
- investment management,
- managing acquisitions
- business management and cooperation of firms in business networks,
- economic efficiency,
- identifying new market opportunities,
- control and feedback.

The implementation process of innovation is gaining its importance in several dimensions:

- dimension of innovation of business management,
- dimension of innovation of production process,
- dimension of marketing innovation,
- dimension of innovation of penetration on various markets,
- dimension of feedback collection.

Innovation requires different tools and methods which we can assess the performance with. By the significant help of advanced information and communication technologies businesses can implement innovation into business. In addition to the implementation assistance, they are important actors of assessment of innovation performance. Besides meeting the requirements of maximizing the benefits of the innovation process, it is not enough to look at just the cost optimization. To assess the possible benefits of innovation in the market is just as important. For its attributes the following can be considered:

- estimating the costs of implementing the innovation in the business
- the quality of the new product or service,
- maximizing efficiency,
- business objectives should comply with customer needs,
- price elasticity of demand,
- improvement (deterioration) of market position of the company,
- substantive involvement of employees in the quality work of innovation

The current Slovak experience shows that, according to the Innovation Union Scoreboard, we belong to the EU countries which perform below average in the field of innovation. In 2011, in an international comparison Slovakia was ranked 20th among 27 EU countries, and it belonged to the group of moderate innovators with the second lowest level of innovation performance. For a more precise specification of development, we would like to indicate that Slovakia was one of the countries with the highest growth in innovation performance in the period from 2010 to 2012 (19.9%), i.e. at the beginning of the implementation of the Europe 2020 strategy. Regarding financial

innovation, Slovakia has not utilized its risk capital sufficiently for a long time. It can be explained with the lack of competitiveness of the tools, and its difficult introduction into practice as well. In 2010, the amount of invested risk capital amounted to 0.03% of GDP, while in the EU the invested risk capital reached about six times higher level (0.2%). Facts graphically illustrated in Graph 1.

FIG. 1: Innovation Scoreboard for Slovakia: EU 27 average
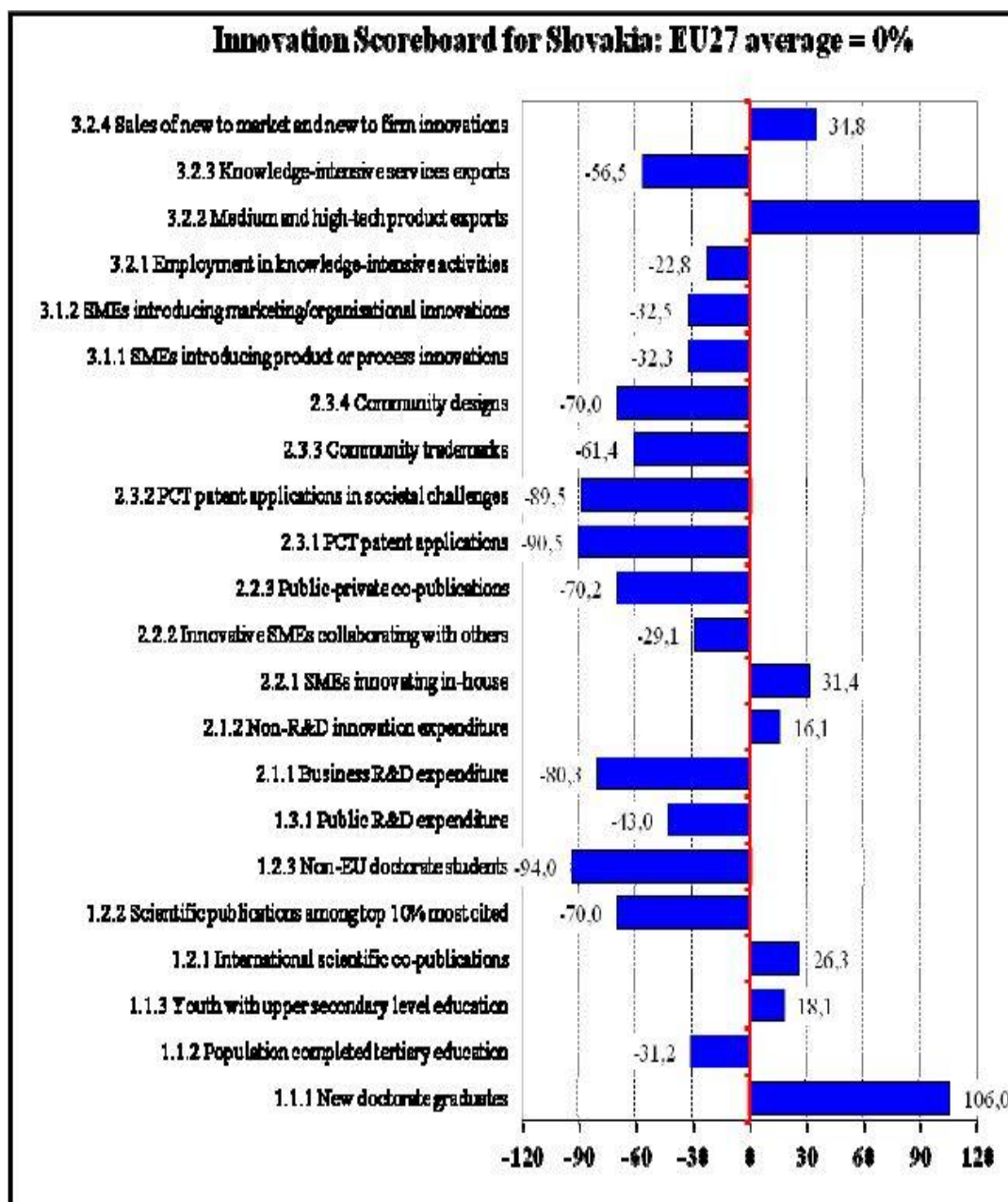
Source: Ministry of Economy. With knowledge to Prosperity - research and innovation strategy for smart specialization of the Slovak Republic.

As statistics show, it is necessary to draw conclusions in order to improve the status of innovation implementation in Slovak enterprises. In Slovakia, despite the significant effect of business networks on innovation performance, only some of the businesses and networks use this option. In order to improve the current situation, our recommendations are aimed at:

- application of methods and tools of strategic management,
- exploiting opportunities of project management innovation,
- individual approach to participants while maintaining their characteristics,
- using specific forms to support innovation (financial schemes, support programs
- of specialized institutions)
- using professional business consulting.

3. Discussion

Sustainable economic development requires constant monitoring and flexibility of the participants of the market. Innovation and participation of enterprises in business networks represent strategies to overcome difficulties in the economic competition. Enterprises are trying to find such a model of business and innovation strategy, which allows them to stay not just in the market, but at the same time to prosper with innovative products. Business network is therefore a useful tool to achieve the goals. Theory but also entrepreneurial experience offers several options to assess innovation, including innovation performance. According to [9], entrepreneurial network provides a dynamic element that helps the participating businesses to make profit. Some authors focus on the economic and mathematical evaluation of the benefits of innovation, for example [1]. Other authors emphasize the importance of developing a completely new model to evaluate innovation processes. In our view, it is important to apply such a model to assess innovation performance, which respects the principle of efficiency, economy, and at the same time it respects the characteristics of a particular business, and can be modified in relation to the changes and the product life cycle.

Conclusion

Evaluation of the business network, with an emphasis on the benefits of innovation, must be an integral part of business management. Quantification of the asset of the

business network for a particular enterprise has the right value about the extent to which it is important for the company to remain in the network and implement the business network. On the basis of our ongoing research we can conclude that although there are obvious benefits of participating in business networks, regarding implementations of innovation and increasing innovation performance, this option is not part of the strategic management of Slovak SMEs.

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SELECTED ASPECTS OF PUBLIC SUPPORT FOR ENTERPRISES IN THE EUROPEAN UNION IN THE CONTEXT OF PRESENT DEVELOPMENT

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Keywords:

public support – European Union – block exemption – the minimis aid

Abstract:

The aim of the paper is to discuss selected aspects of public support enterprises in the context of present development on internal market through the prism of the new rules. The need to reform the regulation of state aid in the EU was not only caused by external socio-economic factors. At the end of 2013 the validity of key public support tools expired and the EU began to prepare multiannual financial framework for the period 2014-2020. The article focuses especially on Commission Regulation no. 651/2014 declaring certain categories of aid compatible with the internal market and Commission Regulation no. 1407/2013 focusing on de minimis aid.

Introduction

European legislation considers state aid as generally undesirable and incompatible with the principles of the internal market, and therefore they are, with few exceptions, prohibited by EU law [7]. Despite the long-term constancy of the general prohibition of state aid in EU law with EU policy of public support developing, particularly in relation to the economic situation of the Union and its Member States. The economic and financial crisis has increased pressure on Member States to implement measures that could be in conflict with the competition rules. The crisis has also caused an increase in demand for stronger state role in stimulating economic growth and a significant burden on public budgets of the Member States [6]. In this situation, the European Commission launched a reform of the rules for state aid. Currently, the European Union is at the beginning of the application of these new rules in the field of state aid, but also at the beginning of the new programming period 2014 - by 2020. Proper application of state

aid rules becomes essential because these new rules are necessary to be applied not only to aid financed from national sources, but they are also an important condition for the withdrawal of funds from the European Structural and Investment Funds [8].

1. The methodology of state aid in the European Union

In order to governments to make minimum disrupt in the single market, and hence competition, the European Union is seeking from the beginning in its founding treaties and other legislation to protect competitive conditions and reduce state aid to businesses and enterprises [4]. Basis of rules of public support are unchanged since the signing of the Treaty establishing the European Economic Community in 1957. The rules for the control of state aid are contained in Articles 107 to 109 of the Treaty on the Functioning of the European Union (TFEU). The concept of state aid is adapted in Art. 107, paragraph. 1 TFEU, which provides [10]: *„Any aid granted by a Member State or through State resources which distorts or threatens to distort competition by favoring certain businesses or production of certain goods shall, if they affect trade between Member States, be incompatible with the internal market, unless the Treaties provide otherwise“*. State aid is not prohibited by EU primary law, but is considered to be incompatible with the internal market. According to Art. 107, paragraph 2 and 3, the primary law does not consider all state aid incompatible and provides a large area of aid from the scope of Article 107, paragraph 1 absolutely or conditionally exempted. The second paragraph of Article 107 TFEU lists the cases of state aid, which are automatically excluded from the above general prohibition. There are three types of aid that can be broadly defined as the assistance of "social" character; assistance for the recovery from damage caused by exceptional occurrences and aid to the economy of certain areas of the Federal Republic of Germany affected by the division of Germany. The third paragraph of Article 107 TFEU lists the types of state aid that may be considered compatible with the internal market: aid to promote the economic development of areas with extremely low standard of living and high unemployment; aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State; aid to facilitate the development of certain economic activities or areas, without adversely affecting trading conditions to an extent which would be contrary to the common interest; aid to promote

culture and heritage conservation, if it does not affect trading conditions and competition in the Union to an extent contrary to the common interest, and other types of aid that may be specified by decision of the Council to the Commission´s proposal. Aids, which automatically are or may be considered compatible with the internal market under those exceptions, must be pre-notified to the European Commission. Exceptions enshrined in EU law can be classified as:

- *general exceptions* (Art. 107, paragraph. 2 TFEU),
- *individual exceptions* (Art. 107 Sec. 3 TFEU),
- *block exemption* (General Block Exemption Regulation no. 651/2014 declaring certain categories of aid compatible with the internal market) and
- *ad hoc exceptions established by the Council* (Art. 108, paragraph 2, subparagraph 3 TFEU).

2. Results

By the early 90s of the 20th century could be argued that the legislation of provision and control of state aid and its development did not belong to the priorities of the Member States and the Commission's approach to changes in secondary treatment was rather case report approach. In the last fifteen years, however, this is an area in which in EU is a significant political development, to which it responds with new regulations and their ongoing revisions and amendments. This led to a situation where - unlike traditionally espoused concept of the prohibition of state aid to the private sector - was rather more appropriate to talk about the legal regulation of conditions of authorization granting state aid on the basis of their assessment by the Commission [3]. The latest plan for the modernization of state aid was introduced in the Commission Communication of 8 May 2012 entitled EU State Aid Modernisation. Commission defined three objectives of state aid modernization: foster growth in a strengthened, dynamic and competitive internal market; focusing enforcement on cases with the biggest impact on internal market and streamlined rules and faster decisions [1].

2.1. Block exemption
On 21 May 2014 the European Commission adopted one of the key legislative instruments for the provision of state aid, and the EU Commission Regulation no.

651/2014, which in accordance with Articles 107 and 108 of the Treaty declaring certain categories of aid compatible with the internal market. From 1 July 2014 this regulation replaced the Commission Regulation EC no. 800/2008 in accordance with Articles 87 and 88 of the EC Treaty declaring certain categories of aid compatible with the common market (i.e. General Block Exemption Regulation). The original regulation covered approximately 60% of all aid in the EU. The Commission estimates that about 3/4 of today's state aid measures and 2/3 amounts of aid will be exempted according to the revised GBER [2]. Block exemptions should in future become the most used legal title for the state aid and Commission expects their applications up to 90% of the state aid measures across the EU. The new regulation applies for aid in all economic sectors, except those explicitly excluded. The basic advantage of using this exception is to avoid the notification procedure with the European Commission and a lower administrative burden. The Commission included a range of new areas that had to be dealt with in the past through notifications into the modernized system of block exemptions. The different categories of block exemptions applicable in Czech Republic are depicted in Table 1.

TAB. 1: Categories of block exemptions

Regional aid
Aid for SMEs
Promoting access to financing for SMEs
Aid for research, development and innovation
Aid for education
Aid for disadvantaged workers and workers with disabilities
Aid for environmental protection
Aid for damages caused by certain natural disasters
Aid for broadband infrastructure
Aid for culture and heritage conservation (including audiovisual works)
Aid for sports and multifunctional recreational infrastructure
Aid for local infrastructure

Source: [9] own elaboration

2.2. De minimis aid

Modernization of the state aid rules brought modernization of one of the most used legislation in the field of state aid, the rules governing the granting of small-scale aid

called de minimis aid. In connection with the modernization of small-scale aid, the following legislation were issued: The EU Commission regulation no. 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid; EU Commission Regulation no. 1408/2013 of 18 December 2013 on the application of Articles 107 and 108 TFEU to de minimis aid in the agriculture sector; EU Commission Regulation no. 717/2014 of 27 June 2014 on the application of Articles 107 and 108 TFEU to de minimis aid in the fishery and aquaculture. The Regulations differ mainly in the areas of applicability and the maximum level of support to small-scale aid, which one company can obtain in the decisive period of three fiscal years. All of the above regulations are applicable for the Czech Republic from 1 July 2014. The new definition of small-scale aid is defined in Art. 3 par. 2 of EU Commission regulation no. 1407/2013 as follows: "*The total amount of de minimis aid granted by a Member State shall provide to one company shall not, in any three consecutive annual accounting periods exceed 200 000 EUR*". These maximum levels (see Table 2) apply irrespective of the form of the de minimis rule and the objective pursued and regardless of whether the aid is granted by a Member State entirely or partly financed from the resources of the Union.

TAB. 2: Maximul levels of de minimis aid valid until 30 June 2014 and from 1 July 2014

Sector	Max. level of de minimis aid until 30 June 2014 (EUR, company/3 yrs)	Max. level of de minimis aid from 1 July 2014 (EUR, comp./3 yrs)
Agricultural production	7 500	15 000
Fishery	30 000	30 000
Others	200 000 (100 000 in transportation sector)	200 000 (100 000 in transportation sector)

Source: [6] own elaboration

New regulation defines the term "single undertaking". The limits should be viewed from the perspective of all enterprises connected with the applicant on de minimis aid. Compare to the previous legislation which support small-scale bound to the beneficiary

and any three consecutive financial years, now newly applied to one Member State. When providing support it is also necessary to meet the obligations arising from national legislation, i.e. The Act 215/2014 Coll., amending certain relations in the field of state aid and amending the law on the promotion of research and development that apply unchanged.

Conclusion

The two-year process of modernizing the rules governing the provision of public funds aimed at the economic activity of enterprises, while their provision has the potential to distort competition and affect trade between Member States, came to an end. Objective of the reform of state aid in the EU is not only to stimulate economic growth and competitiveness of the internal market, in line with the Europe 2020 strategy, but also the rationalization of law and accelerating decision-making processes in matters of public support [5]. The need to reform the regulation of state aid in the European Union was not only caused by external socio-economic factors, but also by many other factors associated with systemic attributes of the Union. At the end of 2013 the validity of key public support tools expired and the EU began to prepare multiannual financial framework for the period 2014-2020, while strengthening the economic and budgetary surveillance of Member States of the EU, and especially those in the euro area. Modernization plan specifying the priority objectives was presented in the Communication entitled Modernizing state aid in the European Union. The intention of the new legislation in the field of state aid is rigorous and focused control of state aid, which should improve the functioning of the internal market through more effective policies aimed at reducing distortions of competition, maintaining equal terms for individual market operators and combating protectionism.

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THE POSSIBLE FORMATION OF SPECULATIVE BUBBLES AFTER THE LAST ECONOMIC CRISIS AND THEIR IMPACT ON INVESTORS

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Keywords:
speculative bubbles – investor – economic crisis – financial markets – creditor

Abstract:
This article deals with the problem of speculative bubbles which may occur in financial markets after the last financial crisis, including their impact on investors. Speculative, or sometimes also called price bubbles, are part of a psychological analysis of financial markets. From time to time these undesirable bubbles appear in some types of investment instruments in financial markets. The aim of this article is to identify those areas of investment instruments where these types of bubbles can occur in the future. The main problem which appears here is to detect the possible formation of new speculative bubbles. If these bubbles are eliminated in advance, it will have a positive impact not only for investors but also for the whole economy of some countries.

Introduction

Speculative bubbles often appear in market economies, which usually lead to a total collapse of the national economy and are accompanied by a reduction in the standard of living for all citizens. When such a bubble bursts, it has an impact on even the smallest investor operating on the financial market. It is therefore a negative phenomenon, which investors perceive as undesirable.

The main objective of this paper then is to identify some selected investment instruments, including areas where the possible formation of price bubbles could be expected. The problem that accompanies the occurrence of these bubbles is their timing. In most cases it happens that the prices of things such as property, commodities, or stocks, tend to move unexpectedly in an excessive growth phase on the financial

market, without having any satisfactory explanation for such an extreme rise. However, growth trends do not last forever, or even for any long term. Therefore prices of investment instruments such as stocks often unexpectedly and without explanation suddenly stop and the price rate plummets. Funding experts explain these phenomena in financial markets at the moment when there is a significant deviation in the rates for shares and bonds from their internal values. There are however investments in which the correct price or intrinsic value is very difficult to determine, such as commodities.

1. Theoretical Basis

The issue of speculative bubbles is dealt with by numerous authors who present possible causes and solutions. Yet even today it is not possible to completely prevent the emergence of these negative phenomena. The latest crisis in the world took place relatively recently, in 2008. It is often referred to as a global financial crisis, triggered by the real estate market in the United States. Real estate prices there increased by 85% between 1997 and 2006, and reached a peak in 2006, when prices on the real estate market fell into a steep decline. [11, 32]

Drasnar [3, 79], draws attention to the needs of property owner ship; at the beginning of a purchase, an investor usually recognises the real value of the investment. After some time passes, this awareness develops into a mass phenomenon and the price of the investment begins to grow exponentially to the point where it reaches absurd values and thus creates a price bubble and then proceeds to burst it. Rejnuš [10, 359] distinguishes two types of bankruptcies caused by speculative bubbles. The first sees a sharp decline in stocks in a short time which does not have a great effect on the functioning of countries' individual economies. The second area includes those failures which have dangerous consequences for almost all investors, as well as various national economic systems. This is a crash that hits the broadest investor community. The result is an economic recession.

Veselá [13, 496] provides an explanation of speculative bubbles in three areas. The first explanation is characterised as mass psychology where the impetus for the creation of a price bubble is lucrative information. This information is assessed optimistically or pessimistically, depending on which driving force is dominant. If an optimistic mood

prevails, people buy until pessimism takes over and then they begin to sell. The second assertion is based on the theory of noise trading, where the main actors are both professional and non-professional investors in the financial markets. The non-professional investors do not have sufficient information and experience, which sometimes leads to deviations in the prices of securities from their intrinsic values. The final explanation is seen in market inefficiency; it is based on empiricism, observation and research of prices of investment instruments, which in some periods deviate from the proper price, thus creating inefficient markets.

Around the world there have been several well-known economic crises that had negative consequences for individual countries, continents, and industries; their expansion may have caused global financial crises. However, a number of speculative bubbles arose in different parts of the world. According to Hunter [5, 163], it is possible to find among them similar attributes and relationships that led to their formation, regardless of the distance between individual countries. Valdez [12, 366] is of the opinion that it is not possible to completely eliminate an economic crisis, but recommends that emerging markets be taught how to adequately protect their economy.

Among the most famous global crises, where a stock market crash was caused by speculative bubbles, are for example the Tulip Craze in Holland, the South Sea Bubble in England, the stock market crash in the U.S. in 1929, and the global financial crisis in 2008. This last crisis was the impulse to strengthen the regulations of the European financial supervision system. The result was the creation of several institutions, one of them being the European Systemic Risk Board (ESRB). It commenced its activities in 2010. Its main tasks include identification of systemic risks; i.e., preventing the formation of speculative bubbles and ensuring the overall stability of the European financial system. [1] The issue causing stock market crashes, including the formation of speculative bubbles, is discussed by a number of Czech authors such as Pavlát [9, 55], Musílek [8, 131], and Jílek [6, 241].

2. Methods

This paper uses the method of comparison, such as in the field of speculative bubbles in companies doing business in the virtual world. Another method applied here is an

analysis of the issue in question based on available resources, supplemented by synthesis in piecing together the knowledge gained from literature. As well, it applies the principles of logical thinking, especially when applying methods which are collocated to each other in pairs, such as analysis and synthesis.

3. Possible Areas Where Speculative Bubbles May Appear

In the future, we may expect the emergence of speculative bubbles in some areas of the financial markets. The first area relates to companies doing business in the virtual world and the second area is that of government bonds in certain countries.

3.1. Companies Doing Business in the Virtual World

The first area is that of companies which do business in the virtual world. These companies usually do not create enough assets to satisfy the claims of creditors in the event that the company declares bankruptcy. Among these companies it is very difficult to determine the value of assets such as "know-how" or brand name as a result of a bankruptcy. Such companies even have rented premises for their business activities, and do not own any physical property such as buildings or facilities. They may even subcontract some of their assets for their business activities, such as their computer equipment. They usually create an intangible product or service and their assets are limited. Limitations of the assets may lead ultimately to mere know-how, brand name, and a few selected skilled workers in the industry. If the company issues securities such as shares, then there is a possible assumption of a future speculative bubble, if investors begin to rapidly invest their funds in those companies; the result may be mass purchases and subsequent sales, thus creating a price bubble, as is shown in figure 1.

FIG. 1: Possible speculate bubble created around a company doing business in the virtual world
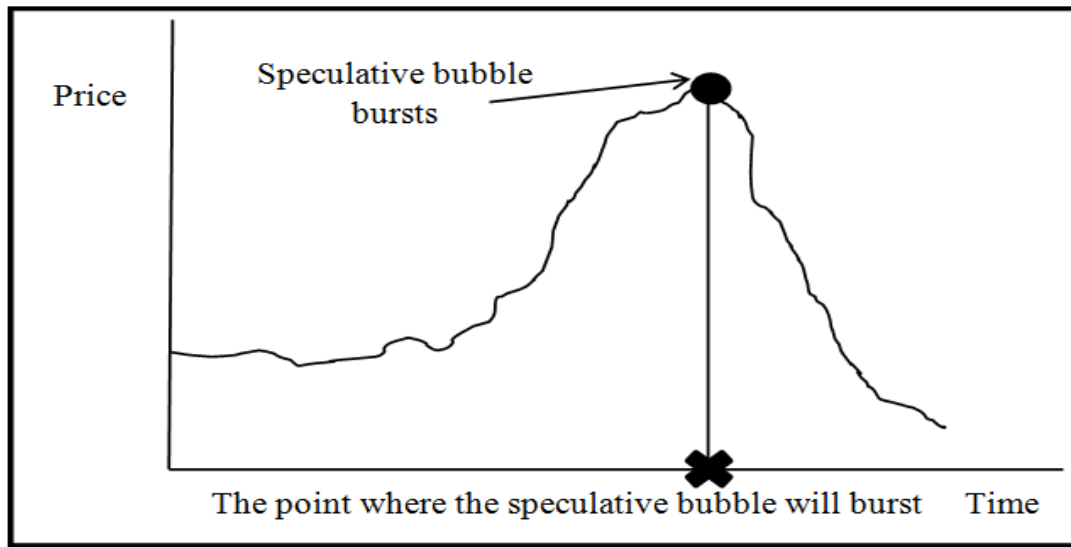
Source: author's own work

In contrast to these are manufacturing companies that create physical products such as automobiles or real estate. These businesses usually have their own machinery, equipment, buildings, extensive qualified personnel, brand name and know-how. A prerequisite for these companies is that they generate more assets which could then satisfy a creditor in the event that the company declares bankruptcy. However, the possible existence of similar price bubbles cannot be completely ruled out even among these companies.

Meanwhile, investors have already experienced a similar bubble and relatively recently, in the 1990s, due to the influence of the Internet and information technologies. This is emphasised by Mráček [7, 99], who adds that in 1995 the popularity of virtual companies using the Internet began to rise. This phenomenon is reflected in the investment behaviour of investors, who tried at all costs to have a portfolio of securities from such companies. The investing public believed that a modern society would be created, the productivity and even existence of which would develop based solely on sophisticated technologies. The result was a decline in prices for these titles shares, which were accompanied by a mass sell-off, thus bursting the price bubble.

3.2. Government Bonds

Another area is that of government bonds. There are a number of countries in the world that owe more than 100% of their GDP. They include some advanced countries, which have a high or average investment grade rating such as Japan, Italy, Belgium, and Iceland. The total indebtedness and rating of these selected countries according to Moody's and Standard &Poors is shown in Table 1.

TAB. 1: Indebtedness and Rating of Selected Countries

Country	Rating Evaluation		Debt in % of GDP
	Moody's	Standard & Poor's	
Belgium	Aa3	AA	101.1
Iceland	Baa3	BBB-	118.9
Italy	Baa3	BBB	126.1
Japan	Aa3	AA-	218.9

Source: author's own work based on[2], [4]

It is expected that in the future, it is not only these advanced countries that will have major problems being able to repay this debt, even though they currently have a positive rating. These countries should take measures to avoid jeopardising primarily the investors. For many investors, this investment in government bonds may be liquidating. Furthermore, it may bring about a total lack of confidence in the country, which may result in an outflow of foreign capital.

The market prices of a bond are not currently growing enormously, but even at current prices of bonds, the situation may arise, as a result of a high national debt and possible bankruptcy, where current prices may significantly fail, which would be like a bubble bursting, as is shown in Figure 2.

FIG. 2: Possible Speculative Bubble Created by Government Bonds
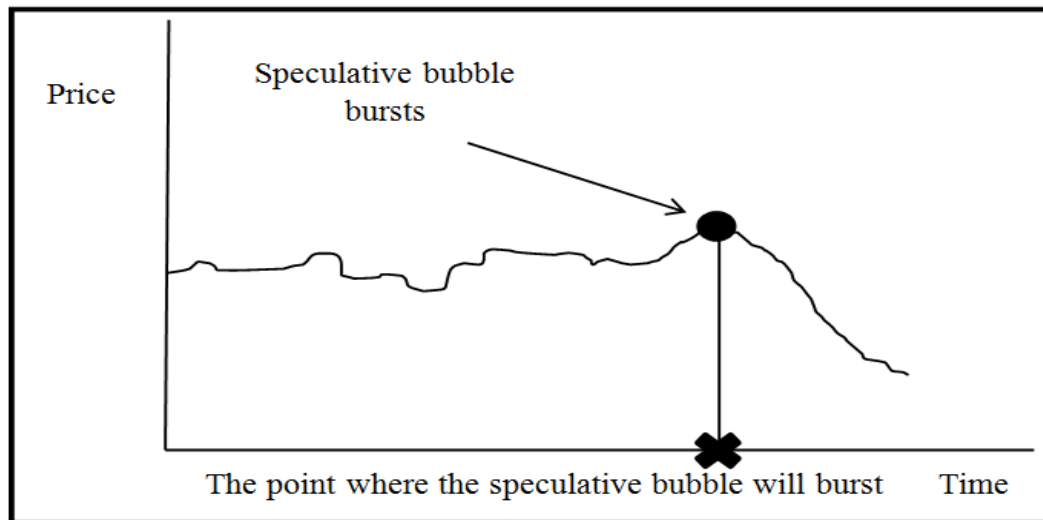
Source: author's own work

4. Discussion

Based on the analysis of available resources, the emergence of future speculative bubbles may be seen in the areas surveyed; i.e., for virtual companies and government bonds. However, among companies operating or providing services in the field of information technology, a speculative bubble occurred fairly recently. There is again an assumption that once more this may occur especially among companies that focus on social networks. One of the reasons why a crisis may occur again in industries that have already been hit by negative effects is the question of an intergenerational exchange of investors. Furthermore, it is a desire to get rich quick, where reason is suppressed and emotions are dominant. A new investor who enters the financial market should be aware of which investment instruments he should invest in. He should be able to assess potential risks such as the indebtedness and ratings of bonds and should learn from history. Ignorance of the history of investments is another shortcoming which contributes to instability and recurrent crises on financial markets.

Conclusion

The professional literature contains detailed analyses of financial crises that have already taken place. Industries affected, national economies, poor political decisions, triggers, and their consequences on the overall economy are analysed in detail, along with future development of specific countries. Certainly new crises cannot be

completely prevented, but it is necessary to create mechanisms and models to support experts and political representatives in order to cushion the effects of possible new crises. The resources available lack adequate designs and solutions which would prevent the emergence of new crises or limit their consequences. One positive solution was the creation of the European Systemic Risk Board, which is intended to prevent the formation of speculative bubbles and the subsequent crises. However, in order to be able to meet its obligations and responsibilities to the investing public, it is necessary for it to work effectively with skilled personnel and sophisticated information technology. Only then can this institution be considered as useful for financial markets.

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MANAGEMENT OF FINANCIAL LIQUIDITY IN THE BUSINESS SECTOR IN POLAND

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Abstract:

The role of financial liquidity management has been discussed in the literature of the subject for a long time. The paper presents selected aspects of managing financial liquidity of Polish enterprises. How liquidity is managed depends on the size of enterprises, with the biggest problems in this area noticed in the smallest economic entities. Therefore, it is necessary to constantly analyse this problem and develop tools to support liquidity management in small and medium-sized enterprises. This analysis is based on the results of a questionnaire survey of 380 enterprises from Southern Poland from 2014.

Introduction

Financial liquidity is an area of special interest for those managing an enterprise. An economic entity can operate without cash only until its resources of liquid assets or possibilities of obtaining a bank credit are exhausted. Thus, the priority of owners or managers is to generate such amount of cash during operating activities that is sufficient to settle current liabilities on time. The experience of highly developed countries has shown that the main cause of bankruptcy of enterprises, especially medium-sized and small ones, is loss of financial liquidity rather than lack of sales profitability [11,7]. Loss of liquidity results in decreased trust in the company affected on the part of its business partners and financial institutions, which makes it more difficult for it to obtain financing and results in the shrinking of the area of its operation on the market. Therefore, a special focus should be placed on analysis of the state and conditions of

enterprises'financial liquidity and constant improvement of liquidity management methods.

1. Theoretical aspects of managing enterprises' financial liquidity

According to a general definition, liquidity is capability of exchanging assets for cash at possibly lowest costs [3, 423]. Thus, financial liquidity is understood as capability of a fast flow of pecuniary means, and the speed and certainty with which current assets can be changed into money within a short period of time [10, 7]. However, the most popular view of financial liquidity defines it as an enterprise's ability to meet short-term liabilities on time [1, 158]. Thus, maintaining liquidity requires that an enterprise possess not only pecuniary means and transferable assets, but also an appropriate share of liabilities with a long maturity [6, 9-10]. Management of the risk of liquidity loss brings an enterprise a lot of benefits. Strengthening liquidity risk management can circulate business funds, speed up cash flow, reduce business risk, and improve the competitiveness of enterprises [9, 66].

It is difficult to establish an optimal amount of working capital, but long business practice has shown that it is necessary to maintain a certain relation between the working capital and current liabilities [4, 19]. It is stressed that by understanding the role and factors determining the management of liquidity and taking steps to achieve appropriate level of working capital, companies can minimize the risk, get well-prepared for uncertainty, and improve their general productivity [5, 52]. At the same time, the literature indicates the negative relationship between the level of working capital and the size of an enterprise. Small companies, fearing loss of liquidity, maintain higher level of cash [7, 44; 8, 2129].

The hypothesis set by the author of this paper assumes that the level of financial liquidity of enterprises and how liquidity is managed depends in many aspects on the size of an enterprise. Thus, the aim of this paper is to analyse selected aspects of liquidity management, taking into account the differences across different groups of enterprises distinguished by size. The reasoning is based on the results of the author's

own questionnaire survey conducted at the end of the second quarter of 2014 on a group of 380 enterprises from Southern Poland.

2. Results

Changeability of the sector of small and medium-sized enterprises requires that it is constantly analysed. The author of the paper conducted a questionnaire survey of a group of 380 enterprises in Poland, divided into micro, small, medium-sized and large enterprises. It allowed her to observe relationships between the state of current finances and the ways of managing them on the one hand and the size of enterprises on the other hand. The survey was conducted at the end of the second quarter of 2014.

Possessing financial liquidity is a priority condition of an enterprise's operation. The survey conducted showed that most entrepreneurs assessed financial liquidity of their companies as average or high, which is a satisfactory result (table 1). Only 1.6% indicated lack of liquidity, which however seems justified for this size of a study group. There is also a visible statistical dependence of the level of liquidity, which grows as the size of an enterprise increases.

TAB. 1: Assessment of an enterprise's financial liquidity in the period between June 2013 and June 2014 (%)

financial liquidity of an enterprise	size of an enterprise				total
	micro	small	medium-sized	large	
High	17.9	19.3	33.3	50.0	20.3
Average	66.4	72.3	52.4	35.7	65.8
Low	14.1	6.0	14.3	14.3	12.4
Lack	1.5	2.4	0.0	0.0	1.6
Spearman's correlation coefficient = -0.114, p = 0.026					

Source: own research

The survey has confirmed that the professionalism of managing current finances depends on the size of an enterprise (table 2). Medium-sized and large enterprises much more often use professional ways or methods of management which are based on established principles and procedures. On the other hand, micro and small companies more often declared intuitive approach to management of operating finances, which

allows us to conclude that small entrepreneurs use knowledge about management of enterprises'finances to a limited degree.

TAB. 2: Way of managing current finances in an enterprise (%)

detailed list	size of an enterprise				total
	micro	small	medium-sized	large	
formalised (there are procedures/principles in place)	30.5	49.4	81.0	78.6	39.2
not formalised (intuitive, used as needs arise, without clearly defined principles)	69.5	50.6	19.0	21.4	60.8
Chi-square = 36.338, p = 0.000					

Source: own research

It is usually the owner of an enterprise that is responsible for managing financial liquidity, and he/she is not prone to transfer decision making in this respect to a lower level of management. Naturally, the situation changes depending on the size of an enterprise (table 3). Larger entities, with a more complex organisational structure, possess qualified workforce to whom part of competences in such an important area as financial liquidity can be delegated. In the smallest companies, the owner usually does not have a managerial staff, therefore only he/she is responsible for the entire decision making.

TAB. 3: People responsible for determining financial liquidity in a company

detailed list	size of an enterprise				total
	micro	small	medium-sized	large	
only the owner	80.2	42.2	28.6	14.3	66.6
the owner and authorised managers or employees	17.9	53.0	61.9	85.7	30.5
only managers or employees	1.9	4.8	9.5	0.0	2.9
Chi-square = 78,609, p = 0,000					

Source: own research

The discussion above is confirmed by the results of the survey that show how financial liquidity is measured. Only 7.3% of micro and 22.9% of small enterprises use widely recognised liquidity measures (table 4). The assessment of liquidity is based on monitoring cash flows, and it is lack of cash that forces enterprises to look for the

causes of such a situation. Thus, in the case of enterprise of this case, unlike in larger economic entities, it is rather estimation than real measurement of financial liquidity.

TAB. 4: Way of measuring financial liquidity in an enterprise

detailed list	size of enterprise				total
	micro	small	medium-sized	large	
economic formulas, e.g. a formula for current liquidity or increased liquidity	7.3	22.9	42.9	64.3	14.7
regular assessment based on possessed cash, receivables from customers and liabilities	92.7	77.1	57.1	35.7	85.3
Chi-square = 56.645, p = 0.000					

Source: own research

Analysing the causes of insufficient working capital, entrepreneurs indicated maximally 3 factors they regarded as most significant (table 5). A statistical analysis showed statistical significance in most cases. We can state that entrepreneurs are concerned mainly about the necessity of granting time limit for payment in sale invoices issued to their trade partners, as well as customers' unreliability and problems with effective recovery of trade receivables. The literature points out that the necessity of granting trade credits to trade partners puts enterprises at risk of losing receivables, makes it difficult to maintain liquidity, and constitutes a factor that further increases the demand for external financing [2, 32].

TAB. 5: Causes of insufficient capital in an enterprise's current operations

causes of insufficient capital	size of an enterprise				total	Chi-square test	
	micro	small	medium-sized	large		Chi-sq	p
low profitability	21.8	19.3	9.5	0.0	19.7	5.511	0.138
sale with an invoice with a time limit for payment	19.5	41.0	38.1	35.7	25.8	17.843	0.000
necessity of advance payments for supply of materials, goods, etc.	20.2	20.5	14.3	35.7	20.5	2.495	0.476
problems with receiving payments from trade partners – the latter failure to pay invoices on time	22.1	34.9	47.6	28.6	26.6	10.414	0.015
increasing sale	6.9	6.0	23.8	7.1	7.6	8.321	0.040
fluctuations in prices, currency exchange rates, etc.	3.8	8.4	19.0	28.6	6.6	20.046	0.000
necessity of continuous investment	22.1	28.9	38.1	50.0	25.5	8.240	0.041
other	29.8	21.7	14.3	7.1	26.3	6.752	0.080

Source: own research

Polish entrepreneurs also indicated the necessity of continuous investment as a cause of problems, with these problems growing with the increase of an enterprise's size. Investments, even those financed with foreign resources, require own financial contribution, which results in the movement of the capital from current operations to development activities. In the periods of economic downturn and more difficult access to sources of financing, this can weaken a company's financial liquidity.

The above aspects represent only some of the areas of management of enterprises financial liquidity. They show necessity to pay special attention to management of current finances of smaller entities, which is very different compared to that of large companies both in terms of professionalism and approach to management, which has a negative impact on their economic situation.

3. Discussion

Due to the importance of SMEs for the national economy, it is vital to continuously develop the knowledge in the field of the functioning of small and medium-sized enterprises as well as building and modifying a set of micro- and macroeconomical tools to be used to effectively carry out management processes, strengthening and stabilizing the sector analysed.

Maintaining financial liquidity is a priority condition for the functioning of the SME. However, analysis of liquidity often does not take into account the smallest economic entities due to their limited financial reporting. Thus, it is appropriate to pay special attention to the analysis of financial liquidity in micro and small firms as well as its determinants.

Conclusion

Financial liquidity determines smooth functioning of economic entities. Maintaining liquidity becomes especially important in periods of economic turndown, when the decline in sales, lower profitability or payment gridlocks cause many enterprises to fail to settle their liabilities on time.

The empirical studies conducted by the author in 2014 clearly showed that in most cases Polish enterprises have sufficient financial liquidity. This suggests improvement in the economic situation in the sector of enterprises after a few years of economic downturn. The analysis of the management of enterprises' financial liquidity and, more broadly, current finances shows low level of professionalism in smaller economic entities. They approach management in an intuitive way, without applying procedures and principles, and rather based only on a superficial analysis of the situation, i.e. without using widely recognised financial measures. It seems that this area requires improvement as part of the policy of supporting entrepreneurship. Increased focus on raising awareness of the importance of professional management of finances and a broader offer of training courses addressed to small entrepreneurs could bring long-term notable benefits in the form of an increase in the rate of survivability of enterprises in their first years of operation, when the unawareness of the priority role of maintaining financial liquidity contributes to the failures of many newly established firms.

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REVIEW OF BUSINESS INTELLIGENCE PRINCIPLES IN LARGE, MEDIUM AND SMALL COMPANIES

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Abstract:

Business intelligence(BI) is used as a tool in large and small companies to gain an advantage through the analysis and use their data to achieve better performance. Important components in BI process are technologies, knowledge and decisions. Acceleration of innovation in small and medium enterprises (SMEs) depends on effective use of new processes and technologies. Development of customer relationship management, use of cloud computing and online services, new data storage and back-up strategy, advanced analytical tools implementation in decision process, communication channels based on web are examples of prospective investments supporting BI. Cooperation of SMEs with research and educational institutions can highlight some ways how to transfer new business ideas to innovative technology and services.

Introduction

Business intelligence (BI) is a set of technologies and processes that allow people at all levels of an organization to access, analyze and use data. BI is an important priority in companies around the world. The places, where BI can be implemented, are unlimited [3]. BI market is high as BI can be implemented in many industries, where business functions help to bring significant benefits. BI has reached one of the top positions in IT investment priorities. It has been analyzed by international data corporation (IDC), that market of BI represents a $20 billion market. In the last years, price for many BI components have increased, while other information technology market has slowed [13].

This work is focused on review of BIprinciples, its understanding, implementation and effects in large companies or in small and medium enterprises (SMEs). Objective of this work is to analyze possibilities of BI approaches in SMEs.Our approach is based on the analysis of BI process in companies and on description and generalization of applications in SMEs. To review principles of BI in large, small and medium companies we used relevantliterature sources, company materials, patents and web pages related to BI.

1. Business intelligence application

Management and control in BI have attracted the attention of people and media. The idea to improve their work using business intelligence becomes popular and empowering people. Following examples describe situations where BI played an important role. 1) Organization opportunity international provides small loans to help people in Africa, Southeast Asia, and Central America.2) In New York and New Jersey, emergency medical associates (EMA) uses business intelligence to predict, prevent and analyze the disease of the patients [13]. 3) Ohio schools and other educational institutions in the district apply business intelligence to improve teaching methods and student performance and understand the trends in student grades [14].

1.1. Advantages and disadvantages of business intelligence

There are several advantages of business intelligence that may occur within organizations [13]: 1) Operational efficiency can be improved by restructuring the information with BI tools. 2) Maintaining customer loyalty in sensitive way and individual approach to customer. 3) Ensure emphasis on seasonal products with a detailed organization and management of data in different seasons. 4) Technical skills are not necessary. 5) It is recommended to segment information by area and limit access to all the information [13].

Disadvantages that involve using the process mentioned business intelligence are for example [3]: 1) Saturation: Many data warehouse grow in size disproportionately because technicians do not get to say "no" to the "excessive" demands of users. 2) Selection of information technology IT: The selection of software and hardware is sometimes performed following general criteria agreements or commitments, rather

than purely technical. 3) Budget: The budget for the project is small in comparison with the degree of complexity to be developed. 4) Extraction, transformation and loading information: The source data are not clean; there is duplication, errors, wrong characters, which implies a more expensive, larger and less performance process [3].

1.2. Present and future of business intelligence

Gartner is the international company of information technology research and consulting based in Stamford [11]. According to the Gartner Company, the people need to have a perspective of all the company to take better decision. This is possible using a dashboard with context that contains ideas and insights using the updated data from the data sources of the company [11]. Mobile applications are a priority for the widespread use of most of the population. For this reason the enterprises are interested to invest into mobile BI. The users demand to obtain information from their mobile phone to take the decisions as soon as possible [10].

2. Company Amazon.com

Amazon.com is an American company of electronic commerce and services of cloud computing in all levels with headquarters in Seattle [1]. Amazon.com can be used as a model of large company due data policies and patents which implements into website and subsidiaries. The way, how Amazon.com collects information about their customers and about the processes that are used to evaluate the important information, are useful for SMEs. In case of collecting large amount of data, SMEs cannot use the same model of BI as big companies use, because they are not able to manage big amount of the data in a short period of time.

Selected patents of Amazon.com can be mentioned: 1) "1 Click" is a method for on-line purchases enabling customers to shop in a faster way, because the data needed to make the purchase have been previously entered into the system by customers. [2, 8, 18].2) "Anticipatory" Shipping is a method that Amazon.com has designed to start sending stuff before customers have bought it [17].

3. Small and medium enterprises

Small and medium enterprises (SMEs) are companies where number of employees is below 250 [9]. SMEs confront to grow and compete to make good decisions based on better information. For example in Mexico it is an important engine of growth. The number of SMEs exceeds the number of large companies. SMEs generate 52 % of gross domestic product (GDP) and 72 % of employment in the country [15]. SMEs helps to the economy of Mexico to increase the GDP and decrease the rate of unemployed people.

The main barriers to adoption for SMEs are cost and complexity. Costs include software tools and services, as well as people and time costs. SMEs face obstacles like tighter budgets, technological barriers and fewer people (which translate to less time for planning and analysis) [4, 6, 12].

There are 4 factors that are involved in the implementation of a BI solution: 1) Information. SMEs have the same challenges to start as larger companies. Small enterprises probably have less data. 2) Technology. The tools of software of BI include scorecards, dashboards, analysis and data mining. These tools can be deployed in small companies. 3) Intelligence. The most important aspect of any BI project is the determination of the measures and the form of measuring. 4) Implementation. The implementation of a solution of BI is ultimately the easiest part, if the work in intelligence and selection of tools was performed successfully. The key step is the design and dissemination of communication strategy [4, 6, 12].

3.1. Market study

The recent report of Howard Dresner has examined trends and market penetration, the use of BI tools in small and medium enterprises, and how small and medium enterprises prioritize differing from large companies. Howard Dresner's market study was conducted in 2013 with 523 enterprises of which 250 are small enterprises (1 to 100 employees) and 273 medium enterprises (101 to 1000 employees) and a total of 1182 survey participants.

Today, there are inexpensive downloadable mobile and cloud BI tools. About a third of small enterprises and just over 20 % of medium enterprises have used BI tools between last 3 5 years. A significant factor in SME adoption is the affordability of recent BI tools compared to previous 5 or 10 years.SMEs drive the cloud BI market because more than 30 % of SMEs studied shows that have used BI solutions from public cloud providers. This is a big contrast because large companies only use 10 % of BI solutions in the cloud. Evidently, small enterprises are more aggressive and ambitious when it comes to cloud based deployment today. But companies have still no plans to implement cloud computing in 2014.

SMEs priorities for BI functionalities are mobile device support, SaaS (Software as a Service) and dashboards. SMEs have far less interest in data warehousing than larger organizations.

Trends in user penetration of BI in SMEs (especially small enterprises) reported much higher user penetration of BI than larger enterprises. They also have higher expectations for further user penetration over the next 12 months than large enterprises.

Adoption of BI tools usually in small enterprises reported that they only use one tool of BI, and people who use this BI tool has good coordination and communication, thus sharing their experience of this BI tool with teamwork. This becomes an advantage for small enterprises that the adoption of BI tools is easier.In contrast, large enterprises can use multiple BI tools and the people working with these tools, they do not have the same communication and coordination than smaller companies[7].

The model that we propose for SMEs is following 1) Information. A challenge for small businesses is to create these data sources. When the SMEs have completed this point it is recommend to apply the CRISP DM (Cross Industry Standard Process for Data Mining) methodology that contained following phases: (Business Understanding, Data Understanding, Data Preparation, Modelling, Evaluation and Deployment). 2) Technology. Choose the appropriate tool according the requirements of the SMEs. Another option is to acquire the free software, which provides the same features that the

software owner. 3) Intelligence. The most important aspect of any BI project is the determination of the measures and the form of measuring. This step is to identify indicators that are appropriate to measure how the organization is performing. 4) Implementation. The implementation of a solution of BI is ultimately the easiest part, if the work in intelligence and selection of tools was performed successfully. The key step is the design and dissemination of communication strategy. Those enterprises focused on BI derive positive and measurable benefits [4-6, 12, 16].

Conclusion

This work was devoted to identify the effect of BI in large, medium and small companies and present a model of BI for SMEs that would be implemented. The contribution is the description of a large and a small company, and comparison of implementation of BI between both.

One of the advantages of SMEs is the easy implementation of BI because their chain of command is small and the communication and coordination is better. With the new BI solutions in the cloud the SMEs have the potential to compete better. In the future it is recommendable that SMEs implement BI because the contribution of SMEs in some countries exceeds 50 % of GDP.

Amazon.com website collects data through various ways like through process of registration, automatic information, mobile, e-mail, etc. Amazon.com could be the inspiration for SMEs, which can implement the policy data model of Amazon.com.

We can conclude that BI helps large and small companies to gain an advantage through the analysis of their data and achieve better performance. The knowledge acquired from BI is recommendable to develop in parallel with the new trends. In the future, BI can be used to analyze the data of the governments that have free access to their information and to find that government policies work and which do not, to govern in a better way and that people know where their taxes are used. BI could also be implemented in schools and universities to measure performance of students and teachers and to measure greater acceptance of subjects.

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WORKFORCE ALLOCATION IN SELF-SUFFICIENT ECONOMY IN LATE IRON AGE

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Abstract:

We present an abstract model of workforce allocation of the Late Iron Age self-sufficient settlement. The model enables experimenting with parameters (the ratio of strong and weak workforce, the impact of bad weather, the ratio of targeted overproduction) during the harvest season with the aim to explore the agricultural bottlenecks (short periods per year when increased labour input is needed). Results of three experiments are presented. The model is extendable and is designed to be applied in archaeological research of socio-economic collapses.

Introduction

Our objective is to explore the complexity of the society of fortified agglomerations (oppida) in Late Iron Age in central Europe. The oppida appeared as a part of an economically advanced environment, together with a distinctive intensification of settlement patterns. The analysis of related demographical and economic factors is obstructed by the overall lack of archaeological evidence. Our intention is to apply the multi-method social simulation. We propose the CeltSIM framework which consists of seven sub-models describing different components of the socio-economic system. The previous work was published in [1] or [4].

In this paper we present one part of the framework, the Harvest Workforce Model. The model enables experimenting with labour input of harvest activities within relevant

logic and temporal constraints. In following sections, the model is described and results of experiments are summarised. In conclusion, further research directions are suggested.

1. Theoretical Background

The late Iron Age economy was predominantly agricultural, dependent on cereal and animal production. In self-sufficient settlements, the population had to cover consumption requirements and ideally, to produce reserves for potential bad years. The production of cereals was constrained by numerous factors, especially by available working capacities and weather. See e.g. [2] or [3] for wide explanations of traditional farming and agricultural economies and see Fig. 1 for the concept map.

The working capacities had to be allocated to regular tasks such as domestic work and livestock husbandry, and in parallel to seasonal tasks (ploughing, seeding, harvest, fuel wood preparation or fodder preparation). The available workforce naturally consisted of "strong workforce" (typically, adult men able to plough with oxen) and "weak workforce" (e.g. older children herding cattle or women doing domestic work). The weather conditions impacted on both the quality and amount of crop and the course of the agricultural work (e.g. rainy weather decelerates the harvest process).

If the society was more complex, with higher level of specialization, the overproduction of food might be traded. The presence of trade was either motivation to produce higher reserves, or oppositely was an incentive to replace part of the food production process with products of the specialised workshops for exchange. Moreover, complex societies are characterized by certain ratio of non-producers (elite, full time craftsmen, traders) whose working capacity was not possibly allocated to food production process.

In case of the late Iron Age settlement, the harvest season, which usually starts in June or July, is one of the so called bottlenecks of the food production process. The cereals had to be harvested and transported to storage quickly, before the quality of grain had decreased. Moreover, hay harvest for winter feeding of livestock had to be completed in the same season. The time constraints for the harvest process are given by the mixture of crops (wheat, barley, pulses), size of fields and transport costs which are related to agricultural practices (extensive cultivation means larger areas of fallows).

FIG. 1: Concept map
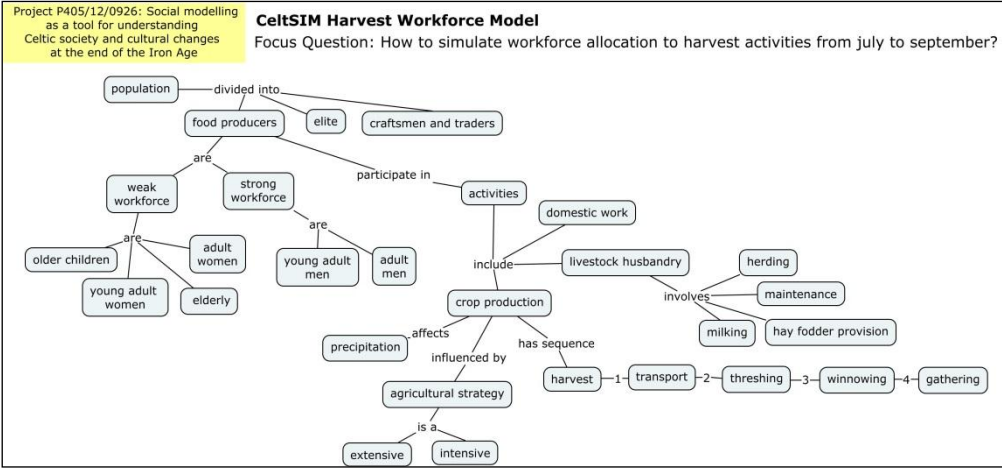
Source: Authors

2. Implementation

Our model was implemented in NetLogo, see Fig. 2 for the interface. The inputs of the model are:

- size of population,
- ratios of strongforce, weakforce and non-workers,
- average crop from 1 ha,
- probability of rainy weather.

FIG. 2: Model interface
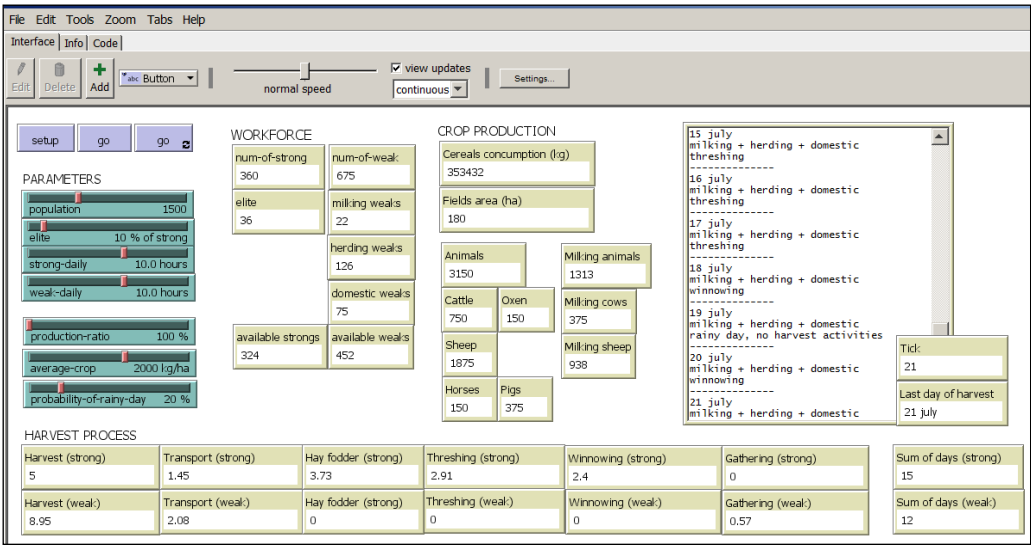
Source: Authors

TAB. 1: Workforce requirements

Task	Strongforce	Weakforce
Harvest	90 hours/ 1 ha	225 hours / 1 ha
Transport	20 hours / 1500 kg	40 hours / 1500 kg
Threshing	40 hours / 1500 kg	-
Winnowing	33 hours / 1500 kg	-
Gathering	-	11 hours / 1500 kg

Source: Authors

Sizes of herds depend on size of population. In our case, there are 10 cattle, 2 oxen, 25 sheep, 5 pigs and 2 horses per community of 20-22 individuals. The corresponding consumption requirements for population and livestock are calculated. Total consumption of cereals (including seed corn requirements, winter fodder and estimation of loses) is matched with the average crop and overproduction requirement to estimate the areas of fields to be cultivated. Time durations of subsequent tasks (harvest and hay fodder, transport, threshing, winnowing and gathering) is calculated (see Tab. 1).

Total length of the harvest process in days is the main output of the model. The whole process should not take more than 2 or 3 weeks, otherwise the crop is damaged.

3. Experiments

In two following experiments, the initial setting was:

- *Population = 1000,*
- *Strong-force = 10 working hours / day,*
- *Weak-force = 10 working hours / day,*
- *Average crop = 1500 kg/ha,*

The objective of the first experiment was to measure *the impact of the rainy weather* on the prolongation of the harvest process *in case of 10% of non-working strongforce*. See Tab. 2 for results. The harvest process can be finished in aprox. 2-3 weeks, if the weather was favorable.

TAB. 2: Experiment 1

Probability of rainy weather (%)	Harvest process (days)
0	18
20	23
40	32
60	47
80	84

Source: Authors

TAB. 3: Experiment 2

Non-working strong-force (%)	Harvest process (days)
10	26
30	33
50	47
70	75
90	92

Source: Authors

TAB. 4: Experiment 3

Avg. crop (kg/ha)	Harvest process (days) to cover 100% of consumption requirements		Harvest process (days) to cover 200% of consumption requirements	
	10% rain prob.	30% rain prob.	10% rain prob.	30% rain prob.
800	26	40	61	77
1600	19	30	36	45
2400	15	18	27	37
3200	14	20	26	36

Source: Authors

In the second experiment, the impact of the *ratio of non-working strongforce* on the prolongation of the harvest process was explored *in case of 30% probability of rainy weather*. See Tab. 3 for results. The presence of 10% of non-workers in the population did not oppose the finishing the harvest process in three weeks.

In the third experiment, *the availability of overproduction* was examined in case of *10% of non-working strongforce*, *10%* or *30% probability of rainy weather* and *variable average crop*. See Tab. 4 for results. If the weather had been favorable, it was possible to cover the population requirements event with a very low average crop (800kg/ha), the double crop is accessible in case of the quadruple yield.

Conclusion

Current version of our model is simplified in certain principles and is focused only on harvest season. We intend to replace:

- *the average crop* parameter with a distribution function that would better represent the growing and declining yield from the land unit for given plants (wheat, barley, pulses).

- *the probability of rainy weather* parameter with more sophisticated methods (times series of weather data for scenarios such as sunny weather, rainy summer or sudden local devastating storms).

Moreover, the following version of the model should capture the workload over the whole year, including the option to experiment with different ratios of agricultural work and other types of activities from crafts to iron production.

The more stratified consumption requirements and constraints, e.g. the existence of food storage from previous years or the gradual deforestation of the surrounding landscape, may change the workload dramatically.

New concepts such as a land allocation to individual households or possibility of hiring seasonal workforce could make model more realistic, too. In this case, our equation-based approach has to be integrated with the agent-based model. But it is necessary to mention that resources on late Iron Age society are too fragmented to allow us to build precise models of functioning of households.

With the growing number of parameters, it will be necessary to involve complex computational methods such as genetic algorithms for targeted experimenting with the model settings.

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DEMAND FOR IMPORTS IN THE CZECH REPUBLIC

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Abstract:

MS Imports usually depend on the demand and domestic versus foreign prices. Demand equations, in general formalized as Almost Ideal Demand System in [1] start by the fact that an optimal behaviour of consumers and producers relates to an optimization problem minimizing cost by a given level of utility. Both primary and dual forms of these problems have their own economical interpretations and it is possible to switch from one form to the other using the Shephard's lemma. Being interested in demand for import what is one commodity, the special case arises resulting into the system of two equations one of them being dropped because of linear dependence. After being regressed on the base of annual data, the model shows the consistency with the economic theory.

Introduction

Imports as well as exports usually depend on the demand and domestic versus foreign prices. Formally it is a relation

$$\frac{x}{y} = f\left(\frac{pd}{pz}\right), \tag{1}$$

in which x is a demanded amount of import, y is a potential demand often proxied by GDP, pd is a home price level and pz foreign price proxied by exchange rate.

Demand equations, in general, may be formalized as Almost Ideal Demand System (AIDS) published by Deaton and Muellbauer in [2]. They start by the fact that an

optimal behaviour of consumers and producers became a starting point of a formulation of an optimization problem relating maximal utility to a given disposable income or minimal cost to a given level of production. Both primary and dual forms of these problems have their own economical interpretations. Unfortunately, not ever theoretical formulation is convenient enough to serve to practical purposes, too. Nevertheless, it is possible to switch from one form to the other according to the disposable data using the Shephard's lemma.

1. Theoretical background

The cost function is specified in [2] as

$$\log c(u,p) = \alpha_0 + \sum_k \alpha_k \log p_k + \frac{1}{2} \sum_k \sum_j \gamma_{kj}^* \log p_k \log p_j + u \beta_0 \prod_k p_k^{\beta_k} \qquad (2)$$

α_i, β_i a γ_{ij}^* being the parameters restricted by $\sum_i \alpha_i = 1, \sum_j \gamma_{kj}^* = \sum_k \gamma_{kj}^* = \sum_j \beta_j = 0.$

As usual, c is for cost, $0 \le u \le 1$ utility based on PIGLOG preferences, p vector of prices of n commodities.

Minimizing cost by a given level of utility or maximizing utility subject to a given budget, an optimal demand q_i concerning a commodity i equals, according to the Shephard'slemma [5] the derivation of the cost function with respect to the price p_i

$$\frac{\partial c(u,p)}{\partial p_i} = q_i$$

or in the logarithmic form

$$\frac{\partial \log c(u,p)}{\partial \log p_i} = \frac{q_i p_i}{c(u,p)} = w_i, \qquad (3)$$

with w_i representing the budget share of commodity i; naturally $\sum w_i = 1.$
Inserting (3) to (2) we have

$$w_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i u \beta_0 \prod_k p_k^{\beta_k} \;, \qquad (4)$$

where $\gamma_{ij} = \dfrac{1}{2}(\gamma^*_{ij} + \gamma^*_{ji})$. Instead of (4) we can write

$$w_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log \frac{x}{P} \tag{5}$$

and by the relation

$$\log P = \alpha_0 + \sum_k \alpha_k \log p_k + \frac{1}{2} \sum_j \sum_k \gamma_{kj} \log p_k \log p_j \tag{6}$$

define the price index P with $x=c(u,p)$ representing total budget disposable for the utility maximization. Then, x/P means real expenses.

The demand system AIDS is created by equations (5) with the following parameter constraints

$$\sum_i \alpha_i = 1, \sum_i \gamma_{ij} = 0, \sum_i \beta_i = 0 \tag{7}$$

$$\sum_j \gamma_{ij} = 0 \tag{8}$$

$$\gamma_{ij} = \gamma_{ji} \tag{9}$$

ensuring homogeneity - (7) and (8) - and symmetry of substitution - (9).

The AIDS system has the following interpretation. Not changing relative prices and real budget, the shares are constant. When changing relative prices, the shares are influenced by γ_{ij}. Increasing the price of j-th commodity by 1%, the share w_i changes its value by $\gamma_{ij}.10^{-2}$ *ceteris paribus*. Movements in real budget value exhibit their influence on shares by the help of β_i.

To estimate parameters of the system, the equation (6) seems to be a good starting point. Substituting (6) into (5) we have

$$w_i = (\alpha_i - \beta_i\alpha_0) + \sum_j \gamma_{ij} \log p_j + \beta_i \left[\log x - \sum_k \log p_k - \frac{1}{2} \sum_k \sum_j \gamma_{kj} \log p_k \log p_j \right] \tag{10}$$

As the individual prices very often exhibit an apparent multicollinearity, the usual praxis is to switch from (10) to the form

$$w_i = \alpha_i^* + \sum_j \gamma_{ij} \log p_j + \beta_i \log(\frac{x}{P^*}), \tag{11}$$

where $$\log P^* = \sum w_k \log p_k, P \approx \varphi P^*, \alpha_i^* = \alpha_i - \beta_i \log \varphi.$$

The equation (11) makes the estimation of parameters more convenient (in comparison with (10)) and the data are more easy to be found for (11) as for (4). Looking for a more sophisticated analysis, (11) may be widen by comprising expected prices or by an assumption about partial adjustment process, what are the ways of bringing a certain dynamic into the model.

(11) represents a system of n equations which are related by conditions (7), (8) and (9). Thus, the covariance matrix of the equation system is singular what in general influences the choice of estimation methods applied to a reduced system after dropping one (dependent) equation.

2. Application

Being interested in demand for import what is one commodity, the complement represents the other one. So a special case arises resulting into the system of two equations one of them being dropped.

Data from Eurostat are annual 1996 to 2013 describing relevant variables in Czech Republic. The share of imports $w = import/GDP$ is proxied by dividing both amounts. Domestic price is given as HICP, instead of foreign price the CZK/EUR exchange rate is used (ECU before 1999). Together with (8) we have $P = \log(HICP) - \log(CZK/EUR)$. The last member of equation (11) is GDP in purchasing power parities (EU15=1).

Computations respecting econometric techniques [4] and using Eviews8 show the following basic results including the first order autoregressive parameter

TAB. 1: Results of the regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
P	0.375948	0.101533	3.702704	0.0027
GDP/PPP	-1.522308	0.463166	-3.286741	0.0059
C	4.497910	1.227822	3.663325	0.0029
AR(1)	0.486891	0.148823	3.271615	0.0061
R-squared	0.777829	Mean dependent var		0.620124
Adjusted R-squared	0.726558	S.D. dependent var		0.058986
S.E. of regression	0.030845	Akaike info criterion		-3.917373
Sum squared resid	0.012368	Schwarz criterion		-3.721323
Log likelihood	37.29767	Hannan-Quinn criter.		-3.897885
F-statistic	15.17114	Durbin-Watson stat		1.932392
Prob(F-statistic)	0.000155			

Source: own computations – Eviews8

3. Discussion

From P and $\gamma_1 + \gamma_2 = 0$ we have $\gamma_1 = 0.376$ and $\gamma_2 = -0.376$. So, increasing the CZK/EUR is followed by decreasing imports. The same direction of influence exhibits the variable of GDP in purchasing power parities (EU15=1). If for every Euro spent on the GDP in the EU(15), more Czech crowns would have to be spent in CR to purchase the same volume of goods and services, the indicated decrease of imports also is consistent.

Conclusions

The model confirms the theoretical economic evidence that more expensive Euro is followed by decreasing imports. The same influence exhibits also an increase in GDP in purchasing power parities (EU15=1). We may conclude that the almost ideal demand system gives the results which are consistent with the economic theory.

For further studies diversity in commodities and/or their sources (as e.g. in [3]) may be comprised.

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BENCHMARKING IN THE QUALITY OF MIDWIFERY CARE

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Abstract:

The monitoringof patients´ satisfactionis one of themethods of measuringhealth carequality. Faculty of Health Studiesin cooperation with allacute care hospitals in Pardubice regionprovidesmonitoringof patient satisfactionof in-patients and out-patients health care and satisfaction of midwifery care. Methodology of the whole surveillance processis based ondata collection,data handling, interpretation and evaluation. The comparison - benchmarking ofall fivehospitalsbringsthe best practicein the providedcare. The main benchmarking advantages: sharing anddisseminating best practicesknowledgeallowsearchingthe examples ofgood practicethat canbeused to increase theskills of workersandimprove the qualityof processes.

Introduction

The issue of quality management in modern health care becomes a scientific-research theme and is part of a coordinated health care processes with the goal to minimize the risks of adverse events, to identify good practice and transfer it further. The quality comes from specific health services, human resources, finance and medical technologies. Whole health system has to be safe and fair from the perspective of gender, race, ethnic origin, geographic location or socio-economic status [10, 11].The concept of quality in health care takes the inspiration in many areas e.g. from the natural sciences [5] or from the international standards ISO 9000 [1, 10]. W. Edward Deming, the father of the continuous quality improvement program, he defined the importance of quality measurement. He said: "If we want to understand something, we have to measure it." "What can´t be measured, it does not exist." The quality is generally understood as a high standard, something excellent or perfect [5]. In another words the

quality is something which goes above the minimum requirements [9]. Another medical expert, Professor Avedise Donabedian, said that health is more important than costs. Other concepts of quality of health care should be defined as the expected maximum benefits for the client's health regardless the costs [9].

To maintain quality in the medical device, it is necessary to continuously monitor and assess it. Based both on the WHO (Word Health Organization) and on the EU requirements, the following principles have been determined: Need for monitoring and continuous improvement of quality, risk management, strategic planning of health care processes [10]. In Czech Republic, the most frequent quality evaluation is done by an independent United Accreditation Commission giving "certificate of accreditation" which means that the hospital met the required SAK standards (SAK stands for "Spojená Akreditační Komise").Evaluation of the quality and safety of health services must obviously also meet the Czech law no. 372/2011 about health services. In the context of this law, each provider of health services is obligated to implement internal evaluation of quality and safety. The process of the external system is mentioned in the Ministry of health ordinance no. 102/2012 [7]. Thanks to that we can evaluate the quality by internal monitoring and external audit or we can measure the quality by using the client's opinion which we'll get from the satisfaction questionnaires.

Quality is a relative and not an absolute concept, i.e. every human can have different point of view thus we must find another key to evaluate that subjective opinion [3]. For example a patient satisfaction, we must have some scale of satisfaction and then we compare the figures. Quality means client satisfaction with the process affecting them (i.e. needs of hospitalized patients, outpatients, surgical patients and women in labor). To ensure quality care, a qualified professional staff, good equipment, instrumentation and educated experts for working with these technologies are required [1, 10].

1. Methodology

Quality measurement was focused on women's in midwifery satisfaction. To get relevant data we had to define, which data are going to be used for evaluation of the satisfaction as a test before implementationchange. The current quality level had to be monitored and measured. Benchmarking of client´s satisfaction is the most frequently

used tool to compare the quality between the institutions. Even though the client´s satisfaction is kind of a feeling, we have a way, how to quantify it and make it objective.

The benchmarking of client´ssatisfaction is one of the University of Pardubice student grant projects. In frame of this project the university cooperates with all acute care hospitals in the Pardubice region. The main theme of the project is the quality of the care provided. One of the objectives is to set the data collection methodology and evaluation of quality of care assessment of clients. Client satisfaction is investigated in three areas: in outpatient care, in the care for hospitalized patients (hotel services) and care in obstetric departments. There are measured therapeutic-preventive care, nursing care including hotel services and total satisfaction in all three areas. Good results will improve the goodwill of the hospital [2].

The questionnaire was the source of data for all areas of above mentioned health care. The outputs from the questionnaires were evaluated in the spring (February-March) and autumn (October-November) of 2013. These questionnaires were processed in the computer system Lime Survey$^{©}$ on the Facultyof health studies. Data were exported into statistical software STATISTICA$^{©}$, where they were evaluated. Hospitals were given the results in the form of charts and tables. The results of the evaluation were then compared between hospitals. The statistically significant differences might be used for further work to focus on.

The research was divided into several parts. The first part was performed in the spring. The differences were verified between all the hospitals.The hypotheses were testedon the relationship of satisfaction of clientsof obstetric care provided by the department. Contingency table report and the Pearson χ^2were used for this evaluation [11].The tests were carried out on the significance level of α =0.05[6]. Further tests have been applied on the differencefrequency response. Research sampleaweretested for the conformity with the structure of the total population(annualnumberof expectant women in labor, individual hospitals and their age structure) [8].

2. Results

In total, 254 respondents from five maternity hospitals of Pardubice region participated in research in the spring of 2013. These respondents filled out the questionnaire. The questionnaire was voluntary and anonymous. The questionnaire investigation for the evaluation of maternal satisfaction was focused on the quality of healthcare and communications on the service provided. The questionnaire was focused on the issue of breastfeeding and newborn care, a pain therapy, an intimacy of women. The results of the investigation are illustrated on 2 tables.

Very important is education in the field of breastfeeding for women in labor. Respondents evaluated whether sufficient information was provided to them or if they had enough support and informationfor breastfeeding of their babies. Statistical testing confirmed in this area, that there is a difference (p < 0.001) between the provided care and education of breastfeeding in allmaternity wards, see table no. 1.

TAB. 1: Information about breastfeeding

Answers	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Total
"Yes, I have enough information. I am breastfeeding my baby."	70	24	47	57	24	222
"I would like to have more information and support, yet I am breastfeeding."	2	5	2	8	3	20
"I have a few information and support for breastfeeding."	1	1	1	1	3	7
"I'm not breastfeeding."	1	1	1	1	1	5
Total	74	31	51	67	31	254

Source: own

The possibility of application of epidural analgesia for relieving pain during childbirth is a normal part of the service offerings today in maternity hospitals. More than 63 % of the total number of respondents had the opportunity to use this method for relieving the pain. Place of childbirth has an influence on the amount of offer of epidural analgesia. A statistically significant difference was found between the maternity hospitals and the scope of this therapy in the course of delivery. Analgesia is applied differently in the various maternity wards, as you can see in table 2.

TAB. 2: Offer of epidural analgesia

Answers	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Total
"Yes."	66	10	33	33	19	161
"No."	8	21	18	34	12	93
Total	74	31	51	67	31	254

Source: own

Discussion and conclusion

The results of the investigation are provided from the hospital management research. The differences which have been identified, should lead to the implementation of prevention, to improve the services, to set the standards in all hospitals of the Pardubice region.

Authors Pinar Guven-Uslu [4] or Garet Furber [2] describe the use of benchmarking in health care in their works. They both write that the benchmarking is an important method for setting up a "best practices" in health care and social services. The method leads to the elimination of risks. It is best to carry out the internal training of staff for the implementation of the good practice. Internal training is also the best tool for increasing the competencies of the staff.

The faculty and the hospitalsprepared the same survey for year 2014. The questionnaires will be the same in content. This is the reason for the continuity and the possible evaluationchanges. The researchers want to implement measures for greater validity of the data. One of the proposals is that students will collect data directly on the wards. The next step will be examining the conformity of the results with the results of the questionnaires from the staff from the hospitals. The change will be assessed after 1 year. Monitoring will show where the measures will lead to an increase in quality.

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A HEURISTICS FOR 3PL PROBLEM

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Keywords:

vehicle routing problem – heuristics – common carriers

Abstract:

Optimization models in logistics are instruments used to deal with problems of increasing transportation efficiency and decreasing transportation costs. Classic model is vehicle routing problem, which deals with optimization of routes between suppliers and purchasers. This paper contains the generalization of distribution problem, where transportation to purchasers is arranged by either suppliers or private transportation companies and the aim is to calculate, which amount should be transported to the purchaser by supplier and which by private carrier. The paper presents mathematical model for the stated problem and a heuristic method is introduced.

Introduction

The paper is associated with a new modification for classic distribution problem. While the original problem deals with transportation of goods from a depot to purchasers by only one transporter, this modification of distribution problem allows main carrier to use services of other carriers, subcontractors of transportation services. The distribution from the depot will then be arranged by main carrier and other private carriers, subcarriers. In literature the problem is referred as „third party logistic problem", abbreviation 3PL problem. There are three parts of logistic chain in the problem – supplier, which is the main carrier, purchaser and a private carrier as a third part of the system.

Supplier is the main carrier, supplier's vehicles are situated in the depot, from where the products are transported to purchasers. Transportation costs of supplier are calculated according to the distance in kilometers and type of vehicle. Private carriers calculate the

price of transportation only depending on the amount of transported goods. We know the purchaser's demand for the amount of goods for every purchaser which should be transported from the depot. We assume that the amount demanded could be greater than the vehicle's free capacity and it could be then divided into several parts, which would be transported by different vehicles resp. by suppliers or by private carriers. The aim is to determine, which part of demand will be transported by supplier and which by private carrier.

Total transportation costs for goods distribution from supplier to purchaser consist from transportation costs of supplier and from the price of transportation of private carrier, which will be covered by supplier. Total transportation costs will be minimized.

The paper presents the mathematical model first, which is integer programming problem with binary variables. The heuristic method is proposed, which can be applied on case studies, where the exact solution of the mathematical model is not possible due to the NP-hardness and the size of the problem.

1. Mathematical model of 3PL problem

Distribution problem is formulated as a problem on non-oriented complete graph with n vertices which form the set of nodes $V=\{1,2,...,n\}$, where node 1 is depot, the place where supplier, the main carrier, is located. Other nodes present purchasers. Let's define q_i as the demand of purchaser i, this demand could be divided into parts, that could be transported either by supplier or by private carrier. The supplier has m vehicles at disposal, we can assume heterogeneous vehicle park, meaning each vehicle has a different capacity and costs per kilometer. Let's define W_s the capacity if vehicle s, p_s – costs per kilometer for vehicle s.

Distance matrix D contains distances between the nodes of the graph, where d_{ij} is the shortest distance between node i and node j. The costs of private carrier are derived from the amount of transported goods, and they are covered by supplier and are the part of supplier's cost function. Let's define C as a price of a unit of transported goods by private carrier.

Mathematical model described in [2] contains the following variables:

- x_{ij}^{s} binary variable ($i \neq j$), which is equal to one when vehicle s travels from node i to node j,

- y_{i}^{s} an amount of goods from the demand of purchaser i, which is transported by supplier,

- z_{i} an amount of goods from the demand of purchaser i, which is transported by private carrier,

- u_{i}^{s} assistant variable used in anti-cyclic conditions.

Mathematical model:

$$\sum d_{ij} p_s x_{ij}^{s} + C \sum_{i=1}^{n} z_{i} \to \min \tag{1}$$

$$\sum_{i=1}^{n} x_{ij}^{s} = \sum_{i=1}^{n} x_{ji}^{s}, \ \ j = 1,2,...,n, \ s = 1,2,...,m \tag{2}$$

$$z_{i} + \sum_{s=1}^{m} y_{i}^{s} = q_{i} \ \ i = 2,3,...,n \tag{3}$$

$$q_{i} \sum_{j=1}^{m} x_{ji}^{s} \geq y_{i}^{s} \ \ i = 2,3,...n, \ s = 1,2,...,m \tag{4}$$

$$\sum_{i=1}^{n} y_{i}^{s} \leq W_{s}, \ \ s = 1,2,...,m \tag{5}$$

$$\sum_{j=1}^{n} x_{1j}^{s} \leq 1, \ \ s = 1,2,...,m \tag{6}$$

$$u_{i}^{s} + 1 - n(1 - x_{ij}^{s}) \leq u_{j}^{s}, \ i, j = 2,3,...,n \tag{7}$$

$$x_{ij}^{s} \ binární, \ u_{i}^{s} \geq 0, z_{i} \geq 0, u_{i}^{s} \geq 0,$$
$$i, j = 1,2,...,n, \ s = 1,2,...,m \tag{8}$$

Objective function (1) presents total transportation costs as a sum of supplier's costs and the price for goods transportation demanded by private carrier. Condition (2) ensures that if vehicle arrives to node j it also leaves node j.

Equation (3) ensures that total demand of node i will be fulfilled either by supplier or by private carrier. Condition (4) states, that if vehicle s does not go to node i, then it is not possible to transport any goods for this purchaser. Inequality (5) ensures that capacity of vehicle s cannot be exceeded. Restriction (6) protects a vehicle from taking more than one route. Condition (7) presents anti-cyclic conditions (Tucker).

2. Heuristic method

In the literature you can find a number of heuristics for both classic distribution problem and 3PL problem [1], [2]. The introduced heuristics is based on principle of gradually inserting nodes to created vehicle routes judging by the level of costs for supplier and for private carrier.

Heuristic steps will use following notation:

- v_j^s is a number of node on place j on route s,
- h_s number of nodes on route s,
- u_i^s amount of goods carried for node i on route s,
- N_s transportation costs of route s,
- W_s the capacity of vehicle signed for route s,
- p_s costs for one kilometer for a vehicle on route s,
- C price for transportation of one unit of goods by a private carrier, transported to any purchaser,
- kod_s is equal to 1, when route s was already created or is not efficient.

3. Heuristics:

Step 1: set h_s and kod_s to 0 for all $s=1,2,...,m$.

Step 2: {beginning of route s}

$dc_{min} = \min_{j',s'}\{d_{1,j'} \cdot p_{s'} \mid q_{j'} > 0, \quad kod_{s'}=0\} = d_{1j}p_s$

if dc_{min} exists, than set: $N_s=2\ d_{1,j}p_s$, $v_1^s=1$, $v_2^s=j$, $v_3^s=1$ and $h_s=3$,

if dc_{min} does not exist, then END.

Step 3:

test = 0,

$$dc_{max} = max_{i,j}\, dc(i,j) = dc(ii,jj),$$

where $\quad dc(i,j) = C\, q'_i - (d_{v^s_j,i} + d_{i,v^s_{j+1}} - d_{v^s_j,v^s_{j+1}}),\ q'_i = min\{W_s,\ q_i\},$

$$i = 1, 2, ..., n, j = 1, 2, ..., h_s - 1.$$

If $dc_{max} > 0$ then:

$$test = 1,\ u^s_{ii} = q'_{ii},\ q_{ii} = q_{ii} - u^s_{ii},\ N_s = N_s - dc_{max} + C\, u^s_{ii},$$

insert ii between v^s_{jj} a $\quad v^s_{jj+1}$

$h_s = h_s + 1$

if test = 1 go to Step 3 otherwise go to Step 4.

Step 4: {route efficiency test}

If $\quad \sum_{i=1}^{n} C\, u^s_i \le \sum_{j=1}^{h_s-1} d_{v^s_j,v^s_{j+1}}\, p_s \quad$ then {delete route s}: set $\quad h_s = 0,\ kod_s = 1,$

$q_i = q_i + u_i^s,\ u_i^s = 0$ for i=1,2,…,n, go to Step 2.

Otherwise go to Step 2.

Note:

In Step 2 the vehicle and the first node with a positive demand on the route will be selected so that the costs of the created route will be the least possible. If there is no node selected, than there is no route to be created and computation ends.

The next nodes are inserted into the route until the costs on route extension are less than costs of private carrier.

Because the first node was selected regardless of the efficiency of using private carrier, Step 4 provides the total efficiency test of the route, and in case the route is not efficient it is canceled.

Presented heuristics can be modified, and the modification can deal with the choice of the first node on the route in particular.

Conclusion

The paper presents an interesting modification for distribution problem. Mathematical model of the problem is presented and the new heuristic method is proposed.

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DISCOUNTING UNDER IMPACT OF TEMPORAL RISK AVERSION – A CASE OF CONTINUOUS TIME

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Abstract:

The main aim of this study is to describe temporal risk aversion impact on the present value. Here the case of continuous time is considered only. Some initial problem with differential equation is obtained as a result of these studies. Then the discounting function is given as the unique solution of this initial problem. The formal influence of risk aversion index on the discounting was pointed out. Among other things, there is proved that for fixed current discount rate the condition of present value temporal monotonicity is equivalent to the condition that temporal risk aversion index is positive. Moreover, there is shown that nominal discount rate increases with temporal risk aversion index.

Introduction

The current equivalent value of payments available in a fixed point in time is called the present value (PV for short) of this payment. In financial arithmetic any PV is used as discounting function for dynamic assessment of the money value. The starting point for the financial arithmetic development was the interest theory. Further development of the financial arithmetic theoretical foundations has resulted in the formulation axioms of the financial arithmetic theory. Peccati [6] has defined PV as an additive function of payment value. This theory has been extensively developed in recent years [5].

The Peccati's definition of PV is generalized in [7] where PV is defined as a utility of cash flow.

For any fixed value of payments its PV may be described as a discount factor which is time-dependent only. On the basis of the interest theory we meet only with exponential discount factors. On the other hand, many different types of discounting have been determined in during of research on the behavioural aspects of dynamic assessment of the money value. Multithreaded results of studies on the discounting factors were competently discussed in [3].

Any product of the discounted value of payment and the discount factor describes linear discounting. Using linear discounting we omit the impact of interaction of payment value and payment time. In general, this approach is contrary to the finance practice. Thus our attention will be paid to the problem of finding such nonlinear discounting which is dependent on temporal risk aversion measure. Each Peccati's PV is a linear discounting. Therefore, PV definition is generalized in [7].

In this article, we will continue studying the impact of temporal risk aversion on discounting.

In [8] discount factor is defined as such discounting under continuous capitalization which is determined for the case when the absolute measure of temporal risk-aversion [1, 10] is constant. There it is shown that this discounting is linear. On the other side, 0btained in this way discount factor is different from Constant Decreasing Impatience discount factors introduced in [2].

In [9], for the discrete time case the discount factor is defined in this way that the absolute measure of temporal risk-aversion measure is nonincreasing function of receivable value. Obtained in this way discounting is not linear for the case when temporal risk aversion measure is not constant.

Therefore, the main purpose of this article is to determine for the continuous-time case such discount factor that the absolute measure of temporal risk-aversion measure is nonincreasing function of receivable value.

1. Axiomatic definitions of present value

Each available at a fixed time point payment can be described as a financial flow. Let be given the set of time moments $\{0\} \subset \Theta \subseteq \mathbb{R}_0^+$. In the particular case it may be the set of capitalization moments. Each financial flow is described by the pair $(t, C) \in \Phi = \Theta \times \mathbb{R}$, where $t \in \Theta$ represents flow moment and $C \in \mathbb{R}$ describes the nominal value of the flow. The set Φ is called the payments set. In addition, by the symbol $\Phi^+ = \Theta \times \mathbb{R}^+$ we denote the receivables set. Due [7] PV is defined, as any function $PV: \Phi \longrightarrow \mathbb{R}$ satisfying the conditions:

$$\forall_{C \in \mathbb{R}}: \quad PV(0, C) = C, \tag{1}$$

$$\forall_{(t_1, C),(t_2, C) \in \Phi^+}: \; t_1 > t_2 \Longrightarrow PV(t_1, C) < PV(t_2, C), \tag{2}$$

$$\forall_{(t, C_1),(t, C_2) \in \Phi}: \quad C_1 > C_2 \Longrightarrow PV(t, C_1) > PV(t, C_2). \tag{3}$$

$$\forall_{(t, C) \in \Phi}: \quad PV(t, -C) = -PV(t, C). \tag{4}$$

The above PV definition is a generalization of the Peccati's definition of PV. In [8] we can find such PV which does not fulfill the conditions of the Peccati's definition. It shows that presented above PV definition is significant generalization of Peccati's definition. Moreover, such approach fully explains the essence of the PV notion.

In [7] we can find the remark that if PV is identified with the cash flow utility then it should fulfill the First Gossen's Law which describes the effect of diminishing marginal wealth utility. Therefore, we can additionally take into account the following condition:

$$\forall_{(t, C_1),(t, C_2) \in \Phi^+} \forall_{\alpha \in [0;1]}: \; \alpha \cdot PV(t, C_1) + (1 - \alpha)PV(t, C_2) \leq PV(t, \alpha C_1 + (1 - \alpha)C_2) \tag{5}$$

2. The temporal aversion risk impact on present value

The concept of time preference is inextricably linked with the notion of temporal aversion. Reinterpreted Saint Petersburg paradox is a theoretical background for the phenomenon of temporal aversion [4]. There is pointed out that probability of deferred payment realization decreases with maturity lengthening. Hence, the liquidity risk increases with the extending of payment term. The cost of this risk reduces the value of assessed financial flows. Thus, the increase in liquidity risk implies a decrease in the unit price of each deferred payment. This means that the discount value is implied by the temporal risk. In this situation, we cannot exclude that also the investor's risk aversion has an impact on the discount assessment.

All our considerations will be restricted here to the case of continuous time. Therefore we assume that $\Theta = \mathbb{R}_0^+$. Let us take into account PV described by the function $PV: \Phi \longrightarrow \mathbb{R}$ fulfilling the conditions (1), (2), (3) and (4). For fixed receivable value $C \in \mathbb{R}^+$ we define the function $V: \mathbb{R}_0^+ \longrightarrow \mathbb{R}$ as follows

$$V(t) = PV(t, C). \tag{6}$$

Due to (2) the function $V: \mathbb{R}_0^+ \longrightarrow \mathbb{R}$ is decreasing. About considered PV we will additionally assume that current momentary discount rate $\delta \in \mathbb{R}^+$ is independent of any receivable value $C \in \mathbb{R}^+$ which results

$$\delta = \lim_{\Delta t \to 0^+} \frac{C - PV(\Delta t, C)}{\Delta t \cdot C} = \lim_{\Delta t \to 0^+} \frac{PV(0,C) - PV(\Delta t, C)}{\Delta t \cdot C} = \lim_{\Delta t \to 0^+} \frac{V(0) - V(\Delta t)}{\Delta t \cdot C} =$$
$$\lim_{t \to 0^+} \frac{-V'(t)}{C}. \tag{7}$$

From the point view of financial practice the above condition is obvious because of in this way current discount rate is defined by banking institutions.

We will characterize the investor's susceptibility to liquidity risk by temporal risk aversion index $\hat{\gamma}: \Phi^+ \longrightarrow \mathbb{R}$ defined as the Arrow-Pratt [1, 10] measure of absolute risk-aversion which is given here by the identity

$$\hat{\gamma}(t, C) = -\frac{\frac{\partial^2 PV(t,C)}{\partial t^2}}{\frac{\partial PV(t,C)}{\partial t}} = -\frac{V''(t)}{V'(t)}. \tag{8}$$

In agree with the First Gossen's Law the temporal risk aversion index is a nonincreasing function of receivable value. Usually, we do not have information about the distribution of temporal risk aversion. Thus we assume that temporal risk aversion index is independent of the payment term. This means that this index is constant in time. Therefore we can replace the temporal risk aversion index (8) by the function $\gamma\colon \mathbb{R}^+ \longrightarrow \mathbb{R}$ defined as follows

$$\gamma(C) = -\frac{V''(t)}{V'(t)}. \tag{9}$$

The equation (9) has the general solution $V\colon \mathbb{R}_0^+ \longrightarrow \mathbb{R}$ defined by

$$V(t) = \frac{A(C)\cdot\exp\{-\gamma(C)\cdot t\}}{\gamma(C)} + B(C), \tag{10}$$

where $A\colon \mathbb{R}^+ \longrightarrow \mathbb{R}$ and $B\colon \mathbb{R}^+ \longrightarrow \mathbb{R}$ are some functions of payment value. From the condition (1) we obtain

$$\frac{A(C)}{\gamma(C)} + B(C) = C. \tag{11}$$

On the other side, from the condition (7) we have

$$A(C) = \delta \cdot C. \tag{12}$$

In this way it is shown that the initial value problem (1), (7) and (9) has the unique solution

$$V(t) = C \cdot \big(\gamma(C)\big)^{-1} \cdot \big(\delta \exp\{-\gamma(C) \cdot t\} + (\gamma(C) - \delta)\big). \tag{13}$$

It is very easy to check that the function $V\colon \mathbb{R}_0^+ \longrightarrow \mathbb{R}$ is decreasing iff when the temporal risk aversion index fulfills the condition

$$\gamma(C) > 0. \tag{14}$$

The foregoing inequality is consistent with the First Gossen's Law. In this way we prove that for fixed current discount rate the condition of PV temporal monotonicity is equivalent to the condition that temporal risk aversion index is positive.

In this situation, according to (6), for given temporal risk aversion index $\gamma\colon \mathbb{R}^+ \longrightarrow \mathbb{R}$ the function $PV(\cdot\,|\gamma)\colon \Phi^+ \longrightarrow \mathbb{R}$ is determined by the identity

$$PV(t, C|\gamma) = C \cdot \left(\gamma(C)\right)^{-1} \cdot \left(\delta \exp\{-\gamma(C) \cdot t\} + (\gamma(C) - \delta)\right). \tag{15}$$

Let us note that due to (7) we can extend the domain of PV to the payments set Φ. Then the function $PV(\cdot\,|\gamma): \Phi \longrightarrow \mathbb{R}$ is defined as follows

$$PV(t, C|\gamma) = C \cdot \left(\gamma(|C|)\right)^{-1} \cdot \left(\delta \exp\{-\gamma(|C|) \cdot t\} + (\gamma(|C|) - \delta)\right). \tag{16}$$

This function can be used to discount the value of future financial flow $(t_i, C) \in \Phi^+$. Then the discount rate is equal to

$$D(t, C|\gamma) = \frac{C - C \cdot \left(\gamma(C)\right)^{-1} \cdot \left(\delta \cdot \exp\{-\gamma(C) \cdot t\} + (\gamma(C) - \delta)\right)}{C} =$$

$$= 1 - \left(\gamma(C)\right)^{-1} \cdot \left(\delta \cdot \exp\{-\gamma(C) \cdot t\} + (\gamma(C) - \delta)\right) \tag{17}$$

In an elementary way, we can prove, that determined above the discount rate is an increasing function of the temporal risk aversion index value $\gamma(C)$. On the other hand any temporal risk aversion index is nondecreasing function of receivable value. It means that discount rate is independent of receivable value iff the temporal risk aversion index is constant function of receivable value. If the temporal risk aversion index is increasing function of receivable value then defined by (17) discount rate describes nonlinear discounting.

Conclusions

For the variable temporal risk aversion index the function $PV: \Phi \longrightarrow \mathbb{R}$ determined by (16) is not linear discounting. Variability of defined above PV depends only on temporal risk aversion index variability and current discount rate variability. Each of these characteristics is an element of economic environment description. In this situation we can say that variability of proposed here PV is fully justified by economic reasons. All this shows that the main goal of this research work is realized.

There is shown that defined above PV is nonlinear discounting iff used temporal risk aversion index is variable. Moreover, we proved that for fixed current discount rate the condition of PV temporal monotonicity is equivalent to the condition that temporal risk aversion index is positive. Analogous results were obtained in [9] for the case of

discrete time. Both of these conclusions can be useful in further studies devoted to nonlinear discounting.

Moreover, in [9] it is shown that the paradox of conducting contradictory transactions under the same set of rational premises may be explained by the fact that the discount rate is an increasing function of the temporal risk aversion index value.

The temporal risk aversion index describes the behavioural aspects of financial management. The current discount rate is an image of the capital appreciation process. The capital appreciation process depends on the objective fundamental properties of the financial market, and it may depend on various behavioural factors. It means that we can determine PV using on the interaction of fundamental and behavioural factors.

Financial arithmetic should be treated as a subjective extension of the interest theory, which is based on objective premises. In this paper, it was shown that this extension is important.

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COUNTERACTING THE NATURAL DISASTERS' EFFECTS
IN SUBCARPATHIAN VOIVODESHIP

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Abstract:

Authors present the counteraction of the natural disasters' effects. In the article, there is the case study of Subcarpathian Voivodeship (NUTS 2). On the background of the conducted analysis, following conclusions can be drawn. Total expenses for permanent assets serving the water management in Subcarpathian Voivodeship in the years 1998-2013 exceeded 0.6 billion US dollars indexed to the year 2013. In the years 2003-2004 and 2011, the number of kilometres of levees which were built increased rapidly. The share of expenses for removing effects of the natural disasters and other phenomena in expenditures for the public safety, fire and health protection is minimal.

Introduction

In the years 1997, 2001 and 2010, Subcarpathian Voivodeship was affected by floods [4, 149-157]. Last drought occurred in the examined area in the year 2013. One year later, Malawa and Kraczkowa in Subcarpathian Voivodeship were affected by tornado.

Tornadoes, floods and droughts are natural disasters. The natural disaster is an unforeseen and often sudden event that causes great damage, destruction and human suffering. It can be defined as the situation or the event, which overwhelms local capacity, necessitating a request to national or international level for external assistance (EM-DAT 2012). The natural disasters are started by the natural hazards – the

probability of occurrence of a dangerous event [1]. There are biological, geological and hydrometeorogical factors of these events (USISDR 2009). The natural catastrophes have large impact on very poor and very rich societies. The former present the highest casualty totals and the latter the highest property damages [2].

In relation to the negative consequences caused by the natural disasters, the crucial significance for the economy of the each region has preventing the effects of these kind of events. The aim of this article is to present counteracting the natural disasters' effects in Subcarpathian Voivodeship in Poland. Authors used the methodology of Zbigniew Piepiora [5] and extended his research from floods [6] to all natural disasters and the examined period from 1998-2011 to 1998-2013.

1. Counteracting the natural disasters' effects in the examined area

Subcarpathian Voivodeship is placed in the south-east part of Poland. This rural region borders with countries – the Slovak Republic (south) and the Ukraine (east), and voivodeships: Lublin (north), Świętkorzyskie (north-east) and Lesser Poland (west). The examined region is situated near the Carpathian Mountains, mainly in the Vistula river basin. The main rivers are: Wisłok, San and Wisłoka. The voivodeship occupies 17,926 km2. The number of inhabitants is approximately 2.2 million. The population density is approx. 119 person/km2 [7, 29-43]. Subcarpathian Voivodeship is in 4.7 % covered by the local development plans. It is very bad result on the background of Poland (19.7%). [10, 255- 273].

Expenses for permanent assets serving the water management in Subcarpathian Voivodeship in the years 1998-2013 according to directions of investing are presented in the table 1. As we can see, expenditures for levees (7.) in the years after the flood in 1997 [8, 9] exceeded every year 4.4 million US dollars to the year 2001. Expenses after mentioned year significantly leveled up in the years 2003-2004 and 2010-2011. Total expenses for permanent assets serving the water management in Subcarpathian Voivodeship in the years 1998-2013 exceeded 0.6 billion US dollars indexed to the year 2013.

TAB. 1: Expenditures for permanent assets serving the water management in Subcarpathian Voivodeship in the years 1998-2013 – directions of investing (in '000 US dollars indexed to the year 2013)

1.	2.	3.	4.	5.	6.	7.	8.
1998	49030	22437	12690	2025	6206	5389	284
1999	37711	20568	4297	3759	3943	4409	734
2000	32868	14405	5581	3281	4687	4597	317
2001	24104	11185	2006	1786	2885	5724	517
2002	29383	9667	2735	1211	6733	8242	795
2003	37258	12325	1599	677	8550	13983	125
2004	35605	11678	1342	575	5247	16757	6
2005	22557	8270	3460	456	5219	5151	0
2006	23228	10551	2341	285	3285	6764	0
2007	41088	12303	16904	2175	1937	7769	0
2008	67064	15985	37802	997	6485	5794	0
2009	39484	17467	13616	911	4664	2826	0
2010	51135	21202	7286	985	6104	15557	0
2011	40523	13518	8061	998	2382	15564	0
2012	47021	18836	14545	614	3080	9946	0
2013	50977	23477	19338	1523	1841	4799	0
total - all years	629035	243874	153604	22260	73248	133271	2778

1. years, 2. total, 3. intakes and deliveries of water, 4. building and modernization of water conditioning stations, 4. water reservoirs and stages, 5. regulation and development rivers and streams, 6. levees, 7. pump stations on breaking downs and depression areas

Source: Own study on the basis of: [1].

The main source of expenditures for permanent assets serving the water management in the examined area in the years 2002-2013 were own measures of the self-governments and measures from foreign countries. From these source, there were financed over 66% of total expenditures in the examined period.

TAB. 2: Effects of investing in the water management in Subcarpathian Voivodeship in the years 2001-2013

1.	2.	3.	4.	5.	6.	7.	8.	9.
units of measure	'000 m3	'000 m3	km	unit	'000 m3	km	unit	km
2001	933	953	315	5	2774400	11	0	20
2002	50711	2710	390	8	241025	7	1	35
2003	32754	1778	317	3	37906	25	2	57
2004	18025	8816	220	2	78600	28	1	21
2005	1716	1476	218	0	0	2	0	28
2006	3109	6318	229	2	128652	1	0	17
2007	6468	0	192	0	0	0	0	4

1.	2.	3.	4.	5.	6.	7.	8.	9.
2008	10717	6635	157	1	310	5	1	1
2009	2854	2581	217	0	0	7	0	13
2010	2965	4878	349	1	32900	7	0	10
2011	3854	293	184	0	0	36	0	15
2012	2010	1012	262	0	0	8	0	15
2013	4119	10164	420	0	0	9	0	6
total - all years	140235	47614	3470	22	3293793	144	5	240

1. years, 2. intakes – efficiency per 24 hours, 3. water conditioning per 24 hours, 4. water supply system, 5. water reservoirs – total number, 6. water reservoirs – total capacity, 7. levees, 8. pump stations on breaking downs and depression areas, 9. regulation and development rivers and streams

Source: Own study on the basis of: [1].

Effects of investing in the water management in the years 2003-2013 in Subcarpathian Voivodeship are presented in the table 2. As we can see, data from this table are corresponding with data from the table 1. In the years 2003-2004 and 2011, the number of kilometers of levees (7.) which were built increased rapidly. In the period 2006-2007 there were built approx.. only 1 km levees.

Expenses for water management were co-financed from ecological funds. One of these funds is the Fund for Environmental Protection and Water Management. Charges and incomes to this fund in Subcarpathian Voivodeship in the years 2002-2013 amounted approx. 160 million US dollars. Incomes from charges for air protection and climate were the main part of total incomes and exceeded 62 million US $.

Total investing expenses for the low water retention in the area of examined region in the years 2003-2013 exceeded 6 million US dollars. The main part of them was investing expenditures for man-made water reservoirs (over 90%). Expenses were financed mainly from structural funds (over 2.7 million US $) and from other sources.

The range of objects of the low water retention in Subcarpathian Voivodeship in the years 2003-2013 amounted 59. Total increasing capacity in the examined period exceed 556 thousands m3.

Expenses for removing natural disaster's effects according to the budget classification in Subcarpathian Voivodeship in the years 2008-2011 exceeded 107 million US $. The

largest share in expenses for removing effects of these kind of phenomena had measures from budgets of municipalities (50.9%) and the smallest – from the budget of Subcarpathian Voivodeship (19.2 %). The largest part of measures from budgets of counties and municipalities were spent for transport and communication – over 314 million US $. From the budget of Subcarpathian Voivodeship, there were mainly financed expenses in agriculture and hunting.

Total expenditures for public safety, fire and health protection in Subcarpathian Voivodeship according to divisions of the budget classification in the years 2008-2013 exceeded 723 million US dollars. As we can see, similar amounts were spent for the public safety and fire protection – 50% to 50%.

The largest share in expenditures for the public safety and fire protection had budgets of municipalities (59%). The largest share in expenses for the health protection had budgets of counties (49%).

It is worth noting the minimal share of expenses for removing effects of natural disasters in expenditures for the public safety, fire and health protection. Only 13.6 million US dollars expenses were spent for counteracting negative consequences of natural disasters from 375 million US $ expenditures for the public safe and fire protection. Only approx. 1 million US dollars expenses were spent for counteracting negative consequences of this kind phenomena from 348 million US $ expenditures for the health protection.

Conclusion

On the background of the conducted analysis, following conclusions can be drawn.

The share of expenses for removing effects of natural disasters in expenditures for the public safety, fire and health protection is minimal.

The range of low water retention objects in Subcarpathian Voivodeship in the years 2003-2013 amounted 59. Total increasing capacity in the examined period exceed 556 thousands m3.

Total expenses for permanent assets serving the water management in Subcarpathian Voivodeship in the years 1998-2013 exceeded 0.6 billion US dollars indexed to the year 2013.

In the years 2003-2004 and 2011, the number of kilometers of levees (7.) which were built increased rapidly. In the period 2006-2007 there were built only approx. 1 km levees.

Total investing expenses for the low water retention in the area of examined region in the years 2003-2013 exceeded 6 million US dollars. The main part of them were investing expenditures for man-made water reservoirs.

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DISCRETE NONLINEAR MALTHUSIAN MODEL

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Abstract:

The aim of the paper is to introduce one possible variant of the nonlinear dynamic model of Malthus's ideas. Unlike the classical mathematical model of the size of human population we consider that the rate of mortality is influenced by the level of productivity. This assumption leads to the nonlinearity of the model. We show that the model has one asymptotically stable stationary point that can be interpreted as a constant level of population. We also discuss how the stationary point is dependent on the level of technology, on the size of land and on the productivity of work.

Introduction

Before the start of the industrial revolution at the end of the 18th century the main production tools were the land and people´s work. These tools served first of all for food production and the standard of living was in various countries of more or less the same level. A number of thinkers of the Enlightenment period considered possibilities of improving the life in society. Not all of them were that optimistic. In 1798 Thomas Malthus (1766-1834) published his influential essay [2], [3]. He believed that it was not possible to increase the income of the poor because the increase would also mean increase in birth rate which would lead to population growth. Larger population would mean a lower average food productivity as the size of cultivated area of land was considered unchangeable. In this case the law of decreasing yields would become applicable. It says that as long as the amount of work increases and the amount of land remains the same the marginal output of the newly employed workers will decrease. This in the end would lead to the decrease of the standard of living of each individual of the given population. As a result Malthus says it is not advisable to increase either the

income of the population or the population growth. On the contrary this should be controlled and become stable at a certain constant size. This idea is in contrast with the real development of human population as shown in TAB. 1. These considerations will be formulated in mathematical model, see also [4]. A similar mathematical model working with another production function can be found in [1].

TAB. 1: Size of human population in millions

Year	1700	1750	1800	1850	1900	1950	2000	2013
Population	640	795	970	1265	1656	2560	6091	7098

Source: Data from [6] a [7]. Values in years 1700 to 1900 were determined as average of the lower and higher assessment from [6].

1. Linear dynamic model

Let us focus on the basic growth population model, which is based on Malthus's ideas as stated in [3]: "Assuming then my postulata as granted, I say, that the power of population is indefinitely greater than the power in the earth to produce subsistence for man. Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will show the immensity of the first power in comparison of the second." To be able to formalize these ideas about the population growth, let us denote $N(t)$ the population size for time period t, $t \in \mathrm{N}_0$, further denote f, $f \in (0,1)$, the constant population birth rate expressed as a fraction of newly born children and the total size of the given population for a certain period of time and finally denote d, $d \in (0,1)$, the constant death rate expressed as a fraction of deceased people and the total population size for a certain period of time. The change of the population size is directly proportional to this population (more people can have more descendants) and the growth rate of new individuals set by the difference between the birth rate and death rate i.e. $N(t+1) - N(t) = (f - d) \cdot N(t)$. This ratio can be transferred into the first order linear difference equations, which is known as Malthus equation:

$$N(t+1) = (1 + f - d) \cdot N(t). \tag{1}$$

Its solution, see e.g. [4], is a geometrical sequence given by the formula

$$N(t+1)=N_0 \cdot (1+f-d)^t, \tag{2}$$

where N_0 represents the initial size of the population in time $t=0$. Since we consider the population size we assume that $N_0>0$. Equation (2) means that for $1+f\text{-}d > 1$, i.e. for $f > d$, the population size grows in time, for $f < d$ the population size decreases in time and for $f=d$ the population size remains constant. On the other hand equation (2) does not express other ideas of Malthus according to which the population cannot grow beyond any limit. Therefore we will focus on the precision of the model which are not generally known and wide spread. The model is to be modified.

2. Nonlinear dynamic model

Let us consider an economy where the production function is given by the relation

$$Y(t)=A\,T^{\alpha}N(t)^{1\text{-}\alpha}, \tag{3}$$

where $Y(t)$ is the output in the time period t, $t\in N_0$, A, $A>0$, is the level of technology, T, $T>0$, is the unchangeable size of cultivable land, $N(t)$ is the population size in time period t a α, $\alpha\in(0,1)$, is the marginal productivity of the land. The population growth is directly proportional to the size of current population and so called specific growth rate which depends on the average productivity $y(t)$ in the time period t, where

$$y(t)=\frac{Y(t)}{N(t)}. \tag{4}$$

Therefore we can write

$$N(t+1)-N(t)=c(y(t))\cdot N(t), \tag{5}$$

where $c(y(t))$ means the above mentioned specific growth rate. Malthus says that the higher the average productivity $y(t)$, the higher the coefficient $c(y(t))$. Thinking similarly as in section 1 let f, $f\in(0,1)$, be the constant population birth rate and $d/y(t)$, $d/y(t) \in (0,1)$, be the population death rate which decreases in dependence on higher productivity rate or the average income of the population. For the specific growth rate the following relation can be now proposed

$$c(y(t)) = f - \frac{d}{y(t)}, \qquad (6)$$

i.e. the population will grow in reliance on the difference between the birth rate and death rate. If we substitute the given relations into the equation (5) and do some manipulations, we get the basic nonlinear difference equation

$$N(t+1) = \left(1 + f - \frac{d}{AT^{\alpha}} N(t)^{\alpha}\right) \cdot N(t). \qquad (7)$$

3. Qualities of the model

The following quality of the described model can be found: Malthus´s growth model (7) has one stationary point $N^{o} > 0$, such that

$$N^{o} = \left(\frac{f}{d} A\right)^{\frac{1}{\alpha}} T. \qquad (8)$$

This stationary point is asymptomatically stable.

FIG. 1: The growth of population size according to nonlinear Malthusian model
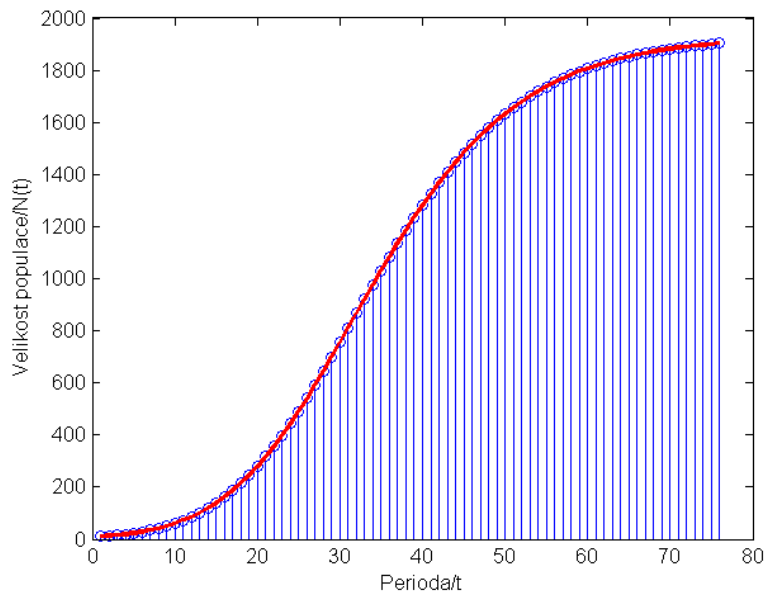
Source: Own calculation according to (7) for parameter values $N_0=10$, $A=1$, $T=500$, $f=0{,}3$, $d=0{,}2$, $\alpha=0{,}3$.

Let us focus on the argumentation which confirms the stated statement. The existence of the positive stationary point of the equation can be determined directly by the solution of the equation for the stationary point

$$N^o = \left(1 + f - \frac{d}{AT^\alpha}(N^o)^\alpha\right) \cdot N^o,$$

where $N^o > 0$. With such assumption the given equation can be divided by N^o and we find

$$1 + f - \frac{d}{AT^\alpha}(N^o)^\alpha = 1.$$

Now (8) can be easily found. The asymptotic stability of this point can be verified by direct calculation of the derivation of the function that stays on the right side of (7). Let

$$h(N) = \left(1 + f - \frac{d}{AT^\alpha}N^\alpha\right) \cdot N,$$

be the right side of Malthusian growth model (7), then

$$h'(N) = 1 + f - (1 + \alpha)\frac{d}{AT^\alpha}N^\alpha.$$

If we substitute the value of stationary point N^o from (8) into this relation, then after some modification we get

$$h'(N^o) = 1 - f\alpha.$$

As $f \in (0, 1)$ and $\alpha \in (0, 1)$, one can see that $f\alpha \in (0, 1)$, so $1 - f\alpha \in (0, 1)$ and therefore

$$\left|h'(N^o)\right| = 1 - f\alpha < 1.$$

This means, see e.g. [4], that the stationary point N^o is asymptotically stable. This observation can be interpreted as follows: the development of population leads and comes closer to the stable state, see also graphic simulation on FIG 1.

4. Discussion

In more details let us notice the relation (8) which characterizes the stable size of population. From this relation it is evident that the steady state N^o is greater, the greater the extent of cultivated land T, the higher the level of technology A, that is necessary for cultivation of the land, the greater the fertility rate f and the smaller the mortality rate d is. The first two relations allow us to explain the population growth with the use of both extensive and intensive agriculture. These are also the reasons why some Malthusian visions were not realized. Let us explain now how the stable value of the population depends on parameter α, which characterizes the marginal productivity of land. For this purpose, we consider the function based on relation (8)

$$N^o(\alpha) = \left(\frac{f}{d}A\right)^{\frac{1}{\alpha}} T,$$

then

$$\left(N^o\right)(\alpha) = \left(\frac{f}{d}A\right)^{\frac{1}{\alpha}} \cdot T \cdot \ln\left(\frac{f}{d}A\right) \cdot \left(-\frac{1}{\alpha^2}\right).$$

Assuming that $fA/d > 1$, we find $(No)'(\alpha) < 0$, i.e. $No(\alpha)$ is the decreasing function of the variable α, $\alpha \in (0,1)$. It means that for a higher proportion of land to the total product is the higher stable level of population and vice versa.

Conclusion

Malthus concerns of the extreme poverty and famine in the global world have not come true and today´s population is more than seven times bigger than the population living in his times, cf. TAB 1. The model we introduced comes out from Malthus's ideas and leads to the conclusion that the population growth can gradually grow up the stable value where the birth rate and death rate are in balance. We assumed that this balance is dependent on the productivity of the given population and can be related to the amount of means the given population can invest to healthcare. We assume that the same way the natural death rate in the relation (6) was modified, it will also be possible to modify the natural birth rate. Today Malthus's pessimistic ideas come alive as a result of fear of

energy crisis caused by not collapse of agricultural production but the exhaustion of fossil material reserves, see [5].

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COMPARISON OF REGIONAL COMPETITIVENESS MODELS ON THE BASIS OF CLUSTER ANALYSIS

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Abstract:

The article presents creation of the model of regional competitiveness with the utilisation of non-hierarchical cluster analyses. For the creation of the model six Eurostat indicators and derived indicators were used. Indicators describe the NUTS 2 regions of selected 'new' European Union member states from the point of view of macroeconomics development, innovation ability and standard of living. The model works with data set from 2007 and 2011 and uses two methods of cluster analysis.

Introduction

It had been 10 years since the Czech Republic has been inducted into the EU, along with other former members of the East Block. During these years, these countries have seen an unrestrained development. Their development, especially of Baltic States, has been affected by economic and financial crisis in recent years. Most of the comparative analysis and studies elaborated on this topic Dexia [1] is focused on the evaluation of the macroeconomic performance of the states as a single entity measured by classical macroeconomic indicators or the fulfilling of the Maastricht convergence criteria respectively [7,8,15]. In our paper, we focus on the role of separate NUTS 2 regions amongst those states. The goal of this paper is to analyse regional disparity and by watching selected attributes evaluate the changes in ability to compete of the NUTS 2 regions in selected countries. The analysis includes: countries of the Visegrad four, which are geographically connected, or had similar historical background (the Czech

Republic and Slovak Republic were united until 1993) and Baltic States (each one is a NUTS 2 unit due to their size) for comparison. The analysis consists of 38 NUTS 2 regions [2].

Goals of this paper could by defined by the following way:

- Selection of the indicators of the competitiveness of the NUTS 2 regions
- Use of the cluster analysis to define similar regions (clusters) according to the defined indicators with use of average growth-ratio of said indicators
- Comparison of clusters of regions in 2007 and 2011

In the article there are defined possible indicators that can be utilized for the characterization of regional competitiveness. These are available, in the regional division, in Eurostat statistics databases [2, 4]. The use of these statistics allows for the creation of the NUTS 2 regions with similar competitiveness potential model. The model utilizes the non-hierarchical cluster analysis method. This method makes it possible to organize the regions, from an external point of view, into heterogeneous clusters and, from the internal point of view into homogenous clusters (groups). Elements of the individual clusters represent regions with similar characteristics and similar problems that have an influence on their potential competitiveness.

1. Regional competitiveness indicators

From the macroeconomic point of view a region's competitiveness is conditioned by competitiveness of the economy as a whole. Long term sustainable economic growth is principally based upon an analysis of gross domestic product (GDP). GDP, which in the regional context may be used to measure macroeconomic activity and growth, as well as providing the basis for comparisons between regions. Since regional GDP indicator expressed in PPS is not suitable for the comparison of this indicator in a timeline, the indicator *GDP per inhabitant in current price* has been chosen. Another possible indicator that projects itself into the volume of regional GDP and also into labour productivity is the indicator of the *number of inhabitants in the region to the total number of inhabitants in the entire state*. For other macroeconomic performance the indicator of *regional unemployment rate* [2, 3] has been chosen. Innovation ability of an

area and its potential to increase its technological level can be evaluated according to the quality of human resources (e.g. according to the reached level of education), expenditures to science and research in regions, level of employment in science and research, level of foreign investment as a bearer of innovation changes and of value added in technologically demanding sectors. Inhabitants´ computer literacy can be used as an additional indicator as well as households´ internet use, number of patents and similar [3, 8]. These indicators can be marked as the indicators for a region's potential development with direct impact to GDP growth and on the human resources quality. Since education and training are widely recognised as important for the knowledge-based society and competitiveness of economy, for innovation performance evaluation the indicators *Number of students in tertiary education* (ISCED levels 5 and 6) and *Number of submitted patents applications* have been chosen.

Among the indicators that represent the quality of life are for instance migration of inhabitants, quality of the environment, crime rate, population health status, lifespan, the opportunities for sports and culture life. Due to lack of relevant data in the given time line for all NUTS 2 regions, households' disposable income has been chosen [2 ,3]. This indicator can be included both among macroeconomic indicators and quality of life indicators.

2. Model design

A cluster analysis [5, 15, 17] is an exploratory data analysis tool for solving classification problems. The object is sorted into cases (people, events, etc.) into groups, or clusters, so that the degree of association is strong between members of the same cluster and weak between members of different clusters. Based on the analysis and the availability of the real data set the following indicators have been used as independent input attributes (variables), stated in Tab. 1, for the creation of the model.

The values of the monitored six indicators have been obtained from Eurostat [2, 3]. These values in years 2007 and 2011 (except for the indicator *P;* values of this one were not available; we had to use values in year 2010) represent the basis of the matrix **DM**. The data matrix has been extended by two attributes representing: region code (attribute *GEO*) and country (attribute *COUNTRY*). In the phase of data preparation we focused

on derivation new indicators – average coefficient of growth *C1* for every indicator computed from years 2007 to 2011 (for indicator *P* to 2010).

TAB. 1: Description of selected indicators

Indicator	Description of indicator
D	Disposable income of private households by NUTS 2 regions (EUR per inhabitant)
E1	Population at regional level - as a percentage of total country level population (in %)
G	GDP at current market prices at NUTS 2 (EUR per inhabitant)
P	Number of Patent applications to EPO by priority year at the regional level NUTS 2 (per million of inhabitants). EPO data refer to all patent applications by priority year as opposed to patents granted by priority year by UPSTO
S	Total number of students in tertiary education (ISCED levels 5 and 6) at NUTS 2
U	Regional UR at NUTS 2 (in %)

Source: [10, 11]

The description (the vector of the measurement) of every object o_j is the following:

$$o_j = \{COUNTRY_j, GEO_j, D\_2007_j, D\_2011_j, E1\_2007_j, E1\_2011_j,$$
$$G\_2007_j, G\_2011_j, P\_2007_j, P\_2010_j, S\_2007_j, S\_2011_j, UR\_2007_j, \quad\quad (1)$$
$$UR\_2010_j, C1\_D_j, C1\_E1_j, C1\_G_j, C1\_P_j, C1\_S_j, C1\_UR_j\},$$

for *j*-th region o_j, (j = 1, 2, …, 38). The final data matrix **DM** is in range (20×38). Software IBM SPSS Modeler was used. The design of model creation we can see in the Fig. 1.

FIG. 1: Cluster analysis model of regional competitiveness
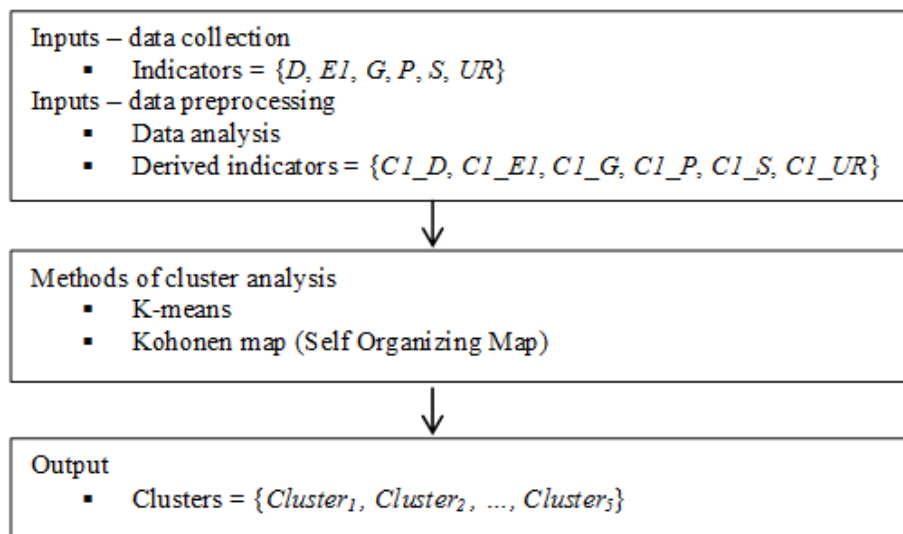
Source: Authors

For clustering the K-means method and Kohonen map were applied. K-means [5, 9, 13] is well-known method. It is an iterative algorithm. There is an initial set of clusters defined and the clusters are repeatedly updated until no more improvement is possible (or the number of iterations exceeds a specified limit) [13]. This method is convenient to use when we work with only quantitative attributes [12]. In contrast, Kohonen map [13] is a special type of neural network that performs unsupervised learning. On the basis of the silhouette measure of cluster cohesion and separation [14] (a silhouette coefficient SC of 1 would mean that all cases are located directly on their cluster centres; a value of −1 would mean all cases are located on the cluster centres of some other cluster; a value of 0 means, on average, cases are equidistant between their own cluster centre and the nearest other cluster [6]), we mentioned only results of clustering by K-Means method (for all experiments by Kohonen map result of this coefficient was less than 0.5 ($SC_{Kohonen} < 0.5$); it means, the structure is weak and could be artificial [14]). By K-Means method, by clustering into five clusters, we achieved $SC_{K\text{-}Means} = 0.5$ and the best results was by clustering into three clusters $SC_{K\text{-}Means} = 0.6$ (a reasonable structure has been found). But on the basis of interpretation of data, we decided to work with five clusters.

3. Discussion

The ranking of individual countries NUTS 2 (CZ, EE, HU, LT, LV, PL, and SK) into five clusters is demonstrated. Mean values of indicators in clusters in 2007 and 2011 and mean values of $C1$ for all indicators (centre of clusters) are in Tab. 2 and Tab. 3.

TAB. 2: Mean values of clusters in 2007 and 2011

Indicator	Mean values of cluster in year 2007 / year 2011				
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
D	10850 / 13350	4883.33 / 4800	7471.43 / 8385.71	6066.67 / 6066,67	4960 / 5795
E1	11.31 / 11.45	11.91 / 11.71	15.38 / 15.58	100 / 100	9.93 / 9.89
G	25700 / 31350	7433.33 / 7350	12057.14 / 13657.14	10133.33 / 10700	7590 / 8935
P	30.34 / 14.19*	10.51 / 3.85*	19.33 / 11.13*	10.36 / 4.89*	4.73 / 4.83*
S	40.2 / 45.9	15.73 / 13.73	17 / 18.79	22.7 / 23.43	19.01 / 20.02
UR	3.35 / 4.7	8.5 / 11.87	5.23 / 6.93	4.97 / 14.63	10.25 / 10.78

* it means that data set is available until 2010

Source: Authors

TAB. 3: Mean cluster values of *C1* for all indicators

Indicator	Mean values of cluster				
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
C1_D	1.052	0.996	1.030	1.000	1.038
C1_E1	1.003	0.996	1.002	1.000	0.999
C1_G	1.052	0.997	1.033	1.015	1.041
C1_P	0.777	0.711	0.835	0.838	1.001
C1_S	1.034	0.967	1.033	1.008	1.014
C1_UR	1.092	1.094	1.083	1.313	1.012

Source: Authors

The cluster 1 is represented by only two regions with capital cities (CZ region Praha and SK Bratislavský region). This cluster is typical by its above-average values in all observed indicators as opposed to other NUTS 2 regions (see Tab. 2), it can therefore be viewed as most competitive. The cluster 2 is represented by all six Hungarian regions except Közép-Magyarország region (one part of this region is a section of the capital city Budapest). This region achieved the lowest values in observed indicators amongst created clusters. In these regions, there's an apparent increase in unemployment and the standard of living is stagnant if we compare the results of 2007 and 2011 analyses. The cluster 3 contains five Czech regions (except Prague region and the poorest regions Moravskoslezsko and Severozápad) and Hungarian and Polish regions that contain capital cities (HU Közép-Magyarország region and PL Mazowieckie region). Rated by competitiveness, it's the second best cluster of NUTS 2 regions. Average values of indicators increased in observed period. Specific cluster is the 4th cluster in which the Baltic States regions are represented. In these regions, the increase in unemployment and stagnant standard of living is most apparent. The cluster 5 consists of remaining fifteen Polish regions and three Slovak regions (except the regions with capital cities), and the two worst performing Czech regions (Moravskoslezsko and Severozápad). It is typical by its relatively low value in standard of living and GDP indicators, and by high unemployment rate. It, however, was high even before the crisis and its increase during the observed period is not that high. This cluster is second worst in competitiveness.

Conclusion

In the paper we have selected the main indicators which characterised the NUTS 2 regions competitiveness. These indicators were used as inputs values for developing the

model of cluster analysis. From the analysis and the model has ensured that despite internal differences of the state in which region is located, the above average successful regions are the regions including the capital cities (cluster 3) or regions that are themselves the capital cities (cluster 1). The analysis confirmed the specific position of the Baltic States with their specific position – each state represents separate region (cluster 4). These regions recorded the highest increase in unemployment in the observed period. However, this indicator increased in all observed regions and created clusters because of the economic crisis. Another mutual attribute in most regions is decrease in number of patent applications. Only the cluster 5, which contains eight Polish regions with increased patent application, had an increase in this indicator). But their original value had been low compared to other regions.

We are aware of some limitations of the executed entry analysis. The extent of this article also does not allow for a deeper analysis of the obtained results. In future work we will deal with application of additional methods and experiments with the data (e. g. new derived indicators) with the aim to increase the value of silhouette coefficient SC (and by this to achieve a strong structure of clusters).

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THE IMPACT OF THE POLISH ADMINISTRATIVE REFORM ON THE CENTRAL FUNCTIONS OF LOWER SILESIAN CITIES

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Abstract:

The aim of the article is to identify the central functions of larger cities in the Lower Silesia region and to analyse the transformations they have been subject to as a result of changes introduced in the territorial division of Poland. The study has been based upon W. Christaller's theory of central places, with the use of two indicators: the centrality indicator of a city and the centrality indicator of a city adjusted to its demographic potential.

Introduction

The Lower Silesian voivodeship is located in the south-eastern part of Poland. It encompasses an area of 19 948 km^2. As of 2012 it had over 2.9 million inhabitants, i.e. 7.6% of the population of Poland. The GDP for the voivodeship per capita in 2011 equaled 44 961 PLN, which surmounted to 113.4% of the average value for the state [4, 58].

The aim of the article is to analyse the impact of the territorial changes in the state on the central functions of larger Lower Silesian cities: Jelenia Góra, Legnica, Wałbrzych and Wrocław.

Up until the year 1998 Poland utilised a regional administration system based on 49 small voivodeships. The administrative reform which came into force on January 1, 1999 aimed at creating a territorial system based on closed regional socio-economic bonds. The capitals of each region were to function as an element of a polycentric

settlement layout capable of balancing the dominance of the state capital (Warsaw). They were also meant to fulfill the tasks assigned to subjects involved in pursuing the European regional policy [5, 181]. Between 1975 and 1998 Jelenia Góra, Legnica, Wałbrzych and Wrocław served as the capitals of four autonomous voivodeships. The first three have been deprived of their status as capitals as a consequence of the reform in question. The territories formerly belonging to the Jelenia Góra, Legnica, Wałbrzych and Wrocław voivodeships, as well as a small part of the Leszno and Kalisz voivodeships have been merged together into the Lower Silesian voivodeship, with Wrocław becoming the new capital.

One characteristic aspect of the space in question is that there is a huge difference in the demographic potential between Wrocław and the other leading urban centres of the region. In the history of post-war development in the above-mentioned cities, the number of inhabitants of Jelenia Góra, Legnica and Wałbrzych added together has never exceeded the population of Wrocław. It is worth noting that Wrocław is developing strengthening bonds with foreign metropolises, which is exemplified by the growing number of foreign passengers using the services of the Wrocław airport [3, 192-193].

1. The method used in research

The study was based on the central places theory created by W. Christaller, which is one of the more popular concepts allowing to evaluate the scope of central functions pursued by a given urban centre, i.e. activities which are serviced by subjects from the hinterlands of cities (catchment area). According to Christaller's theory the economic success of a city is determined by its ability to attract and maintain as large a number of central activities as possible. Christaller's theory aptly explains the formation of the size and status of cities in the settlement system based on service activities, yet it is of little use when demonstrating the development of cities with specialised functions, i.e. such whose markets are dispersed and do not become enclosed in the functional area of the city [2, 7-8].

The article makes use of two indicators for the level of central functions of a given city. These include the centrality indicator of a city W_C and the centrality indicator of a city adjusted to its demographic potential W_C^M.

By making use of the centrality indicator of the city (model 1) one may determine how many people in a given city employed in central functions work towards fulfilling the catchment-related function. The centrality indicator of a city adjusted to its demographic potential (model 2), i.e. with W_C relative to the population of a given city, allows to determine the number of people working in central functions used in the region for 1000 inhabitants of that city [6, 78].

Model 1: the centrality indicator of a city

$$W_C = Z_{iM} - L_M \frac{Z_{i0}}{L_0} \tag{1}$$

where:

W_C - the centrality indicator of a city,

Z_{iM} - the number of people working in the "i" section in a given city,

L_M - the total number of inhabitants of a city,

Z_{i0} - the number of people working in the "i" section in the catchment region (voivodeship) of a given city,

L_0 - the number of people inhabiting the catchment region (voivodeship) of a given city.

Model 2: the centrality indicator of a city adjusted to its demographic potential

$$W_C^M = \frac{W_C}{L_M} \cdot 1000 \tag{2}$$

where:

W_C^M - the centrality indicator of a city is adjusted to its demographic potential,

W_C - the centrality indicator of a city, measured in accordance with model no. 1,

L_M - the general population of a given city [cf. 6, 78-79].

One should take into account that between 1998-2012 a change has been introduced in the manner of classifying data regarding the rate of employment in economy. In 2008 a document entitled The 2007 Polish Classification of Activities (2007 PKD) (Journal of Laws, no. 251, item 1885) has replaced the formerly prevailing 2004 Polish Classification of Activities (2004 PKD). These changes result in a partial lack of direct comparability of data with often unaltered names of classification levels. Thus it was essential to make use of expert knowledge in the conducted study.

2. Transformations in the central functions of cities

When conducting the analysis of the centrality of cities, in accordance with the ideas included in the subject literature [cf. 6,79; 2, 8], the authors focused on service sectors and sections of the studied cities. The values of W_C and W_C^M have been calculated for the studied cities in 1998 based on data included in Table 1 (Table 2, Table 3). It is worth noting that the territory of the future Lower Silesian voivodeship became a mutual catchment area.

TAB. 1: Population data and employees in selected economic sectors of the 2004 PKD in 1998

| Territorial unit | Employees: | | | | Population |
	Total	Service sector total	Service sector – market services	Service sector - non - market services	
Lower Silesia	730234	405529	213505	192024	2982128
Jelenia Góra	29117	19228	10183	9045	93901
Legnica	33945	21853	12649	9204	109335
Wałbrzych	34246	20934	11260	9674	136923
Wrocław	215092	141588	83061	58527	637877

Sources: own elaboration based on data from the Central Statistical Office

The acquired results allow to claim that Wrocław showcased what undoubtedly is the highest value of the global centrality indicator. This advantage was to a significant degree the result of highly developed central functions in the field of provided market services, though activities in the non-market sector also contributed to Wrocław attaining an advantage over the other studied cities. The values for Jelenia Góra and Legnica reached an approximate level, yet the scope of the central functions pursued by Wałbrzych is noticeably low.

The global centrality indicator values for cities adjusted to the demographic potential (Table 3) serve as an approximate, yet not as unambiguous example of the studied phenomena. In 1998 86 people per 1000 inhabitants of Wrocław worked in the realisation of central functions, while in Jelenia Góra or Legnica it was respectively 69 and 64, with only 17 people in Wałbrzych.

TAB. 2: The centrality indicators for selected Lower Silesian cities in 1998

Territorial unit	The global centrality indicator value of a city	The partial centrality indicators of a city	
		Service sector - market services	Service sector - non - market services
Jelenia Góra	6459	3460	2999
Legnica	6985	4821	2164
Wałbrzych	2314	1457	857
Wrocław	54845	37392	17453

Source: own elaboration

TAB. 3: The adjusted centrality indicators of selected Lower Silesian cities in 1998

Territorial unit	The global adjusted centrality indicator value of a city	The adjusted partial centrality indicators of a city	
		Services sector - market services	Service sector - non - market services
Jelenia Góra	68.78	36.85	31.93
Legnica	63.89	44.10	19.79
Wałbrzych	16.90	10.64	6.26
Wrocław	85.98	58.62	27.36

Source: own elaboration

The values of W_C and W_C^M have been calculated for the studied cities in 2012 based on data included in Table 4 (Table 5, Table 6). The territory of the Lower Silesia voivodeship became the mutual catchment area.

TAB. 4: Population data and people employed according to selected grouped 2007 PKD sections in 2012

Territorial unit	Employees:			Remaining services[*] (C)	Population
	Total	Trade; automobile repairs; transport and warehouse management; accommodation and catering; information and communication (A)	Financial and insurance activity; real estate market services (B)		
LOWER SILESIA	778249	153092	32316	247790	2914362
Jelenia Góra	24110	4515	753	11315	82846
Legnica	33978	6928	1192	14697	102422
Wrocław	237365	67571	20139	99337	631188
Wałbrzych	29045	5538		11517[**]	119171

[*]- the "other services" group includes the M, N, O, P, Q, R, S, T and U sections of the 2007 PKD, i.e. those mostly related to public administration and national security; Mandatory social security; Education; Health care and social welfare.
[**]- in 2012 Wałbrzych was classified as NTS 5, as opposed to the remaining cities which where considered NTS 4. This explains the smaller number of statistical data for its area.

Source: own elaboration based on data from the Central Statistical Office and the Wrocław Statistical Office.

TAB. 5: The centrality indicators of selected Lower Silesian cities in 2012

Territorial unit	The global centrality indicator value of a city	Partial centrality indicators of a city		
		A	B	C
Jelenia Góra	4434	163	-166	4271
Legnica	7593	1548	56	5989
Wrocław	93226	34415	13140	45671
Wałbrzych	273	-722		273

Source: own elaboration

The realisation level of central functions in Wrocław in 2012 (Table 5) is noticeably higher in relation to that of 1998. The partial indicator calculated for the "other services" (C) group had a significant impact on the growth of the global W_C indicator value in the city. This group can to a large degree be identified as related to the non-market services sector. Groups A and B (for Wrocław), involving mostly market services have also experienced a rise in central functions.

The realisation level of central functions rose in Legnica and decreased in Jelenia Góra and Wałbrzych. The decrease is especially significant in the case of the latter city. Group C was of major importance for the global centrality value in these cities.

TAB. 6: The adjusted centrality indicators of selected Lower Silesian cities in 2012

Territorial unit	The global adjusted centrality indicator value of a city	Partial adjusted centrality indicators of a city		
		A	B	C
Jelenia Góra	53.52	1.97	-2.00	51,55
Legnica	74.13	15.11	0.55	58,47
Wrocław	147.70	54.52	20.82	72,36
Wałbrzych	2.29	-6.06		2.29

Source: own elaboration

The W_C^M values in Table 6 help create an approximate depiction of the studied phenomena. In 2012 148 people (with 86 in 1998) per 1000 inhabitants of Wrocław were working in the realisation of central functions, with 54 and 74 in Jelenia Góra and Legnica respectively (69 and 64 in 1998), and only 2 people in Wałbrzych (17 in 1998).

Conclusion

The changes regarding the administrative division of the state introduced in 1999, which amended the prior statuses of cities, have had a significant impact on the structure and

dynamics of employment in economy, which was reflected in the level of the realised central functions. The level of these functions in Wrocław has visibly increased, which should be related to the fact that the city achieved the status of the capital of a new voivodeship, as well as to the possibilities for dynamic development this entails (e.g. through the inflow of investments and the proximity of decision making structures). Two out of the three cities which have lost their functions as a capital, i.e. Jelenia Góra and Wałbrzych, have also lost some of their significance, which was reflected in the decrease in their populations, the total number of the employed and the indicators of their centrality.

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RELATIONS OF SELECTED MACROECONOMIC AGGREGATES IN THE CZECH REPUBLIC AND EU IN CONNECTION WITH CURRENCY INTERVENTION OF CNB IN NOVEMBER 2013

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Abstract:

In November 2013 the Czech National Bank (CNB) made a currency intervention to weaken the Czech currency and help to stem a slowdown in inflation this way. This action should have stimulated the economy, above all to recover the growth of GDP and to decrease the unemployment at the same time. In connection with this our paper analyses relations among these three macroeconomic aggregates – GDP, unemployment and inflation. Especially analyses behaviour of the unemployment and inflation which has been described by Phillips' curve. Further, analyses the correlation between the inflation and GDP to verify the assumption of the CNB. To complete all the pairs of selected indicators the unemployment and GDP have been researched as well. The analysis based on the data of Eurostat concerns with EU countries during the period 2010-2013.

Introduction

In November 2013 the Czech National Bank (CNB) made a currency intervention to depreciate the exchange rate of Czech crown and EUR. This action has been announced for several months. CNB this way tried to support the growth of GDP in the Czech Republic and at the same time decrease the high unemployment ibidem. The reason, according the information of CNB, was a deflation threat, which could cause further decrease of GDP, less production and consequently the increase of unemployment. CNB assumed that the higher prices and inflation rate would make the consumers to spend money more than before to generate a new production of goods which recover the

growth of GDP again. Furthermore, according the CNB models about thirty five thousands of new job positions should be created after the intervention [7, 11].

1. Methodology

From the theoretical point of view the relation between the inflation and unemployment was explained in 1958 by Phillips ([2, 497-502], [3, 165-177]). The mutual behaviour of these two aggregates has been shown by the Phillips'curve ([6, 798-800], [9, 159-164]). Briefly, the inflation is a decreasing function of unemployment. At the moment it is necessary to add that there is also a relation between GDP and the unemployment. In this case it is again a non-increasing function, i.e. the higher unemployment, the less GDP a vice versa. The former development of the mentioned aggregates in the Czech Republic in 1995-1999 has been described in [8, 623-646].

In connection with the facts stated above this paper analyses mentioned macroeconomic aggregates not only in the Czech Republic but also in twenty five selected European countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Luxembourg, Latvia, Lithuania, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain and Sweden. To identify the relationships between the aggregates the correlation analysis was used [4, 87-100]. The null hypothesis H_0: $\rho(X,Y) = 0$ was tested at 5% significance level. The alternative hypothesis depends on the particular pair of the aggregates. For the unemployment v. inflation and unemployment v. GDP it is H_1: $\rho(X,Y) < 0$. For GDP and inflation then it is H_1: $\rho(X,Y) > 0$. For the computation Microsoft Excel and Statgraphics Centurion XVI were used.

2. Analysis of Aggregates

2.1. Unemployment v. Inflation

As mentioned above the relationship between these aggregates should be decreasing (or non-increasing) function. The sample correlations of the unemployment and inflation are stated in Tab. 1. The states have been ordered by the correlation ascending.

According the results just a half of the researched countries has a negative correlation between the unemployment and inflation and the second half has a positive one. The

states denoted by a staircase {*} have a statistically significant negative correlation. In the other states the unemployment and inflation are independent variables or their relation is a non-decreasing function. For illustration, there are two figures - the country with the lowest correlation (Germany) and with the highest correlation (Croatia).

TAB. 1: Correlations between unemployment and inflation

GE *	EST *	FIN *	B *	LT *	M *	LV *	SK *	CZ
-0.89	-0.83	-0.81	-0.78	-0.45	-0.45	-0.44	-0.42	-0.25
AUT	**BG**	**CY**	**L**	**PL**	**FR**	**IRL**	**SWE**	**P**
-0.18	-0.15	-0.03	-0.01	0.04	0.07	0.23	0.34	0.49
E	**I**	**DK**	**GB**	**NL**	**H**	**SLO**	**HR**	
0.56	0.58	0.63	0.64	0.74	0.82	0.83	0.87	

Source: EUROSTAT, own calculation

FIG. 1: Unemployment v. inflation – Germany
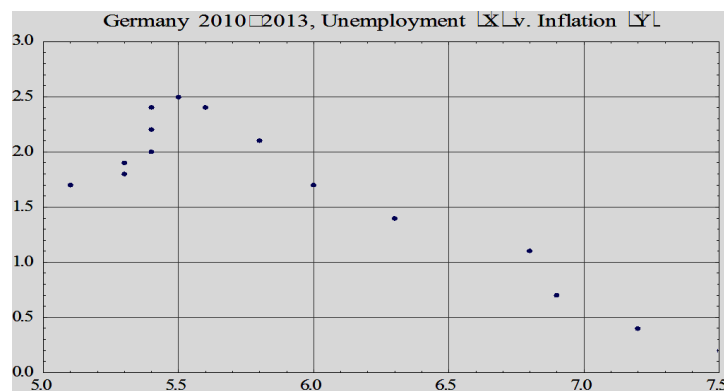
Source: authors

FIG. 2: Unemployment v. inflation – Croatia
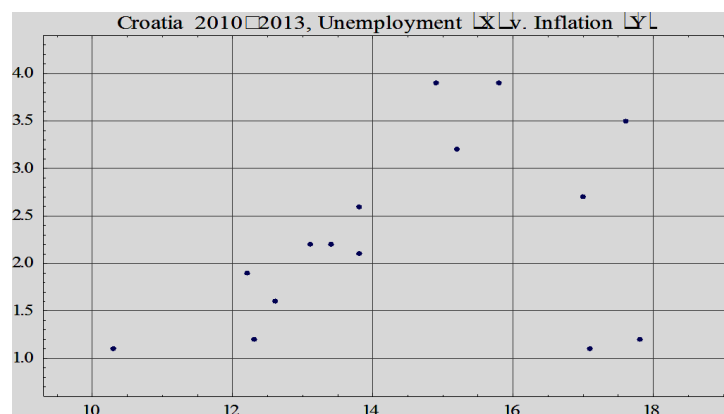
Source: authors

2.2. Unemployment v. GDP

In connection with the aggregates from the previous paragraph further pair of aggregates has been analysed. Concerning the unemployment and GDP it could be assumed the same hypothesis, i.e. their relation is a non-increasing function - the greater unemployment, the less GDP.

TAB. 2: Correlations between unemployment and inflation

EST *	GE *	LT *	LV *	CY *	E *	P *	FIN *	SWE *
-0.97	-0.96	-0.96	-0.96	-0.93	-0.87	-0.8	-0.73	-0.59
CZ *	**DK ***	**M ***	**SK**	**I**	**H**	**SLO**	**IRL**	**HR**
-0.53	-0.51	-0.51	-0.4	-0.38	-0.31	-0.27	-0.22	-0.09
B	**AUT**	**GB**	**NL**	**PL**	**FR**	**L**	**BG**	
-0.06	0.31	0.37	0.38	0.57	0.69	0.85	0.96	

Source: EUROSTAT, own calculation

The results are different in comparison with the previous ones. Twelve of twenty six countries have negative correlation in accordance with the assumption. Further, at the same time four countries have a significant positive correlation.

FIG. 3: Unemployment v. GDP – Estonia
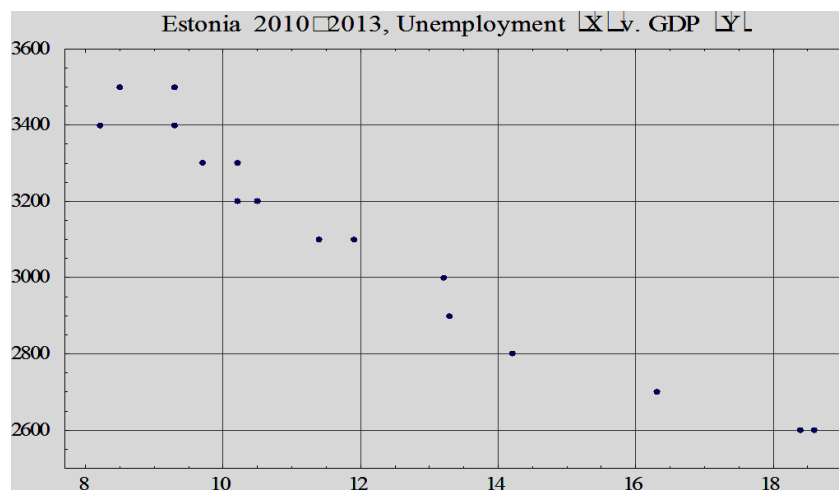
Source: authors

FIG. 4: Unemployment v. GDP –Bulgaria
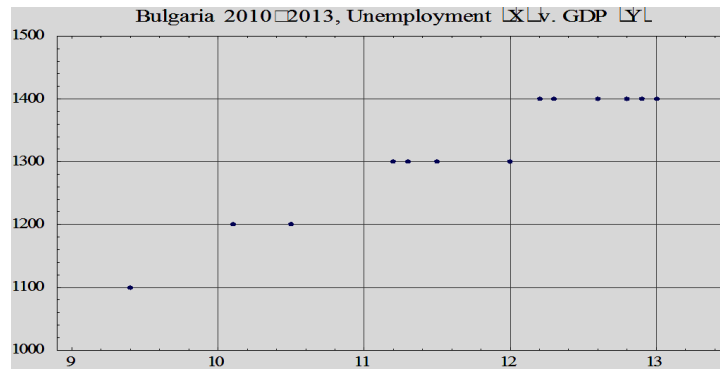
Source: authors

2.3. Inflation v. GDP

The examined assumption for the third pair of aggregates could be derived for instance from [1, 130-136]. There is indicated that the greater inflation should make the consumers to increase buying and this way increase GDP. How it is noticeable from Tab. 3 the correlation is mostly positive (18 of 26 countries).

TAB. 3: Correlations between inflation and GDP

SWE	E	P	PL	DK	H	SLO	BG	HR
-0.89	-0.43	-0.4	-0.39	-0.07	-0.06	-0.06	-0.05	0.04
GB	**I**	**CZ**	**M**	**CY**	**L**	**LT**	**IRL ***	**B ***
0.18	0.25	0.33	0.33	0.34	0.34	0.39	0.54	0.56
FR *	**LV ***	**NL ***	**EST ***	**GE ***	**AUT ***	**FIN ***	**SK ***	
0.58	0.58	0.61	0.74	0.77	0.81	0.87	0.87	

Source: EUROSTAT, own calculation

There are also some states where the correlation is negative but only one of them is statistically significant (Sweden).

FIG. 5: Inflation v. GDP – Sweden

Source: authors

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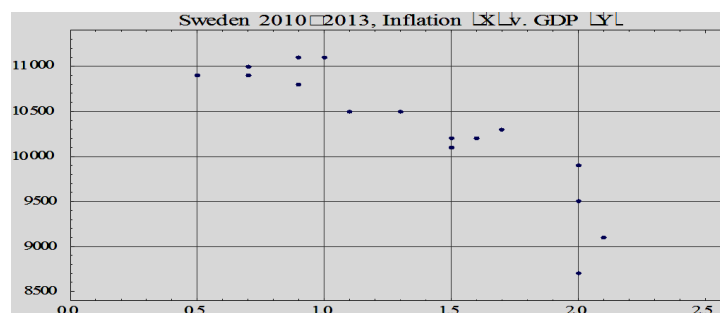
FIG. 6: Inflation v. GDP – Slovakia
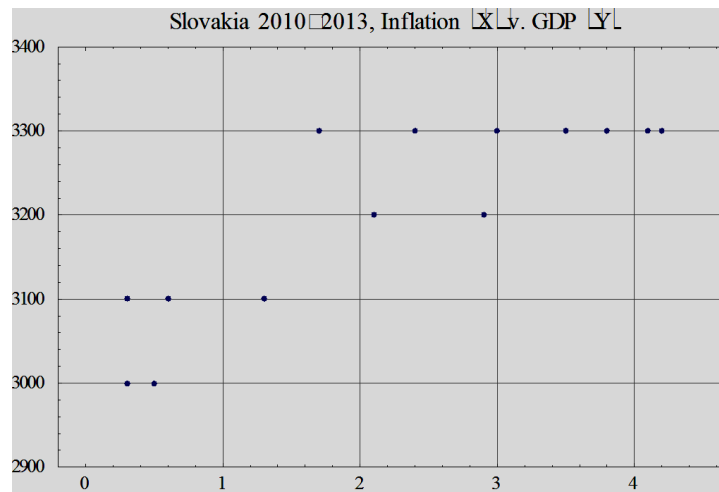
Source: authors

3. Discussion

The findings stated above can be summarized this way: in connection with the statements of CNB explaining the reasons of the currency intervention in November 2013 the main macroeconomic aggregates were analysed. Not only the data from the Czech Republic, but also from selected twenty five European states yet. All researched indicators have been assumed correlated. The correlation of unemployment and inflation, according the Philipps, is negative. Also the unemployment and GDP should be negative correlated. However, the sample statistics vary through the whole interval [0;1].

Conclusion

In the first case, roughly fifty percent of the countries evince positive correlation and the second half has a negative one, where eight states have a significant relation. Concerning the second pair two thirds of the states have negative sample statistic, twelve of them statistically significant, the rest was positive correlated. The third pair, inflation and GDP, should be positive correlated. And mostly it is, as eighteen countries have a positive sample values and ten of them significant. So the conclusion is ambiguous. For each pair of the aggregates there are states which support the tested hypotheses and at the same time there are exceptions, although mostly not significant.

Concerning the Czech Republic only the unemployment and GDP show a significant negative correlation, the other pairs could be classified as independent variables. So the decision of CNB could seem to be at least debatable.

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INVOLVEMENT OF EMPLOYEES IN INNOVATION PROCESS

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Abstract:

In the current global competition, companies want to gain competitive advantage and want to improve their competitive advantages. Methods for managing companies have been described in academia in many contexts. Innovation processes pose particular challenges compared to those of product innovation which is very important for firms if they want to be competitive. Collaboration with employees within management of innovation can be an effective means to drive the competitiveness of a firm. Based on empirical evidence of a study of Czech innovation managers, this paper discusses findings of collaboration with employees on innovation in organizational practice. Paper evaluates the current extent and future potential of the involvement of employees in the innovation process.

Introduction

It is possible to comprehend cooperation within innovation like social activity, which consists of people that draw together and participate ideas. To better understand the innovation process, in particular what level of employee empowerment may be helpful, we have conducted a primary survey of 320 product innovation managers in the Czech Republic. This survey wants to clarify which role and tasks employees may undertake to support and become part of organization´s product innovation process.

1. Literature review and methodology

The background for the empirical study drawing on the existing literature illustrates the fact that innovation process is a complex process that involves activities from research, through the application of results to their commercial use, and it requires the

cooperation of the company with other partners. [6] Concerning the innovation process and integration to incentive systems, the immaterial incentives are better suitable for generating ideas and increase the involvement of employees to participate in the process. [2] For the implementation of ideas, material incentives are more convenient, which means that different incentive systems should be used in a differentiated way during an innovation process, depending on the process phase. In influencing the character of working behaviour of people involved in the organization, managers should (at all levels of the management hierarchy) respect the principles where compliance increases the probability of successful projects. [7] Employee engagement is the level of commitment of an employee toward their organization and its values. An engaged employee performs the work with his team in order to enhance the performance and the goals of the organization. [1] Engagement is described as a two way relationship between the employer and the employee. Employee engagement is key business driver for organizational success. [5]

Department of Management and Business Administration of the Silesian University in Opava, School of Business Administration in Karvina carried out research entitled "Adaptability enterprises (SMEs) in the years 2010-2012". The selected sample is 320 respondents within the Czech Republic. The questionnaire included seven thematic areas (identification of firms, strategic management, economic development in the company, personnel policy of company, production and innovation activities, research activities and cooperation and business performance measurement).

2. Results

One of the objectives of the researches carried out by the Department of Management and Business Administration was to find out factors that have a significant influence on the management and competitiveness of the organization. One of the hypotheses was H1: Collaboration with employees has great impact on competitiveness of company. Using SPSS program there was found this structure of questions which attract the links with other questions and are most responsible for the results that came out after the evaluation of specified number (sample) of questionnaires. Questions correlation coefficient higher than 0.5 was found 21 times but in order to remain the evaluation

clear and concise figure included only the 5 most important questions with a correlation coefficient higher than 0,8.

From the primary research the most important issues with a correlation coefficient higher than 0,8 are customer focused innovation (0,872), technology, brand, reach, reputation (0,865), collaboration with employees (0,814), strong business principles and sustainable development (0,811), performance measurement (0,806). It is from the selected sample of 320 respondents.

FIG. 1: Performance drivers for management
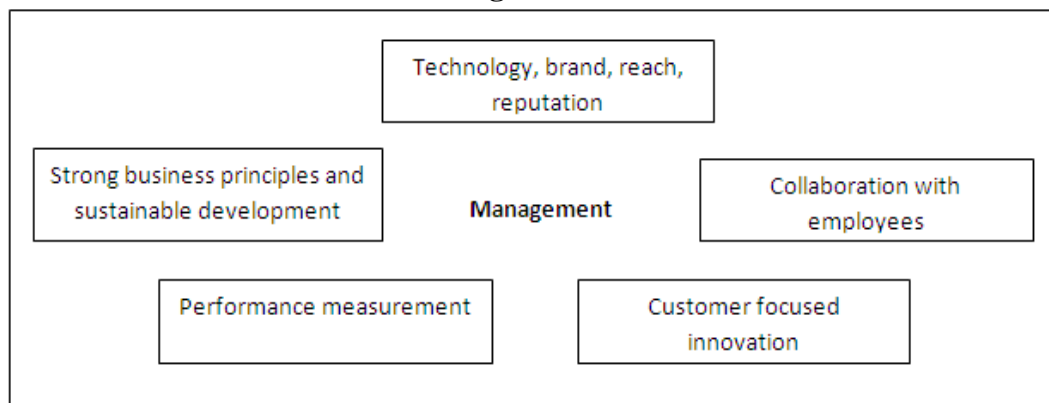
Source: own

In the figure 1 Performance drivers for management there are factors that have a significant influence on the management and competitiveness of the organization. From the above, it is possible to confirm the hypothesis H1: Collaboration with employees has great impact on competitiveness of company.

Based on the foundations above and a number of exploratory interview with experts, we identified, screened and finally surveyed 130 expert practitioners in Czech Republic who are involved in managing product innovation process as part of their daily responsibilities, covering a variety of industries and company sizes. In total, 130 experts participated in the survey (out of 320 which have been invited – which corresponds to a rate of more than 40 %). Of these, 118 answered the questionnaire online while 12 were interviewed in half-hour telephone interviews. The majority of the participating organizations operated in IT, Software or Media (22 %), as well as Finance and

Assurance (13 %). There were also industrial enterprises form Construction (11 %) and other Metalworking industries (8 %).

Employees are an important and critical source of new ideas. Therefore, they should be supported and motivated to participate in finding and developing new ideas. In our survey, we looked both at the autonomy and at the incentives provided by the organizations queried.

Official rules and regulations for setting aside time to work on new ideas are implemented by only 9 % of the organizations, while 72 % appreciate this, but not formal documentation exists.

Companies in which spaces of autonomy are supported (regulated officially or at least appreciated) achieved an average growth in sales of 12,1 % over the last three years, whereas other companies only reached 4,2 % on average within the same time frame.

The surveyed innovation managers frequently applied incentives of awards by management, gratifications through premiums, profit sharing on the specific product innovation as well as product innovation as part of target setting. The innovation managers motivate their employees mostly by paying bonus gratifications and appreciation by management through rewards.

In 42 % of the companies product innovations are made part of employees´ personal target agreements. The theoretical appraisal of profit sparing is interesting, which was rated nearly as an equal alternative to gratification through premiums, but is implemented only as the last possibility. This may be caused by the difficulty of measuring and isolating success of new products.

The analysis pointed out that companies without any incentive system have lower growth in sales (4,5 % less within the last three years) and need three months more for their entire innovation process on average. 27 % of all products introduced to the market had been successful in companies, which do not use any incentive system, while companies with established incentive systems see about 38 % of their ideas succeed.

Other types of incentives, which are used in organizations to motivate employees, are public rankings, which inform about employees with most successful product ideas, or awards, which are tied to the share of the turnover of the innovation. Delegation of responsibility is another possible incentive for employees to engage in innovative ideas, this of course raises the question what the right level of employee empowerment is, which we will discuss in the next section.

In order to capture the level of employee initiative with regard to innovation in products, it is used the scale by Oncken (1987), reaching from Level 1 (lowest initiative level) to Level 5 (highest initiative level). [4] The five levels, which differentiate the grade of self-initiative in this survey, are:

- Level 1: Wait until told – employees will not become active until their manager demands this.
- Level 2: Ask what to do – employees ask their manager actively for possibilities to take part.
- Level 3: Recommend, than take resulting action – employees suggest actions to their responsible manager and, then if approved, carry out the agreed actions.
- Level 4: Act, but advise at once – employees conduct activities on their own but report to their manager immediately.
- Level 5: Act on own, then routinely report – employees conduct self-dependent activities and report to their responsible manager intermittently.

In most organizations the employee initiative is seen to be at level 3: suggest actions to management for decision and then implement the actions if they have been approved (figure 5). In 22 % of the organizations, employees conduct self-dependent activities concerning product innovation (level 4). Autonomous activities, where report is given intermittently (level 5) occur in only 9 % of the participating companies.

3. Discussion

The general – more specifically: „non-R&D" – employee population is increasingly being recognized by organizations as an under-utilized innovation potential. In a global survey of over 700 executives, the general employee population was rated as the most

important source of innovation – more important than internal R&D. [3] Capturing this potential requires both the right infrastructure and tools, as well as empowerment and initiative on the side of the employees. But where is the ideal grade of employee empowerment to take initiative? Should the employees ask their managers pro-actively for petting the possibility to take part in product innovation or proposing smart activities? Both very low and very high initiative are associated with certain risks – from lack of impulses and speed on the one hand to the risk of unaligned action by employees on the other hand.

While the survey can only be a snapshot of the current practices in one country, the findings could point to a number of areas for immediate improvement in businesses and at the same time highlight a number of research questions to be addressed in the future. Where it could only provide status quo and some tentative statements, more elaborate quantitative analysis of the cause-effect-relationships are required, e.g. measuring the effectiveness of collaboration with employees within the individual phases of the innovation process. The development need of product-specific methods and tools, from collaborative generation of product ideas to collaborative investment decisions and implementation, is becoming ever more prevalent, and there are indications that can yield considerable competitive advantage to their early adopters.

Conclusion

The previous competitiveness model „Performance drivers for management" should not be the final goal itself. This model should be understood as the effective tool for management. In order to promote and improve the level of collaboration of employees, organizations should improve innovation culture. An essential condition for ensuring successful collaboration with staff on innovation is the creation of a corporate culture that encourages innovative intentions. Although conditions in different organizations vary widely, it is possible to track certain factors that create more or less supportive environment for innovation based on the long-term studies. These factors include the structure of the organization, the roles played by key individuals, the level of qualification of staff, organization development work (support for the idea, time to experiment, teamwork, projects, etc.), the level to which people are involved in the

innovation process, and how the organization itself approaches to learning and knowledge sharing.

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COMMUNICATION WITH EMPLOYEES IN HUMAN RESOURCES MANAGEMENT PROCESS IN SMES

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Abstract:
Communication plays an important role in the environment of small and medium-sized enterprises in many aspects. It is used for processing information, strengthening interpersonal relations, motivating staff, fulfilling goals defined in strategies to evaluate them, and for checking them, and it is especially important in the area of human resources management. Undoubtedly, it is a cornerstone of success of every enterprise. The aim of the article is to evaluate the process of communication with the employees within human resources management in small and medium-sized enterprises in South Bohemian Region.

Introduction

Communication belongs to the most difficult skills which are necessary for efficient performance of managerial functions. The present trend is a permanently increasing interest not only in developing and coaching trade or managerial skills but also communication skills. The ability of managers and employees, or more precisely superiors and inferiors, to communicate openly and efficiently belongs to critical factors of company success. In HRM communication represents a motivational tool which encourages employees to mutual exchange of information, experience and gaining feedback, all that can be put into effect. Thus the people can take an active part in a company process which results in harmonizing individual goals with company goals. Internal communication is one of the most complex processes which must be kept

on running, that is why it is necessary to make the information available for everybody in due time. A distinctive approach to individual employees is very important, too.

1. Methodology, literature review

Within the research project primary data which were used were gathered by means of quantitative method of questionnaire survey. From the basic set (66 514 companies in South Bohemian Region) a research sample was chosen (1 075) by a method of improbability of random choice on account of difficult data gathering conditions. All of these enterprises (1 075) were addressed by an electronical form of questionnaires. From total 325 questionnaires returned, 23 were eliminated due to insufficiency of the responses. To fulfil the goals of the article the data and information from enterprises from 2014 were used - and it was in the field of communication. The data were processed by means of statistical methods suitable for analysis of categorizing data which are parts of statistical application Statistica. Particularly, methods of descriptive statistics were used. Specifically it was interval classification, or simple sorting data. The presented charts of frequency determine absolute and relative frequency.

The research clearly shows that the art of communication is one of the most important characteristic features of a manager [1]. Communication between managers and interest groups is a source of information which particular sides need to work effectively [8]. It is used for processing information, strengthening interpersonal relations, staff motivation, fulfilling goals defined in strategies to evaluate and check them and many others. Undoubtedly, it is a cornerstone of success of every enterprise [9]. Communication has an essential influence on functioning of the whole organization; it is a basis of management and influencing of prosperity of the company and its competitiveness [10].

Success of a company is based on the knowledge how to treat the information [6]. The ability to work more with information becomes more and more important. To analyse it, to share it, to pass it over and spread it - it means to communicate [12]. The widest form of communication is still vertical communication from the top down. This form of communication is primarily designated for transmitting tasks and commands to

employees [5]. The character of a company and management communication creates environment for cooperation and directly influences achieving goals and company prosperity [2].

Efficient communication procedures form commitment of employees, their productivity and stability, thus they subsequently result in an increased effort which leads to overall increase of efficiency of the company that generates particular financial efficiency, or profit [3]. Communication is important for the correct operation of all activities related to a particular organization. It is necessary to improve and intensify it constantly because only by means of good communication a big success can be achieved [11]. Managers in a modern model must switch from inspecting and supervising roles to roles of mediators, the people who guarantee employees suitable environment, make development and relevant skills possible, so that they themselves can implement value creating processes [7].

2. Results

FIG. 1: Evaluation of functioning of field of communication with employees within HRM in %
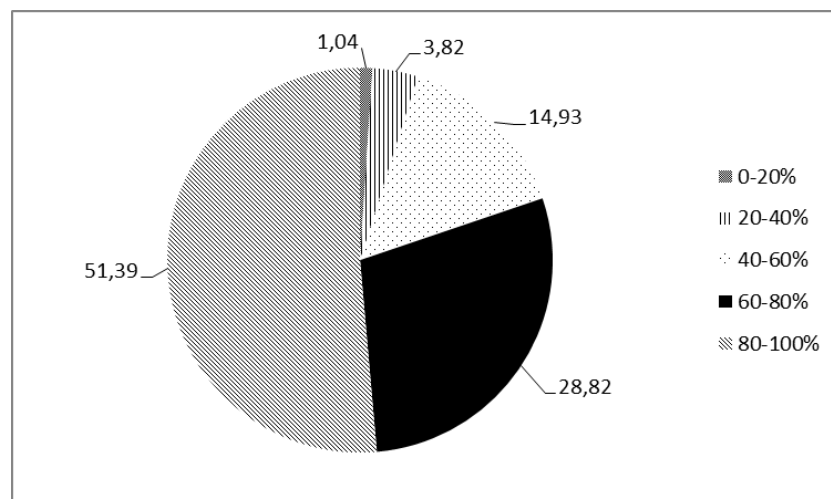
Source: own

Managers of SMEs in South Bohemian Region were asked to evaluate communication with employees on the scale 0 (the worst) up to 100% (the best level). On average this sub process achieves evaluation almost 4/5 in all organizations which answered the question (280). More than a half of the organizations (51%) put the field of communication with employees into the best evaluated range higher more than 80%. According to Figure 1 nearly 30% organizations include communication into the range of 60% to 80%. Only 1% organizations evaluate the field less than 20%.

Figure 2 shows the average ranking of a chosen field of process of human resources management. Managers of SMEs in South Bohemian Region ordered the field from 1 (the most important activity) to 8 (the least important one). Within HRM communication became the most important activity (3.3), followed by satisfaction of employees (3.4). Personal activity of remuneration and staff motivation which is related to it can surprisingly be found in the third place. At the opposite end of the ranking the least important activity of planning (5.2) is to be found.

FIG. 2: Evaluation of field of communication according to importance
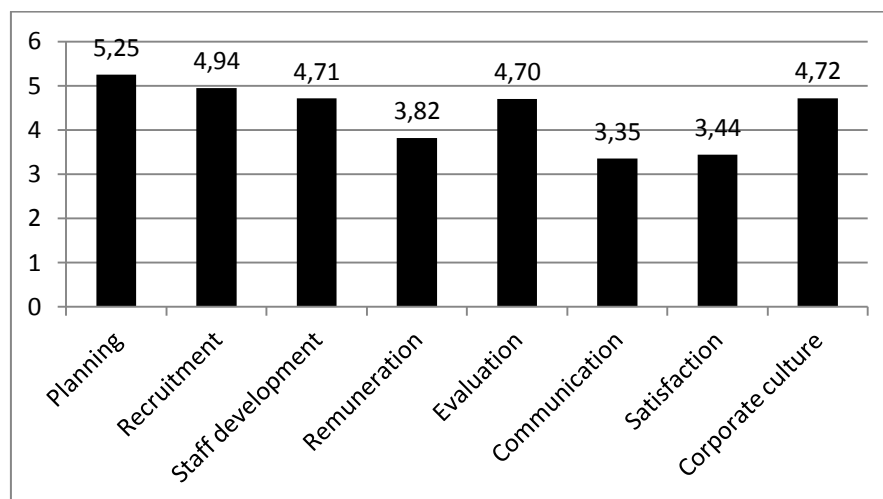
Source: own

As can be seen in picture number 3, according to evaluation of functioning of particular fields in HRM, personal activity of remuneration (81%) took the best place, closely followed by communication (79%). All these activities exceed 70% limit which can be regarded as quite a correct functioning of the sub processes of HRM.

FIG. 3: Evaluation of process of communication according to its functioning in %
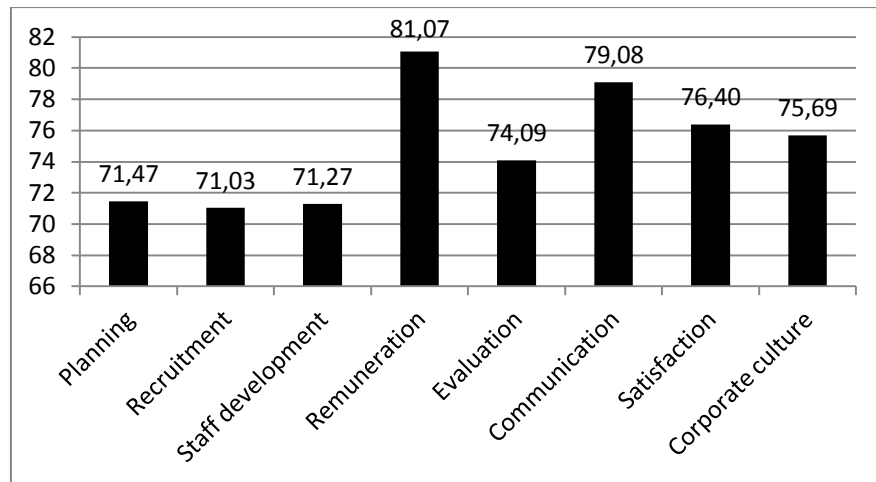
3. Discussion

Communication with employees is the most important part and sub process of internal communication. It is a significant managerial activity which helps in efficient implementation of human resources management. Only owing to satisfaction in the place of employment people can cooperate more effortlessly, share common goals and use resources more efficiently. The employee, who knows his position in the organization, knows his task and its benefit is more satisfied and more efficient in his working duties. He can also identify better with the goals of the company and he is also able to accept changes. Communication should be more deepened and enhanced. It is a tool to improve working performance of particular sectors of an enterprise and also of the individuals. The emphasis should be also put on faster and clearer forms of communication and especially feedback to avoid data losses and misunderstanding. Introducing regular meetings not only on the level of management of the organization but also team meetings with employees belong to possibilities how to improve internal communication. Another way is using feedback. Language simplification is another tool how to improve communication in the organization.

Conclusion

Communication inside the company is a very important basis for its functioning. Quality of internal communication reflects behaviour and manners of the management. Process of communication (inner and outer) was evaluated by managers of SMEs in South Bohemian Region as less important and worse functioning, too (production and trade took the best places). Within the process of human resources management communication with employees took the first place according to its importance and the second place according to its functioning. Managers of organizations become aware that correctly set and functioning internal communication has an enormous influence on efficiency of the employees and prosperity of the organization.

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PITFALLS OF THE PROPOSAL FOR A NEW LEASE IFRS STANDARD

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IAS 17 Exposure Drafts – off-balance sheet financing – lease financing – lease contract – service contract

Abstract:

In July 2006, the Financial Accounting Standards Board FASB and the International Accounting Standards Board IASB announced the commencement of a joint project to comprehensively reconsider lease accounting. The paper analyses proposed changes to eliminate operating lease accounting by proposing the accounting treatment which recognizes an asset and obligation for all lessee leases. The paper will focus on the latest developments in the lease joint project what consequences, advantages/disadvantages it will bring to users and it emphasizes the importance of lease financing and its impact on the earnings management. Improved information on company's leverage and greater transparency assist an investor in decision-making process, by improving assessment of risk and financial situation of the companies.

Introduction

Leasing is a significant source of financing for many sectors and companies in our economy. During very uncertain times, the industry has shown its robustness and continues to cope with challenges that the current European economic climate creates. Leasing plays a crucial role in financing fixed assets (fixed capital investment) for European businesses, as well as SMEs. Leasing has the potential to fill the gap when these firms are facing lack of capital. It will also contribute European SMEs to full economic recovery in coming years as it is very important means of financing SMEs. For example, the growth of the SMEs in developing markets leads to renewal of obsolete fixed assets, an increased demand for (less skilled) labour, generating additional household income, giving access to new technologies and therefore SMEs

contribute to increase of citizens' wealth, consumption and GDP. In mature markets financing through lease creates knowledge spillovers and encourages innovation, the presence of SMEs creates a variety of enterprises and encourages competition resulting in increasing GDP and productivity and fostering innovation. Regarding significance of lease financing, the knowledge what a new accounting standard for lease will bring is relevant for investors, analysts also for lease companies, because in more developed regions approximately 50 percent of listed entities report material off balance sheet lease obligations. The proposed changes to lease accounting will significantly improve the transparency of information on off balance sheet leases, but a lot of companies are afraid of changes in accounting treatment of leases and are afraid especially to disclose all hidden debt on the face of the statement of financial position.

1. Methodology of research

This research paper focuses on lease financing importance for the companies and its interconnection with preparation of a new accounting standard and the way of reporting leases in the financial statements. The lease exposure draft having been elaborated for several years it might be finalized in the following year as the new lease standard. A deductive approach is applied; commencing from the theoretical basis, of which the observations and findings are deduced. The research in this scientific paper is of a qualitative nature concerning the theme of a lease. The newly proposed exposure drafts will be analysed to assess whether it would ease information comparability and transparency for the investors and other users of financial statements. It also examines to which extent IASB and FASB have converged concerning leases or in what area they still differ. The impact of the new proposal on the financial statements will be studied and analysed focusing on the possible pitfalls of the new lease exposure draft.

1.1. The concept of a lease and its importance

Leases, as known, are used to finance the purchase, or more correctly, the use of assets. An operating lease is considered a classical example of off-balance sheet financing; it is a technique for the buyer to finance the use of the asset sponsored by a seller without reporting any liabilities [7, 551]. Lasfer and Levis have found that „the reasons for using leasing depend on the size of the company and that in small firms the leasing decision is driven more by growth opportunities than by taxation considerations, the

latter being one of the main reasons that larger companies chose leasing.[23, 1]"
„Leasing is also preferred to debt by those companies who face agency costs. Studies performed by Sharpe and Nguyen concluded that „lease finance is a good tool when a firm is experiencing informational asymmetry problems. Moreover, leasing is thought to be used as a tool to overcome the credit rationing faced by some companies." [21, 1].

All companies regardless their size consider the most important reasons for leasing 1) predictability and transparency of costs; 2) the preservation of liquidity, especially for small and medium-sized companies; 3) leased equipment is always up-to-date, reduction of the risk that the equipment becomes obsolete; 4) availability of complementary services, such as maintenance, repair and customer service. [21, 1]

Leaseurope, the trade association representing the European leasing and automotive rental industry regularly makes a survey on the performance of European leasing market and the figures 1. and 2. bellow demonstrate lease financing utilized by the enterprises.

FIG. 1: Sources of External Financing of SMEs (over 6 preceding months, % of respondens
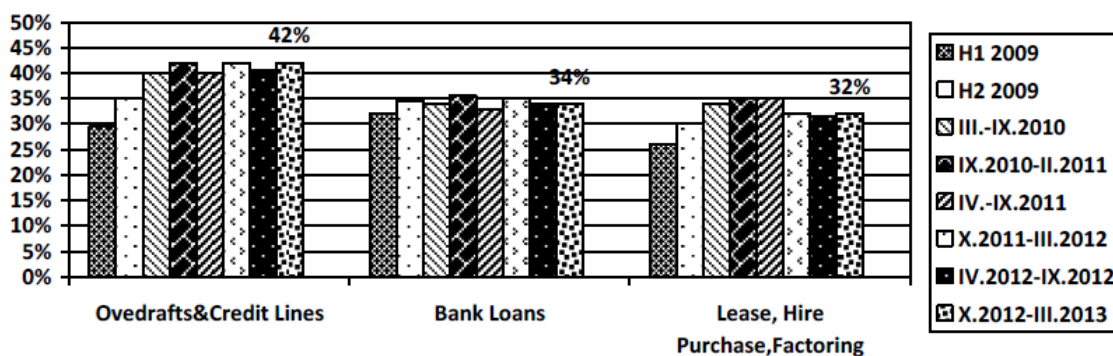
Source:[23, 1]

For example in Germany leasing was considered for an investment decision by 76% of small companies with 5-20 employees, 80% of medium-sized companies with 21-49 employees, and 87% of large companies with 50-499 employees. [23, 1]

FIG. 2: Sources of External Financing of Large Firms (over 6 preceding months, % of respondents)
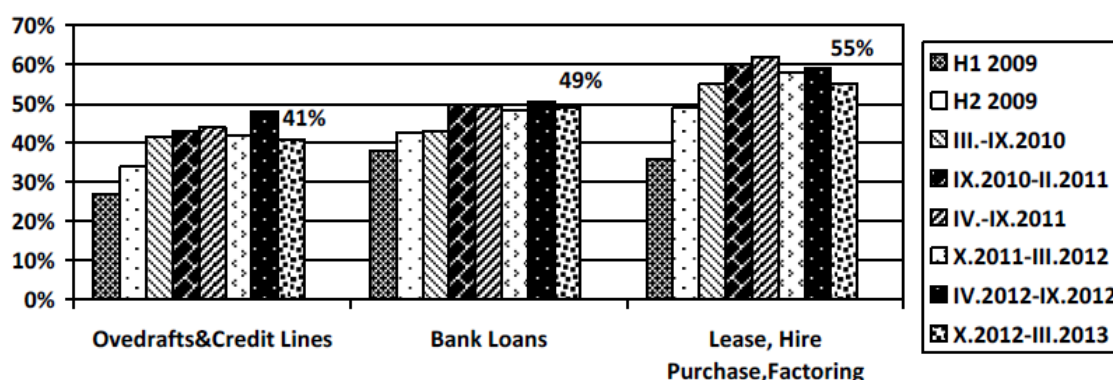
Source: [23, 1]

According to IASB project staff "lease accounting has historically focused on identifying when a lease is economically similar to purchasing the asset being leased. When a lease is determined to be economically similar to purchasing the leased asset, the lease is classified as a finance lease and is reported on the lessee's balance sheet. All other leases are classified as operating leases and are not reported on the lessee's balance sheet. In the latter case, those leases are treated like service contracts, with the lessee reporting a rental expense (typically on a straight-line basis) in each period of the lease." [15, 1]

1.2. IASB and FASB joint project

In July 2006, the FASB and the IASB announced the commencement of a joint project of IASB and FASB to comprehensively reconsider lease accounting. The IASB presented two exposure drafts, in 2010 and 2013 that were commented by the experts and professional public and in August 2014 IASB responded with a new proposal of the changes in the standard after re-deliberations of professional feedback. On 27th October 2014 Leaseurope issued an Update Paper they presented their judgment that new accounting standard for leasing was not ready for approval yet, they objected as the biggest problem to distinguish a lease contract from service contract apart from other objections. Chairman of the Leaseurope's Accounting Committee said: "Particularly at a time when the European Central Bank is investing heavily in facilitating credit provision to improve the business environment for European firms, the IASB should not issue a new Leases standard until it is clear that the project objectives will be achieved.

He highlighted the exposure of business investment to the risk, which would damage the growth prospects of European businesses. [19, 1].

A new standard will significantly affect an increase in financial leverage of companies by treating all leases as financial lease, what is the objective of IASB and FASB's joint project, but investors will be better informed. The existing accounting for leases complicates comparisons between enterprises due to the absence of information about leases on the balance sheet or in the notes to financial statements. The available information is frequently insufficient for users to make reliable estimates for determination of off-balance-sheet liabilities or for understanding the value of the assets being used in the lessee's operations. Without estimating the value of lease liabilities investors and analysts would not be able to compare companies' performance and analyse their risks.

In year 2005 new concept for a financial and operating lease will have been elaborated almost 10 years by IASB and FASB. Current lease accounting standards classify leases into two categories: capital lease and operating lease. For accounting purposes, operating leases are considered rentals and capital leases are asset purchases with borrowed money. Operating leases recognize rent expense periodically without the recognition of the company's future obligation to the lessor. Capital leases recognize a leasehold asset and lease liability in lessee's accounting books.

1.3 Off –Balance-Sheet Financing

Operating lease has been used so far as the smartest way for the outsourcing of industrial equipment. Future rental i.e. lease payments are excluded from the balance sheet recognition. If the company wanted to avoid recognizing the leased asset or the leased liability in order that they could not be reported on the balance sheet, the company might keep operating assets on the low level of use what had an increasing impact on the returns of capital or another reason for doing so could be the intention not to increase the debt figures. Thus, this could be achieved by the use of operating lease. Lease payments are operating payments affecting operating income, not financial income, risks remain with the lessor who is in charge of the asset maintenance. Future

payments on the operating lease are disclosed in the notes to the financial statements of the annual report. Owing to the off-balance sheet treatment of operating lease under the current IAS 17 or US.GAAP it is always necessary to estimate operating lease impact on financial indicators such as profitability and leverage ratios.

1.4 Synthetic Lease

Synthetic lease is used to buy real estate on markets with fast growing prices, when the acquirer does not want to presume a financial commitment at the time of purchase.

a) A financial company establishes a variable interest entity (or special purpose vehicle company) which acquires the real estate.

b) This real estate is leased to a lessee for the period equal to the maturity of the loan, which was arranged for financing the operation to buy the real estate.

c) A guarantee for the residual value (about 85% of the property cost) is set up by the lessor.

d) The lessee is the property owner from a tax standpoint but not from an accounting standpoint, the rental payments are tax-deductible expenses.

e) When the lease contracts terminates, the lessee has a choice of:
   i) contract's extension;
   ii) purchasing the property paying 100% of its acquisition cost (AC);
   iii) selling the property to a third party at selling price (SP) of the amount:
1. If $SP < AC \Rightarrow$ the residual guarantee covers the loss from the sale
2. If $SP > AC \Rightarrow$, the profits remains to the lessee.

Sale and lease back operations is the procedure by which a company sells assets to third parties and immediately leases them back under operating or capital lease contracts. Advantages for the company are:
1. improvements of current liquidity with cash proceeds from the sale;
2. reduction of the net debt level without stopping utilizing the assets in question.

International accounting standards recommend the deferral of earnings obtained from sale and lease back operations. [10, 709]

Accounting treatment of leases depends on their classification and many users of adjusted financial statements benefit from having structured conditions of lease based on what the lease they wished to have. A new standard is being prepared in order to remove the reporting shortcomings for which old standard was frequently criticized, e.g. a possibility of abusing a lease classification for debt figures manipulation or earnings management. The main risk of operating lease is the undervaluation of liabilities i.e. obligations and debts. For example, airline companies use the operating lease for renting the aircrafts, e.g. Iberia, American Airlines, Delta, Singapore Airlines, UAL etc. [8, 55]; their reported liabilities are undervalued.

2. New Standard on Lease Finance

2.1 Right-of-use model (Lessee) and Receivable and residual approach (Lessor)

Right-of-use model comprises following assumptions (the lessor transfers the right of an asset use to the lessee): The model considers **a lease contract** as the contract in which the lessee has acquired the right to control the use of an asset (for a period of time) and pays for this with lease payments (PMTs).

Lease identification: "At inception of a contract, a company finds out whether that contract is or contains a lease by assessing: whether (a) fulfilment of the contract depends on the use of an identified asset; b) the contract conveys the right to control the use of the identified asset for a period of time in exchange for consideration" [18, 13].

Measurement of lease takes into account:
  i)   renewal and termination options;
  ii)   lease payments considering contingent rental payments, residual value guarantee
        payments and expected term option penalty payments;
  iii) asset/liability measurements will be reassessed each reporting period in order that to reflect material changes or circumstances, the process of revaluation should be simplified.

Asset capitalization: Only the right of using the asset is capitalized which becomes an asset for the lease term. The lease liability is the obligation to make future payments in return for use of the asset (equipment, car, building, plane etc.). The contract precisely states that the right to control the use of a specified asset means if the customer has the ability to direct use, and receive the benefit from use, of a specified asset throughout the lease term. A physically distinct portion of a larger asset of which a customer has exclusive use is a specified asset. A capacity portion of a larger asset that is not physically distinct (e.g. a capacity portion of a pipeline) is not a specified asset" [18, 19].

Lease versus service: A lease exists when the customer controls the use of an identified asset obtained for use at the inception of the contract; on the other hand a service exists when the supplier controls the use of an asset. No asset is obtained at the beginning of typical service (executory contract).

Lessee model: [1,2]Right of use asset and lease liability is recognized and measured at present value of lease payments (lessee's incremental borrowing rate used as the discount rate, which the lessor charges the lessee, if reliably determined). Subsequently the liability is measured to make lease payments using the effective interest method.
Increase in Assets: Right-of-use asset (ROU asset)[1] ⇨ will lead to Amortisation Expense
Increase in Liabilities:Lease liability of future Lease PMTs[2] ⇨ leading to Interest Expense

This proposed model will equally account for all leases does not matter if consuming an significant portion of use (model A) or insignificant portion of use (model B). The classification of leases to categories A and B as defined by Lease 2010 ED was cancelled and instead of it a **single lessee model** is proposed for a new lease standard that would require the recognition of interest and amortisation for all leases recognised on a lessee's balance sheet.

TAB. 1: Right-of-use model - Single lessee model

Rationale (lessee)	Balance sheet (BS)	Income statement (IS)
Lessee	ROU –Asset Lease Liability	Amortisation expense Interest expense
Lessee: obtains and reflects on BS 1.Right to use an asset, PPE or intangible asset 2.Obligation to pay for that right	**BS:** 1. PPE/IFRS 1.Leasehold Asset (Intangible /US.GAAP 2. Long-term liability	**Recognises and reflects in IS:** 1.depreciation or amortization on ROU asset 2.interest on lease liability
Exception: Operating lease Lessee of assets for less than a year or large volume of small items (assets)	Operating lease is non-cancellable detailed information required in the Notes to the financial statements	Rental expense
US GAAP –dual model: old classification with use of an operating lease and financial lease		
Portfolio application is allowed (more similar leases accounted for together) Simplified measurement of lease assets and liabilities, variable payments and most optional payments are exclude from that measurement. Simplified separation of lease and non-lease payments The boards have also simplified the reassessment requirements compared to those proposed in the 2013 ED,		

Source: processed by the author

The lease asset is defined by the financing method in this right-of -use model that is more consistent with asset definition in FASB's Conceptual Framework, in US GAAP the asset leased is reported as leasehold asset, which is considered intangible asset; reporting consequences are more consistent with FASB's balance sheet approach for financial reporting. Under the accounting system of IFRS, there is a possibility that a lessee could revaluate ROU-assets, they will be classified as tangible PPE (property, plant and equipment) but disclosed separately from owned assets.

Lessor model: Receivable and Residual approach. This model remains unchanged.

Under this proposed approach, lessors would have recognized:

a) as an asset, the lessor's right to receive future lease payments- Receivables;

b) derecognize a portion of the lessor's rights in the underlying asset (which was transferred to the lessee);

c) a residual asset for the lessor's rights to the underlying asset at the end of the lease.

The derecognition approach is applied when the lease transfers significant risks /benefits of the transferred asset to the lessee; under the derecognition approach gain

recognition at lease inception is possible, the lessor derecognizes (takes off the balance sheet) the part of the transferred asset and records the right to receive lease payments.

TAB. 2: Lessor model: Receivable and Residual approach - Rationale (lessor)

	YES	Receivable and residual approach
	Balance sheet (BS)	**Income statement (IS)**
The lessor provides: the lessee with the right to use an asset	Residual asset[1] Right to receive lease PMTs[2]	Revenue/Gains from the sale Cost of Sales Interest Income[3]
Lessor: recognises	Lease receivable Retained interest in residual asset	Profit on transfer of right-of-use (gross or net based on business model) Interest income—on receivable
Exception: Operating lease Lessee of assets for less than a year or large volume of small items (assets)	Lease Receivable Leased Asset	**Approach similar to current operating lease accounting** Rental Income Depreciation Expense

Source: processed by the author

Legend:[1]Measured at an allocation of carrying amount of leased asset, [2]PV of lease PMTs, plus initial direct costs, discounted, subsequently measured at amortized cost applying an effective interest method.[3]Interest on residual based on estimated residual value—any profit on the residual asset is not recognised until asset is sold or re-leased at end of lease term.

1. No change occurs to accounting for a leased asset.

2. Straight-line lease income is recognised when the lessor charges the lessee only for use of the leased asset.

Reporting in the financial statements:

Balance Sheet   **Income Statement**
Leased asset[1]   **X**   Rental income[2]   X
                                 Depreciation[3]   (X)
                                 Fair value changes[4]

Note: [1] Lessor measures leased asset (e.g. property) at fair value (IFRS) or cost
    [2] Rental income recognised on a straight-line or another systematic basis, what suitable
    [3] If property measured at cost, rental income plus depreciation is recognised
    [4] If property measured at fair value, rental income plus fair value changes recognised

3. Determination of a residual value of a lease asset

The initial measurement of the residual asset comprises two amounts:

  (a) **the gross residual asset** = PV of the estimated residual value at the end of the

     lease term discounted using the rate the lessor charges the lessee   (1)

  (b) **the deferred profit** = the gross residual asset − the allocation of the carrying

amount of the underlying asset.   (2)

Presentation together as a net residual asset which is the sum of (1) and (2):

The gross residual asset + the deferred profit = a net residual asset.   (3)

Remember! The lessor would not recognize any of the deferred profit in profit or loss until the residual asset is sold or re-leased.

The Boards recommends when applying the receivable and residual approach, a lessor should measure the leased asset as the sum of the carrying amount of the lease receivable (after any impairment) and the net residual asset when de-recognizing the underlying asset on termination of the lease before the end of the lease term. [18, 9]

Sale and Leaseback Transactions: the following scenarios may occur:

1. A sale occurred: Accounting treatment: a) first a sale is recognized b) then a leaseback.

2. A sale has not occurred: The entire transaction would be accounted for as a financing. (Control criteria of the revenue recognition project should be applied to determine the sale occurrence.)

In the Leases Exposure Draft the Boards ensured that in a transaction accounted for as a sale and leaseback: a) when the consideration is measured at fair value, the gains/ losses arising from the transaction should be recognized when the sale occurs. However, b) when the consideration is not measured at fair value, the assets, liabilities, gains and losses recognized should be adjusted to reflect current market rentals.

The seller/lessee would implement **the whole asset approach** in a sale and leaseback transaction. The whole asset approach: the seller/lessee i) sells the entire underlying asset and ii) leases back a right-of-use asset relating to the underlying asset.

3. Results

After processing all comments and feedback received to the new exposure draft 2013 from the professional groups and professional public, the boards IASB and FASB have

made different tentative decisions regarding the recognition and presentation of lease expenses in a lessee's income statement. Decisions reached by the IASB up to July 2014 related to the revised Lease exposure draft 2013 comprises:

- 1) Proposal of a single lessee model that would require the recognition of interest and amortization for all leases recognized on a lessee's balance sheet.
- 2) A lessee would be required to recognize assets and liabilities from all leases.
- 3) At the start of a lease, the lessee obtains a right to use an asset for a period of time, and the lessor has provided or delivered that right.
- 4) Leases shorter than 12 months or leases of large volume of small items are exempted and can be considered operational leases.

The FASB has tentatively decided to propose a dual model that retains the existing distinction between finance leases (i.e. leases that are in substance purchases) and operating leases for US GAAP. This model would result in no change to a lessee's income statement, but recognizes all leases on the balance sheet.

- 5) Reporting for Cash Flow:

Leases are financing activities. To retain the link between the balance sheet, income statement and cash flow statement, a lessee would classify:

(a) cash payments for the principal portion of the lease liability within financing activities and

(b) cash payments for the interest portion of the lease liability in accordance with the requirements relating to other interest paid (operating activities section) [11, 129].

The proposals would significantly change the accounting for operating leases of more than 12 months. For all practical purposes, the accounting for finance leases would remain unchanged for the lessor. A lessee would recognise assets and liabilities for *all* leases (of more than 12 months) on a discounted basis.

The recognition and presentation of lease-related expenses in the income statement, and cash paid for leases in the cash flow statement, would largely depend on the nature of the asset that is the subject of the lease. The main effects are as follows: a) for the substantial majority of leases of equipment or vehicles, the balance sheet, income

statement and cash flow statement would change; b) for the substantial majority of leases of property (real estate), only the balance sheet would change.

IFRS and US GAAP

Converged decisions: definition of a lease, lease entirely reported on the balance sheet, measurement of lease liability, lessor model remained unchanged [17, 10].

Difference: Lease expenses in income statement and cash flows in cash flow statement. (depreciation expense tied to fixed asset system-IASB versus amortization expense tied to intangible leasehold asset-US GAAP, repayment of interest may be in the US GAAP considered as preferably financing expense than operating, but the choice exists).

IASB will continue to discuss the project with FASB with the aim of minimizing any differences between IFRS and US GAAP and expects to issue a new standard in 2015.

4. Discussion

There are many responds and comments from the professional public that it will be a difficult issue to distinguish in certain cases whether the contract is a lease contract or service contract. It implies that IASB and FASB's preparers have a difficult task to tackle to distinguish between equipment leases and in-substance service contracts. The following example is a demonstration where the problem may arise.

Example 1: *Company A enters into a contract with Supplier for provision of a fleet of tractors for the farm. Company A gives specifications related to the type of tractor, maximum age (4 years)/or maximum kilometres (150000km), reliability and availability levels requirements. The contract concludes that Supplier may replace tractors. About 1 tractor in 20 is replaced per year by Supplier. Replacement assists to keep required service levels, moreover enabling Supplier manage costs and optimise cash sales.*

Analysis: The threshold for base for the analysis is the definition of a lease (for illustration FASB's definition is presented): "a contract that conveys the right to use an

asset (the underlying asset) for a period of time in exchange for consideration." An entity would determine whether a contract contains a lease by assessing whether:

1. The use of an identified asset is either explicitly or implicitly specified. A contract would not involve the use of an identified asset if a supplier has the substantive right to substitute the asset used to fulfil the contract. A supplier would have the substantive right to substitute an asset if:

a. It has the practical ability to substitute the asset; and

b. It can benefit from exercising that right of substitution.

2. The customer controls the use of the identified asset. A contract conveys the right to control the use of an identified asset if, throughout the period of use, the customer has the right to: a) direct the use of the identified asset; and b) obtain substantially all of the economic benefits from directing the use of the identified asset [18, 14]."

Applying definition of a lease from revised Lease ED 2013, the right to use the asset, it was not clear if a 5% replacement rate would suffice to confirm a substantive right to replace assets with no constraints. It seems no clearer with the proposed clarification that tests whether the supplier would benefit from replacing an asset. The supplier would benefit because replacement is a routine process which regularly takes place, but the problematic issue still remains how much replacement is sufficient. Under the revised ED it can be fairly clear that this transaction would convey to the Company A the right of controlling to use the tractors, although the supplier makes decisions about maintenance and replacement. With the proposed clarification that now focuses right of use considerations on whether the Company A makes decision about the purpose of the asset's use, it seems slightly clearer that the Company A has control of the use. The problematic point may occur in similar cases, because there has to be a clarity over whether there is a substantive right to replace an asset, the accounting treatment of this transaction remains unclear even with the clarifications. [20, 2]

5. Conclusion

Many companies have been disclosing the information on operating lease in the notes thoroughly but investors push the companies to disclose the figures on the face of balance sheets which would be achieved with a single lessee model. The single lessee model is more in compliance with the lessor model from the economic substance.

- Increased transparency will be accomplished about the real leverage of a company resulting in better information for users of financial statements. The proposals would improve the accuracy and comparability of the reporting of the effects of leverage and, thus, decrease analysts and investors' costs for by reflecting the effect of all leases of more than 12 months on a lessee's balance sheet, and improving disclosures.
- Reduction of needs for judgement by investors and analysts leads to decreased uncertainty

The significance of this standard consists in the volume of capital which is invested into the lease business. In spite of the crisis the business showed resilience and stability in economic crises times, capability of functioning and still with positive return i.e. consistently profitable business, although declined in the worst years affected by financial crisis, but the year 2014 shows promising improvement in results. The obligation to report high lease liabilities may affect financial leverage, therefore companies are afraid of this accounting change, but investors would be able to assess more precisely the risk linked to the lease. A psychological aspect what is not disclosed it is not such a big problem maybe be true and worth examining, because applying the new standard if approved may have a detrimental impact on the users' behaviour.

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DIVERSIFICATION OF INDEXES DETERMINING INNOVATION OF ECONOMIES – THE VISEGRÁD GROUP COUNTRIES

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Abstract:

Innovation is one of the priorities of the European Union policy and covers innovative activeness of particular member states. In view of the above, the basic aim of the article is to indicate the similarities and differences within the selected factors determining innovation of economies of countries belonging to the Visegrád Group. The level of innovation of particular countries is determined by numerous factors but this article only covers the selected determinants which develop this activeness while focusing on research and development (R&D) activities. As a result of an analysis, the initial image of the differences and similarities in the undertaken pro-innovation tasks in selected economies was obtained.

Introduction

Contemporary economic growth is based on the broadly-understood innovation. Increasing the level of innovation is one of the key challenges faced by societies of the 21st century. It determines the competitive position of countries, country alliances (EU) and the smallest regions forming the said alliances. Also in the EU policy large attention is paid to increasing the level of innovation of particular member state economies. Among other things, this is shown through the objectives of the Lisbon Strategy from 2000 or in the new plan called "Europe 2020". The level of innovation of particular countries is significantly impacted by the decisions made by authorities within acquisition of R&D activities of particular units forming the economy. Innovation of economies is reflected in such phenomena as: number of patents, expenses to the R&D sector made by companies or from the budget, the number of people employed in R&D units as well as the number of educated people.

The basic objective of the article is to indicate the similarities and differences within the scope of the selected factors determining innovation of the Czech, Hungarian, Polish and Slovakian economies. It was adopted that innovative activeness is determined mainly by the following: the level of expenditure towards R&D activities in total per one resident and as a percentage share of GDP of particular countries; human resources completing tasks in the R&D sector; submitted patent applications, internet access or the number of people with a university degree. The analysis covers the years 2004-2012.

1. Brief characteristic of the Visegrád Four

The work focuses on comparing data relating to countries belonging to the Visegrád Group, i.e.: Czech Republic, Hungary, Poland and Slovakia. When making the selection, the author was led by the fact that these are countries which were originally listed at the 'Eastern Bloc' countries and where the social and economic transformation process has started in 1990s. Furthermore, these countries also completed EU accession in the same year, and became member states in 2004. It shall be noted however that these countries differ at many levels, such as: human and economic potential, level of economic growth, number of R&D institutions, institutions from the business environment as well as in relations with other countries (import-export). When referring to the simplest data (area, population, GDP or GDP per capita) characterizing the Visegrád Four, differences are noticeable. (Table 1) As the quoted data indicates, Poland has been significantly deviating from the remaining countries in terms of the area, population or the generated GDP. Slovakia is the smallest country in terms of the area and population or the generated GDP. Its area constitutes 16% of Poland's area while population equals to 14% of that of Poland. This is also a country with the lowest Gross Domestic Product – 18.64% of Poland's GDP.

The situation is different in case of national income per 1 resident. In this case, Czech Republic dominates with EUR 14.5 thousand per 1 resident; and Slovakia with EUR 13.2 thousand per 1 resident. The lowest value of this index applies to Hungary where EUR 9.8 thousand falls for one resident.

TAB. 1: Basic information characterizing the Visegrád Group countries (data for 2012)

	Poland	Hungary	Czech Republic	Slovakia
Area of the country [tausend km^2]	312.7	93.0	78.9	49.0
Population [million persons]	38.54	9.93	10.51	5.40
GDP Gross domestic product at market prices [million euro]	381479.7	96968.3	152925.6	71096.0
GDP per capita [euro per inhabitant]	9900	9800	14600	13200

Source: Own research on the basis of the Eurostat database.

In case of EU members, each year the European Commission publishes data relating to the tendencies in the field of innovation of particular European economies. Based on the Summary Innovation Index (SII) , we can observe that throughout the period of 2004-2012, the value which is the closest to the average EU value was achieved by Czech Republic, which already at the moment of joining the EU stood out among other countries of the Visegrád Group with the higher index. The remaining three countries had a very similar value of the above index in 2004. Between 2004 and 2009 a higher level of SII was recorded both in case of Hungary and Slovakia. In the following years 2010 and 2011, Hungary ranked slightly better. In 2012 this order swapped with Slovakia achieving a higher level of SII as compared to Hungary. We can also notice that throughout the entire research period, the Polish economy recorded a value of the SII which was the most distant from the average EU value. (Fig. 1) On the basis of SII, four country groups are also determined: "Innovation Leaders", "Innovation Followers", "Moderate Innovators" and "Modest Innovators". Since 2007, the Visegrád Four have been classified within the last two groups: Moderate Innovators or Catching-up Countries (Modest Innovators as of 2011).

In case of Czech Republic, this country has been listed among Moderate Innovators since 2007 while achieving one of the top values in the SII for this group – close to the EU average. The remaining countries moved up from the last group of Catching-up Countries – states which increase its distance to the countries with the highest level of

innovation, to the group of Moderate Innovators. Nevertheless, the innovation index for these countries is lower than for Czech Republic. [1, 6-7; 2, 6-7; 3, 4-5; 4, 6-8]

FIG. 1: European Innovation Scoreboard 2004-2012 – SII time series
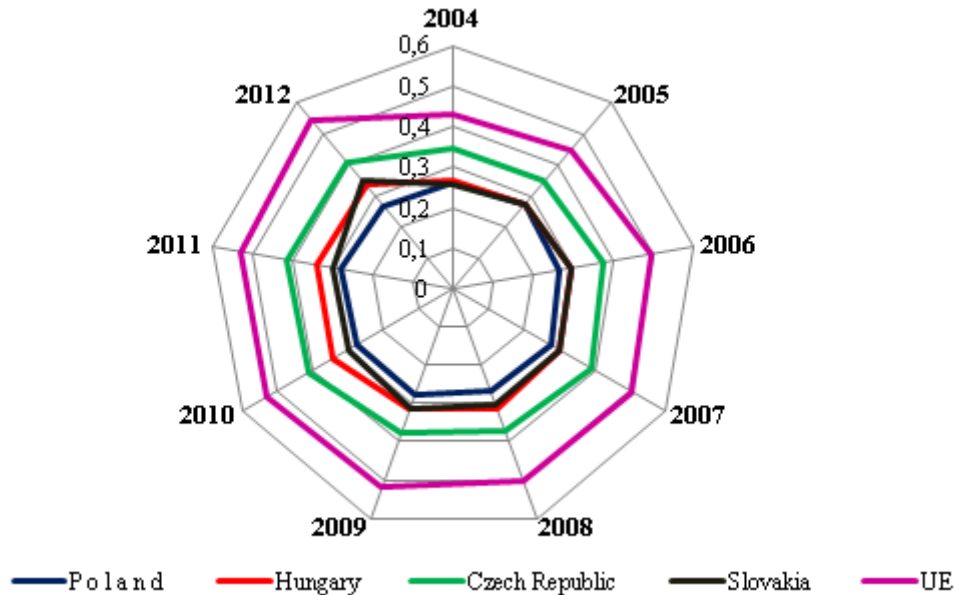
Source: Own research on the [2], [3], [6]

2. Selected factors determining the level of innovation of the researched countries

One of the factors developing innovation of the countries is internet access. When comparing data relating to the number of users per 1000 people, we can observe that all four countries achieve higher values that the world average. Throughout the period of 2004-2012, Slovakia ranked as number 1 and is immediately followed by Czech Republic and Hungary. Since 2006, Poland has been ranked fourth in the researched group while changes in this scope have been minor since 2010. When compared to 2010, the growth rate in 2013 amounts to only 0.8%. Between the years 2004-2013 the largest growth rate can be observed in Hungary (161.9%), while the smallest growth rate, in Slovakia (47.3%). When looking at the reducing gap between those countries, we can observe that in 2004 this difference amounted to 252 users per 1000 people to the benefit of Slovakia while in 2013 it was reduced to 61 users per 1000 people also to the benefit of Slovakia. [9; 10; 11]

In case of the number of students per 10 thousand people, the leading role of Poland is visible. However, the largest increase of this index with regard to 2003/2004 was recorded in Czech Republic (51.4%) and Slovakia (42.9%). In case of Hungary, this increase amounted to only 0.2% in the researched period.

The importance of the R&D sector in reinforcing innovation of economies has been underlined in many publications. Expenditure for R&D activities and people employed in this sector are both considered in the above publications. When researching the number of R&D employees, the entire human resources shall be taken into account because everyone contributes to the achieved changes in the innovative potential. According to data for 2011, among the countries of the Visegrád Group the largest number of employees in this sector are in Poland - 134551 people. In Czech Republic, 52268 less people work in R&D while in Hungary, 55386 and in Slovakia, 28596. However, when analysing the dynamics of change throughout 2004-2011, we can observe that Poland recorded the lowest growth rate (5.6%) as compared to other researched countries. Slovakia was second with 28.7% growth while Hungary was third with 11.6% growth. The largest changes relate to Czech Republic where employment in the R&D sector increased by 36.8%. [8]

Moving onto the amount of expenditure incurred for R&D activities, the leading position of Poland is visible. Throughout 2004-2007, expenses in Poland and Czech Republic were comparable, however after 2007, dynamic growth of expenditure incurred by Poland can be observed. In 2007, Poland spent only USD 35 million more than Czech Republic for R&D purposes while in 2012 this difference equalled to USD 2456 million to the benefit of Poland. The lowest expenditure for this purpose was incurred by Slovakia, where in 2004 USD 2366 million less was allocated as compared to Poland, USD 2052 million less than in Czech Republic and USD 1034 million less than in Hungary. (Fig. 1) Unfortunately, this gap increased over the researched years: almost 3 times with regard to Poland (2.85), more than 2 times in case of Czech Republic (2.09) and when compared to Hungary, the difference in expenditure increased by 70% over these years.[12]

The situation is slightly different when it comes to expenditure for R&D purposes per one resident. Over the analyzed years, the value of this index was the highest in Czech Republic, while Hungary ranked second. The expenditure per capita incurred in Poland and Slovakia are similar but far from the index describing the expenditure in Czech Republic.

FIG. 2: Gross domestic expenditure in research and development activity (R&D)
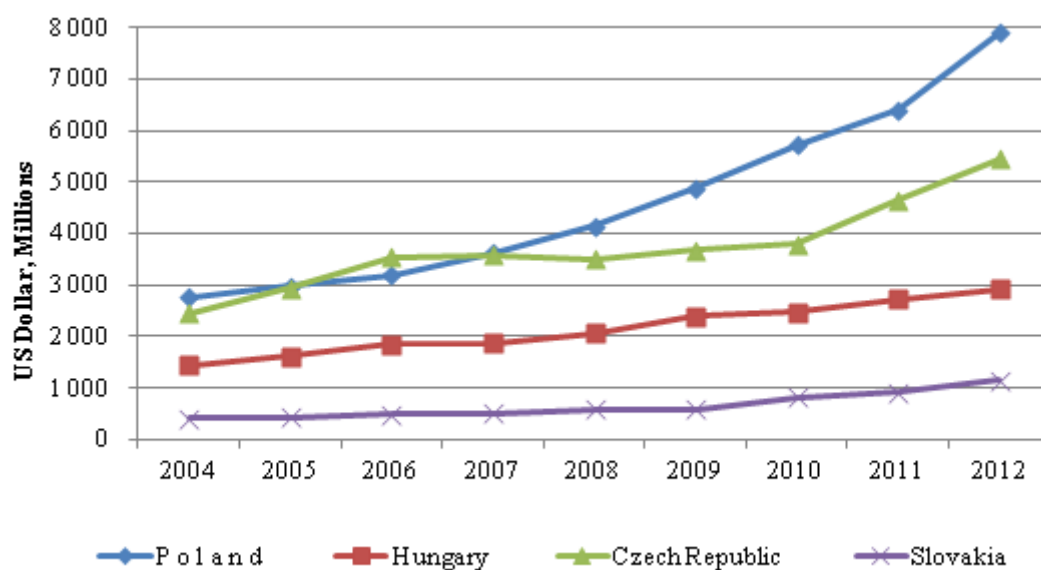
Source: OECD [12]

In 2004 this amounted to USD 168 (for Poland) and USD 166 (for Slovakia) less per 1 resident as compared to the Czech Republic expenditure. What is interesting is that the significant increase of expenditure in Czech Republic is observable from 2010, whereas in case of the remaining countries, the increase is visible but much slower. When referring to the year where the researched countries became EU members, we can observe a more than 2 times higher increase of the discussed expenditure in all four countries. The highest growth rate is visible in case of Slovakia – 284.0%, and not much less can be observed in case of Poland 282.4%. The lowest growth rate is visible in case of Hungary – 206.8%. The leading position of Czech Republic can also be observed in in the GDP in case of the share of expenditure for R&D purposes. Despite a drop of the share of expenditure for R&D in 2008 and 2009, the share of the said expenditure in 2012 (1.88 GDP) was very similar to the average value of this index for the EU (2.08% GDP). Unfortunately, both in Poland and Slovakia, despite regular growth, the

expenditure for R&D purposes did not even constitute 1% GDP in the researched years but these countries are slowly approaching this level. [12]

As the last index, the number of submitted patent applications is quoted. When looking at the patent applications submitted to the European Patent Office (EPO) since 2007 we can observe dynamic growth in the Polish economy. The dynamics of changes in the number of submitted applications throughout the years 2004-2012 looks as follows: for Czech Republic: 1.72, for Hungary: 1.28. However, when we look at 2007 this dynamics of changes is close to unity. The smallest number of applications are submitted in Slovakia, whereas this country increased their number by 2.5 times when compared to 2004. The largest changes however, relate to Poland which over the researched years recorded almost 4 times more patent applications submitted to EPO.[7]

Conclusion

To sum up, in all countries of the Visegrád Group, we can observe systematic growth of particular indexes determining their innovation. In some cases, i.e. expenditure per capita for the purposes of R&D, the share of expenditure for R&D in GDP or the number of patent applications submitted to EPO, significant growth is observed but it relates mainly to the Czech and Polish economies. It shall be noted that the level of innovation in case of all analyzed countries still deviates from countries with higher innovation level as well as the average innovation index for the EU.

Despite the fact that the researched countries are listed in the same economy group – with relation to innovation – a higher level of SII is visible in case of Czech Republic. This result is achieved despite not the largest indexes relating to internet access, the number of people working in the R&D sector or the number of submitted patent applications in the entire Visegrád Group. This country dominates in the value of the share of expenditure for R&D purposes in GDP as well as the increased number of people employed in this sector. It shall also be stressed that the large amounts of expenditure for R&D purposes and the significant increase of submitted patent applications in Poland do not constitute a guarantee of reaching a higher level of innovation. The results of the pro-innovation activities undertaken can often be observed in a long run. Here, it is worth to underline that this analysis constitutes

merely an outline of the situation related to innovation of the researched economies. It constitutes a starting point for further research which will include other determinants allowing to find new dependencies taking into account the visible differences and similarities of the researched economies.

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RATIONALE FOR ECONOMIC DEVELOPMENT OF SHALE GAS IN POLAND- SELECTED ASPECTS

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Keywords:

shale gas – socio-economic development – energy market

Abstract:

To develop the technologies and the increasing demand for primary energy on a global scale caused an increase in interest of unconventional gas resources. Particular relevance is attributed to shale gas extraction. Among scientists there is the view that from 2020, the production of shale gas may be an alternative to fossil raw materials, especially for coal. The aim of this paper is to present economic conditions for development shale gas market in Poland based on various scenarios of socio - economic. To needs the article was used qualitative and quantitative analysis by descriptive method based on secondary data sources.

Introduction

For several years in Poland and the world there is a debate on the future of the energy industry. It is probably related to the energy sector responsibility for climate change on the Earth, and also care to ensure the sufficient energy in the future.

According to long-term forecasts in 2050 the humanity will probably to consume 2.5 times more energy than today. In the twentieth century, the demand for energy largely covered by fossil fuels. However, due to the depletion of these resources and increasing costs of extraction, the importance of for conventional fuels in perspective tens of years to be getting smaller.

To develop the technologies and the increasing demand for primary energy on a global scale caused an increase in interest of unconventional gas resources. Particular

relevance is attributed to shale gas extraction. Among scientists there is the view that from 2020, the production of shale gas may be an alternative to fossil raw materials, especially for coal.

1. Market development prospects of shale gas - possible scenarios for example in Poland

Exploration and production of natural gas and crude oil in Europe in the past have focused mainly on conventional resources. At the present, opportunities extraction of these raw materials are becoming more limited, inter alia, due to the increasing costs of extraction. Technological progress creates new possibilities for obtaining from the geological formations of unconventional fossil fuels for example: shale gas, coal bed methane, and oil shale, whose production was earlier too complicated or too expensive.

The diagnosis of the complex shale does not necessarily mean that it is possible to be used. Shale formations characteristic for feature a large spatial variability of reservoir parameters and filter. There are however difficulties associated with drilling wells located. From a technical point of view, this means the need for specialized analyzes, aiming at secretion of the resources fragments which can be used [7].

According to the report, the agency US Energy Information Administration (EIA) and Advanced Resources International (ARI), the demand for gas will be increase systematically. Covered in this report quantitative data analysis includes 14 regions of the world with the exception of the United States. The report shows that China may have approx. 19% of global resources of natural gas. In European countries, the total resource is estimated at approx. 10% of the world. While the almost 29% of the resources of shale gas in Europe can be concentrated in Poland (approx. 4.19 trillion m3) [11] (Fig. 1).

FIG. 1: The potential shale gas in Poland
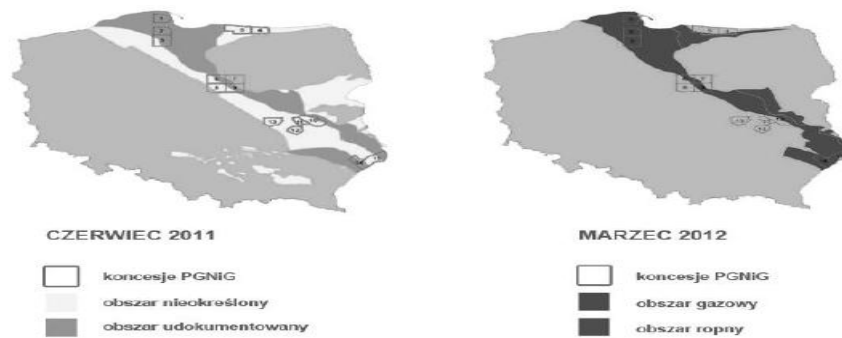
Source: Data of PGNiG S.A. 2011, PIG 2012.

The research of Geological Institute (PGI) from 2012, regarding of shale gas resources in the Baltic-Podlasie-Lublin area estimated recoverable resources of gas from the shale formations extending from Pomerania to the Lublin area approx. 1.92 trillion m3, and most probable range is 346 ÷ 768 billion m3.

It should be pointed that the potential shale gas is currently only an estimate and is not calculated with so much precision as in the case of conventional gas fields. The essence of the difference in the methods of documenting results from the fact that conventional gas deposits can be much more precisely defined so far used methods of geophysical and exploration holes, as gas resources are concentrated (gas migrated from other parts of the reservoir rock to the present), and the structure of the resources evidently distinguishes in rock mass.

In the case of shale we have to deal with continuous geological structures with a significant spread, containing dispersed gas in the parent rock. The degree of use (extraction) of gas from conventional approx. 80% of the identified resources (often more than 100 percentage points through careful use), while in the case of shale gas extraction ranges from 5 to 10% of the gas in shale gas resources [10].

It follows that the potential of shale gas resources are considerable, but technically recoverable resources are much smaller. Does not change the fact that shale gas resources are comparable to with the largest example of a conventional gas deposits. Groningen. It should be noted that more accurate information about the real potential of shale gas in Poland will be available in a few years when exploration work will be

carried out within the mining concession granted by the Ministry of Environment. Thus, estimates of shale gas resources in Poland given by various institutions are based primarily on geological data from many years ago. To further define the potential of unconventional oil and gas resources in Poland, it is necessary to perform at least 150 ÷ 300 exploration boreholes. According to the report of the Institute of Oil and Gas in Krakow has made 48 boreholes in 2013 [8].

2. Rationale for economic extraction of shale gas

The profitability of shale gas extraction is undoubtedly a major aspect in it quest and depends on the efficiency with which we can produce gas from a single borehole, the total industrial resources of gas and the cost of drilling exploitation [6]. In most of the estimated costs of future production are higher in Poland than in the United States, which is a result different of geological conditions. According to the Report of the Institute of Economic Mineral and Energy Sciences, the cost of drilling varies from 6 to 20 million USD per borehole, while the average cost of borehole in the US is 5 million USD [2]. Moreover, they are also very expensive exploration work. Commitments of licensees to more than 1 billion USD for the same exploratory work [1]. The investment costs of exploration and exploitation of shale gas resources are shown in Table 1.

TAB. 1: Projected changes in the cost of investment for exploration and exploitation of shale gas

Type of work	Initial costs [in bilion USD]	Period costs [in bilion USD]	
		2022-2030	2031
Drilling with downloading core	7,5	7,0	6,0
The transformation of reconnaissance borehole in borehole exploitation	4,5	3,5	3,0
New borehole exploitation	12,0	10,5	9,0
Re-fracking	3,5	2,5	2,0
Participation in the costs of building the mine and the elimination borehole	1,5	1,0	1,0
Total	17,0	14,0	12,0

Source: [1]

It should be noted that many of the elements of the costs not yet recognized in the national context. These are important relating to the technical conditions of exploitation to the present, that production test was not performed on any of the wells, so they are not known very important features associated with the profitability of production. Order to bring, although in a limited scale technological work, at this point it seems reasonable to present the stages of research and the process of shale gas extraction for example of Canada (Fig. 2).

FIG. 2: The stages of research and development of shale gas extraction.
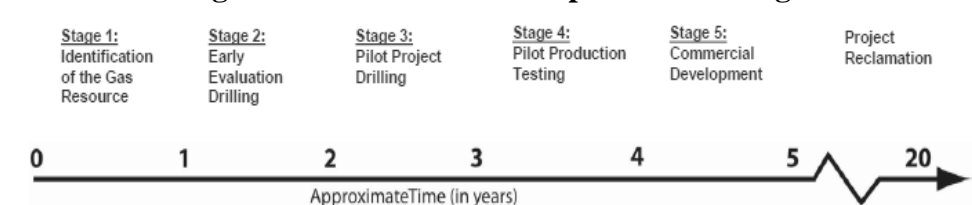
Source: [3]

A decision to proceed with commercial development of a shale gas project is the culmination of a process requiring several years of exploration, experimentation and data collection. These stages of exploration require significant investment by the company with no assurance of success.

While each company has their own processes for development, in general, shale gas development requires five stages of exploration and evaluation to reach commercial development. Each of these stages is designed to gather technical information that is then analyzed and used in the development of the next stage [3].

A summary of these stages and the types of activities that may take place are presented in the adjacent figure:

- stage 1 land Acquisition, securing seismic and drilling location permits, land use agreements. Initial geophysical and geochemical surveys in some regions.
- stage 2 seismic surveys to map the extent of gas bearing formation(s) and geological features; such as faults or discontinuities that may impact the potential reservoir. Initial vertical drilling to evaluate shale gas resource properties; commonly core samples are collected.

- stage 3 drilling of initial horizontal well(s) to determine reservoir properties and optimize completion techniques (includes some level of multi-stage fracturing). Continued drilling of vertical wells in additional regions of shale gas potential. Initial production tests.
- stage 4 drilling of multiple horizontal wells from a single pad as part of a full size pilot project. Optimization of completion techniques including drilling and multi-stage farcing with micro-seismic. Pilot production testing. Planning and acquisition of pipeline right of ways for field development
- stage 5 commercial decision to proceed. Government approvals for construction of gas plants, pipelines and drilling.

Based on the above it should be concluded that it is too early to make a reasonable assessment as to the potential of shale gas production in Poland, especially that has not started pilot production stage. But if have confirmed optimistic data on shale gas resources in Poland, undoubtedly would be of great importance to the entire economy, and in particular for the gas sector, energy, and chemical industries. Assuming that the extraction of shale gas in Poland could prove to be cost effective, many experts are estimated the potential opportunities and conditions for production.

It is worth to cite research Center for Social and Economic Research (CASE) on "Economic potential of shale gas production in Poland in the years 2012 ÷ 2025", which made quite a detailed economic analysis, taking into account three scenarios for shale gas in Poland, according to the intensity of the investment process. The first scenario assumes moderate growth in the absence of significant facilities and incentives for companies engaged in the exploration and preparation for the exploitation of shale gas, and moderate to good productivity of existing fields. The second scenario assumes increased investment to adopt national regulations to facilitate the exploration and exploitation of mineral deposits, and then transfer the produced gas from shale. Moreover, it assumes inter alia beneficial for investors issues the introduction of charges for the use of reserves or other public benefits of natural gas extracted from shale deposits. The result may be the decrease in costs of exploration and mining. The third scenario of accelerated development takes into account the maximum possible

development of production and the adoption of regulatory solutions favorable to investors, as well as rapid technological progress, potential of intensive international cooperation and involvement of Polish science [1].

FIG. 3: The scenario of shale gas extraction in Poland [in billion m 3]
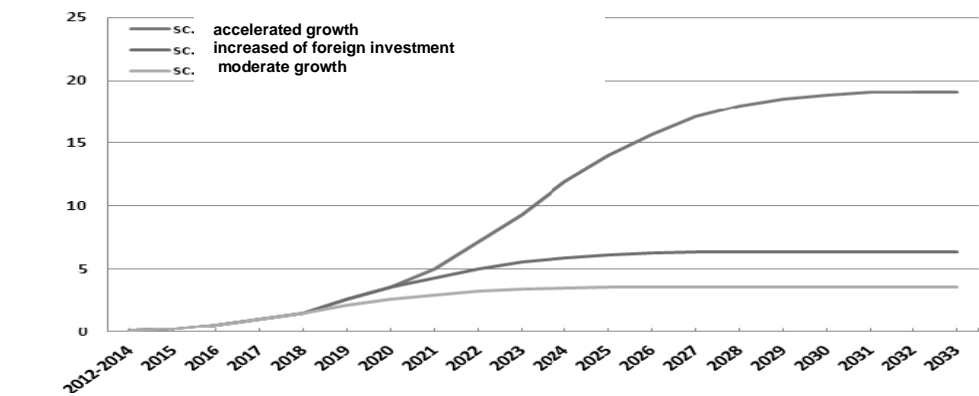
Source: [1]

Analyzing the data from fig. 3 can be extended two important specific conclusions, namely:

- the moderate growth scenario, the increase in gas production from shale rock in 2030, will stabilize at a level of approx. 3.6 billion m3 per year, while in the scenario of increased foreign investments, reached an annual level of production may be at the level of 6.4 billion m3,

- variant accelerated growth, will be followed by an accelerated increase in production to a level of approx. 20 billion m3 in 2033. Significant in this regard seem to investment expenditures, without which it will be possible to extract shale gas at the desired level.

Table 2 shows the total capital expenditures related to the implementation shale gas extraction, taking into account the above scenarios.

TAB. 2: The amount of the annual investment [in million USD]

Scenario	year					
	2015	2020	2022	2025	2030	2033
Moderte growth	60	938	948	795	845	840
Increased investment	60	1298	1593	1380	1470	1470
Accelerated growth	60	1298	2193	3730	4070	3660

Source: [1]

The above examples of shale gas extraction scenarios are based on the assumption that its production will be cost effective. It should be noted, however, that entrepreneurs who currently make decisions about investments in the energy sector, without consideration by the government guarantee success scenario of shale gas production, very slightly will decide to make investments based on shale gas. Is extremely important in this case, the liberalization of the gas market, which is a condition for the development of gas power, because without it, there will be customers of shale gas in the amount of justifying economic sense of extraction [5].

The potential of shale gas extraction should take account of a number of factors for example: technical, legal and socio – economic [12]. With many discussions in international forums in the field the adopted research issues, emerging voices optimistic and pessimistic relating to shale gas extraction technology [4]. Table 3 includes two scenarios for the possibility of shale gas extraction an European scale [9].

TAB. 3: Shale gas extraction in Europe - scenario pessimistic and optimistic

	scenario pessimistic	scenario optimistic
Geology and resource potential	- disappointing well results - reserves fund to be uneconomic - unsustainable production rates	- early exploration success - reserves potential proven to be greater than expected - rapid ramp-up in production
Environmental and social	-results of studies into environmental impacts leads to restrictions/bans on use of hydraulic fracturing	- studies show that hydraulic fracturing is safe to public health and the

factors	In- increased public pressure on governments to halt development activity until impact is known	environment - public desire for lower energy prices.
Fiscal and regulatory regimes	• potential EU-wide regulation of shale gas development • inclusion of shale gas in EU environmental impact assessment legislation	• incentives provided by individual countries to shale gas developers • expedited approvals process for developments • government support for shale gas R&D
Energy prices	• competition from LNG and pipeline gas from Russia and the Caspian region	• deregulation of gas markets • limited spot market liquidity • long-term, oil-indexed contracts not renewed • improved interconnectivity between gas markets
Gas demand	• slower growth due to measures to support development of a low-carbon economy • Slow Eurozone economic growth	• increased demand for gas as a fuel for power generation • gas positioned as a transition fuel to a low-carbon economy
Infrastructure and service capabilities	• limited supply of suitable equipment or skilled personnel • lack of funds available to invest in new gas supply infrastructure	• oilfield service industry is fast to adapt to industry needs •technology developments that result in lower per-well costs

Source: [9]

Conclusion

Whether in Poland will be possible gas revolution is dependent on many factors, geological, technological, economic and legal. At present a significant barrier is the actual determination of shale gas resources in Poland and very difficult to determine whether mining will have economic rationale, because as mentioned earlier, the first real data on shale gas in Poland will be known as approx. 5 years old when drilling companies will carry out work related to the exploration and recognizable licenses issued by the Ministry of Environmental Protection. Unfortunately. The difficulties associated with shale gas exploration in Poland, result not only from difficult geological conditions but delaying the commencement of administrative procedures. The process

of awarding the concession in Poland lasts an average of 8 months, whereas in the US state of Pennsylvania concession period is 45 days. A longer waiting period for the granting of all permits necessary to slow down the research to analyze of Polish rock layers. Whether shale gas exploration in Poland will bring the expected results, and run a few dozen years to greater energy independence especially in the context of the current "Ukraine crisis" will depend not only on the geological conditions (amount of gas from shale formations), but a number of administrative procedures, whose function is to be help in granting further concessions mining companies (in a short time), "and not, as is often the" discouraging there to continue exploration.

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INTERNAL AND ONLINE MARKETING COMMUNICATION OF CZECH COMPANIES

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Abstract:

This paper presents the current state (2014) of use of different online tools, especially social media, by companies in the Czech Republic for their internal and marketing communication. The paper conclusions are built on the aggregation of data from two large surveys that are extended by the previously not yet published data. The collected data shows that in the Czech Republic there is a little competition at the level of use of online tools for marketing communication and the appropriate interconnection of these tools still leads to a competitive advantage. In the area of internal communication the Czech organizations still highly prefer the e-mail and telephone communication compared to the Western Europe countries. The main trends (in 2017) in the field of internal communication are predicted as social media and various elements of mobile communication.

1. Introduction

The paper deals with two areas of tools usage for communication purposes (especially social media) – the first area deals with the internal corporate communication and the second area deals with external marketing communication of Czech companies with an emphasis on the online environment. The paper presents a unique aggregated view on the current state of use of social media primarily as a tool for internal and marketing communication of companies. For this purpose, we used publicly available data from current surveys [11, 14], including previously unpublished data. Any similar large-scale comparison with focus on the Czech Republic is not currently available. However there are some surveys of the communication aspects with regard to specific areas in different

countries – e.g. the use of social networks by people in the Czech Republic [9]; the use of social media in software companies [1]; CRM [10] or strategic organisation communication [7]; students use Facebook in the USA for social interaction [9]; the use of Twitter in political communication in Italy [12] or differences in privacy settings on facebook profiles in France and the Czech Republic [2]. These surveys also stimulate new research activities dealing with certain problems that in this online environment users and organizations must face – e.g. increasing the efficiency of internal communication in order to improve services [3, 4] or to create models for more effective marketing activities in the online environment [5, 6, 13]. Furthermore, these surveys reflect the current use of certain tools in the company or organizational practice and they are also a source of information for both commercial and non-commercial organizations affecting the management of their communication activities.

From the methodological perspective the article provides the comparative analysis of the current state of the outlined areas. This situation is further compared with the trends that we can find in the world (Europe and USA). It is expected that these trends will be followed by Czech companies. The aim of this paper is therefore to present the current state of online (internal and external) communication of Czech companies, which are interesting for researchers and practitioners.

2. Marketing communication

The survey [11] represents the current state of the use of social media for marketing communication by companies that do their business in the service environment on the Internet. The view is not strictly instrumental but it examines the ability to connect different types of media with the parent Web site toward the integrated marketing communication. Only in this way they can achieve synergistic effects (for discussion, sharing across services, etc.). In this context, the author realized that large gaps are seen between the use of social media (creation and maintenance of a profile) and its active connection within the integrated marketing communication towards creating synergy effects at the level of interaction entities environment. If this data is compared with the situation in the USA where there are businesses in this area very innovative, then we

can say that the level of competition on the use of social media in the Czech Republic is still small.

Additionally, this survey of a sample of 4584 companies reflects the low level of competition in the context of effective integrated marketing communication in this area. Details of the use of various social media are shown in Figure 1. In addition, in the survey 62% of companies in the Czech Republic do not link when communicating over the Internet with no social media websites.

Compared to [11] the authors in this paper also publish the percentage distribution of other means of communication – Skype, ICQ and blogs. The Figure 1 below shows that their distribution in the sample of 4584 companies is now negligible. Means for instant communication (Voice over Internet Protocol – VoIP and Instant Messaging – IM) are mostly used by eShops, Software and web companies. This happens due to the use of this resource for online customer support. Blogs are again suitable for the production of relevant web content, thus organically increasing the traffic (via search engines).

These results are interesting in practical terms for a new company when choosing a right mix of social media. The company may choose the means used by other companies and therefore relevant to their business, in order to avoid competitive disadvantage. On the contrary, the established company can do an overview of the use of individual tools for marketing communications competition. Accordingly, they can re-adjust their own mix of social media and avoid the competitive disadvantage.

FIG. 1: Percentage distribution of each social media and other communication means in the four selected segments.
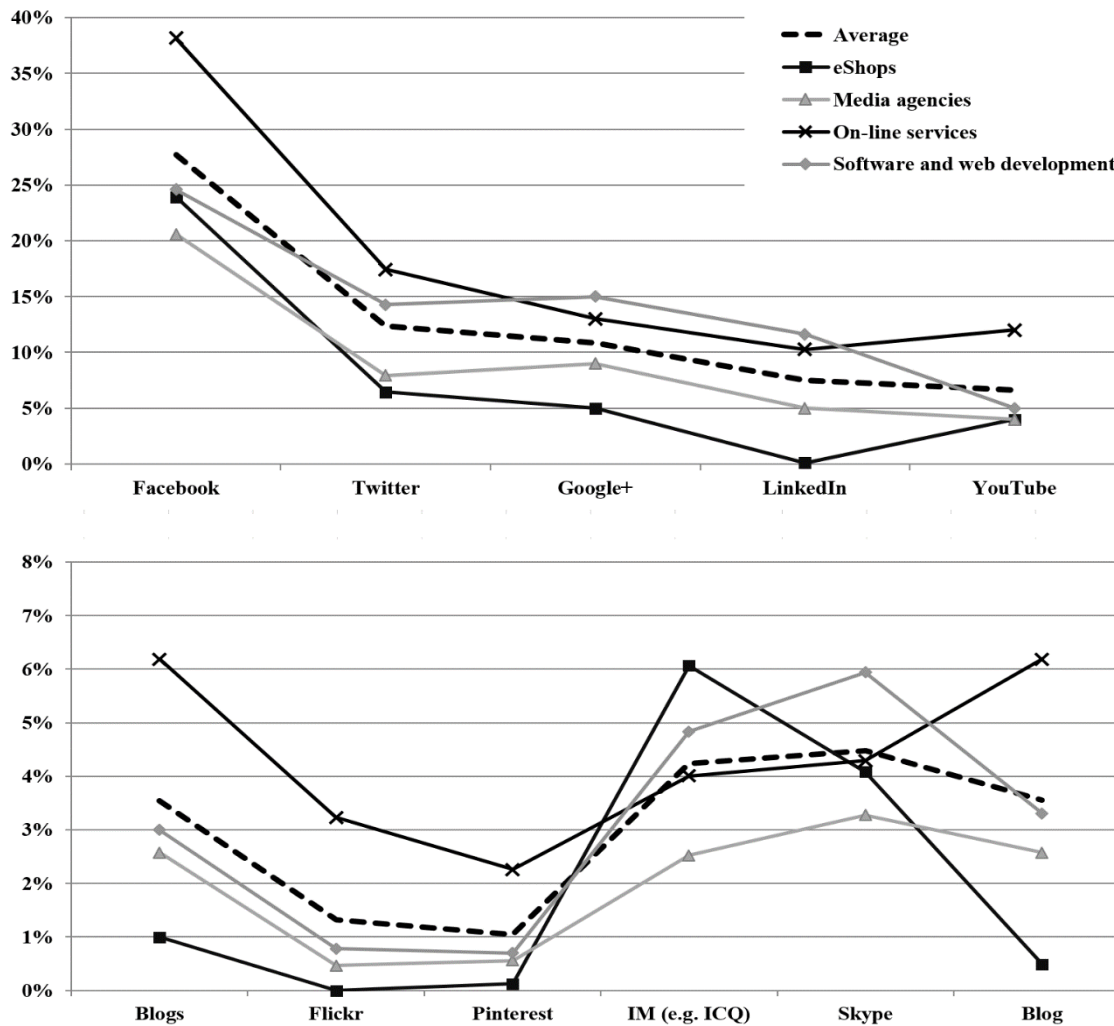
Source: Authors based on survey [11] and unpublished dataset.

3. Internal communication

Information about the development of the use of various tools for internal communication offers annually freely available report European communication monitor supported by European organizations European Association of Communication Directors (Brussels) and European Public Relations Education and Research Association (Brussels). The latest report [14] evaluates questionnaires from 2777 communication professionals from 42 countries. Czech Republic is incorporated in this survey in Eastern Europe. The comparison is thus indirect – by the regions, and

therefore we focus only on the fundamental differences between the approach to internal communications in Northern, Western, Southern and Eastern Europe.

In the context of internal communication of workers leads still e-mail communication (see Figure 2) with the only difference, where in Northern Europe are preferred social media. If we look at long-term trends, exactly social media are in a last few years on the rise. Communication experts expect that this trend will continue along with the use of mobile technologies over the next three years. Permanently massive use of e-mail is, according to the survey, caused by its preference by older senior managers (mainly group 60+ years). In terms of time efficiency is especially preferred communication via phone and social media.

Countries of Eastern Europe, where it is also included Czech Republic, almost duplicate the approach to internal communications in Southern Europe. Eastern and Southern Europe uses more communication via phone, compared to other regions, where it is used more communication face-to-face. In Eastern Europe, compared to the remaining regions, in the field of social media dominates Facebook, while in other regions is preferred Twitter.

FIG. 2: Most often used forms of networking across Europe.
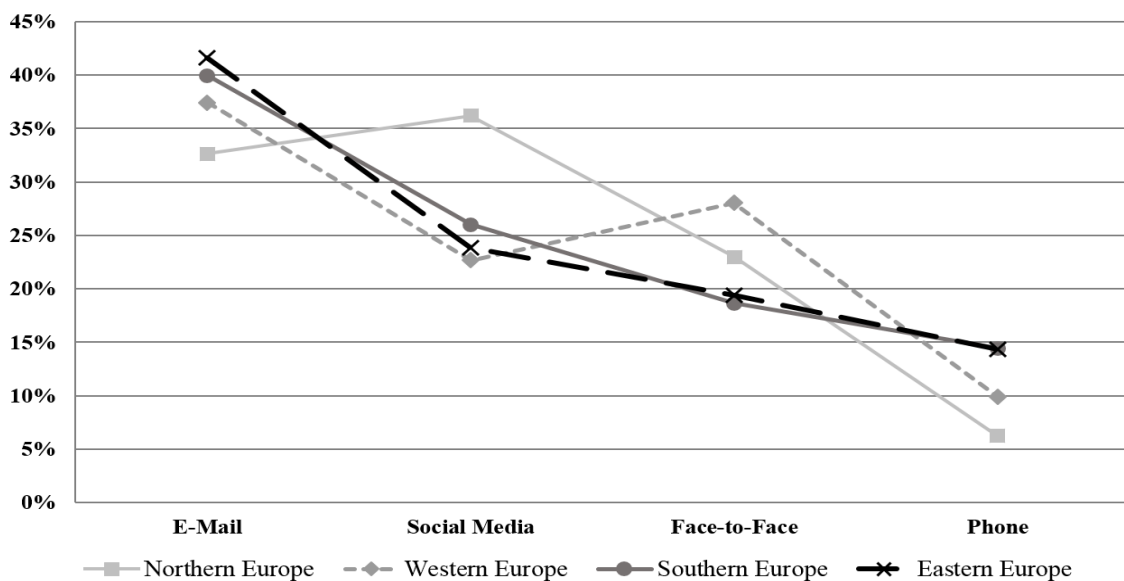
Source: Authors based on survey [14].

4. Conclusion

Post aggregates various data sources and presents to us a broader view of the status and trends in online marketing communication and internal communication of Czech companies. These views are not only important in terms of commercial subjects, but also for researchers (see part 1). We are currently preparing a questionnaire survey of Czech firms focusing on the use of online marketing communication tools and practices for their management.

Summarizing the above, in the area of online marketing tools is still a small percentage of companies, which are actively using these tools. Although social media are an important phenomenon of our time from a marketing view of the Internet environment, the situation at the level of firms operating in this environment does not fully reflect this (e.g. compared to the USA). Hence, the effective involvement of this form of communication in an integrated marketing campaign for Czech firms still means a substantial competitive advantage.

Apart from the results in the field of selected social media, we were also interested in other kinds of communication formerly very popular by the general public. Their functions are now gradually integrated primarily into social networks, it is a VoIP and IM clients, headed by Skype and ICQ. These tools for communication with the customer use around 4% of the companies. Constantly larger penetration of social media and mobile communications technologies will be the trend at the level of internal communication, together with the leaving of the older generation of managers (which mainly prefer e-mail communication). Individual regional variations in the preference of form of internal communication could be seen in Figure 2. Finally, it should be noted that an important determinant of success in internal and marketing communication is chosen strategy and specifics of the business of particular company – it is, however, subject beyond the scope of this explorative paper.

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TAX PRINCIPLES AND THE TAX SYSTEM RATIONALITY

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Abstract:

In this article the author discusses the issue related to the role of the principles of taxation in developing efficient tax system as a tool of fiscal policy. It also describes the achievements of the theory of taxation in the tax principles, and then presents the the different rules in terms of their impact on the quality of taxation law, situation of taxpayers and the level of effectiveness by the state to achieve socio-economic objectives.

Introduction

System of effective and rational regulation of the socio-economic life of a given country should be based on certain principles, in order to properly perform its function. This also applies to the construction and proper functioning of the tax system, and thus the construction of individual taxes. In the literature of the subject, a set of these necessary conditions for a long time have been called the tax principles. Tax principles do not form a closed catalogue and they include various postulates depending on the represented views and expectations directed towards taxes and the tax system, which are influenced by the current political and economic trends occurring in the country [2, 41]. They are therefore not a canon of knowledge, which is not subject to change, but an expression of the phenomena occurring constantly in the social and economic reality [5, 12]. However, these principles should be for each legislator a necessary set of rules and theoretical postulates, the observance of which will be conditioned by the optimum imposition by a public authority of the tax burdens and effective implementation of the adopted assumptions and functions of the state [7, 124].

The purpose of the article is to present the essence and meaning of tax principles, both in the scope of construction of individual taxes, as well as the creation of a rational tax system, which is to be an effective tool of economic policy of the country in the era of ongoing globalization process and the related need to obtain a competitive advantage among other countries.

1. Tax principles classification

A. Smith is considered to be one of the most famous creator of the tax principles, who already in the eighteenth century established four principles: of equality, security, convenience and cheapness of taxation [11, 584]. They were created on the basis of liberal economic thought, well represented by D. Ricardo, J.B. Say and J. S. Mill without losing their validity, despite the passage of years. The principles of legal certainty, convenience and cheapness of taxation are defined in the literature as the principles of fiscal techniques. The rule equality concerning tax, as one of the most basic ones, means according to Smith, such distribution of the tax burdens that they are common and proportionally adjusted to the income. Certainty with respect to the tax equals the determination of the date of its payment, method of payment and the amount of tax based on clear and precisely formulated regulations. The fulfillment of the rule of convenience is designed to provide the taxpayer with the most convenient method, place and time of payment of the tax. The rule of cheapness on the other hand is based on minimizing the tax collection costs, both for the taxpayer and the state.

In the era of rapidly developing economy (second half of the nineteenth century), a new trend of tax thought appeared in Europe, represented mainly by A. Wagner and L. von Stein, who formulated the thesis for taxation in fundamentally different way than in the liberal mainstream of economics [13, 41]. At that time, in the doctrine appeared various views on the importance of taxes in the life of society and economy, which were associated with granting taxes also non-fiscal functions, that is, social and economic. In order to meet the "new perspective" on the issues of taxation, A. Wagner [12] modified the existing tax principles and put them into four groups of rules: fiscal, economic, justice and technical.

Fiscal principles (effectiveness, flexibility, stability) essentially were to guarantee a high enough tax revenue to the budget, taking into account the current needs of the country. The importance of the economic (business) principles on the other hand, which are the principle of inviolability and protection of tax sources (capital and assets), came down to such construction of taxes, so as to enable the entrepreneurs to multiply their capital, the economic development of business entities, and so that the imposition of tax does not limit the economic freedom. Thanks to the principles of justice (equality, universality, ability to pay) A. Wagner called for the need for universality of taxation, while eliminating excessive diversification of wealth in society, and the misery and poverty of many social groups with which the market distribution of wealth and income could not cope. The remedy for those variations was the introduction of progressive taxation. The last of the groups of principles - technical principles (convenience, reliability, cheapness) - are similar to the postulates made by A. Smith, while the principle of the convenience of tax was supposed to concern both the taxpayer and the tax administration, because only then tax revenues to the budget can be guaranteed [6, 64].

In the second half of the twentieth century, F. Neumark, representative of the new German school (the others are: FK Mann, W. Gerloff, G. Schmölders), analyzing the new conditions and phenomena characteristic of financial and economic relations of the period, formulated a catalog of more adapted to the new era tax principles, classifying them into the following groups: fiscal and budgetary principles, the ethical-social principles, economic principles and the principles of tax technique [9,13].

2. Functions of tax principles

Among the tax principles, the most important, especially from the point of view of the taxpayer, are the principle of legal certainty, convenience and cheapness of taxation. The principle of tax certainty by A. Smith was an expression of dissent of, common in his day, tax abuses arising from arbitrariness in their taxing. It was necessary to determine the date of payment in the legal system, method of payment and the amount of tax [3, B/64], [9, 51]. Otherwise, the uncertainty as to the amount of the burden can cause reactions of taxpayer manifested in hiding income and evasion [5, 18]. Confidence of tax according to A. Wagner can be realized if the tax laws will be

formulated in clear, understandable and unambiguous language, the taxpayer will know them in advance, and the tax authorities will only work on the basis of them [5, 24]. According to F. Neumark, the more understandable, communicative and precise is the text of the Tax Act, the greater awareness of the obligations imposed on the taxpayers and less abuse connected with extremely fiscal interpretation of tax responsibilities by the tax authorities [5, 26].

Nowadays, in order to ensure the rationality of the tax system, it is necessary to legally protect the taxpayer against the risk of the illegal actions of tax administration and its consequences, particularly of an economic nature, in the course of economic activity. Otherwise, this would require the entrepreneurs to take into account while assessing the effectiveness of their undertaking an additional variable, in order to be able to take appropriate measures on time and limit such risk [15, 396]. For this reason, all the rules concerning the principles of tax assessment should be largely determined by primary legislation, in accordance with the current constitution [4, 3].

No less important is such construction of the tax system, so as to pay taxes at the most convenient form. This must concern the date, the method and place, as Adam Smith pointed out [11, 585-586], who was of the opinion that the payment deadline should be referred to the economic process of creating tax revenue, starting from income, through profit, property, up to the reported income [6, 33]. A. Smith, A. Wagner, and F. Neumark all saw the need to respect the principle of cheapness of taxation, which results - according to A. Wagner - from the necessity of application in the financial economy and rational tax policy of principle of economics, which should cover both the costs that due to the collection of taxes shall be borne by the taxpayer, as well as the costs arising from this title for the tax administration. Excessive costs of tax collection (of the taxpayer, the payer and the tax administration) limit their fiscal importance, and this in turn forces an increase in the tax burden to cover the "loss". As a consequence, it has an inhibitory effect on the income activity of the society and business development. One should therefore continue to improve the technique of collection, seeking to minimize the necessary costs [1, 3]. Helpful in this regard seems to be the simplification of the tax provisions that currently, due to their complexity, are forcing many taxpayers

to use the services of tax and accounting consulting, which undoubtedly greatly increases the cost of conducting an economic activity. The common use of modern information technology in dealing with the tax authority and in the work of the authority itself could also have a significant impact on the reduction of these costs.

In the context of the economic impact of taxes on economic processes taking place in the country and the conditions of functioning of enterprises, it is important to respect the principle of uniformity of taxation. This principle is considered by many economists as the most important of the principles enunciated by Adam Smith, who argued that "citizens of each country should help to maintain the government in the closest relation to their capacity, which is in proportion to the revenue which each of them achieves under the care of the country." A. Smith compared the economy of the country to the private economy, which is governed by the principle of mutual benefits (equivalence) [11, 584].

In the spirit of avoiding taxation and the protection of sources of taxes, the so-called Edinburgh's rule was established (*leave them as you find them*), which founder was another supporter of liberalism in the economy - D. Ricardo. This rule says that the income and property situation of each taxpayer before and after the imposition of the tax should not be significantly different. In his opinion, the government should conduct such a fiscal policy that will protect accumulated capital and will not harm the development of economic activities and consequently threaten the viability of the country [10, 168]. The presented postulate is the beginning of the idea of tax neutrality, proclaimed today, especially among neo-liberals, and understood precisely as the avoidance of fiscal policy and the protection of sources of tax.

On the other hand, according to A. Wagner, in the country must be guaranteed the universality of tax and reasonable progressive taxation of high incomes, while maintaining a source of tax and incentive to make profit [3, B/71], [14]. The fundamental problem in this context is to define the methods of individualization of the tax burden. According to the concept of the taxpayer's ability to pay, one must here

observe the principles of justice of taxation, although the question of what is fair and what is not, is also the subject of many debates and controversies.

In the literature of the subject, there are two independent concepts of justice within the meaning of equality. It is namely horizontal equity and vertical equity. Horizontal equity is equal treatment of equals, that is, units that are identical in all important respects. On the other hand, the principle of vertical equity is to differentiate the taxation with regard to that which is unequal in terms of tax. The answer to the postulate of application of the principle of horizontal equity in taxation is the use of a relatively low, proportional flat rate with broad tax base. On the other hand, the relatively strong progression and a significant number of different tax reliefs and exemptions reflects the implementation in the tax system of the principle of vertical equity. Although the degree of progression is a matter of separate discussion and opinion is divided, it is agreed that steep progression contributes to the destruction of tax sources, is contrary to the idea of payment ability and affects the development of entrepreneurship.

Conclusion

Without a doubt, excessive fiscal policy discourages taxpayers to pay taxes (escape in a gray zone or deliberate undervaluation of the tax base) in a given country, and even causes the transfer of business outside its borders. It also has a negative influence on the productivity of factors of production and the whole economic process, which results in losses for the country, because the tax revenues to the budget are reduced, it fades the activity of enterprises and decreases consumption. This is a classic example of the destruction of tax sources. This simple relationship, has to be for a public authority implementing fiscal policy (in the narrower sense - tax policy) an indication that primarily it cannot violate the limits of taxation and favor the increase of the economic efficiency of conducting economic activity in their country. This is especially important in an era of increasing tax competition in the world and the globalization of economic processes, allowing the movement of business entities, capital, and finally people - especially highly skilled - to countries with lax tax system. In addition, public funds derived from taxes (i.e. taxpayers' money, and not "state" money [8, 27]) should always be spent rationally and sparingly to avoid wastage, while increasing the tax burden to carry out the necessary tasks of the country.

The achievements of the science of taxation in the form of tax principles is the result of efforts of various representatives of schools and economic thoughts to find the "golden mean", which would find a balance between the economic interests of the country and taxpayers. Despite the passage of many years since the first postulates voiced in the mainstream of classical economics, the issues undertaken at that time are still valid and important. One such issue is to determine the sources of the choice of the tax and the method of their collection. Even today there is a widely discussed issue, what is better - proportional (linear) or progressive taxation. It would be more appropriate, however, to clarify the question with the determination of the fact for whom it would be better and what will be the social and economic consequences in the near time and in the future. While creating a tax system, one should follow the constitutional principle of trust in the state and the law and eliminate destructive factors affecting the legal and economic situation of the taxpayer, who should be allowed to anticipate and plan, with possibly high probability of his/her legitimate activity without the risk of sudden changes in law, and thus their situation.

In conclusion, one must emphasize the undeniable and indisputable role of tax principles, which are an indication of what is right, fair and rational socially and economically while creating an efficient and effective tax system and making changes to it as a corollary to the volatility of the general conditions of socio-economic life in the surrounding world. Every tax system and every tax must be characterized by stable performance, reliability, convenience, cheapness, consistency, fairness and efficiency. Compliance with tax principles, regardless of their provenance, can only facilitate the creation of a favorable environment for freely developing entrepreneurship and economic growth.

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THE MAIN COMPETITIVENESS' DETERMINANTS OF EU 28' NUTS 2 REGIONS

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Abstract:

The issue of socioeconomic advancement of territories is closely linked to setting and evaluation of competitiveness. Level of socioeconomic development is one of the key parameters of territorial attractiveness and one of the main effects of competitiveness in long-term period. The main aim of the paper is to define factors of socioeconomic development of EU NUTS 2 regions by application of factor analysis. Factor analysis contains indicators of Regional Competitiveness Index which describe driving forces of competitiveness, and those which are direct or indirect outcomes of a competitive society and economy. The results of the analysis are input and output factors that determine socioeconomic environment of regions in reference period 2004-2012.

Introduction

The economy's entry into globalisation has radically altered the nature of competition. *Globalisation* has obliged all countries to raise their standards of economic efficiency, whence the growing interest in and concern about *competitiveness*: nations, regions and cities have no option but to strive to be competitive in order to survive in the new global market place and the new competition being forged by the new information or knowledge driven economy [2]. In the *European Union* (EU), the process of achieving an increasing level of competitiveness is significantly difficult by the *heterogeneity* of countries and especially regions in many areas[7]. Although the EU is one of the most developed parts of the world with high living standards, there exist significant *disparities* influencing a level of EU competitiveness in global context[4]. The complexity of competitiveness is used in this paper – every territory has features which

affect and drive the competitiveness of all the entities located there, even if the variability of competitiveness level of the entities within territory may be very high. From this point of view, the main purpose of the paper is to define the main factors of socioeconomic development determining competitiveness level of 272 NUTS 2 regions within EU 28 Member States.

1. Data and methodological background

The empirical analysis starts from building database based on *Regional Competitiveness Index* (RCI) approach. Pillars of RCI are grouped according to the different dimensions (input versus output aspects) of regional competitiveness they describe. The terms 'inputs' and 'outputs' are meant to classify pillars into those which describe driving forces of competitiveness, also in terms of long-term potentiality, and those which are direct or indirect outcomes of a competitive society and economy [1]. RCI was composed by 69 indicators in 2010, but RCI includes 73 indicators since revision in 2013. All RCI indicators are not used in the paper, because all indicators were not available for the whole reference period for each region – evaluated regions are *272 NUTS 2 regions within EU28 Member States*. In the paper, only *39 indicators* are used – 20 for inputs and 19 for outputs. *Reference period 2004-2012* (nine included years) is determined by indicators availability at regional level (year 2012) and year 2004 can be considered as year when all EU 28 countries were already somehow integrated in the EU, i.e. to be member, candidate or potential candidate country.

Many scientific studies are featured by the fact that numerous variables are used to characterize objects, e.g. [6]. Because of these big numbers of variables that are into play, the study can become rather complicated. Besides, it could well be that some of the variables measure different aspects of a same underlying variable. For situations such as these, *Factor Analysis* (FA) has been invented. FA is the statistical approach that can be used to analyse interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions, i.e. *factors*. The main applications of FA are thus – to reduce the number of variables by grouping them into a smaller set of factors and to detect structure in the relationships between variables – for this purpose is FA applied in the paper.

FA is a collection of methods for investigating whether a number of variables of interest $Y_1, Y_2, \ldots Y_n$, are linearly related to a smaller number of unobservable factors $F_1, F_2, \ldots F_k$. If we suggest that one measured variable Y_1, is function of two underlying factors, F_1 and F_2, then it is assumed that Y variable is linearly related to the two factors F, as follows (1) [3].The error terms e_1, serves to indicate that the hypothesized relationships are not exact. In the special vocabulary of FA, the parameters $\beta_{i,j}$is referred to as loadings, e.g.β_{12} is called the loading of variable Y_1on factor F_2.

$$Y_1 = \beta_{10} + \beta_{11}F_1 + \beta_{12}F_2 + e_1. \tag{1}$$

Because RCI is constructed for 'inputs' – driving forces of competitiveness and 'outputs' – direct or indirect outcomes of a competitive society and economy, policy and activities; also empirical analysis by FA is calculated separately for 'inputs' and 'outputs' aspects through*IBM SPSS Statistics 22*software. For calculation the input and output factors of regional competitiveness by FA is used: Principal Component Analysis as extraction method; Varimax with Kaiser Normalization as rotation method.

2. Empirical analysis' results

What is the background of regional competitiveness within EU 28? What are the key factors having impact on competitive advantages and disadvantages on European regions and subsequent countries? These questions motivate to empirical study of aspects of EU NUTS 2 regions' competitiveness. By knowledgefactors of competitiveness, the policy makers can better understand the potential development options and limitations for territoriesand thus plot a development trajectory towards a desired end state.

Driven forces of competitiveness are divided into factors that are crucial for EU economies. In the paper,*five dominating factors for inputs explained 68,659 % of total variability in reference period* (see TAB. 1), what can be considered as satisfactory result. TAB. 1also shows 20 input indicators and their belonging to relevant input factors of competitiveness, which are classified with respect to their importance, i.e. from the mostsignificantto lesssignificant.

TAB. 1: Input factors and total variance explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	8.107	25.006	25.006
…	…	…	…
5	2.027	5.054	78.659

Rotated Component Matrix – Input Factors						
Factors	Indicators	Component (Factor Loadings)				
		1	2	3	4	5
Factor 1 Institutions and Macroeconomic Stability	(GE) Government Effectiveness	.954				
	(RQ) Regulatory Quality	.937				
	(CC) Control of Corruption	.915				
	(GFCF) Gross Fixed Capital Formation	.903				
Factor 2 Level of Infrastructure	(MTLM) Motorway Transport - Length of Motorways		.952			
	(RTLT) Railway Transport - Length of Tracks		.925			
	(ATF) Air Transport of Freight		.899			
	(ATP) Air Transport of Passengers		.892			
Factor 3 Education. Training and Lifelong Learning	(TPEPLE) Total Public Expenditure at Primary Level of Education			.951		
	(TPESLE) Total Public Expenditure at Secondary Level of Education			.940		
	(TPETLE) Total Public Expenditure at Tertiary Level of Education			.935		
	(PHE) Participation in Higher Education			.871		
	(ELET) Early Leavers from Education and Training			.853		
	(PTR) Pupils to Teachers Ratio			.822		
Factor 4 Technological Readiness	(LIA) Level of Internet Access				.932	
	(EA) E-government Availability				.911	
Factor 5 Health Phenomena in Human Life	(HB) Hospital Beds					.925
	(IMR) Infant Mortality Rate					.907
	(HLE) Healthy Life Expectancy					.902
	(HDDR) Heart Disease Death Rate					.895

Source: own calculation and elaboration. 2014

Output factors represent direct or indirect outcomes of a competitive society and economy. In the paper, *four dominating factors for outputs explained 81.832 % of total variability in reference period* (see TAB. 2), what can be considered as very satisfactory result. TAB. 2also shows 19 output indicators and their belonging to relevant output factors of competitiveness, which are classified based on their importance as above.

TAB. 2: Output factors and total variance explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	10.259	30.509	30.509
…	…	…	…
4	4.979	19.108	81.832
Rotated Component Matrix – Output Factors			

Factors	Indicators	Component (Factor Loadings)			
		1	2	3	4
Factor 1 Economic Performance	(LPPE) Labour Productivity per Person Employed	.920			
	(GDP) Gross Domestic Product	.917			
	(CoE) Compensation of Employees	.904			
	(DI) Disposable Income	.897			
Factor 2 Labour Market	(ER) Employment Rate (15 to 64 years)		.941		
	(LtUR) Long-Term Unemployment Rate		.935		
	(UR) Unemployment Rate		.930		
	(ME) Male Employment		.922		
	(FE) Female Employment		.921		
	(MU) Male Unemployment		.906		
	(FU) Female Unemployment		.902		
Factor 3 Innovative Potential	(EPO) European Patent Office Applications			.892	
	(GERD) Gross Expenditure on R&D			.875	
	(HTI) High-Tech Patent Applications to EPO			.849	
	(ICT) ICT Patent Applications to EPO			.824	
	(BioT) Biotechnology Patent Applications to EPO			.813	
Factor 4 Business Sophistication	(EiSS) Employment in Sophisticated Sectors				.832
	(HRST) Human Resources in Science and Technology				.798
	(HRSTcore) Human Resources in Science and Technology - Core Sectors				.756

Source: own calculation and elaboration. 2014

3. Results' discussion

Large geographic, demographic and cultural diversity of the EU brings also differences in socio-economic position of the EU Member States. Each country should know were lying its competitive advantages and advantages and aim to strengthen advantages and reduce disadvantages, i.e. *key factors of competitiveness*.Current economic fundamentals are threatened by the shifting of production activities to places with better conditions. In the global economy regions are increasingly becoming the drivers of the economyand *regions play an increasingly important role in the economic development of states.*Within governmental circles, interest has grown in the *regional foundations of national competitiveness*, and with developing new forms of regionally based policy interventions to help improve the competitiveness of every region and major city, and

hence the national economy as a whole.From this point of view, it is necessary to know factors of regional endowment influencing factors of national competitiveness [8].

Input factors of EU NUTS 2 regions' competitiveness are divided into five areas of the regional economy, which are nowadays key and necessary for economy based on knowledge and innovation. *Output factors* of EU NUTS 2 regions' competitiveness are divided into four areas which are nowadays considered as the main output of knowledge based economy.Factors are designed to capture short- as well as long-term capabilities of regions.Factors as Institutions and Macroeconomic Stability, Level of Infrastructure, Health Phenomena in Human Life and indicators quality of primary and secondary education that are part of factor Education, Training and Lifelong Learning, represent the key basic drivers of all types of economies. As the regional economy develops, other factors enter into play for its advancement in competitiveness and these are factors as Education (indicators of higher education), Training and Lifelong Learning, then factors Economic Performance and Labour Market. At the most advanced stage of development of a regional economy, key drivers for regional improvement are factors Technological Readiness, Business Sophistication and Innovative Potential.

Conclusion

Competitiveness of territory resides not only in competitiveness of its constituent individual entities and their interactions, but also in the wider assets and social, economic, institutional and public attributes of the country itself. The notion of competitiveness is as much about *qualitative factors and conditions*(e.g. untraded networks of informal knowledge, trust, social capital, etc.) as it is about *quantifiable attributes and processes*(e.g. inter-firm trading, patenting rates, labour supply, etc.). Sources of competitiveness may also originate at a variety of geographical scales, from the local, through regional, to national and even international [5]. The emergence of new perspectives in creating competitive advantages at regional level clearly emphasizes the role of local factors and initiative in the general economic development. This isstarting point for further studying the role of efficiency regarding economic governance of resources utilization (inputs) for achieving objectives of increasing of competitiveness (output) by the *Data Envelopment Analysis*approach.

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DIFFERENCES IN ECONOMIC EFFECTIVENESS OF AGRICULTURAL HOLDINGS IN THE CZECH REPUBLIC IN 2007-2013

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Abstract:

The paper deals with the evaluation of economic effectiveness of farm enterprises in the Czech Republic through financial ratios of financial analysis and with using statistical methods. The paper is focused on farm enterprises, in total 614 farm enterprises were analysed, for time series from 2007 to 2013. Data were obtained from the database of enterprises of Albertina and on the basis of these data were calculated selected indicators of financial analysis, especially indicators of twelve financial indicators, namely indicators of profitability, activity, liquidity and leverage. These indicators are compared, evaluated and interpreted in particular years with using statistical methods. Achieved results are summarized at the end.

Introduction

Agricultural enterprises constantly face new challenges and they have to adapt with those challenges in this dynamic world. Agricultural is right now still lasting the economic recession, to which it tries facing [3]. The enterprises also confront still stronger competition and so there is needed to get some advantage over the competition, with which also relates approving correct management's resolutions. The enterprises, that can effectively face those negative issues, are the particular that have suitably chosen a conception of financial management which is related to receiving correct management decision [6].

The objective of this article is to consider financial situation farm enterprises. It will be used the ratio of financial analysis, specifically the evaluation of selected indicators of groups of profitability, activity, liquidity, leverage, the use of which, according to Sinha

worked in process [8]. These results will be used for further analysis using statistical methods. This evaluation is based on the time line 2007-2013.

1. Materials and Methods

Data were obtained from the database Albertina for time series 2007-2013. After cleaning the data file (because of duplicates, incomplete information accounts or the data file was adjusted for enterprises in liquidation) were analyzed 614 enterprises including a limited liability companies, joint-stock companies and cooperatives. Public companies and limited partnerships were not included in this analysis because there were not obtained the necessary data for research.

The methodology in this paper firstly consists of the calculation of the following ratios:

- Profitability ratios are important from a business perspective, because it shows if it is more efficient to work with their own resources or with foreign capital [1]. Rentability is a profit-making enterprise. However, this term refers to the rate of return, i.e. the ratio of profit to a base with whose help a profit was achieved (on assets, sales, etc.). In this paper is used return on sales (ROS), return on assets (ROA) and return on equity (ROE) [2].
- Activity ratios express how effectively the enterprise manages its assets. If the company has a lot of them the unnecessary costs are created, thereby reducing profits. If there are fewer, losing sales, which could be obtained. In this article is used the inventory turnover (IT), days cost of sales in inventory (DCOSI), accounts receivable turnover (ART) and days sales in receivables (DSIR) [5].
- Liquidity ratios provide information about the company's ability to meet its financial obligations, respectively, how quickly the company is able to pay its obligations. There are used the absolute liquid ratio (ALR), quick ratio (QR) and current ratio (CR) [7].
- Leverage ratios provide information about the long-term solvency of the company. These include for example the level of debt (LOF) and the creditors' risk indicator (CRI) [4].

Then a correlation analysis will be applied on the respective values of the ratios using Pearson Correlation coefficient [9]. The formula for this correlation coefficient applied on a sample is:

$$r = \frac{\sum_{i=1}^{n}(X_i - \overline{X}) \cdot (Y_i - \overline{Y})}{\sqrt{\sum_{i=1}^{n}(X_i - \overline{X})^2}\sqrt{\sum_{i=1}^{n}(Y_i - \overline{Y})^2}}$$

(1)

The sample mean is equal to:

$$\overline{X} = \frac{1}{n}\sum_{i=1}^{n}X_i$$

(2)

2. Results and Discussion

The most successful year according to the profitability ratios was the year 2007 for the farm enterprises during the monitored period in the Czech Republic, as demonstrated in the table no. 1. The crisis year 2009 decreases those ratios even to the negative values. ROS indicates the biggest variability during this period when measuring a standard error or the difference from the period average as supposed because sales varies more than assets or equity. The special character of agriculture, mainly the dependence on weather and other conditions, makes the standard deviation so high and profitability ratios so lower than in other sectors.

TAB. 1: Selected statistics of the calculated rentability ratios for the Czech holdings, 2007-2013

	2007	2008	2009	2010	2011	2012	2013	**Average**	**Stand. error**	**Difference of the 2009 value from the average**
ROS	9.32	5.83	-0.59	4.86	9.40	7.35	8.23	6.3429	3.2362	-6.9329
ROA	3.95	2.41	-0.20	1.75	3.67	4.26	4.89	2.9614	1.6323	-3.1614
ROE	5.37	3.31	-0.27	2.36	4.94	4.02	5.10	3.5471	1.8491	-5.3700

Source: Own processing

The monitored farm enterprises slowed down the inventory turnover during the crisis year of 2009. Also the days cost of sales in inventory ratio increased in 2009 so it takes longer time a company to turn its inventory into sales. The farm enterprises are less effective in using their assets during the crisis, but it seems that it also more depends on harvests, because similar values are reached also in other years. The average number of days that farm enterprises take to collect revenue after a sale according to DSIR increased during the crisis years 2008 and 2009 and increased much after the crisis. The table no. 2 brings more detail on the activity ratios.

TAB. 2: Selected statistics of the calculated activity ratios for the Czech holdings, 2007-2013

	2007	2008	2009	2010	2011	2012	2013	Average	Stand. error	Difference of the 2009 value from the average
IT	2.82	2.62	2.27	2.55	2.80	3.10	3.56	2.8171	0.3858	-0.5471
DCOSI	129.6	139.5	161.1	143.1	130.5	124.7	112.9	136.2857	14.1882	24.8143
ART	4.48	4.27	4.32	4.49	4.58	4.73	5.09	4.5529	0.2572	-0.2329
DSIR	81.44	85.42	84.50	81.20	79.72	80.61	82.70	82.4386	1.9331	2.0614

Source: Own processing

The liquidity ratios, showed in the table no. 3, dropped in the financial crisis year 2008, the ALR the most from its average for the years 2007-2013, but the CR the most from the value of the previous year 2007. So the ability of the monitored farm enterprises to pay its obligation was lowered during the crisis.

TAB. 3: Selected statistics of the liquidity ratios for the Czech holdings, 2007-2013

	2007	2008	2009	2010	2011	2012	2013	Average	Stand. error	Difference of the 2008 value from the average
ALR	0.47	0.35	0.46	0.46	0.45	0.49	0.46	0.4486	0.0419	0.0114
QR	1.42	1.25	1.28	1.26	1.31	1.35	1.41	1.3257	0.0643	-0.0457
CR	2.93	2.72	2.84	2.68	2.73	2.97	2.89	2.8229	0.1052	0.0171

Source: Own processing

The table no. 4 presents the results for leverage indicators. The leverage ratio increased in the crisis year 2008 the most and then the decreasing trend till the end of the monitored period is visible so as the general financial soundness is highlighted. Also the creditors' risk indicator reached the highest value in 2008 and then decreased every year till the end of monitored period.

TAB. 4: Selected statistics of the leverage ratios for the Czech holdings, 2007-2013

	2007	2008	2009	2010	2011	2012	2013	**Average**	**Stand. error**	**Difference of the crisis year value from the average**
LOF	36.01	37.57	36.03	34.80	34.77	34.54	34.12	35.4057	1.1092	0.6243
CRI	26.48	27.31	26.49	25.82	25.80	25.32	24.98	26.0286	0.7325	0.4614

Source: Own processing

The results of correlation analysis between all mentioned ratios are summarized in the table no. 5. As supposed the profitability ratios are negatively correlated to the leverage ratios and the activity ratios DCOSI and DSIR, and positively correlated to the activity ratios IT and ART and the liquidity ratios. There is also a negative relationship between activity ratios DCOSI and DSIR and activity ratios IT and ART by definition as well as there is a very high positive correlation among the profitability ratios by definition. The leverage ratios indicate a positive correlation with activity ratios DCOSI and DSIR, and a negative correlation with liquidity ratios and activity ratios IT and ART. The liquidity ratios report small negative relation to the activity ratios DCOSII and DSIR and a small positive to the activity ratios IT and ART. However the correlation coefficients are mostly below 0.8 so there is mostly very weak relationship between indicators except for those ratios in the same group and the strong relationships between the profitability ratios and activity ratios IT and DCOSI, between ART and leverage ratios adn between ART and IT and DCOSI.

TAB. 5: Correlation coefficients between all of the indicators for the Czech agricultural holdings, 2007-2013, 5% critical value (two-tailed) = 0.7545

	ROS	ROA	ROE	IT	DCO SI	ART	DSIR	ALR	QR	CR	LOF	CRI
ROS	1	0.92	0.99	0.68	-0.86	0.50	-0.61	0.09	0.60	0.19	-0.32	-0.34
ROA		1.00	0.95	0.90	-0.98	0.74	-0.52	0.21	0.74	0.45	-0.46	-0.55
ROE			1.00	0.75	-0.90	0.56	-0.53	0.08	0.68	0.27	-0.30	-0.35
IT				1.00	-0.96	0.93	-0.32	0.27	0.73	0.50	-0.60	-0.72
DCO SI					1.00	-0.83	0.45	-0.21	-0.72	-0.41	0.53	0.62
ART						1.00	-0.41	0.48	0.68	0.45	-0.81	-0.90
DSIR							1.00	-0.67	-0.36	-0.14	0.72	0.63
ALR								1.00	0.54	0.57	-0.77	-0.72
QR									1.00	0.78	-0.43	-0.50
CR										1.00	-0.26	-0.37
LOF											1.00	0.98
CRI												1.00

Source: Own processing

The table no. 6 sums up the statistics of the data used in this paper.

TAB. 6: Summary statistics of all indicators for the Czech agricultural holdings, using observations 2007-2013

	Mean	Median	Min.	Max.	Std. dev.	C. V.	Skewness	Ex. kurtosis	IQ range
ROS	6.34	7.35	-0.59	9.40	3.50	0.55	-1.15	0.25	4.46
ROA	2.91	3.67	-0.20	4.89	1.76	0.60	-0.75	-0.58	2.51
ROE	3.55	4.02	-0.27	5.37	2.00	0.56	-1.01	-0.13	2.74
IT	2.82	2.80	2.27	3.56	0.42	0.15	0.60	-0.37	0.55
DCOSI	136.3	139.50	112.90	161.10	15.52	0.11	0.42	-0.41	18.4
ART	4.55	4.49	4.27	5.09	0.28	0.06	0.90	-0.14	0.41
DSIR	82.44	81.44	80.61	85.42	1.85	0.03	0.45	-1.17	3.89
ALR	0.45	0.46	0.35	0.49	0.05	0.10	-1.69	1.53	0.02
QR	1.33	1.31	1.25	1.42	0.07	0.05	0.34	-1.45	0.15
CR	2.82	2.84	2.68	2.97	0.11	0.04	-0.01	-1.58	0.21
LOF	35.41	34.80	34.12	37.57	1.20	0.03	0.77	-0.56	1.49
CRI	26.03	25.82	24.98	27.31	0.79	0,03	0,28	-0,89	1.17

Source: Own processing

Conclusion

The financial ratios were touched by the financial and economic crisis of 2008 and 2009, but not so much as by for example bad weather or other agro-environmental conditions. Of course the crisis closed new investments, decreased the liquidity and profitability of the monitored farm enterprises and activity was deprived. Mainly the huge drop in the return on sales ratio might make one of the reasons for subventions. Also the correlation analysis partly approved the hypotheses of this paper. However, more complex analysis and benchmarking with other countries with similar agricultural sector structure should be done to understand the financial health of the Czech agricultural firms.

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DIFFERENCES IN LABOUR COSTS IN AGRICULTURAL HOLDINGS IN THE CZECH REPUBLIC IN 2009-2013

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Abstract:

Does regional development in the agricultural sector for joint-stock companies comes along with the reduction of differences in labor costs in the specific region among agricultural holdings? The aim of this paper is to find out the labor costs to output ratio and to assess the correlation of the calculated ratios of labor costs and capital employed to output for joint-stock companies across the Czech regions using the data from 2009 to 2013. The correlation coefficients reveal the coincidence of the direct connection between the labor costs and the value of capital employed per unit of output for the region of Prague and Karlovy Vary. The values of the mentioned indicators for these two regions are also mostly negatively correlated to the rest of the regions.

Introduction

As shown in studies, the relationship between wages and productivity (i.e. the relationship between wage growth and productivity growth) has increasing importance in recent years [7]. As the International Labor Organization has observed – wages should grow in line with national productivity. Otherwise districts with higher growth in unit labor costs will systematically lose market share. Hoffer, Spiecker analyzed the case with a coordinated wage policy to avoid imbalances [3]. The effect of an increase in unit labor cost is much larger in low-technology industries, which depend on low-skilled labor [4]. Kwok and Leland focused on asymmetric information in the labor market as the reason of brain draining and they showed that wage differentials among areas is a consequence and not cause of this phenomenon [6]. To the contrary, Miyagiwa emphasized the importance of scale economy in education in attracting

skilled workers of places with significant concentration of qualified labor force [8]. According to Miyagiwa, the scale effect in education improves productivity, and hence skilled people income in a region showing significant skilled labor - this fact explained wage differentials among regions [8]. This reality was also described by Freguglia, Conçalaves and Ribeiro da Silva [2].

Firms do care about labor costs because they track the relationship between their total labor costs and how productive workers are. If a firm′s labor cost increases, they will lose market share and its growth expectations will be negatively affected. The solution to this problem is a combination of wage restraint and labor productivity increase. Felipe and Kumar said that it is achieved by introducing labor-saving techniques [1].

The aim of this paper is to assess the differences between the agricultural holdings, primarily joint-stock companies, among Czech regions (NUTS3) and to try to find out the correlation between the indicators of the value of labor costs relative to the total output of the joint-stock companies (labor costs per one unit of output) and total capital employed in the firm for respective regions.

1. Materials and Methods

Data were obtained from the database Albertina for time series 2009-2013. After cleaning the data file there were analyzed 527 joint-stock companies. The data were selected for businesses focusing their activities on crop and agriculture production.

The methodology in this paper consists of the calculation of the ratios Labor costs to output ratio (L/O), Capital employed to output ratio (K/O), Labor costs to capital employed ratio (L/K) and the correlation of the ratios with respect to the regional perspective using Pearson Correlation coefficient [6]. Pearson Correlation coefficient is a statistical measure of the strength of a linear correlation between two variables. Pearson's Correlation coefficient between two variables is defined as the covariance of the two variables divided by the product of their standard deviations.
The main hypothesis behind the analysis is connected to the idea that there is also a low or negative labor costs disparity in the regions with high GDP growth rates, i.e. Prague

(and the opposite is true for the regions with slight GDP growth rates, i.e. Karlovy Vary) during this period.

2. Results and Discussion

Firstly, the table no. 1 demonstrates the selected summary statistics of the calculated L/O, K/O and L/K ratios for the joint-stock companies in agricultural sector in all Czech NUTS3 regions during the period of 2009-2013, i.e. their average values, standard errors, and also their difference from the average value of the calculated ratios for the Czech Republic as total. However, the results are not very consistent with the hypothesis. The region of Prague has the lowest, resp. highest negative, disparity in labor costs to output ratios, Moravia-Silesia in capital employed to output ratios and for the labor costs to capital employed ratios it is Karlovy Vary region that is contrary to the hypothesis. The highest disparity in L/K ratio is in Olomouc region and in the case of L/O and K/O ratios in South Bohemia, but Karlovy Vary is just the second one.

TAB. 1: Selected summary statistics of the calculated L/O, K/O and L/K ratios for the Czech joint-stock companies, 2009-2013

Region	Average of the L/O ratio	Stand. error of L/O	Disparity (diff. betw. each L/O r. & tot. aver. L/O r., i.e. 0.2159)	Average of the K/O ratio	Stand. error of K/O	Disparity (diff. betw. each K/O r. & tot. aver. K/O r., i.e. 1,8234)	Average of the L/K ratio	Stand. error of L/K	Disparity (diff. betw. each L/K r. & tot. aver. L/K r., i.e. 0.1197)
Cen. B	0.158	0.024	-0.058	1.511	0.159	-0.312	0.105	0.004	-0.015
Kar. V.	0.274	0.056	0.058	3.517	0.876	1.694	**0.070**	0.013	-0.050
Hr. Kr.	0.157	0.037	-0.059	1.635	0.446	-0.188	0.087	0.006	-0.033
Liber.	0.139	0.050	-0.077	1.564	0.066	-0.259	0.098	0.023	-0.022
MorSil	0.124	0.074	-0.092	0.423	0.414	-1.400	0.096	0.011	-0.024
Olom.	0.167	0.044	-0.049	1.898	0.301	0.075	**0.314**	0.282	0.194
Pardu.	0.150	0.033	-0.066	1.707	0.238	-0.116	0.093	0.003	-0.027
Plzeň	0.143	0.048	-0.073	1.274	0.644	-0.549	0.105	0.003	-0.015
Prague	**0.078**	0.054	-0.138	**0.920**	0.401	-0.903	0.090	0.010	-0.030
Sou. B	0.873	0.586	0.657	**4.159**	5.594	2.336	0.105	0.016	-0.015
Sou. M	0.171	0.036	-0.045	1.980	0.298	0.157	0.083	0.008	-0.037
Ústí	**0.254**	0.285	0.038	0.921	0.423	-0.902	0.260	0.343	0.140
Vysoč.	0.156	0.025	-0.060	1.951	0.159	0.128	0.081	0.005	-0.039
Zlín	0.179	0.026	-0.037	2.068	0.233	0.245	0.090	0.002	-0.030

Source: Own processing

The *correlation coefficients* for the labor costs to output ratios, the capital employed to output ratios and the labor costs to capital employed ratios for the Czech joint-stock companies in agricultural sector in all NUTS3 regions during the period of 2009-2013 are comprised in the table no. 2, 3 and 4 respectively.

TAB. 2: Correlation coefficients of L/O ratios for the Czech agricultural joint-stock companies with regional perspective, 2009-2013

Region	CenB	KarV	HrK	Liber	MorS	Olom	Pard	Plzeň	Prag	SoB	SoM	Ústí	Vys	Zlín
CenB	1.00	-0.73	0.91	0.99	1.00	0.99	0.94	0.99	1.00	-0.87	0.99	-0.63	0.99	0.98
KarV		1.00	-0.79	-0.65	-0.70	-0.73	-0.79	-0.76	-0.73	0.81	-0.72	0.69	-0.67	-0.82
HrK			1.00	0.89	0.92	0.95	0.98	0.92	0.88	-0.68	0.93	-0.89	0.92	0.86
Liber				1.00	0.99	0.99	0.92	0.98	0.99	-0.83	0.99	-0.61	0.99	0.95
MorS					1.00	0.99	0.96	1.00	0.99	-0.82	0.99	-0.65	1.00	0.95
Olom						1.00	0.96	0.98	0.97	-0.81	1.00	-0.74	0.99	0.95
Pard							1.00	0.96	0.93	-0.73	0.94	-0.81	0.95	0.90
Plzeň								1.00	0.99	-0.86	0.98	-0.65	0.99	0.97
Prag									1.00	-0.89	0.99	-0.58	0.99	0.98
SoB										1.00	-0.84	0.37	-0.80	-0.95
SoM											1.00	-0.69	0.99	0.96
Ústí												1.00	-0.66	-0.57
Vys													1.00	0.94
Zlín														1.00

Source: Own processing

Karlovy Vary, South Bohemia and Ústí regions in the table no. 2 has very low or negative correlation of L/O ratio with other Czech regions except for the correlation coefficients among them. The mentioned regions are those with highest disparity in L/O ratio in table no. 1. The other regions are positively correlated among each other.

TAB. 3: Correlation coefficients of K/O ratios for the Czech agricultural joint-stock companies with regional perspective, 2009-2013

Region	CenB	KarV	HrK	Liber	MorS	Olom	Pard	Plzeň	Prag	SoB	SoM	Ústí	Vys	Zlín
CenB	1,00	-0,76	0,93	0,57	0,99	0,98	0,89	0,92	0,98	-0,05	0,97	-0,21	0,98	0,94
KarV		1,00	-0,64	-0,90	-0,74	-0,80	-0,87	-0,77	-0,75	0,40	-0,61	0,60	-0,72	-0,78
HrK			1,00	0,54	0,89	0,92	0,92	0,94	0,84	0,29	0,90	-0,15	0,88	0,76
Liber				1,00	0,50	0,58	0,77	0,60	0,54	-0,19	0,37	-0,85	0,45	0,51
MorS					1,00	0,98	0,85	0,90	0,98	-0,14	0,98	-0,13	1,00	0,97
Olom						1,00	0,93	0,97	0,94	-0,08	0,95	-0,16	0,98	0,92
Pard							1,00	0,97	0,80	0,05	0,79	-0,35	0,84	0,76
Plzeň								1,00	0,82	0,08	0,87	-0,13	0,90	0,80
Prag									1,00	-0,22	0,96	-0,25	0,97	0,98
SoB										1,00	-0,01	0,22	-0,14	-0,37
SoM											1,00	-0,01	0,98	0,93
Ústí												1,00	-0,06	-0,20
Vys													1,00	0,96
Zlín														1,00

Source: Own processing

Karlovy Vary, South Bohemia and Ústí regions also in the table no. 3 has very low or negative correlation of K/O ratios with other Czech regions except for the correlation coefficients among them. Karlovy Vary and South Bohemia regions are those with highest disparity in K/O ratio in table no. 1. Ústí has the second lowest disparity and so has a negative correlation with other regions as the opposite extreme region. The other regions are positively correlated among each other.

TAB. 4: Correlation coefficients of L/K ratios for the Czech agricultural joint-stock companies with regional perspective, 2009-2013

Region	CenB	KarV	HrK	Liber	MorS	Olom	Pard	Plzeň	Prag	SoB	SoM	Ústí	Vys	Zlín
CenB	1,00	0,78	0,91	0,99	0,96	-0,66	0,93	-0,09	0,99	0,98	0,88	0,18	0,91	-0,27
KarV		1,00	0,95	0,66	0,90	-0,74	0,52	-0,14	0,79	0,85	0,98	0,58	0,92	-0,23
HrK			1,00	0,83	0,98	-0,83	0,73	-0,23	0,92	0,95	0,99	0,47	0,96	-0,37
Liber				1,00	0,91	-0,57	0,97	-0,03	0,98	0,94	0,79	0,06	0,85	-0,23
MorS					1,00	-0,76	0,83	-0,20	0,98	0,96	0,97	0,29	0,98	-0,34
Olom						1,00	-0,53	0,70	-0,68	-0,69	-0,77	-0,40	-0,72	0,81
Pard							1,00	-0,14	0,93	0,84	0,68	-0,16	0,77	-0,31
Plzeň								1,00	-0,14	-0,03	-0,18	0,13	-0,20	0,95
Prag									1,00	0,96	0,90	0,13	0,94	-0,30
SoB										1,00	0,92	0,39	0,90	-0,24
SoM											1,00	0,46	0,97	-0,29
Ústí												1,00	0,25	0,01
Vys													1,00	-0,29
Zlín														1,00

Source: Own processing

Zlín, Plzeň and Olomouc regions in the table no. 4 has very low or negative correlation of K/O ratios with other Czech regions except for the correlation coefficients among them. Zlín and Plzeň regions are those with negative disparity in L/K ratios in table no. 1, but not with the highest negative disparity that is contrary to the paper hypothesis. Olomouc region has the highest positive disparity and so has a negative correlation with other regions as the opposite extreme region. The other regions are positively correlated among each other.

Conclusion

The hypothesis of the connection of a low or negative labor costs disparity and a high GDP growth rate in the region (NUTS3) during the period of 2009-2013 was partly true

for the Prague region as the region with highest GDP growth rate in the case of joint-stock companies, because Prague has also the lowest (highest negative) labor costs ratio disparity. However, this is not true for the capital employed disparity where Moravia-Silesia region was the region with lowest (highest negative) disparity, and also Karlovy Vary as the region with the lowest (highest negative) labor costs to capital employed ratio disparity that is contrary to the paper hypothesis. The hypothesis was also only partly true for the Karlovy Vary region as the region with lowest GDP growth rate in the case of joint-stock companies, because the region with the highest labor costs ratio disparity was South Bohemia and the region of Karlovy Vary was just the second one. The same is true for the capital employed disparity. Negative correlation coefficients with the rest of regions during the monitored period were achieved in Karlovy Vary region, South Bohemia and Ústí as the regions on the range of all regions in terms of the highest positive disparity in L/O and K/O ratios. Only the correlation results for the region of Karlovy Vary are in accordance with the expectations, i.e. negative correlation to the other regions. The results for Prague region are completely contrary to the hypothesis of this paper. For further research more specified econometric regional model with all factors and without any bias should be designed.

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RETAIL DEPOSITS IN THE NEW APPROACH TO BANK LIQUIDITY RISK

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Abstract:

The recent financial crisis revealed the weakness of security systems for the bank liquidity. The crisis on this scale was an exceptional event, nevertheless, based on its experience the recommendations are formulated for the banks. The paper presents the solutions adopted in the EU regulations for LCR ratio calculating. The uniform standards for estimating the level of liquidity risk are based on the outflow weights attributed to the certain group of deposits. There is an attempt to assess the possible consequences of the implemented regulations for banks and for the retail deposit market. The formulated conclusions are based on analyzes carried out on the basis of the data from the Polish banking sector.

Introduction

The new banking regulation package implemented by UE Commission (Basel III) presents a new approach to the measure of the bank liquidity risk. So far, the liquidity risk measurement in some part was based on inside models drawn up by every bank. The new approach is based on the uniform standards which include indicators the LCR (Liquidity Coverage Ratio) and the NSRF (Net Stable Funding Ratio). The LCR calculation assumes that the bank holds sufficient high-quality liquid assets that cover its total net cash outflows over 30 days [3, 3]. For the calculation of net outflows, the risk coefficients has applied to each category of deposits, depending on identified risk factors [5, 12-15]. The greatest importance to ensure bank liquidity and minimize the risk of its loss will have retail deposits. Some authors point out that retail deposits does not necessarily mean a lower outflow risk through the diversification effect. Certainly, however, forcing banks to compete for a relatively difficult to access source of retail

funding, the regulators have effectively raised their cost of funds [4]. The retail deposits are sensitive mainly to the price, hence banks can shape their quantity by the rate of interest [2, 17-20]. Although the new regulations are still in the phase of establishing details, it is already known that they will change functioning of the bank deposits market. Some banks have already begun a thorough analysis of their balance sheets and their liquidity conditions [10, 51]. The article is a contribution to the debate on the new concept of measuring the bank liquidity and hedging against the risk of its loss, in the retail deposits subject. The study was based on analysis of the Polish banking sector and the deposit market in Poland.

1. Retail deposits in Liquidity Coverage Ratio

The retail deposit defined by the new liquidity requirements is a liability to the identified entities that meet certain conditions. The criterion for including a business entity to retail depositors of the bank is complex and applies both to the economic activity scale pursued by the entity and to the value of assets and liabilities generated by the relationship with the bank. The retail deposits concern:

- natural persons,
- SME if:
  - an enterprise engaged in economic activities employs fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual total balance sheet not exceeding EUR 43 million [7],
  - they would qualify for the retail exposure class under the standardised or IRB approaches for credit risk,
  - their aggregate deposits do not exceed EUR 1 million [3, 23-24],
- other companies if
  - the total annual sales for the consolidated group of which the firm is a part is less than EUR 50 million,
  - their aggregate deposits do not exceed EUR 1 million.

The new liquidity requirements concept assumes that the retail deposits are divided into three groups [6] :

- stable retail deposits

- unstable retail deposits

- unstable retail deposits with increased outflow risk

The retail deposits can be assigned the weight of the outflow from 3% to 20%. In special cases, the regulation leaves the possibility to increase the outflow weight above 20%. In the first step there should be identified a group of deposits with increased outflow risk. Then the remaining deposits that meet certain conditions of stability are included in the group of stable retail deposits while remaining in this way the volume of deposits is considered unstable with the weight of the outflow of 10%.

The regulation of the European Commission introduces special category of the retail deposits with identified higher outflow risk, that are burdened with the outflow weight from 10% to 20%. This group includes the deposits that meet following conditions:

- the total client's deposit balance exceeds EUR 500 000 or

- the retail deposits fulfil two of the criteria below:

    - the deposit is an internet only account,

    - the deposit offers a specific interest rate,

    - the deposit is fixed-term with the date maturing within the 30 days period or the deposit presents a fixed notice period shorter than 30 calendar days and any material penalties for the failure to meet the deadline haven't been provided,

    - the depositor is a non-resident of the EU or the deposit is denominate in the currency different from any Member State.

The detailed classification of the unstable deposits is presented in table 1. A stable retail deposits are burdened with the standard outflow weight of 5% if:

- they are covered by a deposit guarantee scheme and

- they are held in a transactional account what means that salaries, income or transactions are regularly supplied and debited or

- they shall be considered as a part of the established relationship, that means

- depositor has an active contractual relationship with the institution of at least 12 months or

- depositor has a borrowing relationship with the institution for residential loans or other long term loans or

- depositor has at least one other active product, other than a loan.

TAB. 1: Classification of unstable deposits

Deposit characteristics					weight (%)
deposit balance exceeds EUR 500 000					10-15
	deposit is an internet only account				15-20
	deposit isn't an internet only account				10-15
		deposit offers a specific interest rate			15-20
		deposit does not offers a specific interest rate			10-15
			deposit with short term maturity or short fixed notice period		15-20
			deposit with longer term maturity and longer fixed notice period		10-15
				non-resident deposit or other currency deposit	15-20
				resident deposit and denominated in euro or domestic currency of a Member State	10-15
deposit balance below EUR 500 000					5-10
	deposit is an internet only account				5-10
		deposit offers a specific interest rate			10-15
			deposit with short term maturity or short fixed notice period		15-20
		deposit does not offers a specific interest rate			10-15
			deposit with short term maturity or short fixed notice period		10-15
				non-resident deposit or other currency deposit	15-20
	deposit isn't an internet only account				5-10
		deposit offers a specific interest rate			5-10
			deposit with short term maturity or short fixed notice period		10-15
				non-resident deposit or other currency deposit	15-20
		deposit does not offers a specific interest rate			5-10
			deposit with short term maturity or short fixed notice period		5-10
				non-resident deposit or other currency deposit	10-15

Source: own survey based on [6].

2. Projected changes in the banks strategies and in the deposit market

- Retail deposits with weight of 0%.
- Intensification of competition in the segment of transactional accounts.
- Change in emphasis from the acquisition of new customers to retaining current customers.
- Shredding the sum of deposits. Price diversification.

For the purposes of the new regulations, from the calculation of outflows can be excluded certain group of retail deposits, which in practice means assigning weight 0% for funds deposited in the accounts of this type [8, art 21]. The condition is a clause that in case of early withdrawals in less than 30 days the depositor has to pay a penalty. This penalty shall include the interest from the date of the deposit to the date of the contract withdrawal (no accrued interest). In addition, the loss of potential benefits should be increased by a substantial penalty, which must not exceed the interest payable for the time elapsed from the date of the deposit to the date of the withdrawal. If we establish, that the customer withdrawing the deposit has the right to receive the accrued interest from the day of the deposit to the day of the withdrawal, it will be enough that the penalty will be equal to the interest. Finally the customer will receive only paid deposit capital. Generally, on the Polish deposit market there are few offers, in which the bank does not apply any penalties for breaking the deposit before the contractual deadline. In practice, in case of a premature withdrawal of the deposit, the customer loses the interest accrued in whole or the interest is reduced to very low levels similar to a'vista deposits. This way the majority of term deposits offered by banks in Poland would be excluded from the calculation of outflow in LCR ratio. It seems that the legislator intentions were different. Firstly, the measure of stability of the excluded group of deposits should be the possibility of deferring by a bank the payment of funds from the deposit according to the period of the notice agreement. On the basis of the Polish jurisprudence the contractual notice period may not be too long, so that it doesn't restrict the right of the depositor to free having at his disposal funds [9, 5]. On the other hand, it seems that charging customers a punishment for breaking a deposit before the contractual deadline, which is not the reduction or loss of interest payable for the period

from the date of the deposit to the date of the withdrawal is in conflict with the provisions of the Polish law[1], as evidenced by judicial decisions[2].

The bank's long-term strategy aimed at increasing the stable deposit base would be more effective if it was directed to procuring additional funds from existing retail customers or acquiring new retail customers with a transactional account or other active product. Obtaining additional financing by offering new customers attractive interest rates on term deposit accounts may be treated as an emergency strategy or a measure to establish a lasting relationship with the customer. Thus it was considered that the basic banking product for an established relationship (apart from the long-term loan for example residential loan) is a transactional account, actively used by the client. The experience of the Polish banking market indicates that banks with more determination than ever attract customers with personal accounts offers. The added value at zero rate are often prizes, bonuses for active account use. The distinct change in customer preferences can be seen also on the Polish banking sector data. In the last 24 months the balance of current accounts increased by approx. 23%, while term deposits by only about 5%.

The regulations provide the lowest rate of outflow of 5% for term deposits of the customers who have an established active relationship with a bank for at least 12 months. This means that banks should be more determined to retain the current customer in the bank. The tool may be offering other products (including a transactional account, a residential loan) but also an attractive interest rate. As shown by other authors striving to reduce the depositor switching is associated with less competition in banking markets and depositors receiving lower returns than they might expect [1, 30]. It seems that the price competition for retail deposits may move from the acquisition of new customers to paying more to existing customers to retain them. The Polish National Bank data can confirm signs of greater banks activity to increase the attractiveness of interest rates for lasting the household deposit contracts. There was made a comparison

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[1] According to the Art. 483 of Civil Code compensation for loss resulting from the non-performance or the unsatisfactory performance of the obligation will take place through the payment of determined monies (of contractual penalty) only with reference to nonfinancial obligations.

[2] Sentence of Circuit Court in Warsaw - Court of the Protection of Competition and Consumers, 2009-08-31, Sygn. Act XVII AmC 338/09

of average rates for these contracts in the period January 2005 - September 2014 with an average WIBOR3M (the reference interest rate on loans in the Polish interbank market) taking into account only the periods of interest rates stabilization to avoid the expectations effects. For the three selected periods the analysis shows a clear difference with an upward trend: in the period from April 2006 to March 2007, this difference reached minus 1.65 percentage points, for the period from July 2011 to May 2012 it reached a level of minus 0.74 percentage points, while in November 2011 to September 2014 the difference decreased to minus 0.31 percentage points[3].

Due to the limits in force in the Deposit Guarantee Scheme division of large amounts of savings between different banks is in the interest of the client. In low interest rates environment this strategy is aimed at minimizing the risk of funds loss in a crisis situation. According to the new EU regulations, also banks may be interested in limiting the amount of deposits received from a depositor. This way of deposit base diversification is intended to minimize the risk of significant deposit outflow in stress situations. Deposit outflow weights are diversified due to the amount of deposits which the depositor has in the bank. In conditions of the Polish Deposit Guarantee Scheme the outflow weight for amounts to 100,000 euro can be as low as 5% (stable retail deposits). For amounts above 100,000, but not exceeding 500,000 euro the outflow weight may be 10% (unstable retail deposits). For amounts above 500,000 euro if additional assumptions are met, the bank should allocate up to 20% of liquid assets. First of all this is a problem for banks, in which the cost of deposits is higher than the return on liquid assets. Secondly, it means in addition that financing bank lending activity from such deposits brings a lower interest margin. Thus, the obvious strategy of banks should be to minimize the outflow rates for deposits and/or retain profitability ratios. This can be achieved among others by the use of quota limits on selected deposit offers and by varying the interest rates depending on the invested amount and in the maintaining of the degressive scale.

We assume in a simple model that the bank runs credit activity with the profitability rate at K and invests in liquid assets the amount of possible deposits outflows achieve a rate

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[3] Own calculations is based on NBP data (www.nbp.pl) and WIBOR quotations (www.money.pl).

of return A. Let $A < K$. The Bank finances the assets of clients funds. We divide the deposit base into two different portfolios in terms of the outflow weight, where Δw is the weight difference. If the two portfolios have to pursue the same interest margin, the difference in the interest rate is given by the following formula:

$$\Delta d = \Delta w \cdot (A - K)$$

Hence the deposit price, which is burdened by higher outflow weight should be less than the more stable deposit. In market practice, it often happens differently. Large deposits are often accepted at higher interest rates than those of a retail client. It's prefered sales effect and relatively low operational costs over an increased outflow risk. On the other hand, to compensate interest margin deposits with higher outflow weight could be involved in riskier loans with higher interest rates. Then the difference in the credit $\Delta K = K_2 - K_1$ rate could be given as below:

$$\Delta K = \frac{-\Delta w \cdot (A - K_1)}{1 - w_2}$$

It follows that the bank wanting to balance the higher financing risk of the less stable deposit base will need to obtain a higher return on loans, which generally involves exposing to a higher credit risk. As a result, the liquidity risk is growing on the side of the active and passive balance sheet. The introduction of the new regulations on liquidity risk can lead to deteriorating deposit base stability, which may cause a reduction of interest margin. It seems that banks may face the dilemma of whether to improve the outflow weights through the formation of the desired deposits structure or transfer the cost of financing risk to borrowers.

Conclusions

The experience of the recent financial crisis shows that in extreme situations relying financing bank activity on measures obtained from financial institutions or on the wholesale financial markets is a risky way and fosters fast moving crisis wave to other entities. Under the new UE regulations customer deposits, especially retail deposits, although the cost of acquisition is generally higher, are more certain to secure liquidity

in a stress scenario. The introduction of these regulations relating to liquidity risk can lead to significant changes in the functioning of the market of retail bank deposits, which are a limited resource. Some of these changes are already visible in the Polish banking sector. After the first wave of the crisis, from 2010 Polish banks have significantly reduced the share of liabilities of the financial sector in the balance sheet, including the deposits of non-residents. This share fell from 22.5% at the end of 2010 to 18.7% at the end of September 2014, when there were mainly liabilities to non-residents. For most attractive term deposit offers banks in Poland require opening a transactional account. Fee tables and bank commissions are designed to encourage the customer to use the account actively. The transactional account (except mortgage) will be the main product that will ensures durability of the relationship with the customer, hence the observed intensification of the banks efforts in this regard. On the other hand, it seems that if the regulations recognize the funds on transactional deposit as more stable than those collected on a term deposit, then such interpretation goes against the current experience of the banks. In a situation of financial stability these means are generally price insensitive, liquidity is more important for a customer than profitability, hence he does not require payment for time keeping them available to the bank. The bank doubles benefits, as it has cheap financing and the low weight of the drain customer funds involved in the majority in the more profitable lending.

The new regulations may also lead to a reduction of the phenomenon of switching banks by the client in search of great deals. This will be possible if banks with more determination than ever will try to win customer loyalty - to a large extent. It will be apparent loyalty based on financial incentives rather than on building the right relationships by bank employees. It seems that the price competition for retail deposits may move from the acquisition of new customers to paying more to existing customers to retain them. One should not, therefore, fear of the restriction of competition in the term deposit market - it will be perhaps less visible, because the offer for current clients will not be disclosed publicly, only through negotiations.

Expected crushing amounts of clients deposits means that there should be anticipated an increase in the volume of savings covered by the guarantee scheme. It will result in

increasing the burden incurred by banks in favor of the guarantee system. This means transmission the risk of the one bank entity to systemic risk, which costs incur all banks.

The carried analysis shows that EU regulations are rather an order to the formation of the desired by the regulator shape of the bank deposits market and the desired behavior of banks than the actual disclosure of liquidity risk borne by the bank. The confirmation of this thesis would require further research. They could relate to data of clients tendency to leave or transfer funds deposited in the bank in times of stress scenario.

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TRAINEE PROGRAMMES AS THE WAY OF SCHOOL - WORKING LIFE TRANSITION FOR BUSINESS SCHOOL GRADUATES

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Abstract:

The paper is focused on analysis of trainee programmes, trainings and internships provided to economics and management university graduates in the Czech Republic and Austria. The aim of research was to compare trainee programmes arranged by marketing agencies, IT, pharmaceutical and construction firms. The proposal of recommendations for trainee programmes improvement was elaborated based on the research results.

Introduction

Due to the high competition on the labour market, employers can afford to choose from a large spectrum of graduates and they naturally select applicants who have passed an appropriate type of work training. The authors analyse graduates trainee programmes in the Czech Republic and Austria, the countries with the same historical roots when discussing the culture, educational and political system.

1. Methods, literature overview

The main objective of this research is by comparing trainee programmes and implement research outputs to propose recommendations for these programmes improvement. Interviews were conducted in two forms. Structured interviews were hold in with 12 Czech and 10 Austrian firms operating in four sectors (marketing agencies, IT, pharmaceutical and construction firms), by personal contact and interviews conducted via the internet and the web camera.

TAB. 1: List of Austrian and Czech Companies

List of respondents	Size	Sector
Austrian companies		
Absolute-IT	> 250 employees	IT
BOSCH	< 250 employees	Marketing/ media
Fabasoft	> 250 employees	IT
IVM Engineering	< 250 employees	IT
MAN Truck & Bus AG	< 250 employees	Engineering/ constructing
Meditrax GmbH	> 50 employees	Pharmaceutics
Red Bull GmbH	< 250 employees	Marketing/ media
STACHER	> 10 employees	Engineering/ constructing
ZKW	< 250 employees	Engineering/ constructing
ZUSER Ressourcenmanag GmbH	> 250 employees	Other
Czech companies		
AutoCont CZ a.s.	< 250 employees	IT
AVE CZ	< 250 employees	Marketing/ media
ČEZ	< 250 employees	Other
ČSOB	< 250 employees	IT
GE Money Bank	< 250 employees	IT
Hirex, s.r.o.	> 10 employees	Engineering/ constructing
NET4GAS	< 250 employees	Other
Nutricia, a.s.	> 250 employees	Marketing/ media
PIERRE FABRE DERMO, s. r. o.	> 50 employees	Pharmaceutics
Škoda auto	< 250 employees	Engineering/ constructing
Tesco	< 250 employees	Marketing/ media
Unistav	> 250 employees	Engineering/ constructing

Source: Own elaboration based on data obtained from research

The successful school-work life transition has been influenced by two main drivers of higher education transformation worldwide, the massification and the global knowledge economy [1,6,20,29]. There are researches argue that higher education has *decreased in quality,* as the access to study on universities has been widened to almost all groups of population [11,22,13]. The influence of the knowledge economy and the demand for skills has also led to extension of higher education [25,10].

The higher level of education in the Czech Republic is characteristic by study programmes transformed in to three-stage degrees, the Bachelor study programmes, Master study programmes and the Doctoral studies [7]. The Austrian higher education sector can be classified by two types of institutions. By the Universities act BMBWK adopted in 2002 a new form of higher education was established. Former Colleges of Art and Music were classified as universities so currently Universities and Universities of Applied Sciences (Fachhochschulen) are prevailing [14]. The Austrian Federal

Ministry of Education, The Arts and Culture provides the description of four levels of higher education: the Bachelor programmes (Bakkalaureus), the Magister programmes (Magister, Diplom-Ingenieur), the Doctoral studies (Doktoratstudien – Doctor) and the fourth stage University level, the Habilitation, The Fachhochschulstudiengesetz specifies Fachhochschule study programmes as vocational training on the level of higher education, more focused on the needs of the labour market by offering the education in areas of information science and technologies, engineering sciences, the media and design, social work and the health sector, tourism as well as economics [14, 26].

Trainee programmes as work-based learning are considered to be particularly effective was of promoting the employability of graduates [16,19,28]. By these work-based learning students can obtain valuable experience increasing their competitiveness on the labour market [5].

2. Results

The proportion of sectors in which responding companies operate, was relatively homogenous. When concentrating on the size of companies asked, most responses were obtained from companies employing more than 250 employees. Trainee programmes provided by these companies are well-prepared and ensure the trainee receives high quality valuable experience. Most of the respondents plan to recruit trainees in next five years. The proportion of higher education graduates currently employed in Czech companies ranges between 0 and 15 % while in Austria values vary between 0 to 35 %. Most often, the share of trainees employed in Czech companies is ranging from 1 to 5 %. In Austria most often answer was 0 %, but in the overall view research results show in Austria the proportion of trainee in particular company is varying between 11 to 20 %.

TAB. 2: Placement of a trainee into the work process

The equipment provided during the trainee programme	Austria	CR	Austria	CR	Austria	CR	Austria	CR
	Large extend(%)		Usual extend(%)		Small extend(%)		Not at all(%)	
Own working place (table, chair, computer)	70	92	30	8	0	0	0	0
Learning materials	90	58	10	42	0	0	0	0
Educational courses	50	50	50	33	0	17	0	0
Regular feedback	90	100	10	0	0	0	0	0
Mentor	80	58	20	42	0	0	0	0
Clearly defined tasks	100	92	0	8	0	0	0	0
Independence when working on tasks	60	58	40	42	0	0	0	0
Access to required information	50	42	50	50	0	8	0	0
Access to official company´s meetings	30	25	60	33	10	42	0	0
Working on real projects	100	92	0	8	0	0	0	0
Opportunity to experience work in all departm.	60	58	20	25	20	17	0	0
Remuneration	80	75	10	25	10	0	0	0

Source: Own elaboration based on data obtained from research

The duration of trainee programmes is significantly longer in Austria, usually takes from 1 to 2 years. The trainee has enough time to incorporate into the company and gets the possibility to gain expertise. Trainees attending programmes available in the Czech Republic work more hours per week. The share of cooperation with universities is significantly different, when considering it in Czech companies most of the respondents (42%) stated, its companies never cooperates with universities in order to recruit tertiary graduates for trainee programme, meanwhile in Austria 40% of respondents claimed its companies cooperate very frequently with higher education institutions. Analysis of the recruitment process and firms' representatives' decision making on employing graduates was also part of research. The research showed when assessing the suitability of graduate, Austrian employers have higher requirements on attributes graduate should dispose with. Study results, sector specific knowledge and previous work experience are much often required by Austrian companies than by Czech ones. In contrast to this, Czech companies evaluate willingness to travel more importantly.

During the trainee programme both in Czech and Austrian companies emphasizes on the importance of regular feedback. However in Austria trainee is more often provided by appropriate learning materials but more importantly by a mentor. Trainee programmes in both countries are set up to have clearly defined tasks, to work on real projects and to provide the trainee certain degree of independence when working on

assigned tasks. The trainee should have the opportunity to experience work in all departments at usual extend. The trainee receives certain amount of remuneration in both Czech and Austrian companies. After the trainee programme, all of the companies interviewed provide the trainee the training certificate. The employment contract is in large extend 80% offered to trainees finishing Austrian trainee programmes. In Czech companies trainees are offered the employment contract in large extend in 58 % of cases. Most significant differences were evaluated appropriately and the *proposal for trainee programmes* in the Czech Republic was elaborated.

TAB. 3: Proposals for trainee programmes improvement

	Czech Republic	Austria	Proposal of Trainee Programmes
	Customary Trainee Programmes		
Duration	1 year	2 years	2 years
Working hours per week	40 hours	40 hours	40 hours
Recruiting from universities	27%	73%	70%
Importance of factors (from the base of 100%)			
Study results	38%	62%	80%
Sector specific knowledge	48%	52%	80%
Previous work experience	43%	57%	70%
Willingness to travel for work	51%	49%	55%
Provision of items (from the base of 100%)			
Learning materials	48%	52%	90%
Educational courses	48%	52%	50%
Regular feedback	51%	49%	90%
Mentor	49%	51%	80%

Source: Own elaboration based on data obtained from research

3. Discussion

Completing the trainee programme enables the graduates to find more successfully graduate-level jobs [12,27] Therefore companies are requiring graduates who are comfortable with assuming responsibility and with contributing to the company's success through entrepreneurship [10]. Employers decide on the basis of the *similarity of study orientation* and the scope of work as well as *relevant work experience*. When having no work experience it is highly likely employers will not be interested in such a graduate [9]. The findings shows that it is necessary to encourage partnership between professional institutions, research universities, business and high-tech centres [2,24], more of that authors will recommend the higher education institutions to customize their

degree programmes by adopting competency profiles designed considering to employers' and labour market needs [15,23,17]. There is still a gap between graduates of higher education institutions and necessities of individuals and organisations [18,8,21].Therefore is necessary to find a way to strengthen the cooperation of universities and employers [3].

Conclusion

Considering the research results verified by Pearson's chi-squared test and the importance ratio were confirmed assumptions that trainee programmes available in Austria would be better designed than the programmes provided in the Czech Republic and at the same time it was considered likely that Austrian employers have greater awareness of trainee programmes. It may be therefore declared trainee programmes available in the Czech Republic and Austria differ in several aspects. The most *significant variations have been observed in trainee programmes duration, the extent of cooperation between firms and universities and in the impact of study results and previous work experience on the trainees' recruitment process.*

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SOCIAL TOURISM WITH A FOCUS ON DISABLED SENIORS IN THE LIBEREC REGION AS AN OPPORTUNITY FOR IMPROVEMENT OF ECONOMY OF TRAVEL BUREAUS IN THE LIBEREC REGION

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Keywords:

social tourism – segment – senior tourism – disabled seniors – travel bureaus / agencies – religious / sacral buildings

Abstract:

Social tourism is an integral part of the European model of tourism. The individual segments of this model cover the youth tourism, tourism of families with children, tourism of disabled and tourism of seniors. This paper deals with the tourism of seniors, as the fastest growing segment of global tourism, more particularly with the tourism of disabled seniors in the Liberec region. It suggests some possibilities of improvement of economic situation of travel bureaus in the Liberec region, especially by extending their scope of business and offering trips for disabled seniors. The paper presents the results of the specific survey conducted by the author. The survey was aimed at the possibility of utilization of the Liberec region religious buildings as the target destination for disabled seniors. Also it reveals reasons why travel bureaus / agencies are not offering trips to this particular group of people.

Introduction

Globally more and more disabled seniors have been increasingly participating in travelling. They became an important segment of tourism, improving profits of those travel bureaus focused on this sort of trips. However travel bureaus / agencies situated in the Liberec region somehow did not catch this trend. Within the scope of their businesses they do not offer trips for disabled seniors.

1. Methodology

During the period from November to December 2012, students of tourism at the Faculty of Economy, Technical University in Liberec, conducted under the lead of the author of this paper a questionnaire survey aimed at discovery of barriers affecting disabled seniors during their involvement in tourism and also reasons why travel bureaus / agencies do not offer any trips in this particular segment of travelling.

Disabled seniors have been actively involved in all forms of travelling. Many of them however tend to visit sacral buildings. Vast majority of these buildings are - due to very bad technical condition - inaccessible to this group of people. Therefore, in the course of 2010, the author of the paper conducted a survey aimed at suitability of religious buildings situated in the cadastral territory of the statutory town Liberec for disabled seniors as participants of tourism. The research was carried out as a questionnaire survey directly in the selected religious buildings. The research continued in 2013 - at that time the same methodology was used to examine other religious buildings in the whole Liberec region. The results were summarized and 4 digital maps were created, showing religious buildings in individual districts of the region, particularly in the districts of Česká Lípa, Jablonec nad Nisou, Liberec and Semily.

2. Travelling of disabled seniors

While getting older many people became disabled. During 2012 a survey was realized in the Czech Republic aimed at disabled people. The following TAB. 2 shows the basic characteristics of disabled people in the Czech Republic [1].

TAB. 1: Basic characteristics of disabled people in the Czech Republic as of 31.12.2012

	Population	Disabled
Total	10 516 125	1 077 673
Men	5 164 349	512 761
Women	5 351 776	564 912
Aged		
0 – 14 years	1 560 296	64 307
15 – 29 years	1 881 844	65 143

30 – 44 years	2 495 730	109 947
45 – 59 years	2 075 490	206 891
60 – 74 years	1 794 618	333 211
75 +	708 147	298 174

Source: www.czso.cz/code: e-4003-13-Age structure of population as of 31.12.2012

For travelling of disabled seniors the transport means must be adapted (lifting platforms in trains and buses). The following is also required: assistance of social workers, barrier-free access to accommodation and boarding facilities, installation of comprehensible and transparent information symbols for controlling elevators etc.

The quality of services provided in tourism for disabled may be deteriorated by so called architectonical barriers that make the movement of disabled people in hotels, railway station halls and platforms, information centers, incoming agencies, transport, cultural and other facilities difficult. The basic preconditions for good accessibility of internal and external environment for disabled (persons with limited movement and orientation ability - as stipulated in the Decree No. 398/2009 Coll., on General Technical Requirements to Secure Barrier-Free Usage of Buildings) include: access routes, access communications, parking places, drive-up ramps, stairways and stairs, building doors, internal adaptations of buildings, internal glazed doors, elevators, toilets for disabled and summarized parameters of wheel-chairs.

3. The research into suitability of sacral buildings in Liberec for disabled seniors as tourism participants

This research conducted in 2010 was aimed at opening hours, church service time, access to the building (by car, by mass transport, by foot), especially with regard to disabled persons, in all sacral buildings in the cadastral territory of the statutory town of Liberec (and in 2013 also in the whole Liberec region). Special attention was paid to description of access to the building, considering the possibilities of seniors (stairs), possibility of relaxing (places for sitting), availability of social facilities (WC), heating, lighting, taking photos and also availability of fresh water.

While evaluating whether sacral buildings in the cadastral territory of Liberec are barrier-free or not, three groups of sacral buildings were established: sacral buildings built in the past 20 years, sacral buildings built in the past and sacral buildings that were renovated. Sacral buildings built in the past 20 years offer barrier-free access, barrier-free social facilities, rest area and heating. These buildings for example include the Chapel of Resurrection in Vratislavice nad Nisou and Czech Brothers. Religious buildings that were built in the past and not renovated so far are not barrier-free as it was not required by the former legislation. Some of the buildings examined are no longer used for religious purposes, such as the Church of St. John of Nepomuk. Other sacral buildings are closed or waiting for decision on their future destiny (such as the Church of St. Mary Magdalene). In religious buildings that were recently renovated the interiors are already well-prepared for tourism of disabled seniors. The Church of St. Anthony of Paduan is a good example. During its renovation a barrier-free access was established, as well as barrier-free toilets and rest area. The building is heated and offers the possibility of various activities. A catholic charity has been operating there, offering accommodation, boarding and other services. Also there is a social welfare institution on the site [3, 88].

The outcomes of the survey were also standards for assessment of suitability of travel destinations in Liberec for disabled seniors, drafted by the author of this paper. The results of the survey were presented to general public through the author's monograph distributed to the Information Centre of Liberec. It soon became a much-sought-for publication for this matter. A list of suitable barrier-free destinations - religious buildings in Liberec - was drafted.

5. Research into reasons why travel bureaus in the Liberec region do not offer trips for disabled seniors

In accordance with the Act No. 159/1999 Coll., on some conditions of undertaking in the field of tourism, only travel bureaus may develop tours / trips. Such tours / trips may be then sold / mediated through travel bureaus or agencies. As of 1.11.2014 there were 27 travel bureaus and 119 travel agencies in the Liberec region. The research (questionnaire survey) conducted from November to December 2012 in the Liberec

region, with all travel bureaus and agencies involved, revealed that no travel bureau is aimed at trips / tours for disabled seniors. Only one travel agency was mediating tours for disabled seniors, originally offered by travel bureaus outside the Liberec region.

Travel bureaus in the Liberec region claimed that organization of trips (especially stay-trips) for disabled seniors is quite expensive and demanding for all suppliers of basic but also extra services. To organize a stay for such a group of seniors, special transport, accommodation but also boarding facilities would be required. This of course makes the trip more expensive. Often the seniors are accompanied by assistants or family members. The trip programme must be adapted to specific handicap and there are many of them. In order to be able to include trips for disabled seniors into their catalogues or to organize custom-made trips, travel bureaus need to get subsidies, subventions, gifts or contributions from health insurance companies or local municipalities. This sort of trips is not organized for big groups of clients - usually there are only few of them. While calculating the price of a trip, travel bureaus cannot proceed in a standard way, but must cut their margins considerably. Travel bureaus claim that despite this is a very perspective field of business, under current conditions in the Czech Republic they cannot focus on this segment as organizing such trips would be too demanding and also it requires a solid knowledge of market, individual handicaps, trained / skilled assistants and guides and more importantly suppliers of customized and affordably priced basic services.

Conclusion

In the territory of the Liberec region there are some cultural sights and relics included on the list of the National Heritage Institute. In the past few years we witness the increasing effort in their utilization within the scope of social tourism and all its segments. There is a plenty of sacral and petty religious buildings in the cadastral territory of Liberec, representing a municipal monument preservation zone since 1992. They are owned by various entities, from churches through towns to private entities. Also they are in different technical state - some of them after renovation, some still waiting for it. Some of them are closed for a long time. Some are no longer used for their original (sacral) purpose, but for commercial purposes instead. Religious buildings

may be used in multiple ways - not only for believers, but also as concert halls, exhibition premises, spiritual rooms or religious tourism destinations. In Liberec you can definitely find sacral buildings that could easily become a sought-after destination for disabled seniors as well as other segments of social tourism.

Travel bureaus are kept informed on the existence of social tourism - tourism for everyone, including individual segments of this sort of travel. Their offers even cover some tours and trips for seniors and groups of seniors, such as spa trips, wellness stays etc. However no travel bureau having a registered seat in the Liberec region offer trips / tours for disabled seniors. Such trips / tours would be only offered as custom-made trips for a limited group of disabled seniors. Despite this segment is quite perspective, travel bureaus do not offer this sort of trips / tours. It is therefore necessary to put a pressure not only on them, but especially on subsidy and other program authorities to create (in accordance with UN principles) conditions allowing the disabled seniors to participate in social tourism.

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MANAGEMENT APPROACHES TOWARDS ENTREPRENEURSHIP IN RURAL TOURISM

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Abstract:
The paper describes rural tourism and the effective application of business principles. It analyzes the importance of effective strategy and use of modern management skills and approaches. Applying progressive principles and modern management thinking within conditions of rural tourism appears to be an indispensable assumption of business competitiveness. Coordination of activities in rural tourism is equally important to ensure balance between economic, ecologic, social and regional aspects in a given area to remain competitive with other similar destinations.

Introduction

Tourism represents one of the most important pars of global economy. Due to the importance of the tourism and its contribution to regional development, impact on the labour market, infrastructure, natural environment, diversification of activities in the rural areas, competent authorities aim to create favourable conditions for its development (e.g. [21]).

The same is true for most endangered rural areas. Tourism actually embodies opportunity for revitalization of rural regions due to lower agricultural production [15]. Even though rural tourism very rarely becomes a profitable business, it shall at least provide material wealth so that economic, socio-cultural and ecological balance is sustained. It is therefore necessary to:

- *Solve problems of rural areas by sophisticated approach* - this means to analyze areas not only by their attractiveness (traditions, folklore, history) and local

infrastructure capacity, but also from the social dimension (hospitality) and social capital of the locality (e.g. [14], [20]),

- *Manage an entrepreneurship in a region* – problems of strategic management (e.g. [8]), destination management (e.g. [11]) and destination marketing ([17]).

Most of the approaches to the development of rural areas are often based on approaches that specifically highlight economic benefits. Weaver, however, notes that tourism cannot be regarded only from the economic point of view, but should be also examined from the viability of a destination and its competitiveness [24]. In order to do that it is necessary to apply progressive principles and modern management thinking. Equally important is coordination of activities in destination management. Only that can provide balance between ecologic, economic, socio-cultural and regional aspects of development in a given region.

1. Methods, goal and theoretical framework

In order to have successful businesses, tourism entrepreneurs are required to use their skills and personal qualities. The aim of the paper is to characterize some of the modern management approaches suitable for application in rural tourism and the role of destination management in relation to the sustainable tourism development in rural areas. That should result in sustainable products and services that are competitive in also other destinations. The presented analysis of rural tourism, main strategic business principles and management approaches to entrepreneurship are based on strategic qualitative research, personal monitoring, as well as analysis of available literature. Additional information has been gathered at scientific seminars, presentations and practical experience of the authors.

Rural tourism is believed to be a supportive element for the economic and social development, because it draws on a cultural heritage and natural environment (e.g. [2], [3], [21]). Although the concept of rural tourism is widely accepted, operational definitions are not globally consistent [16]. According to Stříbrná, rural tourism relates to low population, open space and locations with less than 10,000 inhabitants. Rural tourism is a multi-aspectual activity, much wider than agrotourism, with which it is

often confused. Rural tourism includes holidays with accommodation at farms, outdoor holidays, hiking or cycling, hipotourism, sport and health tourism, hunting and fishing, exploration tours, travelling in search of art and heritage and many other products provided in the countryside [23]. Pourová defines rural tourism as tourism evolving both outside recreation and tourism centres and outside of urban areas. Rural tourism has many forms presented as its sub products. It is subsequently divided into village tourism, agrotourism (tourism in farms), eco-agro tourism (tourism in ecological farms), cottage and farmhouse stays [18]. Zelenka and Pásková [25, 26] define "agrotourism (or agritourism, farm tourism, amer. agricultural tourism, farm stay tourism, vacation farm tourism) as the tourist or recreational stay at farms in the countryside. Primary reason for agrotourism is exploration alternative life, being close to the nature, participation in agricultural activities and active relaxation".

In fact, rural tourism may be a very positive and ecological form of tourism. Unfortunately, subjects active in rural tourism often lack skills in strategic management. Even basic business issues (such as finance management, HR issues, business planning) are done by owners themselves. However, strategic issues (such as marketing, strategic planning) require cooperation with subjects that have profound understanding and experience with the location, and their core aim is to boost healthy and harmonic development of the area.

2. Results

This section presents modern management procedures that can be applied in rural tourism. More specifically, it focuses on "unconvential" methods that lead to entrepreneurial competitiveness. First, it is a strategic concept designed by Richard D´Aveni. It is based on the principle of *"seven dynamic S"* [9]. It is a reaction on "7S" of McKinsey, which characterize a strategic balance between a company development and its business environment. D´Aveni brings in an idea of competition that is called up to subvert such a balance and derives benefit from it. His "new 7S" include these seven principles: The first principle is full satisfaction of consumers´ demands and surroundings – *"stakeholders satisfaction"*. Because the demands of clients have been changing, it is necessary to not only have a good overview about them, but also try to

anticipate them. Therefore, the modern strategy requires prediction of opportunities and a "victory" over competition – *"strategic soothsaying"*, and gain of competitive advantage on the market. The actions must be fast – *"speed"* and well-timed, because the moment of *"surprise"* is very important. It also concerns an active influence of market and of competition by various means and strategies (e.g. by *"signals"*) about distortion of market balance by continuous interventions or *"shocks"*. The purpose of all these activities is mainly to achieve the stable favorable shift on the market – *"shifts"*, and to improve the position of a company in the market [12].

Due to the growing globalization, the use of local advantage in the fight of *Porter´s "clusters theory"* with competition seems necessary [19]. This theory results from an opinion that the stable advantage of competition in the world today is also based on local contributions. In relation to this idea, Porter has developed the clusters theory, which, according to him, means a "geographical concentration of mutual organization units that are able to create a competitive advantage by the creation of a unique complementary product" [12, 262]. The business subjects operating in the tourism are directed to this connection properly, because they provide supplementary services. Due to their mainly small character they have to create mutual chains (e.g. [4]). As an example we can name the "Klastr cestovního ruchu v Moravskoslezském kraji" (http://www.klacr.cz/).

The principles exercised by the Relais & Chateaux Company ("5C") represent some kind of high quality services. They are characterized as follows: *Caractere, Courtoisie*. In case of tourists in rural areas, personality, uniqueness and hosts´ courtesy are required. Courage and passion, but also responsibility, devotion and discretion belong to any business. For a businessman´s personality in rural tourism, typical features include diligence, accuracy, dedication, creativeness, persistence, also managerial and organizing skills, ability to communicate and treat people, and many other abilities assuring originality and favorable company image. *Calme* - calm and peace are the main requirements of tourist in rural areas. Entrepreneurs´ success is mainly based on making of friendly atmosphere, safety, serenity, and family peace, pride, traditions and customs of their region and on responsible relation to natural and human surrounding. *Charme* –

charm, fascination of a region. The Czech Republic can boast with a number of well-preserved architectural monuments and natural wonders. One third of the country is covered with hilly regions, abounding in woodlands and meadows giving opportunities for rural tourism. *Cuisine* – gourmet delicatessen, local gastronomy. In terms of rural tourism, the supply side is usually concentrated on food and customs adherent to the particular region or village. It can be represented by products such as home-made bread, cakes, mushroom specialties, herbal tea, or organic bio-products with distinctive traits in Czech cuisine, habits and traditions (wine or beer trails) [3], [13], [18], [23].

In rural tourism we can use many other management approaches. For ex. *benchmarking* as systematical comparison with best practice efficiency and on the basis of this comparison it can improve the company function (e.g. [1]). *Outsourcing* provides services, that would be more expensive if done by own sources (e.g. [22]). In rural tourism it is also possible to use the Japanese philosophy of continual improvement *Kaizen*. This philosophy is based on continuous process of improvement which leads to business efficiency. The *CATWOE methodology* [10] can be useful, of course with respect to rural tourism requirements: Customer is represented by the user of rural tourism, while the Actor is the provider of rural tourism services. Transformation then describes ways of how inputs make their way to outputs. Worldview – the kind of experience and pleasure rural tourism provides. Owner is the person who decides on whether or not to continue in service providing. Environmental constraints are impacts of rural tourism on the environment stability, requirements on infrastructure.

3. Discussion

Rural tourism can be regarded as a complex system with many diverse elements (diversity of organizations and variety of operating styles) and interactions (interactions of a system with its surrounding) requiring effective coordination of the whole tourism system [5]. During the whole process of tourism management it is necessary to bear in mind the following issues [11]: needs of visitors as well as residents, economic interests of all subjects concerned, trends in elimination of negative effects, monitoring of the environment in the destination, safety and security protection. As Királ´ová continues, destination management, which includes issues such as managing of visitors,

determination of carrying capacity, application of sustainable tourism indicators, effective use of socio-cultural, historical and natural capacity in a destination, is nowadays in focus of many subjects. These subjects are very often called Destination Management Companies (DMC), and represent subjects which initiate and manage the whole tourism development process in cooperation with commercial subjects, state sector, as well as local inhabitants and various associations. Their primary task is to effectively coordinate activities, react to market conditions and apply principles of visitors and destination management in practice [11]. Partnerships of public, entrepreneurial and civil sector thus multiply the energy spent on particular project and efficient use of financial resources [6], [7].

Conclusion

Rural development planning and its relation to tourism should answer one basic question: How to effectively manage tourism development in order it is in line with natural resource limits their recovery time, while it is still beneficial to tourists, local community and the environment? This question tackles two issues. One is sustainability (to have all processes under control, know development sources and limits), and the second is responsibility (to know real impact of action undertaken). There is thus a prerequisite: only sustainable tourism with its clear strategy and methodology may enhance cultural and natural heritage, increase living standards of local community and overall quality for visitors (see e.g. [26]). These requirements call for effective management system of tourism (and also rural tourism) and application of modern management approaches.

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REGIONAL DISPARITIES – CAUSES AND POSSIBLE SOLUTIONS

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regional disparities – causes of disparities – unemployment – poverty – level of education

Abstract

The authors address the issue of regional disparities which exist persistently not only in the Slovak Republic but also across many different countries of the world. When examining regional inequalities, the authors analyse indicators of economic and social development, such as for instance unemployment rate, average wages, disposable income, number of people being on welfare, at-risk-of-poverty rate, migration, crime rate, etc. In general, it has been believed that western regions are richer than eastern regions. The authors try to determine the correctness of this belief and identify differences in the regions under consideration. Moreover, they attempt to highlight the strengths of both regions, draw attention to their weaknesses and propose ways to eliminate disparities

Introduction

Regional disparities have currently been considered a global issue – all the countries experience the problem of regional disparities and attempt to eliminate or alleviate them. Disparities have an impact on a wide array of social and economic indicators. The Slovak Republic features distinct natural, social as well as ecological environment. Therefore, the dynamics of the regional development varies from region to region. On the one hand, disparities are perceived as a natural phenomenon as they stimulate and support social and geographic mobility of the population. On the other hand, they lead to social injustice and instability. The goal of the paper is to identify regional disparities between two regions in the Slovak Republic, namely the Trenčín region and the Prešov region. In addition, authors attempt to explain the causes of inequalities and propose

ways of eliminating them. Statistical data were collected, processed, and research methods of comparison and analysis were employed. Regional disparities can be defined as "a result of uneven development of regions throughout the history, having caused a wide array of social, economic, cultural, and infrastructural inequalities, as well as inequalities related to living conditions or standard of living to occur, which may gradually lead to a sharp regional polarization." [5, 152]. Regional disparities hinder economic growth, decrease manufacturing output and prevent readily available resources to be expended. Disparities related to standard of living bring about unrest, dissatisfaction, higher crime rate and social exclusion in the regions stricken by high unemployment which may also have grave political consequences. In principle, there are three types of disparity, such as economic, social and territorial. Indicators related to the economic and social development of regions include gross regional domestic product (GRDP), GRDP per capita, unemployment rate, employment rate, structure of unemployment, average wage, disposable income, number of citizens receiving benefits in material need, demographic trends, etc. To measure territorial disparities, population density, migratory flows, climate, distance to market can be looked at.

1 Selected indicators of regional disparities

Sloboda [2, 115] maintains that disparities are a natural phenomenon reflecting differences among communities of the residing population. Communities of population are made up of individuals, distinct from one another in terms of their abilities, qualities and the extent of their self-actualisation in a society.

The Prešov region is located in the north-eastern Slovakia, the population density in the region is 90.9 inhabitants per km² and the average age of its inhabitants is 37 years. It is the most populous of all eight regions in Slovakia and the second largest concerning the area. The Prešov region is one of the poorest regions. The region has kept high natality registering the highest natural increase of population, however, due to migration flows the overall increase of population, it is the second highest of all Slovak regions. The share of population in pre-productive age has dropped, whereas the share of population in productive and post-productive age has grown. Despite the slight increase of average age, the population of the Prešov region remains the youngest in the Slovak Republic.

Industry in the region is varied without expressive orientation on any manufacturing branches. There are more than 14,000 profit-making companies and almost 59,000 entrepreneurs (tradesmen, including natural persons). Their entrepreneurial activities include mainly construction, trade and industrial production. There are 97.8% small-sized enterprises (up to 49 employees), 1.8 % medium-sized enterprises (50 up to 249 employees) and 0.4% large enterprises (with 250 or more persons employed). The Prešov region is appreciated by tourists for its natural beauty and climatic conditions. One fifth of the hotels and lodging facilities of the Slovak Republic is located in the region (724 out of 3,643). In 2012, approximately 665,000 visitors stayed in the hotel and lodging facilities located in the Prešov region and spent 3.2 nights on average (2.9 nights in the Slovak Republic). The most important tourist attractions include the High Tatras, districts of Kežmarok, Prešov and Stará Ľubovňa as well as the towns of Levoča, Bardejov, Poprad and Kežmarok. The Trenčín region is an ageing region. Since 1996, the share of population in pre-productive age has dropped slightly and the share of the population in post-productive age has grown, the average age of its population is 41 years. Various industries have a long tradition in the Trenčín region including machinery, electrotechnics, mining, textile and clothing, glass, leather and food processing. There are more than 13,000 profit-making companies operating in the region, 99.4 % are private companies and the remaining are state-owned companies. In total, there are 83.6 % small-sized enterprises, 5.1 % medium-sized enterprises and 0.6% large enterprises. There are many historic sites which attract tourists, such as the castle of Trenčín (including the Roman inscription dating back to 179 AD, which is the most northern evidence of the presence of Roman soldiers in Europe), and the castles of Beckov, Čachtice, Tematín and Bojnice. The most important tourist attractions include spa resorts in the towns of Trenčianske Teplice, Nimnica and Bojnice, exhibitions in the town of Trenčín, native house of Ľudovít Štúr in Uhrovec or cairn of M. R. Štefánik on the Bradlo hill and the ZOO in the town of Bojnice. Súľovské skaly and Manínska narrow also attract many visitors to the region. In 2012, more than 244,000 visitors stayed in 259 hotel and lodging facilities and spent 4 nights on average.

1.1 Unemployment

Not all categories of people are threatened by unemployment in the same extent. There are certain categories of people who are more likely be unemployed than others. They

include young people, especially graduates lacking experience, pre-retirement age people, physically or mentally challenged people, women, people with low or no qualifications and Romany citizens.

TAB. 1: Number and ages of job seekers in 2013

	Total	15-24		25-34		35-49		50 and above	
			in %		in %		in %		in %
SR[1]	398,876	72,629	18.2	96,783	24.3	133,529	33.5	95,935	24.1
SGRT[2]	34,577	6,558	19.0	7,993	23.1	10,845	31.4	9,181	26.6
SGRP[3]	83,574	16,836	20.1	21,197	25.4	27,935	33.4	17,606	21.1

Source: elaborated by authors based on data from the Regional database, Statistical Office SR

Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

The data listed in Table 1 indicate that the highest proportion of job seekers is the 35-49 age group in both regions. The highest number of job seekers in the SR was in the Prešov region which has the second highest registered unemployment rate as shown in Table 2. The rate of registered unemployment is below the Slovak average in the Trenčín region. The rate of registered unemployment in the Prešov region is twice as high as in the Trenčín region.

TAB. 2: Rate of registered unemployment by age in 2013

	Total	Males	Females
SR[1]	13.50	12.69	14.50
SGRT[2]	10.74	9.80	11.96
SGRP[3]	19.35	18.62	20.31

Source: elaborated by authors based on data from the Regional database, Statistical Office SR

Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

However, the number of job seekers ready to start working immediately should be noted (compare Table 3). In the SR, 8.7% out of the total number of job seekers are not ready to start working, whereas the number amounts to 7.1% in the Trenčín region and to 9.8% in the Prešov region.

TAB. 3: Numbers of job seekers and job seekers ready to start working immediately in 2013

	Number of job seekers			Number of job seekers ready to start working immediately			Difference
	Total	Males	Females	Total	Males	Females	
SR[1]	398,876	206,247	192,628	364,225	189,282	174,943	34,651
SGRT[2]	34,577	17,557	17,020	32,122	16,472	15,650	2,455
SGRP[3]	83,574	45,378	38,196	75,391	41,231	34,160	8,183

Source: elaborated by authors based on data from the Regional database, Statistical Office SR

Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

It is difficult for Roma ethnic minority to get a job, especially due to employers' requirements concerning qualification, extent and quality of social skills as well as prejudice. According to the 2011 Population and Housing Census, the number of Roma amounted to 5.3% of residents in the Prešov region and 0.1% of residents in the Trenčín region (approximately 2% of the population of Slovakia are Roma). The census results concerning the most frequently used language at home show that 7.6% of resident population use the Roma language in the Prešov region, whereas the number amounts to 0% in the Trenčín region.

1.2 Poverty

Poverty is defined relative to the standards of living. Pursuant to the definition, poverty is not an exceptional case and all societies regardless of their economic conditions have some of their citizens living in poverty. Next, absolute poverty is defined as the absence of enough resources to secure basic life necessities. In line with this definition, poverty does not have to be present in all societies. To measure poverty in regions, available statistical data, such as the data on unemployment, social dependency and average wage are used. In line with the Methodology of the Statistical Office of the SR, the equalised disposable income is the total income of a household divided by the number of household members converted into equalised adults. The resulting figure of the equalised disposable income is attributed equally to each member of the household. The at-risk-of-poverty threshold is set at 60% of median equalised disposable income. The at-risk-of-poverty rate is the share of people with an equalised disposable income under 60% of the national median disposable income. The at-risk-of-poverty rate is 12,8% in

the SR. As shown in Table 4, the lowest at-risk-of-poverty rate is reported in the Bratislava region (8%), and the highest in the Prešov region (19.2%).

TAB. 4: Income and living conditions of households in 2013

	Average equalised disposable income of households in a month	People below the poverty threshold – 60% of the median	The at-risk-of-poverty rate – 60% of the median (%)
SR[1]	629.63	715, 578	12,8
SGRT[2]	674.01	49, 406	8.2
SGRP[3]	555.88	162, 347	19.2

Source: elaborated by authors based on data from the Regional database, Statistical Office SR

Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

The differences between regions dwell not only in the at-risk-of-poverty, but also in income. Whereas the net income per person is EUR 452.51 in the Bratislava region, the lowest net income per person in the SR is reported in the Prešov region, namely EUR 327.08 (compare Table 5). The fact can be attributed to higher unemployment rate and bigger household sizes.

TAB. 5: Income and living conditions in 2013 (in EUR)

	Average net nominal monthly income	Net income per person in a month
SR[1]	701	370
SGRT[2]	641	376
SGRP[3]	582	328

Source: elaborated by authors based on data from the Regional database, Statistical Office SR

Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

In addition to the average monthly wage, net income per person in a month is considered to be one of the indicators of regional disparities. Concerning the total income of citizens, this indicator is of higher statistical significance as it includes every form of income (after taxes and mandatory social contributions), social benefits (such as social security benefits, sickness insurance benefits, state social support benefits, unemployment benefits) and additional income (for instance property income, income in kind, income from selling agricultural produce, etc.). Citizens living below the subsistence minimum, who cannot ensure or higher their income by their own efforts or

property are eligible to claim to benefit in material need (BMN). The number of BMN beneficiaries is the lowest in the Bratislava region (1.0%), and the highest in the Košice region (10.95%). The Prešov region registers the second highest number of BMN beneficiaries (10.85%) and the region of Trenčín the second lowest number of BMN beneficiaries (compare Table 6).

TAB. 6: Registered unemployment rate by age as of 31 December 2013
Proportion of persons in material need

	Number of BMN beneficiaries, incl. commonly assessed persons	Population	Proportion of persons in material need in relation to the size of population in %
SR[1]	359,632	5, 415, 949	6.6
SGRT[2]	16, 846	594, 186	2.8
SGRP[3]	89,307	815, 806	10.9

Source: elaborated by authors based on data from the Office of Labour, Social Affairs and Family
Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

Attractiveness of the Prešov region is partially demonstrated by migration – the difference between the number of persons entering and leaving the region. The net migration in the SR registered 0.6 in 2011, and regions having higher net migration include the Bratislava region (2.00 in 2001 and 7.5 in 2011), the Trnava region (1.39 in 2001 and 2.60 in 2011) and the Nitra region (0.64 in 2001, dropped to 0.20 in 2011). The Prešov region has had negative net migration count with the lowest value in the SR in the long run (compare Table 7).

TAB. 7: Comparison of net migration per 1,000 persons in 2001 and 2011

	2001	2011
SR[1]	0.19	0.6
SGRT[2]	-0.65	-0.7
SGRP[3]	-0.79	-1.7

Source: elaborated by authors based on data from the Regional database, Statistical Office SR
Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

1.3 Educational attainment

Education and access to knowledge are one of the dimensions of social and human development and key factors having a significant impact on the social stratification of a society. Šprocha [2] claims that both regions with above the average education level structure as well as regions with the lowest education level structure have gradually been formed in Slovakia. Regarding the education, access to educational institutions, employability of graduates, educational traditions in the respective regions, inter-generational transfer of knowledge, etc. are taken into consideration. The data on educational attainment in the Slovak Republic, and in the Self-governing Region of Trenčín and the Self-governing Region of Prešov are listed in Table 8.

TAB. 8: Population by educational attainment in 2011

	SR[1]	SGRT[2]	SGRP[3]
no school education	2.8	2.8	3.0
basic	15	12.9	17
apprentice (without diploma)	13.4	15	12.8
secondary professional (without diploma)	9.7	12	8.9
complete secondary apprentice (with diploma)	3.5	3.9	3.6
complete secondary professional (with diploma	20.2	22	18.8
complete secondary general	4.4	3.8	4.0
higher professional	1.5	1.4	1.2
academic bachelor program	2.3	2.3	2.3
academic master program	10.8	9.8	8.9
academic PhD program	0.7	0.4	0.4
not specified	2.8	2.8	3.0

Source: The 2011 Population and Housing Census

Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

1.4 Crime

Crime is a grave problem for all societies, and is caused by many factors. Crime rate is markedly affected by social control and anomie. Mechanisms of both formal and informal social control are not so effective and efficient in municipalities, which can partially be attributed to extensive anonymity. Social anomie (roughly defined as the lack of social norms and violation of existing norms) is common among citizens mostly affected by negative consequences of social differentiation. Exclusion and

marginalization of certain social groups, and their spatial concentration in some regions are the real factors which make crime rates rise. Crime rates correlate primarily with the population size, minority population sizes, average wage, unemployment, social dependency, etc. Therefore, there is a higher criminal rate in the Prešov region when compared with the Trenčín region. The Trenčín region is the region with the lowest number of criminal offenses (compare Table 9). The highest number of violent offenses was reported in the Košice region (1,064), whereas the lowest number in the Trenčín region. The highest number of acquisitive offenses was reported in the Bratislava region (9,030), and the lowest in the Trenčín region.

TAB. 9: Criminal offenses in 2013

	Criminal offenses in total	Violent offenses	Acquisitive offenses
SR[1]	89,677	6,003	38,750
SGRT[2]	7,569	467	2,515
SGRP[3]	10,431	770	3,984

Source: elaborated by authors based on data from the Regional database, Statistical Office SR

Slovak Republic[1], Self-governing Region of Trenčín[2], Self-governing Region of Prešov[3]

2 Possibilities to eliminate regional disparities

The ultimate goal of regional development is pursuing the objectives as stipulated in the Act of the National Council of the SR No. 539/2008 Coll. on Support of Regional Development. The objectives are as follows:

- to eliminate or mitigate undesirable disparities at the levels of economic development, social development and territorial development of regions and to ensure sustainable development of regions,
- to increase the economic performance, and competitiveness of regions and promote innovation in the regions with a view to ensure their sustainable development,
- to raise employment and standard of living of people living in the regions.

The Prešov region provides favourable conditions for cross-border cooperation with Poland and Ukraine. Owing to its advantageous location, the region has a huge potential to develop tourism and spa industry. Thus, job opportunities for long-term unemployed

would be created. Another opportunity for the creation of jobs will be the planned construction of the motorway from Prešov to the state border with Poland (Vyšný Komárnik). Weaknesses of the region include high unemployment rate, high proportion of the Roma minority living in the region, strong dependency on social benefits, which may even indicate the abuse of the social system. The strengths of the Trenčín region include its advantageous position, well developed transport infrastructure, and sufficient numbers of qualified workforce.

Both regions should keep promoting entrepreneurship (small-sized and medium sized enterprises), tourism, and the inclusion of marginalized groups. One of the possible options of eliminating regional disparities is the reallocation of resources supporting the tools of the active labour market policy. The tools should be proportionate to the unemployment rate of the region in question. Moreover, the unemployed can raise their earnings by carrying out community service jobs. To raise employment, employers employing a disadvantaged job seeker receive an allowance amounting to EUR 422.89 monthly. Other measures directly raising regional and local employment also include a financial contribution paid to an employer for employing disadvantaged job seekers registered unemployed for at least 3 months, people over 50, people with the below secondary professional educational attainment or disadvantaged job seekers registered unemployed for more than 12 months. The contribution is paid at most for 9 months amounting to max. EUR 634.34 monthly. In their Declaration, the Slovak Government declared their intention to ensure conditions for social inclusion of marginalized Roma communities by means of comprehensive projects and approaches. The Slovak Government acknowledge the relevant strategies, in particular the EU Strategy for Roma Integration, which was developed for the conditions of the Roma communities living in Slovakia into the Strategy for Roma inclusion up to 2020. The document focuses on the following priorities, such as education, health, and employment. The strategy is considered as an open document that will be continuously amended and supplemented by annexes detailing action plans, data and necessary information. The Slovak Government acknowledge that the European funds to address the Roma issue are utilized to a lesser degree than desirable. Therefore, one of the objectives of the Slovak Government is to raise employment and education of members of the

marginalized Roma communities. Up to 2020, more significant positive changes should occur, particularly in the access of the Roma population to education, culture and language, housing, and healthcare. According to the 2011 Population and Housing Census, the number of Roma living in the Prešov Region amounts to 5.3% of residents and 0.1% of residents in the Trenčín region (approximately 2% of the population of Slovakia is Roma). The census results concerning the most frequently used language at home show that 7.6% of resident population uses Roma language in the Prešov region, whereas the number amounts to 0% in the Trenčín region. Therefore, self-employment jobs, such as for instance traditional trades, should be created and supported. Other ways to reduce unemployment include promoting villages and municipalities by organizing traditional cultural events, constructing bicycling routes and supporting agrotourism. The regional operational program titled "Improving accessibility and quality of civil infrastructure facilities" is aimed to mitigate regional disparities. Additional objectives of the operational program include increasing the level of services provided in the field of education, increasing the scope and level of services provided in the social area, strengthening the cultural potential of the regions, strengthening the competitiveness of settlements, increasing the quality and safety of public concourses, and increasing the level of transport serviceability of the regions. [1, 35].

Conclusion

In the paper, we have addressed several issues. First, we have justified the significance of investigating the problem of regional disparities. We maintain that the issue is of high social relevance in Slovakia mainly due to failing to stop regional disparities to deepen. Next, we have highlighted some indicators of regional disparities, focusing on the Trenčín and Prešov regions. Last but not least, we refer to possibilities of reducing regional disparities through instruments of active labour market policies, EU funds and programs.

As a matter of fact, growing regional disparities cause problems to many lagging regions in different countries. To balance regional disparities, it is necessary to identify the level of regional disparities and their main differences. Thus, we will be able to cover a wider theoretical background and to capture and reveal many subtle relationships. Moreover, we will be able to identify, examine and explain the prevailing

tendency, and to evaluate and interpret the findings. The issue of regional inequalities is one of the key issues in Slovakia. There are several causes of uneven regional development in Slovakia. We, however, maintain that slight differences are a natural phenomenon as regional disparities largely reflect differences among those residing in the regions in terms of individuals who naturally possess distinct abilities, qualities and level of self-actualization within a society. The issue of regional and its scope naturally refers to distinct level of concentration of economic activities in the regions. Naturally, economic activities are concentrated in the Bratislava region and its adjacent regions.

Regarding individual regions, the Prešov region has the worst position in the Slovak regional structure. Most of the recorded indicators are in the Prešov region, and its position keeps deteriorating or stagnating. The Prešov region has the highest recorded unemployment rate, the highest at-risk-of poverty rate and the lowest average net nominal wage. Yet, the Prešov region has kept high natality registering the highest natural increase of population (the number of live births in 2013 was 9,412 in the Prešov region as compared to 5,396 in the Trenčín region), and the region is the leading region in terms of migration. Thus, the region serves as the source of labour for other Slovak regions.

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SELECTED ASPECTS OF MUTUAL INTERRELATIONSHIP OF CORPORATE CULTURE AND KNOWLEDGE SHARING IN ORGANIZATIONS

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Abstract:

Recently, knowledge management has become an object of interest for many researchers and practitioners. This paper discusses dependence between the corporate culture and knowledge dissemination within organizations. Corporate culture represents one of variables that must be taken into consideration when meaningful and reliable system of knowledge sharing and transfer needs to be established. Responsibility of every manager is to create a culture that ensures continuous knowledge transfer in the enterprise. If the managers handle this task successfully they can achieve prosperity of a concrete enterprise in a long term far more easily. The aim of this paper is to highlight and open debate on selected issues associated with knowledge sharing culture.

Introduction

Organizations hope to improve competitiveness and performance through knowledge management implementation and deployment. This same argument is not unique as it is shared with many firms that have demonstrated significant interest in this discipline for more than two decades. Knowledge significantly influences whether business will be considered as success or failure [2]. This trend is most obvious in high-tech industries such as telecommunications [6] or aeronautic [9]. In order to preserve, enhance and apply knowledge in an enterprise, there must be established a well-functioning system of knowledge sharing and transfer. It is very important that employees and workers at

all position and seniority levels in the organizational hierarchy comprehend it. Therefore, it is necessary for knowledge management to be a part of the corporate culture [1]. This should be one of the main priorities of every successful manager, but the question might state: how to induce workers not to be afraid to spread their knowledge? It is a difficult task for managers.

This paper brings specific perspective on knowledge sharing based on both literature review, and authors' personal experience. It is generally accepted that if there is an atmosphere of mistrust or even fear created in the company, the employees automatically tend to keep information and knowledge to themselves [10]. They are afraid of their jobs and prefer to keep their know-how as their personal competitive advantage. Such a strategy, on the part of workers, represents a jeopardy for the further development and can be devastating for the company. For these reasons, the main objective of this paper is to highlight selected aspects of knowledge sharing with a high level of importance in practice. Hence, this paper discusses issues related to corporate culture and possibilities of knowledge sharing. From the methodological perspective, this paper is based on personal experience acquired by authors in various types of organizations, which is generalized and generic principles or relationships are induced. Thus, this paper has to be considered as a discussion paper, rather than an original research paper. Hopefully, it will open a debate on soft metrics and indicators associated with knowledge management implementation and contribute to new research paths in this discipline.

1. Knowledge sharing culture

In knowledge management literature, it is widely believed that organizational culture provides the basis for effective knowledge management and organizational learning [3]. Organizational culture is quite complex concept covering plenty of issues [11]. It represents the source of values and beliefs that influence organizational behavior. The corporate culture embraces many aspects. Some of them are hidden such as a method of compensation of employees, forms of their motivation, methods of education, and sometimes this includes also the company brand, or equipment of the workplace. It is not necessary to emphasize that the corporate culture affects the overall atmosphere in

the company and represents a mirror of the corporate identity. The corporate culture can be classified by various criteria. For instance, the following classification might be found in the literature [5]:

- Tough-guy macho culture is individualistic and a particularly performing individual is in its center. The employee is as good as his last performance.

- Work-hard, play-hard culture gives prominence rather to a group. In particular an idea is appreciated and career advancement is not important. It is spoken about private matters. The employees know their background and worries.

- Bet-the-company culture most typically expects advancement according to rules set in advance. It is not spoken about private matters. The precisely pre-set procedure has to overcome risks and uncertainties.

- Process culture is typical for state organizations. Formal appurtenances take precedence over formal content.

Knowledge sharing has received considerable attention [4] because it is vital for innovation, organizational learning, the development of new skills and capabilities, increased productivity, and maintaining a competitive advantage [7]. The literature review reveals that it typically concentrates either on the organizational level (strategic alliances, partner similarity, expectations, or trust issues), or on the individual level (motivation, organizational antecedents, etc.) [8]. Both levels might be connected with particular organizational culture classifications. For instance, work-hard, play-hard culture might be considered as the friendliest corporate culture, for the preservation and transportation of tacit knowledge into corporate life. The reason is that the work-hard, play-hard culture gives prominence rather to a group. In particular an idea is appreciated and there is no reason to be afraid to share knowledge and pass it on.

2. Discussion: Practical implications from authors' experience

Regular research or survey is necessary to be conducted in order to find out what is the current situation in a particular company. Requirements on the properties of the selection file, which replaces the basic file, are different in a quantitative research (representativeness, greater range) as well as qualitative research (intention of the

selection, smaller range). The process of selecting respondents follows mainly three basic steps by asking three fundamental quesitons: Whom? – How? – How many?. It is often sufficient to apply very simple research methods such as conversation in order to determine the real needs and atmosphere at the workplace. In case of an interview it is necessary to plan the whole conversation clearly and in advance, especially what kind of conversation will be concerned, by which we limit the communication style. It is necessary to determine the setting of the research project and the way to solve it. The initiation of the conversation serves to ensure that the person asking questions explains the objective of the research and the reason why the respondent is interviewed. A friendly atmosphere should be established. However, it is not so important what type of research is used by managers. It is important that the research is relevant, fast and accurate and the research results are used to create the most effective measures to create such an atmosphere and environment in the company, which serves for the effective dissemination of tacit and explicit knowledge, whether for internal or external customers. Innovation together with knowledge of workers and their effective dissemination to internal and external customers, supplememented by knowledge and strategic management, may be the right recipe for a long-term prosperity of the enterprise.

Managerial work is a largely creative job. It often functions in practice that the manager gets a goal but he/she has to find the way to pursue it by himself/herself. We can program success and failure in ourselves mainly in our heads. This means that the psychic plays a big role in managerial life. Our consciousness can be largely programmed to success as well as failure. It is true that almost everything is only in our heads, both success and also failure. We can learn very well from history and it is clear that continuous improvement of all possible and impossible things will continue. We all have to adapt to this trend, because we live in a world which rewards the prepared. Dissemination of knowledge clearly helps this improving. It is necessary that the company management creates conditions for the employees that those who have knowledge also transfer it whether to subsequent generation or to new colleagues. Such an approach can largely influence prosperity of a particular enterprise.

What is a good corporate culture? In general, corporate culture is appropriate when it ensures the fulfilment of business objectives while meeting the needs of all employees and that makes the company useful for its surroundings. The obstacles that arise in practice when implementing change or building a desired corporate culture, stem mainly from the fact that every company or organization is made up of employees – people who profess different values and who have different opinions at the same thing and who can see different meaning in their work. Therefore, in every company there are ***three types of corporate subculture at one time*** – the one required by managers, actually lived by managers, and lived by other company employees. Whether the resulting corporate culture is good depends on the alignment of these three types of subcultures. It results from this perspective that the key factors of success of each positive change in corporate culture are: the behavior of managers (and also owners) and constant two-way communication. Under the behavior of managers it must be understood particularly the consistency between what they want respectively declare, and whether they actually comply with it.

Normal human decency in behavior is a matter of course. Behavior of managers should also be understood as a personal example and its effectiveness should be taken into account. It is also important that the positive behavior of managers (in terms of corporate culture) has a ***long-term nature***. Short-term "actions" have the opposite effect. When communicating in favor of the formation of corporate culture the two-way communication is truly necessary. Therefore, it is important to listen. Otherwise it may happen that the manager can somehow not notice that employees are positive about the change and his/her efforts and corporate resources are directed somewhere where they are not needed., or, on the contrary, convinced that everything is fine, he does not capture activities against the change. Forms of communication may be different and a variety should be used. These may be workshops, trainings outside the company, informal events, and even prescriptive regulations, but they should definitely not prevail and be always accompanied by active communication with emphasis on feedback and public evaluation. External communication for change or formation of the corporate culture has one main goal – to support internal communication. Its aim is to encourage pride of employees that they work in the company, thus increasing their social prestige.

This communication is a part of the overall external communication, but should not be confused with it. It is important on the management side that everybody understands that it is not enough to possess knowledge. Until proper environment and culture of the company is created (friendly for selfless dissemination of knowledge among workers) such an enterprise may be unsuccessful despite possession of large amounts of tacit as well as explicit knowledge. Therefore, a substantial part of knowledge management should be also creating such working climate and work environment and corporate culture, where knowledge finds the right recipient in a natural way. The practical experiences demonstrate clearly that there is a direct parallel between knowledge management and corporate culture. A substantial part of the application of knowledge management in an enterprise is the application of modern principles of management and seeking inspiration also in other scientific disciplines, especially in psychology.

Conclusions

This paper deals with selected issues of relationships between corporate culture and knowledge sharing. It points out research tools as valuable and meaningful intermediator for processes, which aim at determination of the current state of knowledge management and corporate culture in an enterprise. It emphasizes three sub-cultures which are present in organizations, namely the one required by managers, actually lived by managers, and lived by other company employees, and necessity to carefully use all types of communication, when a working knowledge sharing system is to be established. It results from this perspective that the key factors of success of each positive change in corporate culture are both the behavior of managers (and also owners) and constant two-way communication.

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HUMAN RESOURCES DEVELOPMENT IN CONDITIONS OF THE SLOVAK COMPANIES

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Abstract:

Human resources are generally considered to be the most important asset of the whole of society well as of enterprises. The present context increases their importance and companies' needs skilled and creative staff with strategic thinking. The objective of the article was to analyze the initiatives of the Slovak enterprises in the area of human capital and its development. The paper presents the results of research in the field of education employees which aimed at exploring the links between the numbers of hours spent training staff and costs company´s for this activity.

Introduction

The global world we live in is increasingly based on knowledge. In the knowledge society, education provides for a greater flexibility of workforce, and is also one of the key factors of increasing the productivity and competitiveness, as well as the breeding ground for innovation. Education facilitates the personal fulfilment and development of an individual, his or her social inclusion and employment [3, 44].Companies currently often downsize and reduce the amount of money spent on their employees but the many organizations forget the fact that the human resources development is an area that requires investment of money[1, 76]. For this reason the personal work of an enterprise is becoming more important and the main task is not to stop education but to improve its effectiveness and efficiency, as is from the survey carried out during May-June 2014.

1. Methods, literature overview

Knowledge, skills and abilities obtained by individuals should be continually transformed into important expertise that could be utilized for the benefit of both people and business [2, 13]. In general human capital is a combination of knowledge, abilities, experience and other attributes embodied in individuals or groups of individuals, needed during their lives and utilized for the production of goods, services or ideas in the market of opportunities [4, 124]. Besides many other specific features, human capital is able to be cultivated but may be degraded as well. This is the case when a company does not invest in the human capital development, underestimates education and training activities and hinders its employees to keep up with changes in the environment [3, 48]. It is true that investments into technologies are easier to notice and easier to evaluate than investments in individuals. The latter, on the other hand, have considerably higher potential assets. To successfully develop the value of the organization, people must increase their personal and professional level to achieve the top level of overall progress [1, 103].

The objective of the survey was to analyze the initiatives of the Slovak enterprises in the area of human capital and potential development. In order to meet this objective I have also set several partial objectives:

- to evaluate the share of costs company´s for the education employees and training;
- to compare the amount of money and number of hours spent by the employee education.

Based on the current state of the researched topic elaboration I have set 3 hypotheses:

- I supposed that the proportion of the employee education costs on total company´s costs is less than 5 per cent.
- I supposed that between a rising amount of money spent on education and a rising time spent by education and training of employees there is a direct dependence.
- I supposed that there is correlation between the number of hours spent by employee education as well as the proportion of education costs of the total

company's costs and the characteristics of the enterprises (size, legal form, line of business).

In order to categorize and interpret acquired data and to verify the hypotheses I have used several theoretical methods, e.g. analysis and synthesis, comparison, induction and deduction and scientific abstraction. While processing and evaluating data and results I have used relevant mathematic and statistical methods (Pearson´s Chi-Square, Fisher's Exact Test, Linear-by-Linear Association, Likelihood Ratio, quota charts) and disposable software (SPSS, MS Excel).

2. Results

In order to compare the acquired data, to identify the changes, events and their frequencies as well as future trends I have decided to choose the methods of the quantitative research. As the main research method I have used interrogative method through the use of the questionnaire as one of its techniques. As the object of the survey, I have chosen enterprises operating in the region of Trenčín in the Slovak Republic. In the process of their identification I have used the database enabled by the Statistical Office of the Slovak Republic. There are 3, 348 enterprises filed in the database (except for the micro enterprises with less than 10 employees that were irrelevant for the purposes of the survey). The questionnaire was distributed by electronic mail to 1, 132 of them due to the impossibility to contact all of them (some of the enterprises do not have an e-mail address or the process of delivery failed because of other reasons). Due to the insufficient reaction of the respondents I have decided to distribute the questionnaire personally. In spite of the effort, only 106 enterprises (i.e. 9.37 %) operating in the region of Trenčín were willing to take part in the survey.

### 2.1. The first survey - The structure of the researched sample

The structure of the researched sample from the point of view of their legal form and line of business is depicted in the graphs in Fig. 1 and Fig. 2. The greatest part of the respondents were limited liability companies (50 %) followed by stock companies (33.3 %) and sole traders (6.5 %). The other legal forms of organizations were of minor shares.

FIG. 1: The structure of the researched sample from the point of view of their legal form
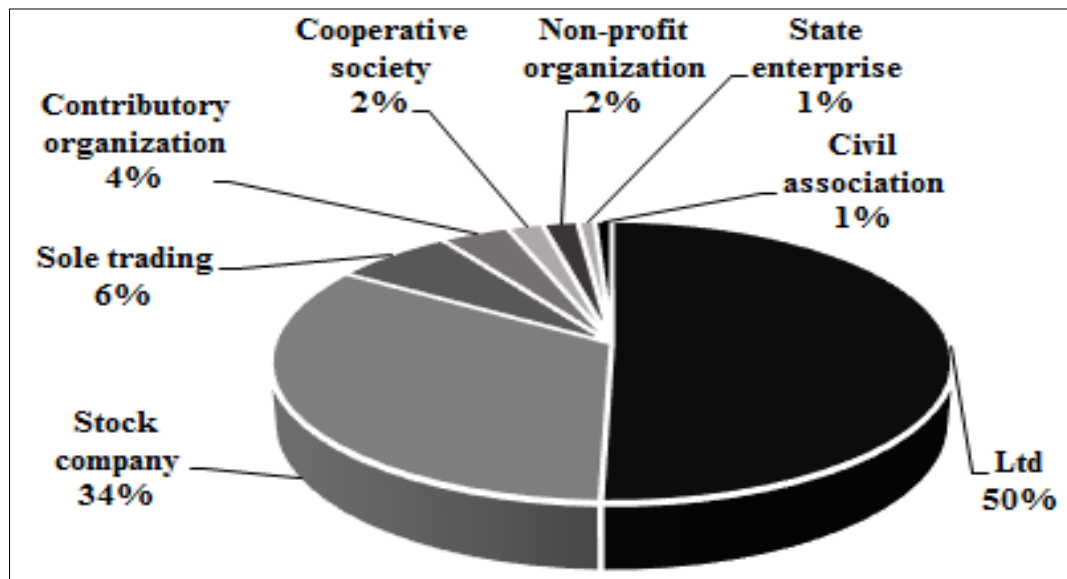
Source: own survey, 2014

FIG. 2: The structure of the researched sample from the point of view of their line of business
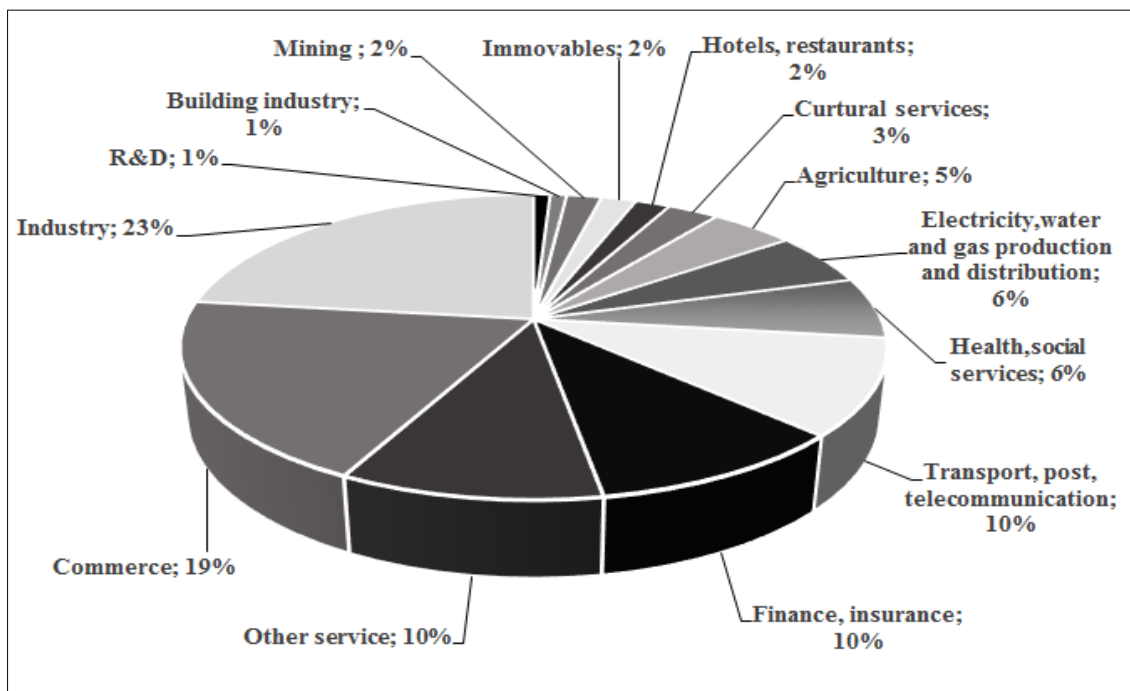
Source: own survey, 2014

As for the line of business (graph in Figure 2), the most of the respondents were those operating in the field of industrial production (23.1 %), wholesalers and retailers (19.4

%) and enterprises in industrial production, finance and insurance and transport, post and telecommunications (10.2 %). As for the number of employees, 49 % of the respondents are small enterprises having less than 50 employees, 24 % of respondents have more than 50 but less than 250 employees, 11 % have more than 250 employees but less than 500 and only 7 % of the examined enterprises are of more than 500 employees. As the research topic we have chosen the areas of employee education, ways of assessing the effectiveness of education, total costs spent on education, number of hours per capita spent by education and finally, the impact of the global crisis on the area of employee education.

2.2. The first survey - The proportion of employee education costs of total company's costs

Money spent on employee education is considered to be an investment rather than a cost. Although the money has to be spent now, the positive effects and benefits will become evident a long time later. Despite this fact education and training represent a very important activity in human resources development and thus also in the development of the company. Because of that we have tried to find out what is the proportion of employee education costs of total company's costs. I have the findings of this survey only based on the answers of 83 companies. The other enterprises involved in the whole survey were not able to assign this percentage as they do not use a personnel controlling system and thus do not monitor similar data. The results are much worse than our expectation was before starting the survey. It is apparent that the majority of enterprises (55.4 %) spent less than 1 % of total costs on employee education. The second biggest group of enterprises (26.5 %) assigned more than 1 but less than 5 per cent of total costs used for the purposes of employee education. Only in 5 of the asked enterprises, e.g. 6 % of the companies that answered this question, the proportion of education costs accounts for more than 25 % of the total company's costs.

2.3. The first survey - The amount of hours spent by employee education and training

Another issue solved in the survey was the amount of hours spent by employee education and training. This question was answered by 84 enterprises. Based on their answers I can set the mean value of the number of hours spent by education at the level of 250 hours, while the mode (the most frequent answer) is 20 hours and the median is

50 hours. Naturally, this number depends on the size and character of the company as the line of business strongly determines the necessity to educate people as well as the extent and duration of the education. Despite this fact the number reported by the enterprises is rather small as it expresses the total number of hours of employee education per year and we live under the conditions of a knowledge-based economy when the continual education and innovative activity of the company is considered to be a necessity. Without it a company is no more able to keep abreast with its competitors as well as with new trends in the branch. In order to see the potential correlation between the number of hours spent by employee education as well as the proportion of education costs of the total company's costs and the characteristics of the enterprises (size, legal form, line of business) (Table 1), I have used mathematical and statistical methods (Pearson´s Chi-Square, Fisher's Exact Test, Linear by Linear Association, Likelihood Ratio).

TAB. 1: Correlation between the time and money spent on employee education

		Costs	Hours
Costs	Pearson Correlation	1	.032
	Sig. (2-tailed)		.792
	N	83	70
Hours	Pearson Correlation	.032	1
	Sig. (2-tailed)	.792	
	N	70	84

Source: own survey, 2014

As for the identification data of the enterprises involved in the research sample, the only dependence has been proved between the examined values (costs, number of hours) and the legal form of enterprises (Table 2). Except for the Eta indicator these results have been verified by using the Pearson´s Chi-Square.

TAB.2: Directional Measures (dependence of education costs on the legal form)

			Value
Nominal by Interval	Eta	Legal form dependent	.737
		Education costs Dependent	.261
Nominal by Interval	Eta	Legal form dependent	.669
		Hours of education Dependent	.307

Source: own survey, 2014

The main cause of this finding could be that the time and money investments into employee education are higher in the case of companies than in the case of sole traders. The reason might be their bigger budget, higher importance of human capital development and more specialized job functions in companies.

3. Discussion

On the basis of the acquired data and results, I have verified the hypotheses set before the survey. The results have led to the following findings:

- I supposed that the proportion of the employee education costs on total company´s costs is less than 5 per cent. As the survey proved that the majority of examined companies spare approximately 1 % of total costs on the employee education, I confirm the hypothesis 1.

- I expected a rising amount of money spent on education along with rising time spent by education and training of employees will be in direct dependence. Surprisingly, the results have not proved a correlation between the time and money spent on employee education as I supposed, I have not confirmed the hypothesis 2.

- I supposed that there is dependence between the examined values (costs, number of hours) and the legal form of enterprises. The dependence has been proved between the examined values, so I confirm the hypothesis 3.

Conclusion

The survey has been focused on human capital and its development on the sample of Slovak enterprises. The research results have been verified by means of the formulated hypotheses. In the conclusion, I can state that Slovak enterprises spend low amounts of money on employee training. This solution is in defiance of the opinion about the crucial role of human resources among the company's resources as well as in defiance of their most important role in the company's performance and competitiveness. Without development people will not be able to get used to new trends and innovative production and technology, and without adequate reward they will neither be motivated to use their individual human capital for the benefit of the company.

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APPROACH TO EMPLOYEES IN PUBLIC ADMINISTRATION ORGANIZATIONS

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Keywords:

public administration organizations – employees – management style – directive forms of management – ethical behavior – team work – barriers

Abstract:

The paper is focused on approach to employees and ethical behaviour in organizations of public administration in the Czech Republic. Public administration has to improve economic and social environment. Public administration can offer services in high quality only if has a good approach to employees. Objective of this paper is to confirm or disprove two hypotheses. Description, analysis, comparison, synthesis and questionnaire survey are methods used to prepare this paper. We have obtained 85 responds, especially from the municipal offices. The results from the research show that public administration organizations have some barriers in approach to employees.

Introduction

Public administration has to improve economic and social environment. From this reason, it is necessary make only ethic decisions. Employees sense behaviours of managers and non-ethical behaviour can be a reason for their smaller motivation and dissatisfaction. Simultaneously, public administration has to offer high quality products and services. Public administration can offer products and services in high quality only if has a good approach to employees. This relationship was confirmed with in a lot of studies, e. g. Harris [9] or Harris and Ogobonna [10, 11].

However, public sector is limited in production of quantity and quality of goods and services [5]. Nutt and Backoff [17] stress less finance as the first. The second is bureaucratic system. Rusaw [19] points out the similar reasons. According to him public

sector makes decisions according to especial legislative rather than market-driven changes and public managers have to overcome financial and human resources barriers.

The paper is focused on approach to employees and ethical behaviour in organizations of public administration in the Czech Republic. The objective of this paper is to find out how approach is used by managers of public administration organizations to employees. Two hypotheses are determined for achievement of this objective. First, public administration tries to be ethic and make ethic decisions. Second, organizations of public administration choose directive approach to employees. Description, analysis, comparison, synthesis and questionnaire survey are the methods used to prepare this paper. A part of the questionnaire New Method with 7-point Likert scale constituted by Tomášková [25] was used for the research.

1. Literature background

Eskildsen et al. [6] notice differences between private and public organizations. According to them, private and public organizations do not achieve results in the same way. Public organizations: 1) emphasis people dimension in contrast to private organizations which emphasis on system dimension; 2) do not always have enough resources needed in order to offer products and services according to priorities of customers (users); and 3) are limited in strategic freedom and a lot of strategic goals are decided by politicians.

Goliembiewski [7] mentioned five structural barriers connected with public sector change. First, inputs into the legislative decision making process are the executive branch, legislative sub-groups and mass media at public organizations. Second, public organizations have a lot different interests and reward structure; from this reason it is difficult to identify precise needs for change and satisfy all stakeholders. Third, government bureaucracies are not responsive to local pressures in decision making. Fourth, the government is changing in short time and the government change has a great impact on skills, interests and goals. It brings problems in communications, coordination and limit decentralized decisional flexibility. Fifth, administration procedures are aimed on control and emphasized procedural regularity rather than openness in solving problems by both groups – politicians and managements.

Public administration organizations have to overcome a lot of barriers. These barriers are connected with financial and human resources [19], decision authority [15] and time for bureaucracy activities [17]. A lot of public organizations have very limited operating room in some aspects of human resource management. According to Sakalas [20] human resource management is very important for creating and sustaining of functional strategy. Approach to employees is the main factor determining the success of activity. Kazlauskaite and Buciuniene [13] stress human resource management that it has to respond with overall organization strategy.

However, finance and bureaucracy are significant barriers for high motivation of employees. Generally, there are some other factors which can influence employees in motivation and satisfaction. One of them is relationship and management style of immediate superior. Management style is connected with personality of manager and his knowledge and experience. Managers influence whole organization and have significant position to change course of organization. It is recommended that managers have seven characteristics which are creativity, sense of risk, competence, responsibility, long-term horizon, planning and monitoring of filling the goals. These characteristics are prerequisites for implementation market orientation as well as. Manager has the main influence on relationship in whole company and has significant impact on corporate culture. Barriers connected to corporate culture are systematic, structural, procedural and communication ones. Thus other barriers as too high centralization, formalization or departmentalization can also appear. [26]

According to Skietrys et al. [22] public administration organizations have to change into more flexible, result oriented and modern management models developing especially the partnership between public sector and private sector. These characteristics respond to New Public Management. New Public Management is based on human resource. Human resource management is a strategic, complex approach to the significant aspects of an organization [2]. According to Storey [23] human resource is the main factor of changes and can stimulate or hinder changes in public administration organizations.

Sakalas and Vienazindiene [21] find out that transition from traditional public administration to new public management is oriented to decentralization, privatization, economizing, and application of the best management methods used in a private sector. New public management places emphasis on ethic behavioural. Success of new public management is caused by the base of human resource management, which are delegation of authorization, cooperation and stimulation of a team, development of a decision making process, engagement of citizens into decision processes and application of an advanced management.

2. Methodology

We used a questionnaire "New Method" constituted by Tomášková [25] with 7-point Likert scale for a measurement of market orientation and interfunctional coordination. This questionnaire was measured of internal consistency with Cronbach alpha. The data collecting was realized in the spring of 2013 with the help of selected students of public management course taught on Faculty of Law in Masaryk University. Each questionnaire was filled on the basis of controlled interview with manager at any hierarchical level of the public administration organization. We have used methods of descriptive statistics for confirmation of two hypotheses in this paper.

We have collected data from altogether 95 organizations, 10 of them were related to public sector but not public administration. Thus, the data from 85 public administration organizations were used for further processing. Most of this data came from municipal authorities, but we received answers from tax offices, labour offices, police departments and e. g. ministry too.

3. Hypotheses

H1: Public administration organizations try to have respect to ethic and make ethical decisions. Ethic and ethical decisions are closed with social responsibility. According to Gurská [8], ethic helps to improve unfavorable situation in the society (corruption, insufficient community support, bad working conditions) and environment (pollution and global warming). Today, the EU stated certification of corporate social responsibility at organizations. This certification can motivate employees to increasing loyalty, improve image of organization and together increase in competitiveness [1].

Ethical decision and ethical behaviour influence management style. Generally, it is important factor for motivation of employees and it leads to their satisfaction. The need of ethical behaviour at public administration management is higher than at business sector. Kazmanand Bonczek [14] stress that public administration organizations combine in general all activities concerning public good and public interest. Ethical behaviour and decisions maintain citizens' trust, ensure effective and efficient use of resources, and allow government to preserve individual rights while assisting those who will benefit the most. From this reason, we expect that public administration organizations are ethic in their activities.

H2: Public administration organizations tend to directive forms of management. According to Bose [4], directive forms of management mean direct goals, orders, procedures and standards. These directive forms of management respond to autocratic management styles. This type of management style can decrease motivation and in longer term increase staff turnover. The two basic styles are participative and democratic [16]. There were developed a lot of other approaches to management style during the years. For example, Tannenbaumand Schmidt [24] created "The Continuum Approach" with seven types of management style on a continuum from autocratic to democratic. Blake and Mouton [3] introduced five management styles on a grid which is based on two behavioural dimensions. Reddin [18] developed a "3D Leadership model" based on four basic types of management styles. However, management styles of the next author are based on model by Lewin, Lippitt and White [16]. Theorists of managers agree that there is not one universal best management style. We think that public administration managers use more directive forms because they have to fulfil requirements of bureaucratic process.

4. Results

Because the first hypothesis is identical with one statement included in the questionnaire, evaluation of this hypothesis is relatively easy. Given the answers of respondents, we can the first hypothesis consider as valid. Thus, we can say that public administration organizations try to have respect to ethic and make ethical decisions. More than half (about 57.65 %) of addressed managers chosen six or seven on the 7-point Likert scale where seven represent complete agreement, only 9 of them (about

10.59 %) disagreed, chosen one or two on the scale. Average rating of the statement regarding to ethical behaviour is 5.25 with standard deviation in the level of 1.65. It could seem that the effort to ethical behaviour and decisions is quite intensive in the public administration organizations. However, the results are not so positive in comparison with private sector organizations. For example the same statement was rated in high average 5.91 at hi-tech companies [12].

Predominant management style, thus confirming or disproving of second hypothesis, can be estimated on the basis of mainly four statements included in the questionnaire. These statements are: 1) Relationships between superiors and subordinates cannot be defined as very strict and formal; 2) There is preferred team work and mutual cooperation in the organization; 3) The comments from employees are regularly analysed; 4) Every worker knows the main organizational targets and knows how to contribute to them. There are shown the basic statistical characteristics in answers of these four statements and the arithmetic mean at hi-tech companies too, in Table 1.

TAB. 1: Statistical characteristics of statements

	Arithmetic mean	Standard deviation	Mode	Median	Arithmetic mean at hi-tech companies
Statement 1	4.63	1.66	5.6	5	5.29
Statement 2	4.95	1.3	5	5	5.97
Statement 3	3.96	1.86	2.4	4	5.4
Statement 4	5.27	1.36	6	6	5.68

Source: Authors

Our assumption that public administration organizations tend to directive forms of management wasn't clearly proved. In particular regarding the assumption that workers in public administration organizations don't know the main organizational targets and also don't know how to contribute to them. Whereas more than half of respondent (55.29 %) think that workers know the organizational targets, only two respondents think that workers are without knowledge of targets. Compared with hi-tech companies, the difference is not so significant [27]. According to responses of this statement it

could seem that public administration organizations tend rather to democratic management style. However, it is necessary to note that public administration organizations often have clearly identified mission, from which the targets come. It depends on how specific are these objectives. It is also possible that it was directive given specified tasks to every worker in public administration organization and only these tasks are consistent with the organizational mission and targets too. In addition, the high rating can be result of managerial optimism. Employees would evaluate this statement quite differently.

Other two statements were also rated relatively high. Average agreement with preferred team work and mutual cooperation in the organization reach to 4.95 from maximum level at seven. The difference between public administration and hi-tech organization is obvious, but team work at hi-tech companies is probably higher than at other branches of business sector too [27]. Only 11 respondents (13.1 %) consider the relationships between superiors and subordinated like strict and formal. Compared with hi-tech companies there is not so large difference, but also this statement is worse rated in public administration organizations.

The tendency to directive form of management style can be noticeable from the answers the statement "the comments from employees are regularly analysed". With this statement the same number of respondents agreed (chosen six or seven on the 7-point Likert scale) like disagreed (chosen one or two on the 7-point scale). In comparison with hi-tech companies, the difference is quite striking. There is evident discrepancy between this statement and rating of relationships between superiors and subordinated too. Whereas the relationship between superiors and subordinated are not rated like strict and formal, the comments from employees aren't regularly analysed.

Discussion and conclusion

We have tested two hypotheses. The first hypothesis (Public administration organizations try to have respect to ethic and make ethical decisions) is possible to consider as confirmed, about three quarters of respondent agreed with various intensity, thus chosen five or more on the 7-point Likert scale.

At first sight, the second hypothesis has to be disproved. The tendency to directive form of management is noticeable only in the question of regularly analysing of comments from employees. Other statements don't confirm directive form of management style. On the other hand, every statement was evaluated worse in comparison with business sector organizations, specifically with hi-tech companies, by which the same survey was made in year 2009.

Thus, it seems that public administration organizations try to have respect to ethic and managers of these organizations try to make ethical decisions and use less directive form of management style to subordinates. Some results could be distorted by managerial optimism; some discrepancy between the ratings of statements is obvious. It could be interesting to compare answers of managers with their subordinated, in the future.

The results from the research showed that public administration organizations are ready to receive more managerial methods included in New Public Management which puts higher demands on the ethics of the organization and all its employees. The results also showed that public administration organizations have some barriers in approach to employees, especially in analysing of the comments from employees. Managers of public administration organizations should focus on this problem if they want to achieve higher motivation and satisfaction of their subordinates and offer high quality public products and services too.

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CZECH AND POLISH EXPERIENCE OF THE GREAT RECESSION: DSGE MODEL APPROACH

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Abstract:

Inspired by the radically different aftermath of the Great Recession in the Czech and Polish economy, we turn to investigate the structural differences between these two Central European economies. Both the economies are represented by a nonlinear dynamic stochastic model of a small open economy general equilibrium with financial accelerator. First, the DSGE models are estimated using Bayesian methods under the assumption of constant structural parameters. Then, the development of time-varying structural parameters is estimated by particle filter using second order approximation of a nonlinear DSGE model. It is our goal to identify the most significant differences in the underlying structure of the two economies.

Introduction

The Czech and Polish banking sector coped with the financial crisis of 2007-2008 fairly well, mainly thanks to the fact, that the domestic banks were not trading with the complex structured financial instruments in a significant volume and their exposure to the U.S. subprime mortgage crisis was, therefore, limited. However, both economies were affected by the subsequent increase of systemic risk and uncertainty that lead to a downturn in world aggregate demand and international trade.

What is particularly interesting is the different aftermath of the economic crisis of 2008-2009 in the two economies. The Czech economy experienced a double-dip recession with relatively deep economic downturn between 2008Q4 and 2009Q2 and a protracted

shallow recession between 2011Q4 and 2013Q1. By contrast, the Polish economy suffered only a minor economic slowdown in 2008Q4 and avoided recession altogether. For a total of 22 quarters since 2009Q1, the Polish economy is growing by an average quarterly rate of approximately 0.75 %. In the same period, the Czech economy achieved an average quarterly rate of real GDP growth of only 0.2 %. In this paper, we use the DSGE model framework to investigate the structural differences between these two economies in order to shed light on the underlying causes of the recent development.

1. Model

Since we focus on the period of financial and subsequent economic crisis, a DSGE model with financial frictions is used for the analysis. In our paper we use the model framework developed by [4] that incorporates financial accelerator mechanism proposed by [1] into the small open economy setting of [2]. This tractable medium-sized model of a small open economy incorporates important real as well as nominal rigidities and allows us to describe the Czech and Polish economy in a reasonable detail. We departed from the original model specification of [4] in modelling of the foreign variables as a VAR(1) block and we also added an exogenous component to the development of the entrepreneurial net worth, the net worth shock.

The model contains households, entrepreneurs, retailers, central bank and foreign sector. The entrepreneurs play two important roles in the model. They run wholesale goods producing firms and they produce and own the capital. Entrepreneurs finance the production and ownership of capital K_t by their net-worth N_t and borrowed funds. In line with [1], cost of borrowed funds is influenced by borrower's leverage ratio via external finance premium,

$$EFP_t = \left(\frac{N_t}{Q_{t-1}K_t}\right)^{-\chi} \tag{1}$$

where Q_t is real price of capital or Tobin's Q and χ is financial accelerator parameter. To maximize profit, the entrepreneurs choose the optimal level of capital and borrowed funds.

1.1. Time-varying parameters

All the estimated model parameters are considered time-varying with the exception of shock autoregression parameters and standard deviations. Time-varying parameters are defined as unobserved endogenous variables with following law of motion

$$\theta_t = \left(1 - \alpha_t^\theta\right) \cdot \theta_{t-1} + \alpha_t^\theta \cdot \bar{\theta} + v_t^\theta \tag{2}$$

where θ_t is a general time-varying parameter, $\bar{\theta}$ is initial value of this parameter, α_t^θ is a time-varying adhesion parameter common for all the remaining time-varying parameters and $v_t^\theta \sim N(0, \sigma_v^\theta)$ is exogenous innovation in the value of parameter θ_t. Setting of the adhesion parameter α_t^θ influences the tendency of the time-varying parameter θ_t to return to its initial value $\bar{\theta}$. With $\alpha_t^\theta = 0$, the time-varying parameter would be defined as random walk, while with $\alpha_t^\theta = 1$, the parameter would be white noise centered around the initial value $\bar{\theta}$. For the purposes of this paper, we set the initial value of the adhesion parameter to a value of $\alpha_0^\theta = 0.25$. Since α_t^θ is itself considered to be time-varying, its adhesion parameter is set to a fixed value of 0.25.

2. Estimation technique

Models with constant parameters were estimated using Random Walk Metropolis-Hastings algorithm as implemented in Dynare toolbox for Matlab. Two parallel chains of 1.000.000 draws each were generated during the estimation. First 50 % of draws were discarded as burn-in sample. The scale parameter was set to achieve acceptance rate around 30 %. Nonlinear particle filter (NPF) was then used to identify the unobserved states of the DSGE model with time-varying parameters. In a condensed form, the NPF algorithm can be described as follows:

I.   Initialization: $t = 0$, set the prior mean $\bar{x}_0$ (steady state) and covariance matrix P_0 for the state vector x_t.

II. Generating particles: Draw a total of N particles $x_t^{(i)}, i = 1, \dots, N$ from distribution $p(x_t)$ with mean $\bar{x}_t$ and covariance matrix P_t.

III. Time Update: $t = t + 1$, for each particle $(i = 1, \dots, N)$ propagate the particle into future with the use of nonlinear transition and measurement

equation and calculate means $\bar{x}_{(t|t-1)}$, $\bar{y}_{(t|t-1)}$ and covariance matrices $P_{(t|t-1)}, P_{(y|y)}, P_{(x|y)}$.

IV.   Kalman filter: Calculate Kalman gain $K_t = P_{(x|y)}\left(P_{(y|y)}\right)^{-1}$, $\bar{x}_t = \bar{x}_{(t|t-1)} + K_t\left(y_t - \bar{y}_{(t|t-1)}\right)$ and $P_t = P_{(t|t-1)} - K_t P_{(y|y)}(K_t)^T$.

V.   Continue by step II until $t = t_{max}$.

Posterior estimates of the model with constant parameters were used for initial setting of the particle filter. In our application we performed 20 runs of the NPF with 30.000 particles each for the second order approximation of the nonlinear DSGE model.

3. Data

Quarterly time series of eight observables were used for the purposes of estimation. These time series cover the period between the 1999Q2 and 2014Q2 and contain 61 observations. Seasonally adjusted time series of real gross domestic product (GDP), harmonised consumer price index (CPI), 3-month policy interest rate and real investment are used for the domestic economy. The foreign economy is represented by the 17 Euro area countries and is captured by the seasonally adjusted time series of real GDP, CPI and 3-month policy interest rate. Time series of CZK/EUR and PLN/EUR real exchange rates are also used for the purposes of estimation. These time series were obtained from the Eurostat, Czech National Bank and European Central Bank. The original time series were transformed prior to estimation so as to express the logarithmic deviations from their respective steady states. Logarithmic deviations of the observables from their trends were calculated with the use of Hodrick-Prescott (HP) filter. In order to mitigate the end-of-sample bias of the HP-filter, the level data were prolonged by the VAR forecast before the calculation of the logarithmic deviations.

4. Calibration

We decided to calibrate several deep structural parameters because they are difficult to estimate. These parameters were assigned values commonly reported in the literature. The value of discount factor β of 0.995 implies real interest rate of approximately 2 % p. a. Capital share in production α corresponds to the national income share of capital of

0.35. Capital depreciation rate δ was set to 2.5 % per quarter. Households' share of the labor supply Ω is calibrated to 99 % and markup parameter μ is set to 1.2 following [4].

5. Empirical results

The priors and posteriors of estimated structural parameters are reported in TAB. 1.

TAB. 1: Priors and posteriors

Parameter		Distribution	Prior Mean	Std	CZ Posterior Mean	Std	PL Posterior Mean	Std
Structural parameters								
Υ	Habit persistence	B	0.60	0.05	0.60	0.05	0.60	0.06
Ψ	Inv. elast. of lab. supply	G	2.00	0.50	1.30	0.35	1.39	0.34
ψ^B	Debt-elastic risk premium	G	0.05	0.02	0.03	0.01	0.04	0.01
η	Home/foreign elast. subst.	G	0.65	0.10	0.53	0.09	0.52	0.06
κ	Price indexation	B	0.50	0.10	0.49	0.09	0.54	0.09
γ	Pref. bias to foreign goods	B	0.40	0.15	0.42	0.08	0.23	0.05
θ_H	Home goods Calvo	B	0.70	0.10	0.80	0.03	0.81	0.03
θ_F	Foreign goods Calvo	B	0.70	0.10	0.83	0.03	0.82	0.02
ψ^I	Capital adjustment costs	G	8.00	3.00	12.2	2.90	21.8	4.04
Financial frictions								
Γ	Capital/net worth ss ratio	G	2.00	0.50	1.45	0.23	1.27	0.18
ς	Bankruptcy rate	B	0.025	0.015	0.06	0.01	0.07	0.02
χ	Financial accelerator	G	0.05	0.015	0.05	0.01	0.05	0.01
Taylor rule								
ρ	Interest rate smoothing	B	0.70	0.10	0.86	0.02	0.64	0.04
β_π	Inflation weight	G	1.50	0.20	1.84	0.23	2.00	0.24
Θ_y	Output gap weight	G	0.50	0.20	0.19	0.05	0.28	0.09

Source: author's calculations
Notes: B – beta distribution, G – gamma distribution

While most of the parameters are estimated to be very similar in both economies, there are also some interesting differences. The difference in preference bias to foreign goods γ can be explained by much greater openness of the Czech economy. Higher capital adjustment costs ψ^I in Poland suggest more conservative attitude towards investment. Lower steady-state leverage ratio Γ in Poland also hint at lower degree of debt-funding of domestic firms. Parameters of the Taylor rule show lower smoothing ρ and higher weight of inflation β_π in Poland, which can be explained by the experience of hyperinflation.

5.1. Time-varying estimates

Time-varying estimates of selected structural parameters are depicted in OBR. 1. The trajectories of steady-state leverage ratio Γ capture the improving conditions in the period of economic boom 2007-2008 when the firms were getting less dependent on the external funding. The situation, however, worsened quickly during 2008-2009 crisis. Capital adjustment costs ψ^I exhibit an increase during 2008 suggesting that the clear investment opportunities were becoming scarce and the investors were becoming more conservative. The trajectories of the elasticity between domestic and foreign goods η and foreign goods share in consumption γ have potential to partially explain the differences between the effects of the Great Recession in both economies. Both these parameters increased significantly in the pre-crisis period, thus boosting the volume of international trade together with the dependency of the Czech economy on the external environment. The negative effects of this development materialized during 2008Q4-2009Q1. By comparison, the development of import share γ in the Polish economy was much steadier. Also the development of price stickiness was quite different in both economies. Increased price stickiness of domestic goods retailers in 2009-2010 might have prevented faster recovery of the Czech economy. Note that this parameter declined after the exchange rate intervention of the Czech National Bank in November 2013.

FIG. 1: Selected filtered time-varying parameters
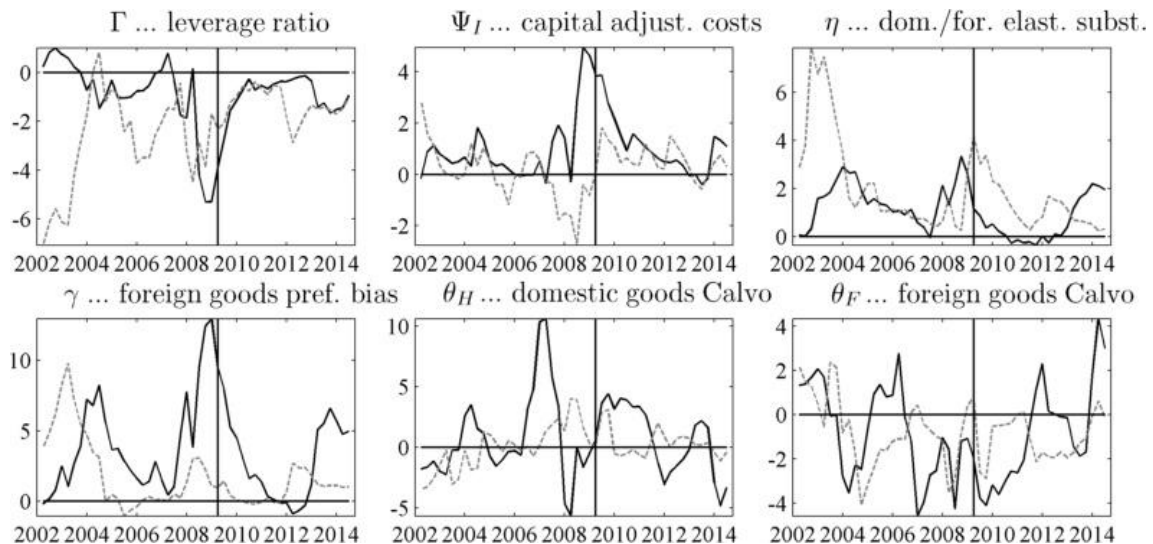
Source: author's calculations
Notes: per cent deviations from initial values, CZ – solid black line, PL – dashed gray line, vertical line denotes the first quarter of 2009

6. Discussion

The implications of the financial frictions for the monetary policy of the Czech economy were investigated in detail in [3]. The subject of structural stability of the Czech economy was previously investigated for example by [5]. Our results are broadly in line with the findings reported in these publications. Further research could be directed at the analysis of the changes in the model economy behavior as captured by the time-varying impulse response functions.

Conclusion

In this paper, we presented the results of the estimation of two DSGE models with time-varying parameters using a nonlinear particle filter for the Czech and Polish economy. We found that the main structural differences that might at least partially explain the different impact of the Great Recession on the two economies are mainly related to the international trade, openness of the economy and price stickiness.

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SUSTAINABLE CULINARYTOURISM AS A SOURCE OF ECONOMIC AND SOCIAL DEVELOPMENT OF THE REGION

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region – regional development – regional food – tourism – sustainability

Abstract:

Regional Food guarantees freshness and quality, but above all it specifies the given region. The developing culinary tourism is a significant source of economic and social development for the region. The aim of the article is focused on the importance of regional foods in terms of benefits for tourism, the producers themselves and consumers of regional foods and especially as the development potential of the region. The opinions of regional food consumers in connection with tourism in the South Bohemian Region were surveyed using questionnaires and the benefits of regional food for producers themselves were evaluated based on semi-structured interviews. The results will be discussed and a conclusion will be determined for practical application in the development of the region.

Introduction

Regional brands contribute to sustainable development in the region in three areas: economic, environmental and social sphere. The economic area includes recovery of rural areas and associated subsequent development. It helps to maintain employment in the region and thus prevents outflow of people to large cities. For producers it means higher added value, it strengthens their promotion and advertising. The social area can be understood as the cohesion of local residents to the region which they are proud of. Within the social sphere, effective collaboration occurs between local businesses, local governments, NGOs and other institutions. In terms of environmental friendliness or the environmental sphere, it is environmentally friendly production. It is a principle of the use of local ingredients, including their consumption,

leading to shorter transport and shipping distances. Regional labelling also helps in this area to perceive the relationship between natural, cultural and socio-economic aspects of the region. Regional labelling contributes to sustainability in tourism, including culinary.

1. Methodology, research

A field survey was prepared based on theoretical bases. With the help of a questionnaire survey, the quantitative survey was focused on the attitudes and opinions of consumers of regional foods in connection with tourism in the South Bohemian Region. A standardised questionnaire was used for field collection of the necessary data. The collected data was analysed on the basis of mathematical and statistical methods. Qualitative investigation using semi-structured interviews was conducted with producers of award-winning regional foods in terms of finding the benefits of regional foods to develop their business activity even from the perspective of regional development in the context of the development of tourism.

The concept of regional development is characteristic for the growth of socio-economic and environmental development. Furthermore, it focuses on the competitiveness of specific areas with the aim to improve the population's standard of living. Several institutions contribute to support regional development, thus we can say that regional development is a cross-cutting and multi-disciplinary area.

Tourism reflects the economic development of the region, and therefore it is necessary to interconnect regional development plans with tourism. Whether positive or negative, the impacts of tourism are reflected in the economic, social and environmental area. Sustainable Tourism [4,14] represents tourism that meets the needs of tourists, the tourism industry without compromising the ability of future generations to meet their own needs. Tourism is beneficial, but on the other hand it also negatively affects the surrounding area of human society. Sustainable tourism links three areas. The first is the environment, the second concerns the socio-cultural area and the third area that sustainable tourism affects is the economic environment. The products offered in the field of tourism within sustainable tourism should be in line with the environmental and cultural environment on such a scale that society can benefit from them, but not at the

expense of the environment. At present, sustainable tourism [1,125] is used as an important term not only in the field of recreational activities, but also in the context soft forms of ecotourism. Dynamic growth in recent years has been noted in the area of ecotourism. Culinary tourism is sometimes also referred to as gourmet tourism, or gastronomic tourism. We classify it under specific forms of tourism. As the name suggests, it concerns the tasting of culinary specialities of the region. Culinary tourism not only offers participants a taste of specific foods, but also focuses on learning about cultures and regions from the perspective of eating. Products are offered with specific features of the given locality, be it the actual composition of the food or table manners of the given area. Culinary tourism creates opportunities for the development of tourism, especially in rural areas, where it is mostly complemented by agrotourism.

Regional food is defined as food that is grown, produced in the region [2,37]. Regional Food aims to develop small and medium-sized enterprises, focusing on the production of traditional domestic raw ingredients. It also takes account of the growing interest in quality food. Under the auspices of the Ministry of Agriculture, the Regional Food competition was established in 2010 [3]. The Regional Food (RP) designation is granted only to the best and highest quality agricultural, as well as food products in the region.

2. Results

With the help of a questionnaire survey, the quantitative survey was focused on the attitudes and opinions of consumers of regional foods in connection with tourism in the South Bohemian Region. For the purposes of processing the field survey, research questions and hypotheses were established verifying the correlation between the education of respondents and the purchase of regional food. Research questions: The highest number of respondents learnt about Regional Food from the press. More than half of the respondents know at least one Regional Food or one RF producer of the South Bohemian Region. Culinary tourism within the territory of the South Bohemian Region is not commonly sought out among those surveyed. Respondents prefer another form of spending free time in the region. The established hypotheses for verification of the correlation of qualitative characteristics: Does a correlation exist between the knowledge of Regional Food and its purchase? Does a correlation exist between the highest achieved education and satisfaction of respondents with the offer of RF on the

market? A total of 200 respondents were addressed, 28 refused to participate in the survey. Thus a total of 172 responses were collected. Women (115) prevail over men (57). This result may be affected generally by the fact that women go grocery shopping more often than men. The age structure of the respondents varied in the survey. Most respondents were aged 30-40 years old (representing 59 respondents), followed by the second largest group of respondents aged 41-59 years old (54 respondents). The third group consisted of respondents aged 18-29 years old (41 respondents). The last and smallest group of people were over 60 years of age (18 persons). According to education, respondents were represented in the sociological research as follows: 35 respondents have basic education i.e. 20.4%, 54 respondents have secondary education with GCE i.e., 31.4% of respondents. 41 respondents stated that they have secondary education with a vocational certificate, i.e. 23.8%. 42 respondents reported that university education is their highest level of education attained, which represents 24.4% of the total number of returned questionnaires. The economic activity of respondents was in the following representation: see following table: working (114), maternity/parental leave (21), retired (14), student (10), unemployed (9), other (4). The most frequently mentioned criterion in the selection of food is the price, then quality and the third is the origin. The questionnaire was designed in order to evaluate the respondent's awareness of regional foods (RF) and the relationship to tourism in Southern Bohemia. Respondents most frequently associate RF and regional food with regional origin and local production. The second most frequent representation in the responses was the support of local entrepreneurs, producers. The third answer was award-winning quality food and the last answer was distinction from other regions, and their specificity. The dominant source from which the respondents learned of the existence of regional food was the press. The next most frequent response was directly from the seller, where the information was provided directly by the seller. This was confirmed by research question no. 1. Even local advertising media place great importance on promoting the region by trying to get the existence of original food of their region into the subconscious of respondents. The most common response of respondents regarding where they encountered regional food was in the supermarket. Second place was dominated by farmers' markets and hypermarkets ranked third. The favourable result of question no. 12 confirmed research question no. 2 that the

respondents are aware of the manufacturers of award-winning Regional Food or regional food in general. Due to the limited capacity of the extent of the contribution, the calculation will be provided only for the first tested hypothesis. Even the testing for the second hypothesis defined can be calculated similarly. Does a correlation exist between the knowledge of Regional Food and its purchase? To determine whether there is a correlation between knowledge of RF and its purchase the x^2 test for non-correlation will be used (1). The scope of the set is greater than 40 i.e. the scope of the tested set is 172 respondents (Tab.1). H0 No correlation exists between the stated characters, i.e. there is no correlation between the knowledge of RF and its purchase. H1 No correlation exists between the stated characters, i.e. there is no correlation between the knowledge of RF and its purchase (2).

TAB. 1: Association table

Knowledge of RF	Purchase of RF		Total
	Yes	No	
Yes	**133**	**22**	**155**
No	**7**	**10**	**17**
Total	**140**	**32**	**172**

Source: own field survey

$$x^2 = \frac{n\,(ad - bc)^2}{(a+b)\,(a+c)\,(b+d)\,(c+d)} = \frac{172\,(1330 - 154)^2}{17 \times 140 \times 32 \times 172} = 18{,}16 \tag{1}$$

The tables state the critical value of $x^2_{0.05}= 3.841$ $x^2> X^2_{0.05}$ 18.16> 3.841 H_0 is rejected and the alternative hypothesis H_1 is accepted

To determine the correlation we will use the coefficient of association

$$|V| = \sqrt{\frac{x^2}{n}} = \sqrt{\frac{18{,}16}{172}} = 0.32 \tag{2}$$

Correlation between variables is direct and moderately correlated.

Does a correlation exist between the highest achieved education and satisfaction of respondents with the offer of RP on the market? To test this hypothesis, it is important to take into account that this verification will cover only 140 respondents, as 32 respondents stated that they do not purchase RP and therefore are excluded from this monitoring. H_0 No statistically significant correlation exists between the satisfaction

with the offer of RP on the market and highest achieved education. H_1 Does a correlation exist between the highest achieved education and satisfaction of respondents with the offer of RP on the market? A statistically significant correlation exists that could be described as slight or moderate between the satisfaction with the offer of RF on the market and highest achieved education.

Regional food, "South Bohemian - Tastes Nice" is aimed more at the promotion of products of the South Bohemian Region. Local producers are trying to preserve the original traditional recipes and processing of local raw ingredients that can be easily described as culinary heritage. Just the location of their plants in the South Bohemian Region is a sign that these producers are also South Bohemian employers. In the future, the addressed producers will continue to strive to be successful in winning different awards and to preserve the competitiveness of South Bohemian food and other food products, while mainly keeping them traditional and regional. Keeping this vision, however, brings with it various difficulties concerning the origin of food. The raw ingredients used in the production of a product should only come from the region and even be processed here. This criterion may also pose considerable difficulties for certain manufacturers in the future.

3. Discussion

Small rural areas with rising unemployment are not promising areas for young people, who are leaving to work in other places, thus leading to an outflow of labour from the region. The entire region is trying to promote traditional small-scale, family farms and rural tourism. The promotion of regional products is a form of increasing the attractiveness of the region. Products originating from local production, on the one hand, promote the region, and on the other, offer tourists and visitors something really typical of the given region.

Conclusion

Tourism also improves the standard of living of the population, since the taxes of business entities are also used for local infrastructure and services. Tourism helps to create and maintain a sense of belonging to the local natural, cultural and even culinary

heritage. Tourism is a very dynamically developing sector, in which it is necessary to offer tourists and visitors only those products, which will be of interest. Various cultural and other events are held with the aim of boosting domestic tourism. Often the production itself is an experience for tourists and visitors. Tasting excursions to plants are also a tourist attraction. Business activities not only in the production of local products, but also other areas of trade and services are a profit generator for the given region. Only a prosperous region can better serve its residents and non-residents. Greater satisfaction of needs thus leads to regional development in the economic, cultural, social spheres and others. Mostly, it is also about cross-border cooperation between regions, leading to an exchange of information between regions even beyond the scope of regional development.

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THE INFLUENCE OF EUROPEAN INTEGRATION ON THE UNEMPLOYMENT RATE: CASE STUDY OF THE IMPACT OF EASTERN EU ENLARGEMENT TO UNEMPLOYMENTRATE OF THE MEMEBR STATES, ACCEDING COUNTRIES AND THE EU AS A WHOLE

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Abstract

The objective of this paper is to evaluate the 2004 enlargement of the European Union, from the perspective of its effect to the unemployment rate of the individual member states, accession countries and the EU as a whole. The text briefly defines the economic view of unemployment, followed by an analysis of the eastern enlargement on the example of selected countries and the EU. The method of the research is a comparison of major economic indicators in the five years prior and five years after the eastern enlargement.

Introduction

In 2014 it has been ten years since the eastern enlargement of the European Union. The admission of a ten new member countries, including the Czech Republic, meant a historic milestone in the modern history of the European integration. There has been a great economic impact, as the EU increased its population with 74 mil. new citizens (to the total of 459 mil.), creating the largest common market in the world [1].

The objective of this research is to assess an important aspect of the functioning of the European Union – its enlargement, respectively influenced by the new states' accession to the selected macroeconomic indicators (real GDP growth, trade exchange and unemployment rate). The development of each of these economic indicators was monitored in selected countries of both the existing members (EU 15) and the new

accession states (EU 10) and the EU as a whole. This paper presents findings in changes of the unemployment rate.

1. Determination of the hypothesis

It is clear that real GDP growth is influenced by many factors, not only the economic integration associated with the eastern enlargement. However, eliminating those factors and finding only the effects of integration is very difficult and with uncertain outcome [2]. Some effects are almost impossible to quantify, such as the influence of globalization and political decisions. Similarly the synergistic effects associated with economic integration cannot be separated and we cannot say how the macroeconomic indicators would have developed if the countries had not joined the EU [3]. In this research, we presume economic and political integration was the main determinant of economic development.

The eastern enlargement influence on the unemployment rate in the EU and the selected countries is determined by testing the hypothesis: "Eastern enlargement caused the EU 15 unemployment rate raise and the EU 10 unemployment rate fall. In total, the unemployment rate declined in the EU." The assumption of increasing unemployment in the old member states is based on the expectations articulated before the enlargement itself. The EU Commission predicted that labour force will migrate to the western countries and cause unemployment amongst its citizens [4]. Verification of the presented hypothesis will be based on the comparison of unemployment rates in selected countries, the EU 15, the EU 10 and the EU region. All research data come from the European Statistical Office (Eurostat) and are seasonally adjusted.

2. Analysis of Unemployment

The number of people without a job indicates the economic performance of any country. Unemployment below the natural rate means the economy operates below its potential - it has not created a maximum possible product and that other negative effects are present (including social effects) [5].

2.1. Czech Republic, Poland, Lithuania

We can observe some similarities amongst the examined EU 10 countries. Since the fall of communism the employment market has begun its long-term adaptation to the countries of Western Europe [6]. The quantity of people employed in the primary and the secondary sector (industry and raw materials) is declining in favour of the tertiary and the quaternary sectors (services and knowledge-based sector).

FIG. 1: The unemployment rate in Czech rep., Lithuania and Poland (1999-2008)
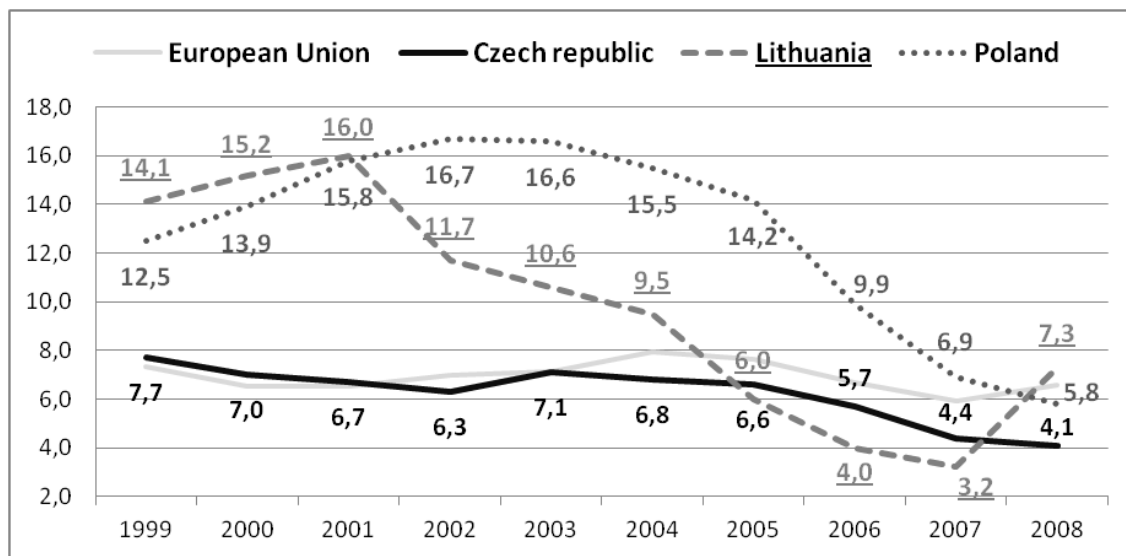
Source: Eurostat, own calculations

The graph of the unemployment rate in the Czech Republic shows a downward trend, with the exception of the years 2003 and 2008. The average unemployment rate in the period 1999-2003 is 7%, in the period 2004-2008 it is 5,5%. There is a significant decrease in the average unemployment rate after the Czech Republic joined the EU. The curve of the unemployment rate in the Czech Republic highly corresponds with the unemployment rate of the European Union, which suggest dependent open economy. The graph also corresponds with the increasing GDP in the period after accession to the EU [7].

The Poland's unemployment rate shows a very high value in the reference period. The average unemployment rate before joining the EU (1999-2003) was 15.1%, in the period after (2004-2008) it has decreased to 10.5%. There is a very significant decline in

unemployment after accession to the EU. Unemployment in Poland was well above the EU average, however, the accession started a significant decrease in the unemployment rate. This indicates that the economic integration restructured economic system in Poland and increased opportunities for the external trade. Reduced unemployment has also been partially caused by migration of workers and thus higher efficiency of the labour market [8].

The initial situation in Lithuania is similar to the one in Poland. The reference period starts with a very high unemployment rate, which exceeds more than twice the average EU unemployment rate. In contrast with the Poland case, Lithuania's unemployment started to improve earlier, since 2002. The average unemployment rate in the period 1999-2003 was 13.5%, in 2004-2008 was only 6%. We can observe a significant fall in the Lithuania's unemployment rate. This corresponds well with the finding that the Lithuanian (open) economy managed a good increase in GDP growth and also reported the highest increase in trade of the countries surveyed after the accession [7].

2.2. Germany, Denmark, Spain

Labour markets of western and northern Europe are characterized by a high emphasis on education and skills of employees, good working conditions and proper employment policy. In contrast, the countries of southern Europe (including Spain) have been plagued with high unemployment in the recent decade. This is partly due to the inappropriate structure of the workforce and also due to the education system that does not meet the demand of the labour market [9].

FIG. 2: The unemployment rate in Germany, Denmark and Spain (1999-2008)
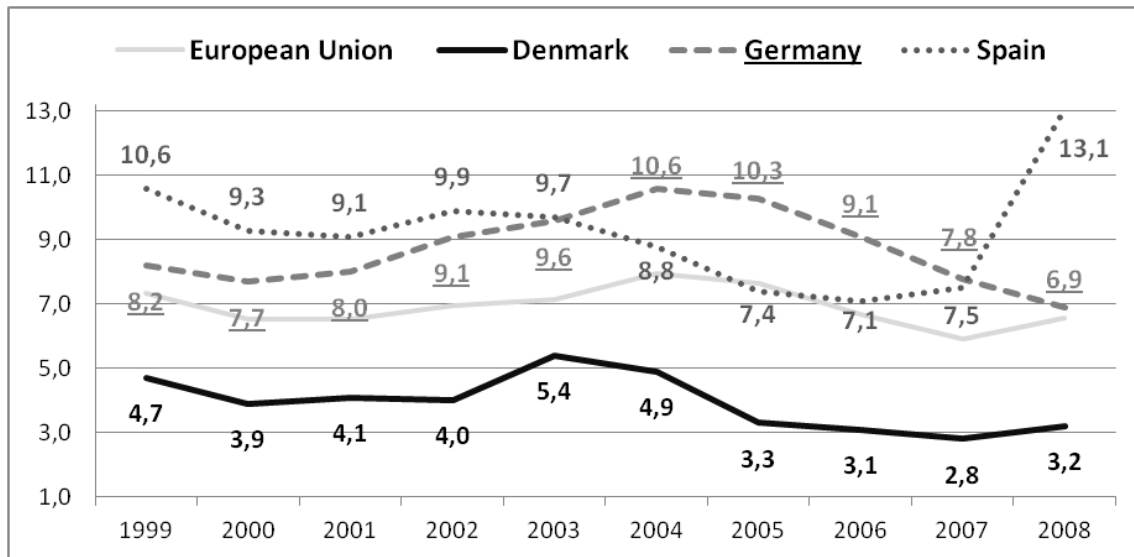
Source: Eurostat, own calculations

The Germany's average unemployment rate reached 8.5% in the pre-enlargement period (1999-2003). After the year 2004 it was slightly higher, on the value of 8.9%. Despite the higher average in the period 2004-2008 a favourable downward trend had begun and was maintained even in the subsequent years. We can observe a positive repercussion of the enlargement to the trend of unemployment on the example of Germany. It may have been caused by an increased trade between Germany and the EU 10, respectively by the growth of the export industries. This effect is stronger in the countries that lie close to the eastern border of the original EU 15 [1].

Denmark's flexible labour market shows very low unemployment rate in the reference period (at the limit of its natural rate). In the period 1999-2003, the average unemployment rate was 4.4% in 2004-2008 it was only 3.6%. The Danish economy struggled with higher levels of unemployment in the mid-nineties when it reached 12%. After the reforms came a significant decrease that lasted until 2010. Danish unemployment might be influenced by the increase in mutual trade – which increased the necessity in the production capacity [7].

Spain's unemployment rate is generally higher, but between the years 1999-2007 shows a declining trend (with the exception of 2002). In the period 1999-2003 the average

unemployment rate was 9.7% and it got slightly lower after 2004 (2004-2008) to the value of 8.8%. However, in the last year of the reference period we observed almost a double raise in unemployment, caused by the emerging economic crisis. It hit the Spanish labour market significantly, primarily due to the low competitiveness of Spain and the unsuitable structure of labour force. The Eastern enlargement had no observable effect on the unemployment in Spain. We can explain this by Spain's distance from the eastern border of the EU. Nevertheless, increased competition in the common market resulted in higher (faster) effect on the emerging economic crisis in Spain [7].

2.3. European Union

A comprehensive effect of the eastern extension on the unemployment rate can be determined by comparing the European Union and the Regions of the EU 15 and the EU 10. The following table shows the seasonally adjusted unemployment rate by percentage in those regions (Table 1).

TAB. 1: The unemployment rate in the period 1999-2008; EU, EU 10 and EU 15

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
EU 10	10,9	11,4	12,3	12,5	12,5	11,9	10,9	8,2	6,3	6,0
EU 15	7,3	6,5	6,5	7,0	7,2	7,2	7,0	6,4	5,8	6,7
EU	7,3	6,5	6,5	7,0	7,2	8,0	7,6	6,7	5,9	6,6
Share of new states to the EU	X	X	X	X	X	0,8	0,6	0,3	0,1	-0,1

Source: Eurostat, own calculations

The data indicate that the unemployment rate in the EU 15 fluctuated in a relatively narrow range throughout the period. In terms of trends, unemployment grew between the years 2001-2004 and declined between the years 2005-2007. In the period prior the enlargement (1999-2003) the average unemployment reached 6.9%, after the enlargement (2004-2008) it was 6.6%. We can assume that the influence of the eastern enlargement on the unemployment rate in the EU 15 was rather negligible.

On the other hand, the unemployment rate of the EU 10 showed an increasing trend in the period 1999-2002 and a significant decline between the years 2004-2008. The

average unemployment rate before accession raised to 11.9% and to only 8.7% in the period 2004-2008. The unemployment rate in the EU 10 dropped significantly after the accession to the European Union.

3. Hypothesis verification

There was a slight drop in unemployment among the original member states (EU 15), but with the alteration only in tenths of percent it is not sufficiently valid. Therefore the first part of the hypothesis (increasing unemployment rate in the EU 15) is evaluated as unproven. Unemployment in the EU 15 did not increased but decreased slightly.

In the new member states (EU 10) the unemployment rate dropped on average by 3.2% annually, during the first five years after the accession to the European Union. In conclusion this reflects a positive impact on unemployment due to the integration to the EU . The new countries managed to use the benefits of the common market and both financial and structural aid from the EU, which led to economic growth and also reduced unemployment.

On the reverse, the premise of a positive impact on the EU as a whole has not been substantiated. Unemployment remained at virtually the same value despite the initial increase, which was caused by the admission of ten new economies. It can thus be assumed, that the positive effect on the average EU's unemployment will have long-lasting effect connected to increase of the EU's strength in competitiveness.

Conclusion

To sum up the results of the research, we observed a significant positive implication of the Eastern enlargement on the acceding states (EU 10) in all evaluated areas – faster GDP growth, increased trade exchange and decreased unemployment rate. We can observe the same results, however in a lesser extent, in case of the EU 15 region [7]. Pre-enlargement concerns about the increase in unemployment in the EU 15 were not confirmed. Migration of workers from Central and Eastern Europe to the West has did not take place in the anticipated extent and its negative effects were negligible.

The positive features of migration were outweighed and the workers arriving into the EU 15 labour markets helped to meet the local demand, mostly in the low-skilled and "scarce" professions in construction and services. In addition, the migration effects lasted only for a short period and most workers returned to their country of origin after some time. This phenomenon accelerated even more during the economic crisis.

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INNOVATION ACTIVITY OF THE DAIRY PROCESSING COMPANIES IN BULGARIA

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Keywords:

innovation activity – process innovation – product innovation – dairy processors – Bulgaria

Abstract:

Nowadays the intense competition and complex economic conditions force the companies to increase their innovation activity. The dairy processing companies in Bulgaria are also influenced by this trend. This is an important prerequisite for their orientation to continuous innovations in different areas. This paper presents the results of a study on the activity of dairy processors in Bulgaria in the field of product and process innovations for the period 2011-2013. The paper outlines major trends arising from the study. Some findings and conclusions concerning the innovation activity of enterprises in the sector are drawn.

Introduction

In recent years there is observed an increased competition among the dairy processors in Bulgaria for taking a better market position. One of the main manifestations of the intense competition is reflected in the orientation of companies from the dairy industry to continuous innovations in different areas. In this respect, the crucial importance of product and process innovations occurs.

The orientation towards continuous innovations, besides the intensity of competition, is determined by the changes in the needs and requirements of users. The dynamic changes are a determinant to the accelerated obsolescence of the applied technologies and existing products, which logically affect the instability of competitive positions of

companies in the sector. These conditions define the primary role of innovations as a crucial success factor.

The key role of innovations, in general, and of product and process innovations, in particular, determines their acceptance as a subject of consideration in this article. They have crucial importance on the competitiveness and economic performance of production companies, which is widely accepted by scientists and researchers [1, 4, 5, 6, 8, 9].

Due to the intense competition and dynamically changing conditions that are typical for the Dairy processing sector in Bulgaria, the companies, operating within its boundaries, are determined as an appropriate object of study in relation to product and process innovation issues.

The numbers of dairy processing companies in Bulgaria are about 208 [7]. They are distinguished by their size, market position, innovation potential, etc.

The deteriorated economic conditions in Bulgaria in recent years found its adverse impact on the dairy sector in the following aspects: there is a decline in demand for dairy products, which is reflected in the insufficient use of available production capacity in the sector; lots of the farms are going bankrupt, leading to a shortage of raw materials - locally and increases the need for imports; the big retail chains increase their pressure on dairy producers, imposing them increasingly unfavorable financial and commercial conditions; development of own brands dairy products by the retail chains puts pressure on price levels in the sector and causes a decline in turnover of the manufacturers; all these issues lead to a deterioration in the financial performance of companies in the sector and some of them are facing serious financial difficulties [2, 7].

At the same time, a big part of the companies in the dairy sector in Bulgaria remain isolated from foreign markets, despite the possibilities for increasing the turnover that they impaly [3]. As main reasons for this could be indicated lack of international trade

experience, shortage of funds, quality inconsistency, low innovativeness, high energy consumption and low productivity, which is typical for most of the companies.

Along with the companies experiencing unfavorable internal conditions, there are also firms which are able to impose good management practices. They are competitive and adapt successfully to the specific conditions of the sector. A key factor for their successful development appears to be the product and process innovation activity.

Within the context of topicality of the mentioned area of interest, this paper *aims* to present the results of a study on the process and product innovation activity of the companies in the Dairy processing sector in Bulgaria.

1. Methods, literature overview

The authors of this paper adhere to the definitions of product and process innovations presented in OSLO MANUAL: GUIDELINES FOR COLLECTING AND INTERPRETING INNOVATION DATA, Third Edition, OECD/EUROPEAN COMMUNITIES, 2005.

A *product/process innovative firm* is one that has implemented a new or significantly improved product or process during the period under review [8, p. 47]. A *product innovation* is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics [8, p. 48]. A *process innovation* is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products [8, p. 49].

This paper presents the results of a survey of innovation activity in the area of product and process innovations of 24 dairy processing companies from different regions in

Bulgaria. At the core of the study is the survey method carried out by a specially elaborated questionnaire. The set of respondents includes 24 senior managers of the companies' object of study. The research tool includes the application of a systematic approach, structural and dynamic analysis, as well as methods of descriptive statistics.

2. Results

As a result of the study, it was ascertained that during the research period (2011-2013) product and process innovations have been implemented by 20 of the examined companies (83%) (FIG. 1).

FIG. 1: Share of companies implemented product and process innovations
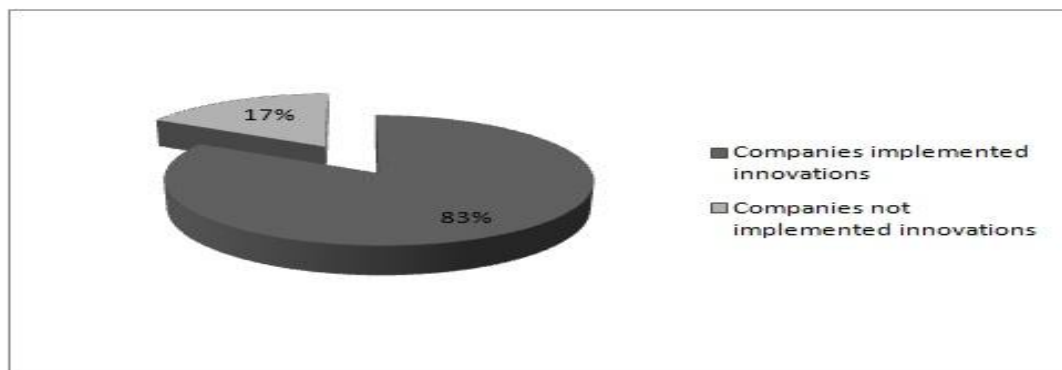
Source: Elaborated by the authors.

There is an upward trend in the number of companies implemented both product and process innovations. This number in 2013 has increased by 20% compared to the number for 2011. For product innovations the increase is 28.6% and the number of process innovations has remained unchanged (TAB. 1).

TAB. 1: Number of companies implemented product and process innovations

| №	Companies, depending on the type of innovations implemented	Year		
		2011	2012	2013
1.	Companies implemented process innovations	14	13	14
2.	Companies implemented product innovations	14	17	18
3.	Companies implemented both process and product innovations	15	16	18

Source: Elaborated by the authors.

The distribution of innovations by type, as a relative share of the companies implemented them, is shown at figure 2. During the period under consideration (2011-2013) the number of the implemented product and process innovations by the examined sample has increased with 85.92%. For the process innovations this increase is 87.23%, and for the product innovations - 83.33% (FIG. 3). This is an indicator for significantly increased innovation activity of the companies in the sector.

FIG. 2: Relative share of the companies implemented product and process innovations
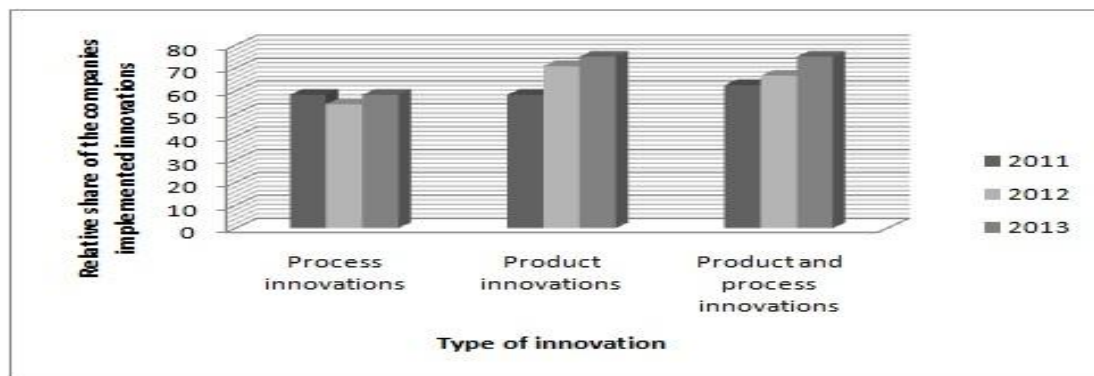
Source: Elaborated by the authors.

FIG. 3: Number of innovations implemented for the period 2011–2013
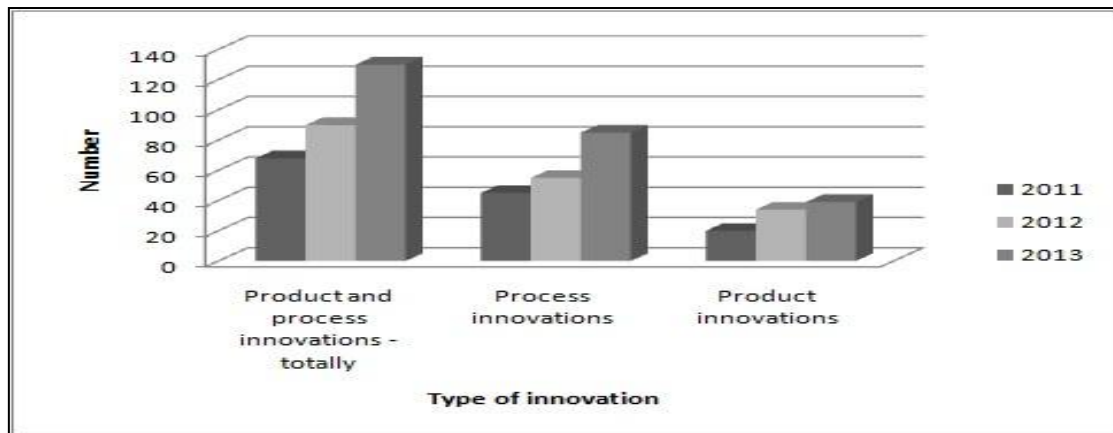
Source: Elaborated by the authors.

The average number of product and process innovations per a company from the verified sample is 1.731 in 2011, 2.317 - in 2012 and 3.219 - in 2013. For the process innovations this number is respectively 1.146, 1.439 and 2.146, as for the product ones – 0.585, 0.878 and 1.073 (FIG. 4). The number of the implemented product and process

innovations average per a company implemented such innovations is 4.1 for 2011, 4.7 for 2012 and 5.9 for 2013. For process innovations this number is respectively 2.5, 2.8 and 3.9, and for the product innovations - 1.6, 1.9 and 2.0 (FIG. 5).

FIG. 4: Number of product and process innovations average per an enterprise from the examined sample
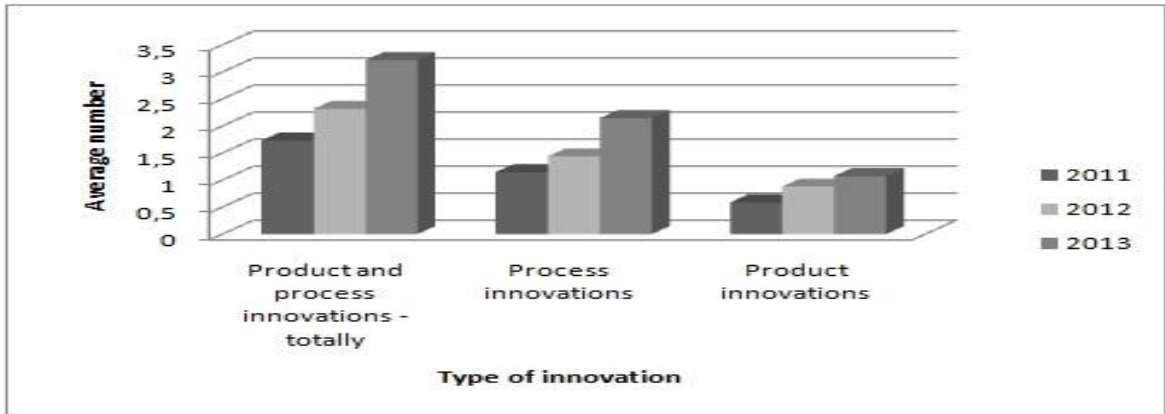
Source: Elaborated by the authors.

FIG. 5: Number of product and process innovations average per an enterprise implemented such innovations
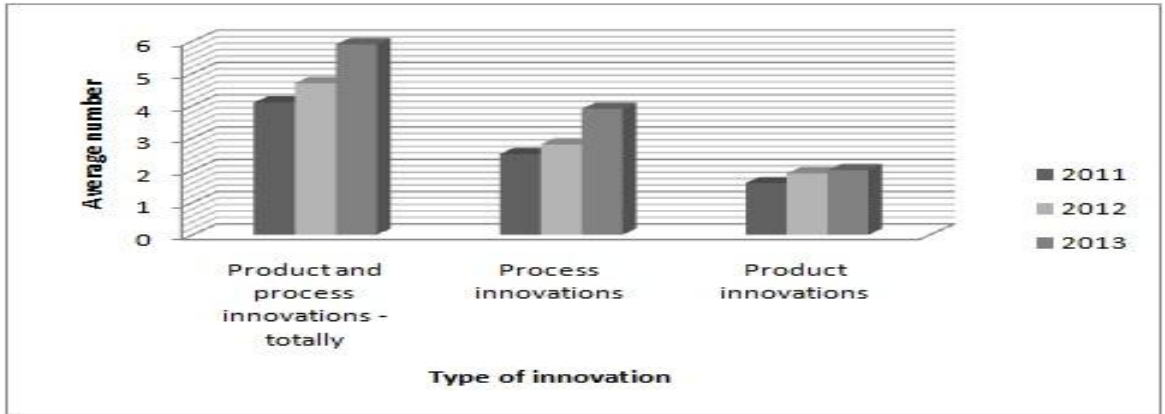
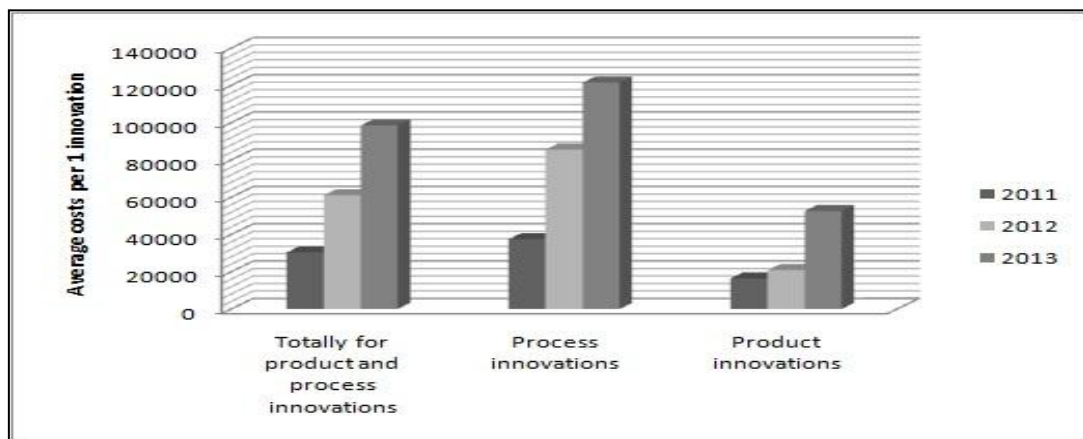Source: Elaborated by the authors.

The average costs for the innovations implemented by the examined enterprises are:

TAB. 2: Average costs for product and process innovations implemented

| №	Type of innovation	Innovation costs (leva)					
		Average per 1 innovation			Average for the companies implemented innovations		
		2011	2012	2013	2011	2012	2013
1	Process innovations	37487,4	85553,3	121501,8	92732,1	240364,0	356405,2
2	Product innovations	16446,0	20839,2	52595,8	26313,7	39484,7	105191,6
3	Totally for product and process innovations	30374,9	61030,1	98533,1	63429,9	144946,4	250122,5

Source: Elaborated by the authors.

FIG. 6: Average costs per 1 innovation (leva)

Source: Elaborated by the authors.

FIG. 7: Average costs for the companies, implemented product and process innovations (leva)
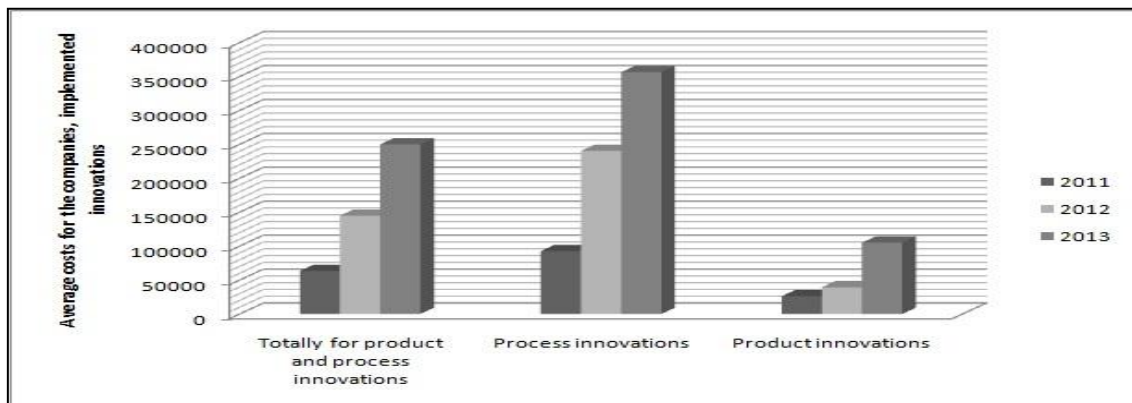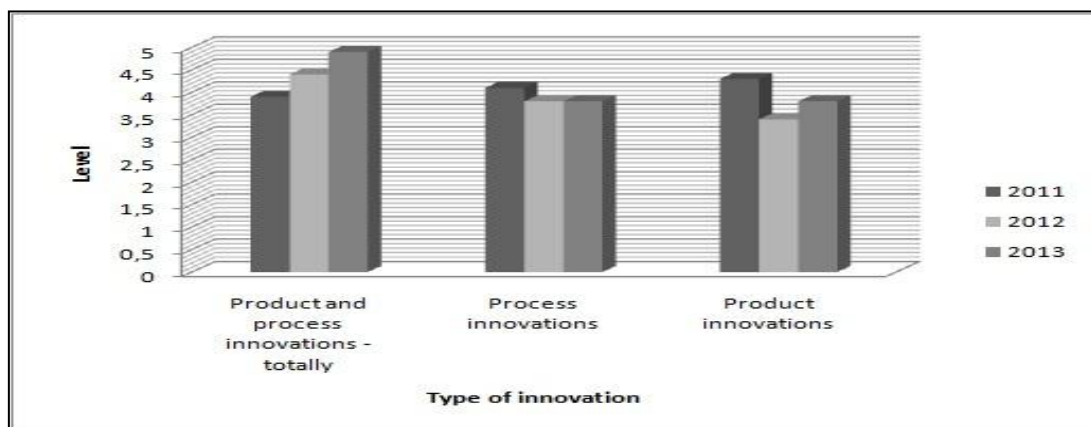

Source: Elaborated by the authors.

The results of the study showed an increase in costs, which the examined enterprises have spent on process innovations. In 2013 the costs have increased significantly an average for a single innovation of this kind. This is due not only to the general increase in prices in the country, but is rather an indication of a gradual transition from the implementation of small and marginal innovations to larger ones.

According to the managers interviewed, however, the product and process innovations implemented in their companies did not have had high levels, evaluated as degree of novelty and significance of change. Their assessment for the average level of product innovations, summarized for all the enterprises examined is shown on figure 8. For the purposes of the study a 7-point scale was applied (score 1 indicates a very low level, 7 - very high level). It is noteworthy that the level of product innovations has been continuously decreasing during the research period, and the process innovation has fluctuated at around or slightly above the average. Overall, the level of product and process innovations fluctuates slightly above the average. The results for the level of innovations show that the companies have usually performed small, minor changes with a low level of novelty or some relatively expensive innovations, but again with a low level of novelty. It is reasonable to expect that this has also had an impact on the economic results of their implementation.

FIG. 8: Average level of product and process innovations

Source: Elaborated by the authors.

3. Discussion

Based on the above stated, we can outline the following:

First, despite the difficulties faced by the milk processing companies, a significant part of them have implement product and process innovations. This trend is especially noticeable in respect to the number of companies implemented product innovations. They are crucial for gaining a better market position for the companies in the sector, as consumers are particularly sensitive to innovations. The identified increase in the number of companies that have implemented both product and process innovations is not accidental, as they are interrelated with each other and the implementation of product innovations in most cases implies the implementation of process ones.

Second, there is also a positive trend with respect to the number of implemented product and process innovations, which has increased over the period. The trend outlined is indicative for the increased innovation activity of the dairy processing companies in Bulgaria.

 Third, in the current conditions of financial difficulties for the milk processing companies, the issue concerning costs for innovations implemented is also important. The results of the study show an increase in companies' costs for product and process innovations. The reasons for this may be sought not only in the increase of prices but also in targeting the companies to large-scale innovations.

Fourth, the identified trend for maintaining a relatively low level of innovations performed should be noted as unfavorable, evaluated as degree of novelty and significance of change, i.e. the implemented product and process innovations in most cases are determined by the managers interviewed as minor changes with low level of novelty.

Fifth, although the studied sample of companies is not representative for the sector, as a whole, the results obtained are interesting and indicative in respect to the innovations

implemented by the companies from the sector. They can be discussed and could be a basis for making a number of managerial decisions related to the proper targeting of innovative efforts of companies.

The topic about innovation and innovation activity is one of the most significant areas of research in the scientific literature worldwide and, in particular, in Bulgaria. In this context, the future researches should focus on identifying the key areas of innovation activity, depending on the sector in which the market participants operate. This will allow the elaboration of adequate marketing strategies and will increase the competitiveness of companies from different sectors of the economy.

Conclusion

In conclusion, it should be pointed out that the product and process innovations appear to be a key success factor for dairy processing companies in Bulgaria. Although, there are many good practices observed, a large part of the companies do not perceive innovations as a continuous approach to process improvement and product development. They usually take place spontaneously and are regarded as a goal in itself, without implementing a clear and focused strategy and policy. Because of the importance that is assigned to innovations in modern conditions, the introduction of methodical approach is necessary for managing the issues related to innovations in dairy processing companies in Bulgaria.

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KNOWLEDGE-ORIENTED ISSUES OF RESEARCH AND DEVELOPMENT IN MULTINATIONAL ENTERPRISES

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Abstract:

Research and development represents a set of activities studied by both academicians and practitioners. This specific part of business has to cope with several knowledge-related issues. Moreover, these issues are quite peculiar in case of various business types. This paper identifies and discusses it with respect to multinational companies, which has intensively internationalized their research and development activities during the last decade. The paper is based on the desk research attempting to open discussion on issues related to knowledge flows in multinational firms. Hence, it provides readers with fundamental introduction to this domain and discusses selected points of view such as autonomy, trust, or type of research and development.

Introduction

Multinational enterprises (MNEs) represent the main drivers of this growing internationalisation of enterprise research and development (R&D) and, furthermore, in many countries foreign affiliates carry out more R&D than domestic firms [1]. An increasing amount of R&D outward investment in recent years has gone to emerging economies [12]. The type and motivations of R&D investment vary depending on whether R&D activities by multinationals were located in developed or emerging economies [13], or the cultural specifics are considers [5]. The existing studies usually describe a multinational firm's location decision as part of a three-step process which is initiated by the firm's decision to serve a foreign market and continues with the selection to undertake foreign direct investment and the location choice [4]. These three steps serve as a framework for this manuscript, while the additional research construct is

added - *knowledge flows*. This discussion paper aims to open a debate focused on R&D activities performed by MNEs and appropriateness of their positioning.

1. Reflections on knowledge flows in MNEs

From the early stages of their formation MNEs moved to foreign markets largely due to lower costs of resources and labor for production activities [2]. Mostly, research and development (R&D) activities remained in the home country, since localy-recruited R&D personnel play limited role in innovation within MNEs [11]. All acquired innovations were then introduced to subsidiaries abroad. If any R&D was done abroad, it focused on tailoring products to the specific needs of the local market. In this structure, knowledge flows in a form of particular knowledge and innovation moved within the MNE only in one way - from headquarters to foreign subsidiaries. Nevertheless, there has been a growing internationalisation of enterprise R&D activities over the last two decades [14]. Today, the globalization of MNEs causes that the subsidiaries have often the task to develop or cooperate by the development of essential innovations. In this situation, knowledge has to flow in multiple directions - from home country to subsidiaries, from host country to subsidiary, from subsidiary to home country, and from subsidiary to subsidiary. This global diffusion of R&D gives MNEs the competitive advantage over a centralized one country R&D. This advantage depends on the effectiveness of the MNEs to share knowledge between headquarters and subsidiaries with R&D. As nodes in multinational companies' knowledge networks, these subsidiaries help their parents maintain a knowledge advantage [7], partly by providing a valuable source of new knowledge through the development of new products and technologies. In general, there are five types of knowledge flows – technical knowledge flow, market knowledge flow, subsidiary - headquarters, subsidiary – local market, and subsidiary to subsidiary. The strategies of R&D generally determine amount of knowledge flows. The study of Iwata concerning these flows found that flows integrating market and vertical knowledge flows are more important for performance than other forms of knowledge flows [10].

There are six main channels for international knowledge transmission: imports, exports, inward foreign direct investment, foreign patent flows, geographic proximity and

general channels [3]. Growth rates of domestic and international knowledge stock are potential important determinants of productivity growth. Furthermore, there are five main reasons why a knowledge flow occurs within a multinational enterprise - economic, technological, organizational, geographic and sociological reasons. Why the sharing of know-how brings potential benefits can be explained by various explanations. From the economic reason, knowledge is shared to bring more efficiency. In the area of R&D this can mean saving cost and/or time. To save cost or time by achieving the R&D task can be a reason why start to search within a group to find already existing know-how [9]. These studies also imply that organizing the MNE as an integrated network can bring better economic results. Thanks to subsidiaries' specialization on different resources, the company can use this fact to leverage it for more value. The studies also say, that the exchange of knowledge is easier and more efficient within an organization rather than through external market because of various problems and negative externalities of the market [9].

Technological knowledge sharing between the various R&D subsidiaries of an MNE exists with the goal to achieve synergy through economies of scope. Sharing of complementary intellectual resources generates economic rents. From the resource-based view, Buckley and Carter [6] indicate that integrating knowledge is a business activity with considerable economic benefits. Main motivation for technology sharing is to get specific technological knowledge that can assist in R&D problem solving. Sharing may take place because the technological knowledge is not available within the R&D group but can be accessed from another R&D group (source) within the MNE.

2. Discussion

The unit's autonomy is the degree to which an R&D unit is able to make or influence strategic and operational decisions affecting it in various value-adding activities, including production, marketing, human resources, budgets, and R&D. R&D units with greater autonomy have more authority when making decisions on their own behalf compared to those with less autonomy. Autonomy requires resources of several types, including managerial, technological, financial, and informational [8]. It has been argued that subsidiaries with greater R&D capabilities may be less technologically dependent

on the headquarters (HQ) and hence may display higher levels of autonomy. However, the counterargument is that the strategic sensitivity of the knowledge-related activities of the subsidiary may be grounds for tighter HQ control. The finding that a high degree of bureaucratic control inhibits creativity and innovation is complicating the situation. Moreover, the incentive to collaborate is greater when R&D units have complementary skills, knowledge, or resources and when the costs or risks associated with certain R&D activities are beyond the capability of any single unit.

Theoretical and empirical research on global R&D collaborations underscores the importance of trust as the foundation of collaborative relationships. The more R&D staff trust each other, the greater the likelihood that they will share knowledge, information, and other assets of strategic value with their colleagues in other locations.

The important role of subsidiaries in multinational enterprises' innovation and knowledge network has long been recognized [7], but only limited research has explored knowledge assimilation and innovation activities in subsidiaries. Researchers have studied mostly technological innovation by focusing on patents. This means that subsidiary new product development has largely been unobserved, even though an important feature of subsidiary R&D is its substantial influence in new product development. Moreover, although recent studies have demonstrated empirically that a subsidiary's success in technological innovation relies on its assimilation of knowledge from different sources and its ability to integrate and use such knowledge, only the direct impact of knowledge assimilation has been examined.

The different types of R&D bring different magnitude of knowledge spillover which on the other hand motivates to more investment in R&D. Lately, the importance of productivity and effectiveness of R&D is becoming more and more important which arises question about measuring the impact of R&D on productivity and implementation of KM into R&D activities. What seems to be the biggest issue is the transformation of knowledge into productivity. This requires that global R&D managers view their roles differently by changing their perception of being merely managers of people, processes, and budgets to becoming initiators and facilitators of purposeful learning and

innovations across the global R&D organization. Such intentional learning could result in more effective coordination and utilization of costly R&D assets, which over time could further improve coordination processes, reduce costs, and improve innovative interactions among globally dispersed units.

Conclusions

This paper opens a debate focused on knowledge flows within MNEs and highlights several aspects such as HQ dependency, trust, role of subsidiaries, or R&D type. Apparently, MNEs expand internationally not only for getting acces to new markets. They recognize that creating breakthrough innovations requires accessing and using the full range of knowledge available internationally. One of the best ways to tap into this knowledge is with local R&D facilities in international centers of technical excellence. However, leveraging regional knowledge and incorporating it into existing knowledge networks is exceptionally difficult. One of the assumptions is that the global spreading of R&D activities does not have to bring improvements in innovative capabilities. To be so it has to be supported by effective cross-border coordination and integration. Higher level of knowledge generation and sharing represent the main outcome that can produce significant innovative capabilities.

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THE QUALITY OF COMMUNITY INVESTMENT REPORTING BY POLISH COMPANIES

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Abstract:

The aim of this paper is twofold: first to evaluate quality of community investment disclosure in sustainability reports issued by Polish companies, second to examine determinants of the quality disclosure. Results show that the majority of reports provide stakeholders only with qualitative information. Firms neither disclose quantitative data on specific targets nor present outcomes of their social initiatives. Regarding the disclosure quality it is associated with the CSR level, the volume of CI disclosure, and the corporate sector vulnerability to public criticism.

Introduction

This paper concerns the quality of community investment disclosures (CI) made by Polish firms in their non-financial reports. CI is defined following Patten as "disclosures related to community activities, health-related activities, donations of cash, products or employee services to education or the arts, or other community activity disclosures" [6, p. 280].   Even though, CI is sometimes regarded by scholars as a discretionary responsibility [3], companies use it to as the main manifestations of their CSR strategies. That's why this type of information is generally self-laudatory [2]. However, the use of rhetoric to communicate CI seems not to be the best way to build corporate image. The literature clearly shows that tangible data and transparency are key factors in creating a strong prosocial reputation [4].

Although the issue of CI is important, only a few papers have addressed this issue. Patten explored social disclosures in reports by firms present in the 500 Fortune [6].

Tsang and colleagues investigated CI in GRI reports issued by international firms [7]; whereas Yekini and Jallow [8] as well as Campbell, Moor and Shrives (2006) investigated CI disclosures in UK firms reports [2]. The mentioned studies examined disclosures made by firms operating in countries which have a long tradition of non-financial reporting. According to the best knowledge of the author there is no research concerning CI reporting in a country which is at the early stage of non-financial reporting.

Non-financial reporting is becoming more and more popular in Poland, but this phenomenon is relatively new and uncommon among firms. According to the Corporate Register.com there are only 258 non-financial reports issued by companies operating in Poland. The first report was developed in 2001 by a company operating in gas and oil industry. Since that time the number of CSR reports is growing. However, reporting on prosocial engagement seems to be the exception rather than the rule.

Taking into account the importance of CI reporting and the lack of knowledge about the CI disclosure this paper has a twofold objective. The first is to diagnose the quality of CI disclosure made by firms operating in Poland. The second is to identify factors shaping this quality.

1. Methods

The sample included reports issued by 16 firms from the top 100 companies listed on the Warsaw Stock Exchange. More specifically, the analysis was carried out on 48 annual reports representing seven sectors: Construction (4), Electromechanics (4), Energy (17), Financials (18), Health Care (1), Mining (1), Telecommunication Services (3).

The concept of quality disclosure and its measurement was grounded on works by Gray and colleagues [5], Brammer and Pavlin [1] and Yekini and Jallow [8]. In order to measure the CI quality disclosure the reports were examined against nine criteria, representing four aspects of quality, including corporate policy on community investment, carried out initiatives, their results and a report audit (Table 1).

TAB. 1: The measurement criteria of CI investment disclosure quality

Quality Index	Items	Scores
POLICY	General description	0-1*
	Objectives	0-1
	Targets	0-1
ACTIVITY	General description	0-1
	Total support	0-1
	Volume of support per activity/cause	0-1-2**
RESULTS	Outputs	0-1-2
	Outcomes	0-1-2
AUDIT	External	0-1
	Total Quality Scores	12

* 0 (no disclosure), 1 (disclosure);** 0 (no disclosure), 1 (some disclosure) or 2 (extensive disclosure)

Source: [1,5,8]

The hypothesized determinants of the quality disclosure were selected taking into account the results of previous studies [1,5,8]. It was expected that the reporting quality would be associated with the firm's profitability (ROE), its size (total assets), the volume of CI disclosure, an industry vulnerability to the public opinion, the application of a reporting benchmark and the level of CSR. Mining, financials, energy and telecommunication were classified as vulnerable industries; whereas construction and electro mechanics were categorized as not vulnerable. Regarding the CSR level, companies present in the ethical index (RESPECT) were considered as highly responsible, other firms were coded as less responsible.

2. Results

2.1. The quality of CI disclosure

The analysis showed that mean value of the total quality index amounted at 4.04 (SD=1.68) in the scale from 0 to 12 points. It means that the quality of CI reporting was relatively low. Even though around 90% of the reports included information about firms' community policies, the carried out social initiatives and selected data on initiative outputs, only 40% of non-financial statements involved firms' social objectives, total support, and support per activity or cause. Specific targets of community policies and program outcomes were not reported at all (Figure 1).

FIG. 1: The quality disclosure composites
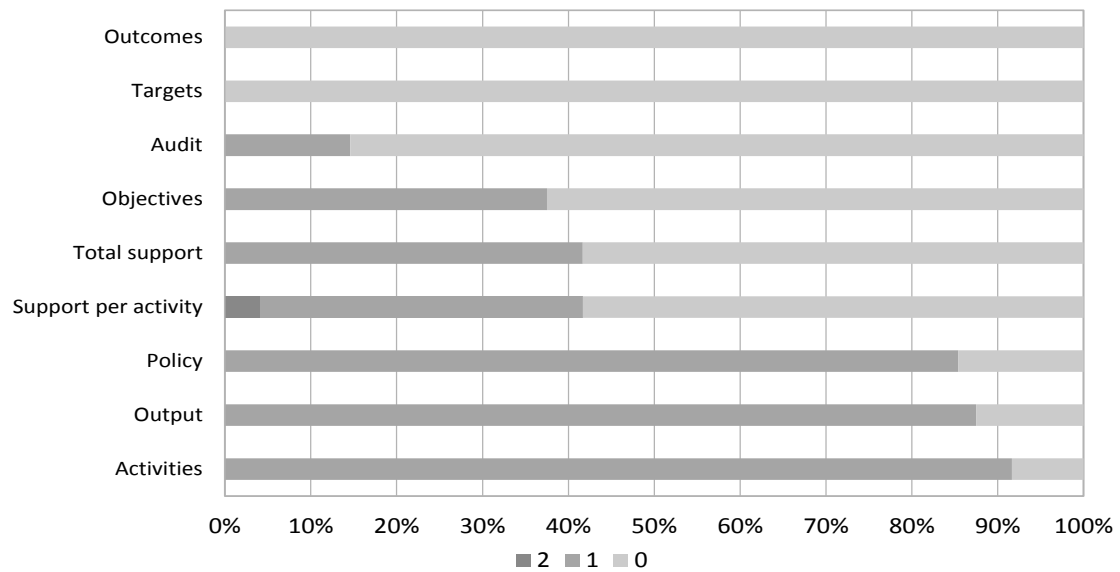
Source: own research

Findings also suggest that there were significant differences in the quality of CI disclosures across industries ($F_{(6,41)}=3.662$, $p=0.005$). The report issued by a firm operating in mining industry provided stakeholders with the highest quality information; whereas the quality of CI sections in reports issued by firms operating in construction industry was the lowest (respectively, M mining= 7 vs. M const.= 1.25). Detailed information on the quality of CI disclosures across industries can be found in Figure 2.

FIG. 2: The quality disclosure composites
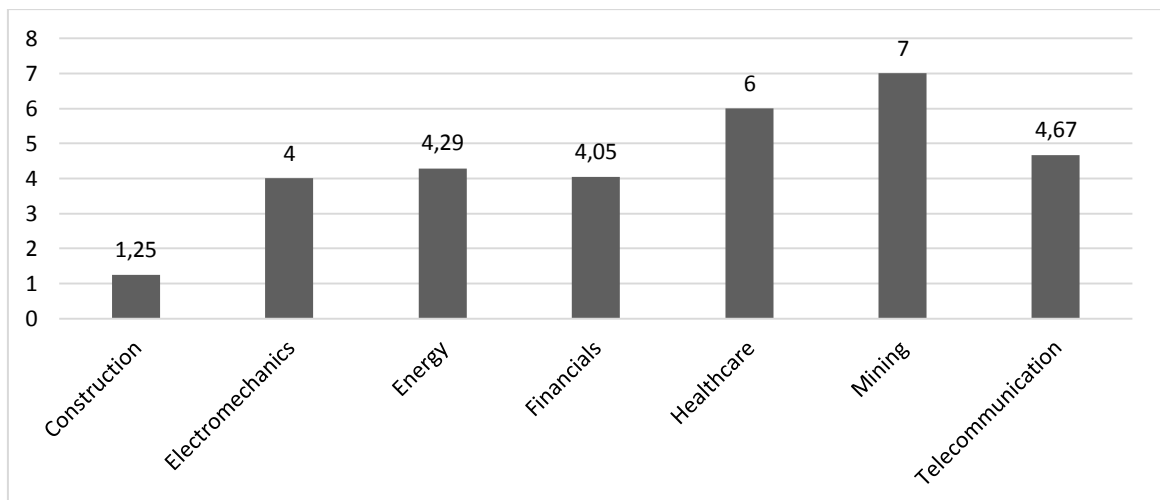
Source: own research

2.2. The determinants of the quality CI disclosure

At the second stage of analysis the examination of factors influencing the quality of CI disclosure was done. The total quality index was regressed against six independent variables including: the profitability, the firm's size, the industry vulnerability to the public opinion, the application of reporting benchmark, the quantity of CI section and the firm's level of social responsibility (Table 2).

TAB. 2: Regression analysis of the CI disclosure quality

Variable	β	Standard error (β)	b	Standard error (b)	t (41) - value	p-value
Constant			1.475	0.724	2.037	0.048*
CSR level	0.303	0.135	1.004	0.449	2.238	0.031*
Profitability	0.002	0.126	0.040	2.506	0.016	0.987
Company size	0.020	0.132	0.000	0.000	0.151	0.881
Sector vulnerability	0.331	0.142	1.235	0.532	2.324	0.025*
Volume of CI disclosure	0.418	0.112	1.475	0.724	2.037	0.048*
Reporting benchmark	0.150	0.139	0.052	0.480	0.108	0.914
R= 0.685 R 2= 0.469, Adjusted R 2 = 0.392;						
F(6,41)=6.0488 p<.00013 Standard Estimation Error = 1.3064						

Source: own research

Results showed that significant predictors of the CI disclosure quality were the level of corporate social responsibility, the sector vulnerability and the volume of CI disclosure. Surprisingly, the company size, firm's profitability and the application of reporting benchmark were not associated with the quality of CI disclosures.

3. Discussion

Contemporary companies use CI to build reputation. This issue is especially of high importance for firms operating in sectors vulnerable to public criticism. In order to create a strong reputation a firm has to communicate its prosocial activities. Without stakeholders' knowledge about firm's activities the development of favorable image is impossible. In other words, the reputation seems to be a function of information. Social reports play an important role in providing stakeholders with information about corporate social activities. Thus the quality of CI disclosures made in non-financial reports should be high, especially in sectors where the firm's perception plays an important role. Results of this research also support this reasoning and show that the

quality of CI disclosures made by firms recognized as socially responsible, who operate in vulnerable industries to public criticism is higher than the quality of reports published by other firms. It is also reasonable that the quality disclosure goes with the volume of CI section since more socially engaged companies have more information to report.

As regards to the non-significant effect of reporting framework, it might be explained by the fact that GRI (Global Reporting Initiative) guidance provides companies with very little information how to report on CI. The lack of significant association between firms' size and the disclosure quality might be caused by several factors. First, even though large firms have lots of resources they can be at an early stage of development of non-financial reporting. Second, companies who do not operate in mas markets and their operations are free from environmental criticism might ignore the issue of disclosure quality.

The hypothesized positive impact of firm's profitability on the CI information quality was also not supported. Of course, the magnitude of CIs is susceptible to the firm's profitability, it could be higher or lower depending on financial income. However the way a firm is measuring and then reporting on CI seems to be mainly associated with the firm's CI policy and operational procedures. If a firm does not have such policy and CI is managed intuitively, the increases in CI do not necessarily goes with the disclosure quality. This may explain neutral relationship between the profitability and the CI disclosure quality.

Conclusion

To sum up, findings suggest that the quality of CI disclosures made by Polish firms is low. Most of the reports provide stakeholders only with qualitative data on community policies, social activities and some of their results. Firms neither disclose quantitative data about specific targets nor present outcomes of their social initiatives. Regarding the reporting quality determinants it seems to be associated with the CSR level, the volume of CI disclosure, and the sector vulnerability to public opinion.

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HUMILITY AS A NEW TREND IN LEADERSHIP: SUGGESTION OF AN EMPIRICAL MODEL

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Keywords:

leadership – humility – self-esteem – model

Abstract:

The paper has for objective to present the new empirical model for more efficient leadership. In the first part we present a survey of academic literature dealing with definitional concept of Humility as defined in the classical Greek literature and in the contemporary business, managerial and psychological research. In the second part of the paper we present the model based on the combination of the Humility mind-set and Self-esteem in the social context. We present the model in a static manner as well as in its dynamic form as a tool of personal and professional development.

Introduction

The wisdom of thousands of years, both in the East and West, talks about the importance of humility in one's life. However this wisdom is only very occasionally reflected in the managerial practice or academic research nowadays. Our bibliometric research on the platform of Web of Science (Analytics / Citation report) enacted on January 2014 showed that in all research areas cumulated since 1985 there were only 624 peer-reviewed articles/papers devoted to humility (measured by the title or key words).

In the area of business, management and leadership we found only 36 peer-reviewed articles/papers dedicated to humility (measured by the title or key words). However, the total number of peer-reviewed articles in the field of business, management and leadership (indexed by the Web of Science in January 2014) was more than

140 thousand, hence the papers/articles dealing with humility represent less the than 0,025% of all the publications.

This article has for objective:(1) present definitions of humility in the literature, (2) propose an empirical model based on humility/self-esteem for a more efficient leadership.

1. Survey of existing definitions of humility

1.1. Humility in the classical Greek literature

A nice walk around the definitional issues proposes Molyneaux [6, 347-348], using the methodology of literature science. He starts with the analysis of the New Testament , with the famous saying "*Blessed are the Meek*", where for "meek" stand the Greek word "πραυτησ"; phonetically read as *pravtis*. According to the New Testament literature review, "meek" *does not require withdrawal, unthinking compliance or power foregone. Rather, it instructs on the active exercise of the powers of ownership and leadership.*

Plato describes the citizens of Atlantis as a people of moral integrity, using the word "πραυτησ" or "meekness" or eventually "gentleness": *For the intents of their hearts were true and in all ways noble, and they showed 'πραυτησ' joined with discernment in dealing with the changes and chances of life and in their dealings with one another.* The alliance of "meekness" and "discernment" is critical, as Molyneaux emphasizes[6, 349].

For Aristotle in Nicomachean Ethics, "meekness" was synonymous to a self-control, as a middle position between bad-temper and indifference. And specifically, there is no connection with timidity, withdrawal or disengagement from business or public affairs.Xenophon brought most impressive usage of "meekness": *Powerfulness and endurance was the warrior, and meekness was his battle horse*. Combination of the two was preeminent for the success [6, 350-351]

1.2. Definitions of humility in management literature

An interesting survey of definitions bring Dusey and Rodriguez-Lopez[4, 393-395]. Based on the review of authoritative business books. Robert Solomon in his book

A *Better Way to Think about Business* provides a useful definition of humility as: *a realistic assessment of one's own contribution and the recognition of the contribution of others, along with luck and good fortune that made one's own success possible.* Humility enables leaders to distinguish between: (a) self-esteem, (b) self-confidence, (c) self-assessment. Humility is the mid-point between negative extremes of arrogance and lack of self-esteem. To our view, this definition, based on one's own capacity to discern among esteem, confidence and assessment is most compatible with our view of the humility concept.

In Harvard Business Review, Collins[3, 138-140] describes the concept of "Level 5" leader as a seemingly paradoxical combination of humility and fierce resolve. Rather than lacking ego or self-interest, "Level 5" leaders are ambitious, but with the ambitions for the firm and for the others. One of the characteristics is that humility is not really a visible virtue, but appears in a more implicit way.

Dusey and Rodriguez-Lopez [4, 394]came up with their own model of six key concepts of humility in the learning organization: (a) openness to a new paradigm, (b) eagerness to learn from others, (c) acknowledgment of own limitations and ability to correct it, (d) pragmatic acceptance of failure, (e) ability to ask for advice, (f) development of others. Thanks to the application of the key humility concepts of a learning organization, the company should achieve a high performance based on instant innovations.

1.3. Definition in the psychology research

Johnson [5, 858]found probably the most encompassing and both intuitively and empirically best acceptable definition in The Oxford Handbook on Positive Psychology, suggesting following key elements of humility: (a) ability to acknowledge own personal limits, (b) openness to advice from others, (c) keeping accomplishments in perspective, (d) low self-focus, (e) appreciation of others. This definition appears to be highly appropriate for further practical application and empirical research.

Ashton and Lee [2, 1216-1228] introduced a concept of Honesty-Humility dimension, consisting of four narrow personality traits: Fairness, Modesty, Sincerity and Greed-

Avoidance. For the purpose of this article, analyzing concept of Humility we choose the personality trait of Modesty.

2. Suggestion of a new empirical model: Humility vs Self-esteem

2.1. Model Humility vs Self-esteem as a static definition

We suggest a model for personal mind-set in the leadership framework that is simple and empirical, but it might bring an important momentum for professional and personal development. See Fig. 1. It is based on two controlled variables: 1. humility mind-set (vertical axis)and 2. overall and sustainable personal satisfaction in life (horizontal axis). We base both aspects on the definitions proposed by Asthon and Lee [1]. The third axis Z represents an outcome in the form of the quality of interpersonal relation in the frame of leadership. The third dimension "relation with people" in the workplace (axis Z) is a natural result of the intersection of the humility mind-set and self-esteem.

FIG. 1: Model of Humility vs Self-esteem and impact on inter-personal relations
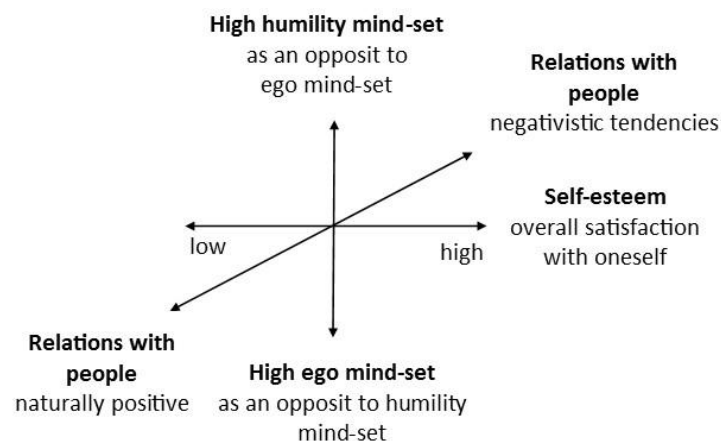
Source: authors

Ashton and Lee define Social Self-Esteem and Humility/Modesty as follows: *Social Self-Esteem* assesses a tendency to have positive self-regard, particularly in social contexts. High scorers are generally satisfied with themselves and consider themselves to have likable qualities, whereas low scorers tend to have a sense of personal worthlessness and to see themselves as unpopular. *Humility* (or Modesty in the frame of Ashton-Lee´s definition) is a tendency to be modest and unassuming. Low scorers consider themselves as superior and as entitled to privileges that others do not have,

whereas high scorers view themselves as ordinary people without any claim to special treatment[1].

2.2. Model Humility vs Self-esteem as dynamic path of personal development
This chapter presents the Humility/self-esteem model in the dynamic perspective of personal and professional development. Table 1 presents 4 quadrants of a personal status quo in terms of Humility mind-set and Self-esteem and its possible implications for leadership.

TAB. 1: Four quadrants, combination of self-esteem and humility.

	Low self-esteem	High self-esteem
High humility	**3. Transformation** **Period of personal transformation** **Communication style:** mixed. **Self-perception:** self-reflection. **Relation with people:** mixed. **Sustainability:** transformative.	**4. Long-term equilibrium state** **Communication style:** well-balanced, harmonized. **Self-perception:** well-balanced. **Relation with people:** positive, humility & high self-esteem is a source of inner power what other people feel, appreciate, respect and surrender to. **Sustainability:** sustainable. However a with regular need for self-reflection.
Low humility	**2. Frustration/re-evaluation** **Communication style:** frustrated. **Self-perception:** I am significant, but people do not see it / I am the least significant and people see it. **Relation with people:** problematic. **Sustainability:** medium term, limited.	**1. Authoritative** **Communication style:** Authoritative, imposing heavily on others, insistence on self-importance. **Self-perception:** I am significant, most of others are not. **Relation with people:** negative, might be accompanied by reluctance. **Sustainability:** long-term or medium-term, but with high probability limited.

Source: author

1st phase. Authoritative. With a low humility mind-set and high self-esteem. Communication and behavior is authoritative or even arrogant. Such a person can have high overall satisfaction with him- or herself (self-esteem). But as regards sustainability of relations, person will probably come into relational difficulties with the subordinate employees. *2nd phase. Frustrated.* The person has arrived to relational difficulties with subordinate employees. Overall satisfaction with him- or herself has decreased. However the humility mind-set is still strong. The person might considered himself or herself as a victim of unfairness. *3rd phase. Transformational.* The person starts to re-think his or her behavior, searching for reasons and solutions. A solution might be a natural transformation towards the humility mind-set. This is an interesting transitory period based on self-reflection. Relation with subordinated employees might partly improve.*4th phase. Equilibrate.* Humility mind-set leads to better relation through

higher respect of others. At the same time the humility mind-set is a source of inner power, what the other people feel, respect, appreciate and progressively surrender to. Consequently, the self-esteem of the person in the 4th stage increases, as the humility mind-set strengthens, thanks to (1) internally: less conflictual approach and (2) externally: more appreciation by other people.In the ideal case, the fourthphase will become an optimal and sustainable mind-set enabling efficient and effective leadership.

Conclusion

Based on the extensive review of academic literature (Greek traditional literature, business and management resources as well as recent psychology research dealing with humility). Consequently we propose a simple empirical model for efficient and sustainable leadership based on the combination of high humility mind-set and high self-esteem. Hereby proposed model represents an interesting domain for empirical as well as formal scientific testing.

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ARE MANAGERS HONEST AND MODEST? ANALYSIS OF PREFERENCES OF MANAGERIAL POSITION BY MEANS OF HEXACO PERSONALITY TEST

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Abstract:

Objective of this paper is to explore whether the preference of a managerial position (MP) is predicted by the predisposition to unethical behavior (UB), measured by the Fairness and Sincerity. On the sample of 157 undergraduate students of business we analyzed preferences for the MP (expressed in the frame of leaderless group discussion) in relation with the score in four personality traits of Fairness (F), Sincerity (S), Greed-avoidance (GA) and Modesty (M), defined by HEXACO-PI-R, using logistic ordinal regression model. Results show that the preference of MP is significantly predicted by GA ($p < 0,001$) and M ($p < 0,01$), both negatively. Hence the preference of a MP and predisposition to UB are determined by different psychological mechanisms, on the contrary to some management myths.

Introduction

In 2001 we witnessed the fall of Enron and Arthur Andersen corporation, what has been considered as the biggest ethical scandal in our era. This scandal has evoked lot of debate and effort on the public, corporate and academic level to reinstall ethical standards in the business domain [2, 342-380], [13, 137-151]. Nevertheless, these days, in November 2014, it comes out, that shortly after Enron fell, another conscious, deliberate and systematic fraud of the managers at J.P. Morgan Chase & Co [18], [19] rocketed developed economies on four continents into what is now denoted as Economic and financial crisis 2007-2009.

Consequently, the question rises again: if a person who has ambitions to be a manager has also inherent predispositions to be unethical. In this article we try to provide an answer based on the combination of a behavioral experiment and personality testing.

1. Objectives and research question

The objective of the paper is to examine the relation between preferences of a managerial position and four personality traits Fairness, Sincerity, Greed-avoidance and Modesty of the personality dimension Honesty-Humility (abbreviated as h-factor) as defined by the HEXACO-PI-R inventory [6, 340-345]. We stipulate following research questions: *RQ* – Which out of the four personality traits (Fairness, Sincerity, Greed-avoidance and Modesty) of h-factor predict significantly the preference of the working position of a manager.

2. Literature review, methodological concepts and sample

2.1. Honesty-Humility (h-factor) of the Hexaco personality test

Hexaco-PI-R represents a new generation of personality tests consisting of six dimensions: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience [4, 150-166], [5, 1216-1228]. This concept introduces a new personality dimension Honesty-Humility (abbreviated as h-factor), consisting of four traits (see Tab.1). For the needs of this paper we denote two first traits as "Ethical predispositions" and second as "Status and welfare predispositions".

Previous personality tests were based on 5 dimensions (Big 5, Five Factor Model). Thanks to the Honesty-Humility (h-factor), Hexaco outperforms previous platforms in predicting workplace delinquency [14,179-197], predicts better individual differences in the religiousness [1, 880-883]. H-factor is a good predictor of personal integrity at workplace [15, 147-167] and a unique predictor of working performance of healthcare assistants [12, 857-862]. H-factor predicts personality dimension of the so-called Dark Triad (psychopathy, Machiavellianism, and narcissism that the 5-factors models do not reveal [16, 169-184].

Ethical predispositions	**Sincerity** - a tendency to be genuine in interpersonal relations. Low scorers will flatter others or pretend to like them in order to obtain favors, whereas high scorers are unwilling to manipulate others.
	Fairness - tendency to avoid fraud and corruption. Low scorers are willing to gain by cheating or stealing, whereas high scorers are unwilling to take advantage of other individuals or of society at large.
Status & welfare	**Modesty** - tendency to be modest and unassuming. Low scorers consider themselves as superior and as entitled to privileges that others do not have, whereas high scorers view themselves as ordinary people without any claim to special treatment.
	Greed Avoidance - tendency to be uninterested in possessing lavish wealth, luxury goods, and signs of high social status. Low scorers want to enjoy and to display wealth and privilege, whereas high scorers are not especially motivated by monetary or social-status considerations.

Source: Ashton – Lee, Hexaco PI-R official website, [9]

Intercultural testing proved that Hexaco personality tests works well also for other European languages, including the new personality trait Honesty-Humility [6, 841-875]. It is important to note that in some situations narrow traits (Sincerity, Fairness, Modesty and Greed Avoidance) are better predictors of unethical behavior or delinquency than a wider personality dimension [3, 289-295], [8, 289-303], [17, 74-78].

2.2. Methodology of the behavioral experiment

In the experiment participated undergraduate students of management at the business faculty in Brno, Czech Republic (N = 157; females 68.8 %, age 21 - 22). Participants filled the questionnaire of HEXACO-PI-R inventory, paper-based, 60-items version [6, 340-345]. Then they engaged in a behavioral experiment, in the form of a Leaderless Group Discussion, which enables to reveal and develop leadership qualities and allows appropriate combination with the psychometric approach [10, 596-616],[11, 331-342],[20, 1-28]. Participants marked their preference for the managerial position (ethically neutral position in a fictive company dealing with the implementation of information systems) on the 5-point Likert scale. Consequently we match the job preferences with the score in four narrow traits of h-factor, using logistic ordinal regression model.

3. Results

The Honesty-Humility scale is roughly suitable for factor analysis (KMO = 0,721; det r = 0,16). Using the maximum likelihood exploratory factor analysis with the Direct Oblimin rotation, we extract 4 factors with the reasonable model-data fit ($\chi^2(11)$ =

7,348; p > 0,77). The factor loadings (Tab. 1) are consistent with the original paper [6, 340-345], so we can use the facets for the analysis without the loss of the validity.

TAB. 2: Factor structure matrix for the Honesty-Humility scale

Structure Matrix

	Factor			
	Modesty	Greed-Avoidance	Fairness	Sincerity
o06	,254	-,316	,356	**,600**
o12	,163	-,204	**,689**	,369
o18	,262	**-,998**	,224	,260
o24	**,447**	-,159	,160	,169
o30	,186	-,170	,201	**,554**
o36	,149	-,070	**,545**	,378
o42	,337	**-,376**	,258	,260
o48	**,990**	-,217	,113	,310
o54	,252	-,097	,270	**,604**
o60	,207	-,252	**,806**	,198
Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.				

Source: authors

The descriptive statistics of the Honesty-Humility facets are shown in Tab. 2.

TAB. 3: Descriptive Statistics of the HEXACO-60 dimensions

	N		Mean	SD	Skew ness	SE of skew.	Kurt.	SE of kurt.
	Valid	Miss.						
Honesty-Humility	157	0	3,159	,584	,008	,194	-,058	,385
Sincerity	157	0	3,306	,773	-,145	,194	-,087	,385
Fairness	157	0	3,278	,948	-,113	,194	-,581	,385
Greed-Avoidance	157	0	2,834	,889	-,133	,194	-,369	,385
Modesty	157	0	3,086	,807	-,061	,194	-,367	,385

Source: authors

In the case of the preference of the managerial position, the test of parallel lines gives the insignificant result ($\chi2(8)$ = 10,754; p > 0,21) what indicates that the proportional odds assumption is fulfilled. Under this condition, we obtain the following estimates of the model parameters (Tab. 4) indicating that the Greed-Avoidance as well as Modesty facets are significant predictors.

TAB. 4: Parameter estimates for the preference of the position of manager

		Estimate	SE	Wald	df	Sig.	95% CI	
							Lower Bound	Upper Bound
Threshold	[prefe_mana_OK1 = 2]	-5,374	,991	29,400	1	,000	-7,316	-3,431
	[prefe_mana_OK1 = 3]	-4,229	,957	19,530	1	,000	-6,104	-2,353
	[prefe_mana_OK1 = 4]	-1,224	,887	1,902	1	,168	-2,962	,515
Location	Sincerity	,108	,225	,232	1	,630	-,332	,549
	Fairness	,237	,180	1,724	1	,189	-,117	,591
	Greed-Avoidance	-,893	,206	18,738	1	,000	-1,297	-,489
	Modesty	-,559	,212	6,978	1	,008	-,974	-,144

Source: authors

These two facets work in the negative way: the more modest and greed-avoidant the person is, the less likely he or she prefers the managerial position.

4. Discussion

Research showed that preference of the managerial position is significantly predicted by the score in two narrow personality traits of Greed-Avoidance ($p < 0,001$) and Modesty ($p < 0,01$), both negatively; what means the more the participants prefers the managerial position the more he or she prefers higher status, measured by Modesty trait and elevated material welfare, measured by the Greed-Avoidance trait. For the purpose of this article, we mark these two traits as "*Status & welfare predispositions*".

On the other hand, the two other narrow personality traits of the Honesty-Humility dimension, Fairness and Sincerity do not significantly predict the preference of the managerial position. We denoted these two traits as "*Ethical predispositions*". As defined by the Hexaco-PI R, Fairness describes ethical predisposition relations to material values and Sincerity describes ethical predisposition in relation to the people.

5. Conclusion

The fact that the predisposition "*Status & welfare*" and *"Ethical predispositions"* do not work as the same behavioral vectors, we conclude that these two predispositions are determined by different and possibly independent psychological mechanisms; what is

on the contrary to some managerial myths stating that the greed means necessary unethical tendencies.

This article also confirmed the proposition of Ashton [3, 289-295], [8, 289-303] and on the usefulness of the narrow traits as a more efficient predictors of behavior in specific situations/conditions. Results also indicate a strong potential of the Honesty-Humility dimension of Hexaco PI-R in predicting unethical behavior in line with the previous research on the work delinquency [14, 179-197] and personal integrity at workplace [15, 147-167] or work performance in socially/ethically sensitive settings [12, 857-862]. The above mentioned arguments strongly encourage further research.

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