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PROLOGUE

In November 2015 the NEWTON College organized the 9th International Conference from the cycle European Entrepreneurship Forum with over 80 participants from the Czech Republic, Slovakia, Estonia, Poland and Croatia.

The topic of this conference was Efficiency in the Private and the Public Sector. The conference was held under the auspices of the Ministry of Industry and Trade of the Czech Republic. The conference was attended not only by academics but also practitioners and policy makers. Among the keynote speakers were prof. Hrvoje Šimović, prof. Eva Zamrazilová, prof. Juraj Nemec, prof. Jan Pavel, prof. Jiří Špalek. The conference was also attended by Mr. Jiří Kala, president, Supreme Audit Office, Mr. Luděk Niedermayer, member, European Parliament, Ms Rut Bízková, president, Technology Agency of the Czech Republic, Ms Irena Liškařová, president, Chamber of Auditors of the Czech Republic, Mr. Dan Jiránek, executive director, Union of Towns and Municipalities of the Czech Republic, Mr. Zdeněk Hrdlička, department director, Ministry of Finance of the Czech Republic.

The current economic situation augments the need for research into the efficiency and usefulness of different methods, in both the private and the public sector. Creating room for an open discussion on the issues of efficiency in the private and the public sector among domestic and foreign experts was the main aim of this conference.

The ninth year of the European Entrepreneurship Forum laid conditions for active participation of domestic and foreign attendees.

The organizers encouraged the participation of students and young economists. Competition for the best paper of the young economist up to 35 years was announced. Conference details are available at the web site of the conference at www.efp.cz.

The conference was successful not only among participants but also in the national media.

Bojka Hamerníková

NEWTON College

Prague, Czech Republic

EFFECTIVENESS OF COMPETENT DECISION MAKING OF PROFESSIONAL MANAGERS IN THE CONTEXT OF THE MODERN CORPORATE ENVIRONMENT AND ITS REQUIREMENTS FOR THE QUALITY OF THEIR SKILLS

Eva Ambrozová, Jiří Koleňák, David Ullrich, Vratislav Pokorný

Abstract

The text focuses on development trends of the modern corporate environment and on changing requirements placed on the preparation and skills of professional managers. It presents selected characteristics of the developing corporate environment and formulates further parameters, additional standard models that describe or characterise the abilities and dispositions of managers. This paper also describes partial results of pilot study focussing on identification of sub-indexes for the development and validation of a unifying N-dimensional index X-tream. In the context of professional preparation and education of individuals for management and business in modern corporate environment, this paper describes what people´s natural potentials are and how these potentials lead to so-called Subtle Skills, which can be further refined through Connatural Management approach. These skills cannot be acquired through common models of preparation and development, but they can be identified and further developed. They include potentials and abilities that stand beside the hard and the soft skills and form the background of good or bad results of professional managers and entrepreneurs; or they are linked to risk of various types of failures of what we call „the human factor"– be it in the form of making wrong decisions, taking wrong actions or in the form of nervous breakdown of a project/process bearer.

Keywords: professional manager, corporate environment, psychophysical and mental condition, Critical Thinking, load, Cognitive Management, X-tream index, Connatural Management, Subtle Skills

JEL Classification: M14

Introduction

Our environment is constantly changing, just like us. Similarly, characteristic features of human systems created by us within this environment for various purposes and functions also constantly change. Though we can agree with these general allegations, it is difficult for us to fully comprehend, imagine and respect their full consequences. Exploration of the ever-changing environment is always somewhat lagging behind its development, change and transformation. In other words, the achieved knowledge in various scientific disciplines tends to be concerned with the past. It is also important to note that our findings (the so-called „cold knowledge"), although properly verified and published, are only statements of our experience with something - testimonies of particular variants of knowledge inevitably limited by the discipline in which they are formulated. Thus they are not images of true reality and its development and transformation. Most importantly, they provide no firm knowledge that would allow us to correctly predict and influence its future development. The above mentioned statement is valid in relation to both the environment and to the people inside this environment, and in relation to human systems that are defined, organised and managed by its relationships.

In the following text we focus on the corporate environment from the perspective of management and business, and on changes of needs and requirements related to human potential in this environment. We consider thoughts on differences and trends that can be observed in processes of selection and preparation of people, and can be encountered in real life situations. At the same time, we bring first results of a pilot study focussing on identification of sub-indexes for the development and verification of a unifying N-dimentional X-tream index. This topic is presently being addressed as part of IGA project titled „Relationship Between Aspects of Critical Thinking and Personality Styles and Types, Possibilities of its Identification and Shaping in the Context of Managerial Decision Making and Problem Solving“ undertaken by NEWTON College in Brno.

In our concept we view the modern corporate environment either as the environment of a single company or organisation, or as environment of whole corporations with units acting as legal entities. We reflect on the qualities and potentials of individuals to effectively tackle demanding situations, situations of change, management and business; professional managers and entrepreneurs who not only decide and act in various specific situational na professional contexts, but who also organise and lead human systems in dynamically changing, complex environment. We focus on options, approaches and methods of their identification, development and cultivation and draw on the experience of preparing individuals for the demanding, security related and corporate environment.

1 THEORETICAL BACKGROUND

We use the notion of corporate environment in the context of professional management. It allows us to approach considerations about professional managers, their suitability and preparation for the performance of activities and functions within organisations and in organising relationships and processes between these organisations, in wider environment, both in a more complex and, at the same time, in a more detailed and specific manner. Professional management is about the creation, organisation and management of relationships and processes. It is therefore not only about leadership and management of people and of human systems, but also about creation of knowledge needed for making decisions and taking actions, sharing of information, networking, process management and others. It turns out that the significance of the so-called cold knowledge and skills provided in the preparation and education by classical training models, decreases dramatically in the modern corporate environment. It is not just about how quickly becomes information and knowledge obsolete in relation to development of the specific professional environment, or in relation to their availability, but about how quickly do requirements for the use of new methods or technologies change too.

As indicated in the introduction, we consider corporate environments in two basic modes. The first mode is the environment of single organisational unit, which is part of a human system– the environment of a company (corporation). The second mode is the environment formed through the existence, functions and activities of corporations that act as legal entities. The first mode is specific due to the following: the environment of each economic subject active in corporate environment creates „internal knowledge“ world with its own value system, specific organisation of relationships and forms of exercising influence, control and power as well as cognitive models for decision making and taking action. These aspects are reflected in the internal and external environment and are closely related to qualities of potentials and professional abilities of individuals who are, or want to become, members of this environment. They are closely linked not only with what this organisation, resp. economic entity, provides, but also with the way it is included in the corporate environment, which means with the modality of the subject´s function for the environment (defined by the specifics of its product,

service, activities) and with the way it behaves, acts, decides and thus with the way it survives in this environment. In terms of the second mode, the above mentioned aspects of the internal environment of a single economic subject/entity/business, i.e. its values, functions, methods of learning and organisation of relationships, inevitably follow the values, functions and relationships of the outside environment that, in case of the corporate environment of business and trade, determine whether the particular subject survives or not.

In this context, there seems to be an important distinction – depending on whether there is a prevalent strategy of thinking, learning, decision making and action/conduct in the internal business environment (or in the external environment), which, one side of the continuum, constitutes a strategy to gain influence/power, superiority and victory, and on the other side constitutes cooperation, usefulness, meaningfulness for the environment etc. Business survival, or rather business existence, depends in the long-term on the extent to which is its internal environment in harmony with its external environment. Mobility in this continuum, the degree of consistency, balancing out and harmonisation of "relations" and processes, is one of the criterions of modern professional management. We emphasize that it is not just the social or interpersonal relationships. These relationships form just one layer, or aspect, of the relations of the whole organisation and of its environment. Professional managers are, in terms of the above mentioned, core agents of the organisational environment, their dominant function being organisation and management (creation, maintenance and cultivation) of relationships within the internal environment and relations between the business and its external environment.

In this context, development trends of modern corporate environment point to a need to define, or formulate, requirements for the quality of professional managers´ abilities separately from the traditional models that emphasize, with various degrees of importance, aspects which are both typical for the environment of a specific discipline that created the model (for example economy, psychology of work, sociology etc.), and at the same time are influenced by specifications of the environment for which they were created (for example, manufacture). Systems of education, selection and preparation of employees, such as labour agencies or schools, educational organisations and training centres, must cope with these theoretical models simulating practical requirements. But these same institutions are also limited by their specialisation or professional focus.

In this respect we emphasize that in the modern corporate environment, there is a significant growing trend that characterises the environment as artificial – but not because it has been created by people, but particularly because there has been a marked increase in the use of modern communication and information technologies. The consequences of this trend include, for example, specific reduction in cognition, application of AI models for data and information processing and for their transformation into „knowledge", which affects, for example, agility of thinking in the cognitive continuum and the way managers cognate, make decisions and act. More about this can be found, for example, in L. Kostroň (1998), K. R. Hammond (2000), N. N. Taleb (2011, 2013, 2014), D. Kahneman (2010, 2012), M. Spitzer (2014). The consequences of using application potential of modern technologies include, on one hand, the fact that this "artificial" environment constantly evolves itself, and on the other hand the fact, that the growth dynamics and complexity of its development, as well as the growing scope of consequences of decision making and of the following actions, exhibit characteristic features of challenging environment and thus require increased potentials, dispositions and abilities needed for long-term coping with demanding situations, greater dynamism of changes and associated stress load. In other words, the environment starts to require dispositions and abilities regularly used by people only purposefully and situationally, and only rarely over a prolonged period and never permanently.

Partial selected outcomes in requirements placed on professional managers active in modern corporate environment stem from the analysis of trends of this environment´s development:

1. Networking literacy and IT management, competences for the use of the full potential of modern communication and information technology for the creation of networks, information, and knowledge and for their sharing, creation and organisation of relationships and processes. Competitive advantages currently last very short time. Proactivity, speed, critical, creative and system/contextual thinking turn out to be the most meaningful abilities.
2. The ability to cognitively handle the change of conditions and the development of relationships in terms of mental agility displayed in decision making and behaviour in varied environment and under various situational conditions (natural/artificial environment, decision making under uncertainty, uncertainty and risk, solving of analytical tasks/heuristics, etc.)
3. The change of nature of work, dynamics, demands and its overlap into personal life in all areas and fields, places greater demands on the personality of individuals involved, their ability to keep, cultivate and develop psychophysical and mental condition.

These and other changes place specific requirements on the selection and preparation of professional managers for their work in modern corporate environment, not only in terms of knowledge, but also in terms of their using their natural potential abilities and skills at the end of their preparation. Dynamism and complexity of system changes, and of their environment, place smaller emphasis on specific knowledge and higher emphasis on skills, mental condition and performance in decision making and behaviour, on personal development and transformation of natural potentials into abilities and skills required by specific period, situation, process and environment. For example, on the psychological spectrum we can observe the emergence of dominating aspects of extremely saturated specific personal dispositions or qualities that are not standard in everyday interpersonal contact and relationships. These qualities can, depending on the situation or task at hand, reach even values typical for psychopathy (K. Dutton, 2014). Nevertheless, as long as the individual in question uses these qualities in a detached manner, with reflection and purpose, these qualities can be perceived as useful and even desirable for the mental agility in handling demanding, extreme situations, creation of knowledge and finding solutions for decision making and acting in changing situations and under conditions of uncertainty, execution of activities and functions under specific conditions. Generally, cognition in this field, in terms of abilities´ quality and of their cultivation, works from the man´s outside to his “inside”. As good examples we can mention various modern approaches, methods and disciplines, for example various ways of applying cognitive sciences and neurosciences (neuroleadership etc.) that are currently on the rise and during preparation of professional managers turn attention to personal growth and to permanent self-development of natural potentials, both in terms of personal and professional life.

It turns out, that besides the knowledge and skills that can be acquired and learned through education and training, there is also a great field of natural potentials that stand at the background of abilities and skills but cannot be approached by this traditional way. These potentials are related to qualities that manifest themselves as the following levels of selected abilities which are heavily influenced by mental condition of any individual:

- Mobility between concrete and abstract (for example solving of heuristic type problems, decision making and behaviour in specific situations versus system, process and mediated decision making and management).

- Mobility in the cognitive continuum from primarily analytical to largely intuitive (L. Kostroň, 1998, K. R. Hammon, 2000; D. Kahneman, 2012).
- Decision making and behaviour under demanding, dynamically changing conditions, burdened by uncertainty, lack of information or high risk etc.

From the perspective of the above mentioned information, it is important to think about a manager in modern corporate environment, be he active in a specific situation, or environment of a specific business/company, or in the network environment of global business (financial enterprise, travel and tourism, etc.), as of an individual – professional (i.e. he/she possesses professional mastery) with mature, complex competence for performing in specific professional and system environment. This means abilities and skills of certain quality that are not readily available by external models of education and training and are based on identification and cultivation of people´s natural potentials, because they are related to the levels of each individual´s psychophysical and mental condition (e.g. his ability to accept changes and adapt proactively to their consequences). They are also related to potentials for critical, creative and system thinking, ability to change cognition models needed for decision making and behaviour etc. which lie at the foundations of professional mastery of management as described, for example, by Senge (2007), Saliger, Pokorný, Pindešová (2010) and others.

X-tream index

We have been interested in people´s natural potentials that form the background of various abilities, skills and function, for a long time. It turns out, that these potentials are multidimensional – more dimensions translate into them, dimensions that can be used to describe any individual and can be explored by means of various tools, methods and procedures. We focus on three main dimensions. The first dimension is mental, or rather, cognitive condition. The second dimension is psychophysical condition and the third one is personal fitness/condition. The reason behind this is the fact, that sub-indicators, or parameters, such as knowledge, one-time cognitive performance in tests conducted under standard conditions, or physical performance under stress, or presence of selected personality traits, have only very low and limited accuracy when trying to predict people´s ability to handle a specific situation, make a correct decision or to predict their potential for failure. It turns out that validity of the prediction of peoples´ success depends on relationships between these dimensions (parameters) and on the way they are organised into an overall condition of each individual. Therefore, within the Connatural Management approach (hereinafter referred to as CNM), we focus on index named after the family of methods used to select and prepare professional managers – the X-tream index.

CNM approach, like Cognitive Management, focuses on natural potentials that form abilities and skills needed by professional managers to learn, make decisions, act and lead in modern, constantly developing corporate environment. In this sense, the CNM focuses on natural abilities that are inborn in varying degrees to all people, and hence also to human systems and to all situational contexts in which these people may find themselves. In other words, they are naturally found in any context and can be applied anytime and anywhere. These qualities, which are inborn to every person though in various degrees of quality and structure, are open to identification, management and cultivation and we call them Subtle Skills. They relate to natural potentiality of man, based on the ability to step out of familiar patterns of cognition, models of thinking, standards of decision making and norms of behaviour. As mentioned above, professional managers should have abilities and skills in all three areas (and not just in two as is often stated). These areas are:

- Hard Skills – related to profession, contain system related knowledge and skills necessary for a specific job;
- Soft Skills – skills necessary for creation, maintenance, development and management of direct relationships between people;
- Subtle Skills – fine skills and abilities (individual, implicit, tacit); they form on the basis of natural potentials.

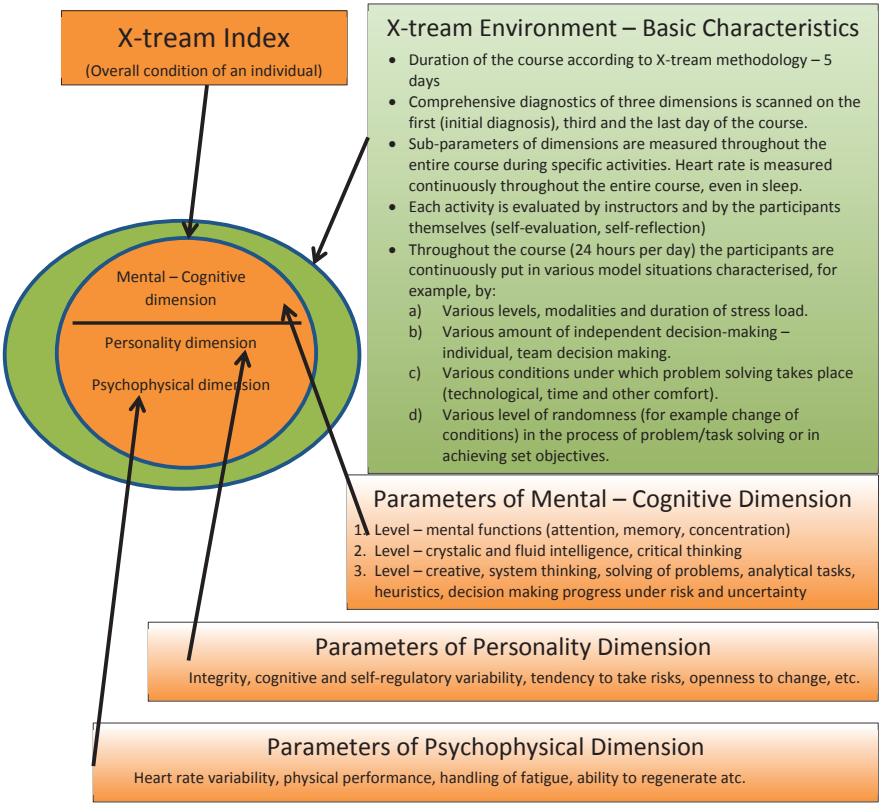
These three areas of skills and abilities are based on Cognitive Management (Saliger, Pokorný, Pindešová, 2010) and form the basis of CNM approach for the corporate environment (Koleňák, Pokorný, Ambrozová, 2013). CNM approach can be loosely translated as management of people´s natures. This formulation includes two aspects:

1. Management of people´s natures in the sense of managing natural qualities of people´s potentials (and the potentials of human systems);
2. Management of people´s natures in the sense of cultivation of the ability to recognise what is natural and what is artificial, and to respect natural conditions and effects of situations and of the environment, potentials of organisations and people for their existence.

The X-tream methodology is an environment with a sophisticated multidisciplinary variable stress load and methodology of testing both the quantity and the quality of people´s performance levels, and progress of changes of their condition in several dimensions and in various task situations. It enables us to create conditions for the above stated basic tri-dimensional and multidimensional testing and evaluation of indicators associated with performance of the participants and of the way the participants handle requirements of various task situations. In this sense, the actual methodology and experimental X-tream based selection and development courses have multidimensional character. In terms of indicators´ frequency rates and the complexity of observations, as well as in terms of observation of dynamism of changes, the methodology represents N-dimensional environment (M. Kaku, 2008, p. 48 – 54, Kostroň, 1998) and requires special approaches in terms of processing and evaluation of obtained data. Because identification of relationships between individual sub-parameters and dimensions is difficult in the traditional one, two or three dimensional environments, it was necessary to create a methodologically sophisticated unifying environment with multiple dimensions. But increase in dimensions in turn increases the complexity and demands on the measurement, collection and statistical processing of data. That is why we are dedicated to development and verification of N-dimensional index X-tream which includes three basic multiparametric dimensions and other dimensions expressing, for example, characteristics of requirements for task situations etc.

The following figure shows the sub-characteristics of the basic X-tream index:

Figure 1 - Sub-characteristics of the basic version of X-tream Index



Source: authors

Three multiparametric dimensions observed during the courses using X-tream methodology are:

a) Mental performance

b) Physical performance and psychophysical condition

c) Personality dispositions

We record not only the participants´ specific results in sub-tasks and situations, but we particularly watch the development trends and changes of the immediate condition of each of the participants. This places greater demands on the organisation of the course, standardisation of experimental task situations and continuous evaluation. In cases, where the course is conceived as a developmental course, greater importance is placed on reflection and feedback to the participants. In terms of the individual dimensions, we use standardised methods and technologies.

In the dimension of Mental Performance, the tests focus on intelligence, critical thinking, decision making under stress and mental functions, such as attention, memory, concentration and others. These factors are observed in terms of both – the quality and the quantity, under standard conditions and also at various stages of the course (non-standard conditions). Thus, we are not so much interested in partial results, but we are interested in trends displayed by the results of each participant, both, in terms of quantity and quality, throughout the course. This is true, for example, for the D48 Domino test. This test reveals mental potential of any individual in the zone of so-called Fluid Intelligence (according to R. B. Catell) and registers the achieved intellectual level, its sources and even allows for prediction of future intellectual performance. Practice has shown that aspects measured by sub-tests of so-called Crystalic Intelligence (e.g. IST method) were not reliable enough for our experiments. We also used Decision Making Under Time Stress test. This method maps complete performance of any individual under several types of stress: stress induced by a situation, motivation to perform, the test itself and time stress. Another test we use is Numerical Rectangle, which measures optical perception, selectiveness and distribution of attention under conditions requiring rapid performance. The last standardised method used by us is Attention Test d2, which measures individual performance in the field of attention and mental concentration.

In the dimension of Psycho-physical Condition we continuously watch and evaluate the participants´ heart rate (see for example K. Javorka, 2008) by means of Polar Team System set designed for group measuring. During the course we measured, for example, morning heart rate (as a response of the organism to stress load), heart rate during sleep – the average value, changes of heart rate during activities, for example after standardised physical condition tests such as Ruffier´s test (rest 10 minutes = heart rate 0, number of squats completed in 30 seconds = heart rate 1, in one minute = heart rate 2) or X-tream Test of Physical Condition (number of sit-ups in 1 minute, number of pushups in 30 seconds, Burpee test – stand up, squat, pushup, squat, stand up – 20times). We also observe changes related to various kinds and intensity of load during the course.

In the Personality Dimension, we focus on personality traits identified, for example, by GPOP methods. This method builds on the Myers-Briggs Type Indicator (MBTI). GPOP is based on the following assumptions: Differences in personality are manifested in different inclinations, respectively in different preferences. The various inclinations can be assigned to ten global scales that are combined in pairs: extraversion (E) and introversion (I), senses (S) and intuition (N), thinking (T) and feeling (F), orientation on decision making (J) or on perception (P), tension and relaxation. Big Five, a five-factor personality questionnaire maps the following factors: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. SPARO questionnaire identifies basal structure and dynamism of autoregulation, integration and psychological resistance of personality.

Results obtained through the above mentioned methods are gradually processed and finally used for identification of good and best individuals. What turns out to be possible, is the fact that relationships between sub-parameters and dimensions form a network environment, in which statistical methods can be used to identify levels of individual sub-parameters for the prediction of quality of the participants´ natural potentials; and also and especially, these methods can be used to identify groups of relationships, criteria and parameters that allow us to predict with greater certainty the amount of these potentials in each individual.

Besides the psychological and physiological diagnostic methods, we also used other cognitive tools, such as various model situations and tasks allowing open as well as hidden observation, linear, knowledge based and analytical tasks for observation of quantity and quality of performance, particularly heuristics examining output, result, type of decision making a the way participants solved the presented problems. Situations of continuous type and greater

complexity (complicated and longer lasting), including described cognitive, moral, social, emotional and other aspects turn out to be of great informative value. Generally speaking, the results of psychological testing show that good and better than good participants (qualitative research) demonstrate, for example:

a) Relative stability of internal structure in time.

b) Deviations from the norm, but not extremities.

c) Situational agility and the ability to quickly calm down in demanding situations and to recover after (or during) the activity and others.

Besides the measurements and the outcomes of sub-tasks, we also keep and evaluate observers´/instructors´ records, as well as records from the participants themselves (individual or group reflections).

The following text will focus on the critical indicators of mental condition as measured by methods D-48, DMUTP, NR and d2. The aim of the pilot research is to use statistical data-processing methods to identify critical parameters and to set sub-indexes, or formulas, for calculation of these indexes.

2 METHODOLOGY

We focused the pilot research on critical parameters and identification of sub-indexes of multiparametric dimension of mental performance using the data gained through methods of D-48, DMUTP, NR and d2 during the courses. Data for statistical processing were obtained during the courses with applied X-tream methodology. In total, there were 82 respondents of 20-25 years of age.

The D-48 Domino test is based on Spearman´s theory of g factor. The essence of the test lays in finding principles – rules of organizing relations, and reveals mental/intellectual, potential of any individual. It records both the achieved intellectual level as well as its sources and, in its concept, refers to so-called fluid intelligence (see Miglierini, B., 1989).

Test of Decision Making Under Time Pressure (DMUTP) is a method mapping complex performance of any individual under stressful conditions including several types of stress factors: situational stress (environment, testing, presence of a psychologist), performance motivation (the stated and the perceived aim of the test, individual reaction to stress), the test itself (reading, knowledge, number and clarity of the test entries) and time pressure. Specification of sub-abilities observed by the test include, for example: attention, quickness of reaction, ability to differentiate and to compare, visual short term memory, flexibility, concentration and resistance to distractions, quickness of decision making etc. The test observes, how quickly the subject reached a solution, whether the solutions were correct or wrong and the number of entries left unsolved (see Komárková, E., 1993).

The Numeric Rectangle test (NR) focuses primarily on testing optical observation ability, selectivity and distribution of attention under conditions requiring high rate of activity. Visual observation is determined by internal factors, such as the state and quality of nervous system, the degree of concentration, focus and oscillation of attention, level of visual perception and memory. External factors include the size of observed field, number of elements therein, their colour, shape, size etc.

Attention test d2 allows for determination of individual performance in the field of attention and mental concentration. This test is a standardised innovation of so-called “checking” tests. It measures the speed and accuracy in distinguishing of small visual cues (in detail

discrimination) and thus allows for the assessment of the participant´s attention or concentration. The test assumes identification of three elements of performance, which are: The speed or amount of work done, quality of the work done and the ratio of speed and accuracy of the work done (see Brickenkamp, R., Zillmer, E. 2000).

3 STATISTICAL DATA PROCESSING

Factor analysis is based on the selection of correlation and partial correlation coefficients. The correlation coefficient represents the closeness of linear dependence of individual variables and partial correlation coefficients. Partial correlation coefficient shows a similarity of two variables in such a situation that the other variables are assumed constant. If it is possible to explain the dependence of variables using common factors, the partial correlation coefficients are very small, close to zero. To perform the factor analysis it is necessary to have ***n*** observations of each ***k*** variables (X_1, X_2, X_3, …X_k). Correlation coefficients would be high in absolute terms, if linear dependences between defined variables exist. On the assumption that the condition of dependence of common variables is met, partial correlation coefficients of variables (X_1, X_2, X_3, …X_k) will be very small. Two tests can be used to assess the suitability of factor analysis (Škaloudová, 2010; Hinton et al., 2004; Řezanková, 2010; Field, 2009):

- ***Kaiser-Meier-Olkin*** (KMO) is coefficient reaching values between 0 and 1. Its value is calculated as rate of squares sum of correlation coefficients and squares sum of correlation and partial coefficients. Acceptable value is 0,50 and higher. Best one is 1,0.
- Usage of ***Bartlet's Sphericity Test*** is in testing null hypothesis that correlation matrix of variables is unit (i.e. matrix with numbers of 1 on the diagonal, while all other numbers are zeros). If null hypothesis is rejected, factor analysis could be used for defined variables. Best value of Bartlet's test is 0,0, but acceptable is 5% error.

Factor analysis measures relation between standardized variables X_i and linear combination of smaller number of hypothetic factors F_j (see formula):

$$X_i = a_{i1}F_1 + a_{i2}F_2 + a_{i3}F_3 + \cdots + a_{im}F_m + e_i$$

For i = 1, 2, 3, …k, where

k – number of variables

m – number of factors; ***m<n***

$\boldsymbol{e_i}$ – specific part of variable $\boldsymbol{X_i}$

The way to determine the number of factors and the size of the factor loads, represents extraction methods *of principal components* and gives non-correlated factors, sorted by their variance. Own analysis tries to reduce the number of variables to express variance of original variables. If there are high correlations between variables, the total variance can be expressed by one main component. The implementation of this method gives a clear factor solution where the variable produces the highest possible percentage of variance.

Cronbach's alpha indicator must be used to verify the factor analysis. This indicator is seen as reliability coefficient, which is used as kind of analogue of the correlation coefficient. Usually, it is possible to reach values in the interval <0, 1>. Zero as extreme value describes situation, in which individual variables are uncorrelated. On the other hand, the value of 1 describes the correlated variables. When the value is closer to 1, there is reported higher degree of conformity (Hrach, Mihola, 2006; Řezanková, 2010; Leech, Barrett, Morgan, 2005). Cronbach's alpha can be calculated by formula:

$$\alpha = \frac{N \times \bar{c}}{\bar{v} + (N-1) \times \bar{c}}$$

where

N – defined minimal sample size

$\bar{c}$– average internal covariance between variables

$\bar{v}$– average variance

4 RESULTS

Usages of factor analysis reveal the reduction of surveyed corporate performance indicators which companies use in their own measurement processes. The main input into factor analysis was a correlation matrix which showed the individual correlation values of the chosen indicators.

Factor analysis was applied to three fields that play important role in soft skills and abilities of individual employees. According to basic requirements of factor analysis, all fields were verified by KMO test and Bartlett's test of sphericity (see Table 1)

Table 1 - KMO and Bartlett's Tests for individual fields

		Performance tests
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.515
Bartlett's Test of Sphericity	Approx. Chi-Square	156.074
	Df	28
	Sig.	.000

Source: authors

In the first step, the least acceptable value of KMO test must be at least 0,5. Second step confirms applicability of factor analysis with significance of p value ($p\ value < 0{,}05$). From observed result, KMO test is acceptable, and was put under testing.

The total variance of inputs in the factor analysis can be explained by means of a description of the process of extraction. The beginning of extraction (Initial Eigenvalues) includes whole components which were put into the extraction. In the second step (Extraction Sums of Squared Loadings), according to the key (Eigenvalue ≤ 1), there is a reduction to the four strongest components which are used in the next step of processing. The last step (Rotation Sums of Squared Loadings) shows the differences in individual components. From this point of view, Extraction Sums of Squared Loadings with cumulative percentage is important.

The total variance of the field is explained due to eigenvalues, which represent the total variance explained by each factor. In extraction, all components were divided into two component groups, from which only one is strong. These new component groups show various depth with the previous four components (see Table 2).

Table 2 - Rotated component matrix for components

	(1)	**(2)**	**(3)**	**(4)**
Solution Q ment. Potential	0,088	0,024	**0,789**	0,102
Solution DMUTP	-0,024	**0,764**	0,015	0,268
Solution NR	**-0,970**	0,019	0,022	0,043
Solution d2	-0,070	**0,756**	0,027	-0,230
Errors Q ment. Potential	-0,098	0,015	**0,806**	-0,026
Errors DMUTP	0,082	0,282	0,064	**0,707**
Errors NR	**0,972**	-0,072	0,010	0,035
Errors d2	0,085	0,226	-0,023	**-0,745**
Cronbach's alpha	***-18,399***	***0,385***	***0,381***	***-0,311***

Source: authors

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.a

a. Rotation converged in 5 iterations.

Calculation of the final value of acceptable factors required the transformation of individual coefficients. These coefficients have become the significance of used elements. Their sum total has to be 1. The index was defined by this procedure.

$$Index\ 2 = 0{,}6552 \times RR + 0{,}3448 \times RD$$

where

RR – Solution of DMUTP

RD – Solution of d2

Calculation of the final value of acceptable factors needs the transformation of individual coefficients. These coefficients have become the significance of used elements. Their sum total has to be 1 (similar to negative figures which must be equal to -1). The index was defined by this procedure.

$$Index\ 3 = -0{,}4947 \times RQ - 0{,}5053 \times CQ$$

where

RQ – Solution Q mental potential

CQ – Errors Q mental potential

On the basis of the calculation index of the factor, the mean value of the index was found. This value represents the average factor for each set of data recorded. We can say that these indices reflect low bonds within a factor. This is due to the range of possible answers listed in the questionnaire.

Table 3 - Evaluation of observed factors

	Mean	Standard deviation	Variance
Index 2	1,73	,44170	,195
Index 3	1,1448	,43888	,193

Source: own work

To modify the indexes, it is necessary to use a rating scale for companies which determines, whether the tool is used. For the calculation of the total index, it is necessary to put the answers of individual respondents into the appropriate index formula and compare them.

5 DISCUSSION

Using statistical data processing and factor analysis, we gained several key parameters for formulas describing two partial indexes related to mental dimension. The mental dimension is one of three main multiparametric dimensions of N-dimensional X-tream index. Besides these three dimensions, the X-tream contains also other dimensions that express, for example, characteristic changes of stress load, specific requirements of task situations, etc. The mental dimension therefore constitutes one of the first steps through which we try to create a functional system of individual partial indexes that will be used in various situations, in the context of a specific managerial position, difficulty of tasks and environment.

The aim of our study is particularly to:

- Find factors with key indicators in the various dimensions.
- Find key relationships between the various dimensions in relation to the abilities of individuals to manage, both quantitatively and qualitatively, the requiremens of tasks and problems solved during the X-tream course.
- Identify objective criteria and parameters enabling a comprehensive evaluation of people´s potentials for the prediction of their abilities to cope with the demands and requirements of problems solving, decision making and acting under changing conditions of task situations.

It turns out that the quantity and quality of individual´s mental performance under changing (non-standard) conditions, and its trend, is dependent, apart from the ability to quickly adapt to environment of the specific task situation, also on the ability to immerse in the solution and discover (comprehend) quickly and precisely the nature of the problem or task (parameter of DMUTP solution). Another important factor is the ability to correctly apply relatively simple algorithm over a prolonged period of time (parameter of d2 solution). It also turns out that there is another key indicator that determines success under changing stress load and growing demands for psychophysical and mental condition. It is the ability to learn as you go – an indicator that is closely related to fluid intelligence (parameter RQ), and also the ability to correctly understand principles, relationships and contexts and the ability to identify these on the basis of external parameters. Significantly contributing are probably also individual dispositions, and particularly aspects of the will, that shape each individual´s focus on the quality of performance expressed by the Error trend (parameter CQ).

Variations of environment through changes of external conditions affecting performance (both in terms of quality and quantity) also show, that individual´s performance in cognitive tests and in some mental functions conducted under standard or optimal conditions has only limited informative and predictive value in relation to quality and quantity of the individual´s performance under changing conditions of task situations.

Conclusion

Development of the modern corporate environment presents, in terms of people selection and preparation for the role of the professional manager, numerous questions that need to be addressed in a complex and multidisciplinary manner using modern knowledge. It turns out that in addition to traditional models of development, preparation and education of professional managers, as well as cultivation of their hard and soft skills, it is also necessary to explore and address other ways and possibilities that lead to mastery in professional management. One of these options is the identification and cultivation of natural potentials that form the „background" of subtle skills – or rather, that are the source of the subtle skills. This is the reason why we apply Connatural Management Approach, develop X-tream methodology and strive to define a unifying X-tream index. We consider a comprehensive, multidisciplinary approach, multidimensional and multiparametric environment to be a necessary, and, if used in conjunction with modern knowledge and technologies, also a possible way for effective preparation, identification and development of natural potentials of people for the abilities and skills of professional management in the modern corporate environment.

In our pilot study, we focused on identification of key parameters and the creation of sub-indexes of multiparametric **dimension of mental performance**, using data from tests of D48 Domino, Decision Making Under Time Pressure, Numerical Rectangle and Test of Attention d2. By means of statistical data processing we determined and defined formulas for calculation of two sub-indexes. Index Solving (DMUTP/d2) and index Mental Potential (RQ/CQ).

The aim of our research is to identify key parameters that would enable us to capture critical aspects related to the effectiveness of learning, decision making and conduct of professional managers in the conditions of dynamically changing environment of situations and tasks. The key parameters served us to form mathematical models of the indexes that allow for the identification and verification of the level of natural potentials of people and thus create conditions for their appropriate cultivation into skills and abilities needed for not only handling the demanding environment, but also for their ability to permanently and proactively adjust to the changing requirements of the environment. It turns out that individuals with higher values of mental performance in the identified indexes demonstrate the following tendencies when facing situations and tasks under changing conditions:

Approaching each situation with respect and discretion, regardless of the pressures they are under;

a) Approaching each situation as a new challenge, in the sense of the ability to constantly learn (whether in terms of improving their own methods and procedures, or in terms of inventing different, new a more efficient solutions), regardless of whether the task is familiar or completely new;

b) Preference of energetically least demanding solutions (for themselves, the solution system and the environment), critical, system and process thinking;

c) Greater courage in the sense of going pragmatically to the limits and beyond the limits/horizons of the situations and of the possibilities of their solutions, realistic evaluation of risks.

d) Personal awareness of their own final performance quality;

e) Preference of personal/situational distance, neutrality, self-control and self-awareness;

f) Efficient regeneration, cultivation and development of psychophyzical and mental condition.

Basically, these are the aspects that can be identified both in the natural personal dispositions of individuals and in their behaviour too. These aspects are closely linked to their performance under various conditions and situations, and especially, to the procedures and ways used by these people, either explicitly or implicitly, knowingly or unknowingly (spontaneously and naturally).

It is the trends in the results of these people, which in the course of modelled stress load point to qualities of natural potentials that contribute to their achievements. These are the qualities that cannot be drilled or acquired by external training, education or preparation. They can be identified, they can be discovered through their various manifestations, and only then can they be cultivated – but only if they are present in a sufficient amount. And if they are not? In this case, the individual can be „taught" appropriate procedures but that individual´s ability to apply or even transform them in changing situational contexts is doubtful. And this is what truly distinguishes potential masters of any profession, including professional management, from other members of the human systems.

Cognitive Management, X-Tream methodology and Connatural Management approach which we apply, are inspired by cognitive and behavioural sciences, neurosciences, philosophy and social sciences and various disciplines of psychology; for example, psychology of sports, martial arts, survival and psychology of stress load, limit and extreme situations etc. It uses modern knowledge, technologies and methods to help to create conditions for identification, development and cultivation of qualities of individuals´ potentials for:

- Cultivation, inducing and maintaining of optimal state of psychophysical, mental, social and situational condition;
- Mental agility for transitions between environments, systems, processes, contexts and task situations;
- Internal stability and integrity of individuals upon entering various contexts, positions, relationships and roles, for assuming appropriate situational (tactical) and system and process oriented (strategic) attitude.

In terms of preparation of professional managers for modern corporate environment, we need to remind the readers, that in our work we emphasize the importance of good quality, comprehensive and objective diagnostics for the identification of people´s potentials levels, and at the same time, we emphasize our conviction that the most effective outcome of the training and development process is an individual, who can think independently, critically and in a manner that is both system and process oriented. Such individual is also able to learn about how to learn and how to acquire new knowledge, choose right approaches and methods, and if needed, to transform them during the problem solving process. In this sense, we continue to create and verify the methods and indexes of X-Tream as a modern model for the creation of knowledge and learning of individuals throught the process of solving task situations.

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THE STATUS OF KNOWLEDGE MANAGEMENT IN INDUSTRIAL COMPANIES IN THE CZECH REPUBLIC: RESULTS OF THE RESEARCH

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Abstract

The aim of the research was to identify the current state of knowledge management in industrial businesses. To achieve the objectives, a qualitative research in form of questionnaires was performed. The research has focused on mapping the current situation of knowledge management in industrial businesses within the Czech Republic, further on identification of the strengths and weaknesses of the current use of knowledge management in practice. Last but not least, the research was focused on knowledge management techniques that are used in practice and to identify the horizontal and vertical permeability of organizations to share information and awareness of tacit and explicit knowledge in the organization.

Key words: knowledge management, industrial business, knowledge management techniques, competitiveness

JEL Classification: M12, M15

1 KNOWLEDGE MANAGEMENT

Knowledge management is an important component how to influence most of companies. Knowledges are seen as strategically most important resource and learning, as strategically most important power of enterprises and organizations. The attention of knowledges and their management dramatically grow over the world and it covers a lot of levels. We use knowledges at every level in any company or institution without realizing. Then working with the knowledges is individual and it depends on leadership, how to care and disseminate it among other employees. If you ask manager today to use knowledge management, it is common to hear from them that it is an extra work. There is nothing easier to answer if he knows if anyone from the company already solved the same problem, how and what was the result.

It is good way how to get a lot of managers to think about advantages of this type of management and to start to be interested in its uses, because in fact it can save a lot of time. Global aim of research is to identify contemporary level of knowledge management in Czech companies. To be successful was necessary to fulfil this partial goals:

- Verify current situation of knowledge management in the companies
- Identify negative and positive factors of using knowledge management in Czech companies, especially strengths and weaknesses of current use
- Identify used methods of management
- Identify permeability of horizontal and vertical levels of organizations for information and identify tacit and explicit knowledge in organization

1.1 Sources and techniques

We had to get a lot of information to meet the objective of given goals. For this reason, from January to February 2013 was realised quantitative questionnaire research.

In quantitative questionnaire research were chosen 300 industrial enterprises situated in the Czech Republic. In the routing who choose for questionnaire was used following assumption: managers are too busy to fill in a questionnaire. The lowest management level will not have all information needed to fill in questionnaire and because of that the questionnaire is primarily determined to middle management. Companies were chosen from very broad European databank placed online on the Internet. 1

In the table shown below is possible to see the frequency of each ways of addressing, including the return rate of questionnaires. There is visible that from 300 of sent questionnaires were returned and subsequently evaluated 119, which is 39,7% return. The highest rate of return (64,7%) was achieved during the personal meeting with owner of companies from research.

Table 1 - Number of questionnaires used for primary research and rate of return

DETAILS OF THE QUESTIONNAIRE SURVEY	WAY OF ADDRESSING SELECTED COMPANIES		TOTAL
	Letter	Personal meeting	
Number of handed questionnaires	150	150	300
Number of returned questionnaires	22	97	119
Return rate of questionnaires	15 %	64.7 %	39,7 %

Source: own processing

The questionnaire used for primary research included four topics which are mentioned in the following summary:

- General characteristic of the company (field of business, number of employees)
- Questions exploring the level of information technologies and information systems in the company
- Work with human resources
- Organizational structure of the company and style of informational management

Questions in the questionnaires have been selected to allow:

- Optional answers in form of selecting from the offered options (and limited to single choice or multiple response answers)
- Answer yes or no
- Additional and free answers.

[1] www.edb.cz. There is a search portal where you can find information about more than 180 000 companies from the Czech Republic including contact details.

2 RESULTS OF THE RESEARCH

This part provides brief overview of the results of the primary research which was measured to determine current state of knowledge management in industrial enterprises.

2.1 Using of management methods

The first area of the questionnaire research was focused on the using of management methods in industrial enterprises. Questions concerned frequency of the formal and informal meetings in the company, the existence of teams etc. The results are shown below. From the respondents, 68 % of them answered that they take place of formal meetings at least once a week, 28,6 % organise formal meetings once a month and 3,4 % of respondents organise formal meetings once a year.

From the respondents, 50,4 % answered that they took place of informal meetings at least once a week. 21 % respondents organise informal meetings once a month. 25,5 % of respondents organise informal meetings once a year and four organisation don't take place of any informal meetings at all. There is deliberately not shown the list of any informal events.

The reason of this question is to determine transfer of information between vertical and horizontal levels and especially the intensity of transmitting information. Informal meetings are usually not so important in information. Organising informal meetings or events are good basis for sharing tacit knowledge. More than 50 % of the respondents organise informal meetings once a week which is the best option. The rest of the respondents should focus on more frequent organising of informal meetings. The reason is to increase informal contact at least of key employees with other employees.

Questions about formal and informal meetings follow information transfer between vertical and horizontal levels. There is communication between superior and subordinate and between colleagues at the same organisation level at the regular meetings. This leads to transfer of information. It is necessary to realise that the outcome of formal meeting is usually information transfer in the form of explicit knowledge. A lot of respondents (68 %) organise management meeting once a week which is the best choice. The rest of the companies should focus on more frequent organising of formal meetings. Or they can ensure transfer of explicit knowledge in another way.

The main advantage of the team is well known "two heads are better than one" and also faster respond to unexpected events. Teams are created in order to carry out the planned project for organisation or specific task which is usually beyond the normal duties. Frequent participation in teams is one of the best tools for transfer tacit knowledge between employees. While not creating any teams indicate to poor sharing of tacit knowledge. In this regard respondents have a lot of weaknesses. I recommend try to support more frequent forming of teams. 31 % of the respondents do not have any fixed teams and they form team just sometimes. They should consider advantages of permanent teams and try to use them. 21,9 % of respondents do not form teams at all.

Respondents must consider if they would like to share hidden knowledge and possibly using other tools to share tacit knowledge to eliminate deficient of this type of knowledges.

2.2 Meaning of organizational structure

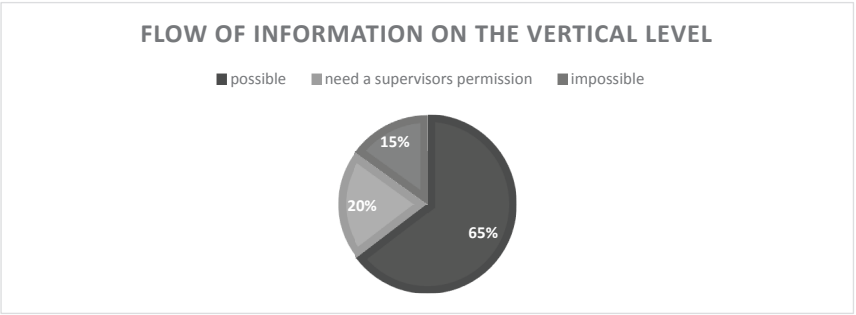
Another part of the research was focused on organizational structure. The questions were about delegation of tasks, information flows in the organization, and more. The results are shown below.

This question was answered by 119 companies. 115 (96.6%) of them answered, that they have an idea about the work of their colleagues. Only 4 companies (3.4%) responded that they had no idea about the work of their colleagues.

Next question is following: What is the flow of information on the vertical level in the company? If the participant does not have an idea about the work of his colleague, then the flow of information in the company is on very poor level. It is important to have well mapped hidden knowledge associated with individuals. If we do not have all the knowledge needed to solve certain problem, we have to know who is able to solve it instead of us. Situation where employees usually have no idea about the work of his colleagues is usually result of keeping old organizational structures. If you are able to identify issue mentioned before, we recommend you consider upgrading to a more modern type of organizational structure.

Seventy-seven companies (64,7%) stated that they are able to show results of work made by their colleagues in the case of interest. Twenty-four companies (20,2%) responded that they must ask their supervisors in case of interest. The rest of companies (15,1%) responded that they have no possibility of access to this information.

Figure 1 - Flow of Information on the Vertical Level in the Company – Research Results



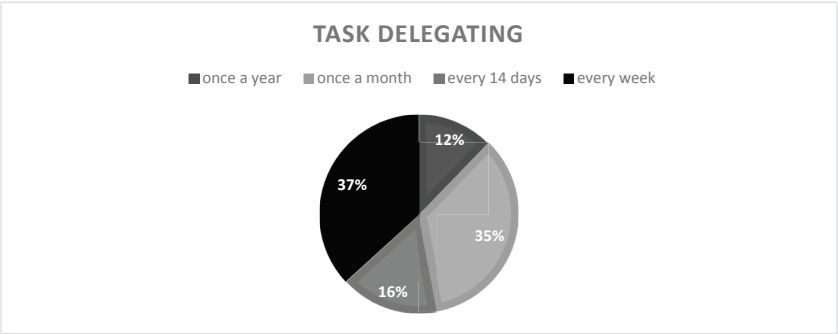
Source: own processing

Question examines the flow of information on the vertical level in the company. Question is also examines if it is possible to exchange knowledge within the existing organizational structure. This problem can also be solved with maps of knowledge. Employees can then more easily acquire new knowledge. Employers are also able to control the flow of knowledge within the company to improve the flow of knowledge to all employees.

This question was designed to determine whether subordinates can get to the information from his supervisor or not. Reluctance to delegate indicates a lack of confidence in their employees, which results in lower transfer of information between vertical levels in company. The very high number of companies (70,6%) usually delegate their task. After considering this fact, we may say that the communication on vertical levels is very good.

Another question which was given to companies was about delegating task. Thirteen companies (12,3%) answered that they delegated task at least once a year. Thirty-seven companies (34,9%) responded that they delegated at least once a month. Seventeen companies (16%) responded that they delegated at least once every 14 days. Thirty-nine companies (36,8%) responded that they delegated at least once every week. This high number may be explained by involving many large and medium-sized companies where delegating is common.

Figure 2 - Frequentation of Task Delegating in the Company – Research Results



Source: own processing

For delegating task is needed very good information between different horizontal levels. Frequent delegation is also an indicator of trust between senior and subsidiary. Frequent delegation leas to feel of necessity on the side of subsidiary. In case of using the knowledge management system, there is high chance to attract interest in subordinate knowledge management. Within delegated authority they are currently assigned access rights to knowledge that will be needed to accomplish the task.

The next question examined preference of different type of communication. Eighty-five companies (71,4%) prefer oral communication within company. Thirty-four companies (28,6%) prefer written communication or via email. This question examines the stance between explicit and tacit knowledge. Verbal communication is a better for sharing tacit information. Written communication or e-mail is better to share explicit knowledge. Companies that have answered that they preferred the oral communication are often investing enormous resources in information technology. It is possible to say that most organizations do not have a clear strategy for knowledge management.

The next question monitors whether employees are precisely prescribed procedure of communication or not. The question also examines if there is stoppage of information on important positions. Responses show that the majority of companies (58%) do not control any kind of regulation within company. I tis major problem which should be solved as soon as possible. If the information is being sent based only on immediate needs then there is real threat of not getting information in time.

This question was answered by 54 companies (45.4%) that information is being forwarded exactly as organizational structure says. Forty-four companies (37%) use their system for transmitting information. Twenty-one companies (17.6%) don’t use any kind of regulation in case of transmitting information.

Regulated flow of information is a springboard for the implementation of knowledge management. If information as able to spread between levels easily, it is easy also for knowledge. If it is hard to spread information in company, it is possible to say it will be hard also for knowledge.

The aim of the question was to determine the state of the flow of information in company. If information flow follows the organization structure it is the best way. If there is deviation it means that organizational unit has no information. This survey has been greatly simplified and it would be appropriate also to determine the cause. However, for the unveiling of the biggest weaknesses was the finding that derogation enough. Companies in which the information flow deviates from the organizational structure should this deficiency as soon as possible to rectify. The first step is to identify which areas are information flows severed. In the second step should be to determine the causes that led to the breakage of the information flow. In the third step, it is necessary to implement organizational elements. The best using directive or an internal standard set of communication rules for all organizational units.

In case of missing proper flow of information it is necessary to correct this deficiency. The best way to correct flow of information is employee within company from senior management. He should be able to choose which kind of information is needed for every position. Also the chosen one should not be delegated. The most of respondents replied that controlling person was from senior management. It is very good situation. The situation is a bit complicated for organizations where is an authorized specific employee management. It is necessary to take into account the organizational structure of the organization. Both a manager and authorized employee have limited options in large organizations with a classical type of organizational structure which will be the organizational structure in terms of management control from top to bottom. Information here spread especially along the vertical line and the horizontal line is in most cases completely impermeable. Both a manager and authorized employee responsible for the flow of information have to insist on strict rules about flow of information throughout the entire organizational structure.

The situation is different in the modern types of organizational structures. For example in bottom-up structures that are already flexible and flat. It is useful to motivate employees to create and recording knowledge. Information about knowledge is passed on oral or written form along the vertical and horizontal lines. In a mixed organizational structure the flow of information is controlled by mid-level managers on mid-level. I tis not effective to use top management. It doesn't have such an overview. Senior management in this case is only the creator of a knowledge strategy.

This question was answered by 51 companies (42.9%), they have exactly defined company functions and work. Sixty-six companies (55.4%) has a job description and declared partly. Only two firms answered that their staff acted fully in accordance with their intuition.

Discretion in determining the workflow is a good sign for the fulfilment of the knowledge system with new knowledge. I tis needed to rate the type of organization. Companies that focus on science and research should prefer greater flexibility in work practices than manufacturing firms. Employees must always know the scope and purpose. How to reach the target may be different and if leaders give the freedom to employees in their work, they may develop better procedures. The employees then may provide further the system of knowledge management. Choose the degree of freedom in the performance of job duties is a difficult task. I tis mostly on emotion and experience of managers. However, if employees will strictly adhere procedures, there is not very good chance for new knowledge.

3 DISCUSSION

Research was focused on identifying the current state of knowledge management in enterprises. Based on results of this research is possible to say.

- High percentage of respondents (94,1%) say that their information technologies are modern and correspond to current needs of the company. This fact is very good for the implementation of knowledge management.
- Czech companies are very well equipped with technology and the vast majority of companies is connected to the Internet (98.3%). This is a good basis for sharing explicit knowledge.
- A substantial part of company activities is in most cases focused on technical equipment.
- Many respondents (68%) organize management meetings weekly which is absolutely ideal situation for sharing explicit knowledge.
- Frequent participation in teams is one of the best tools for the transfer of tacit knowledge among employees. Therefore, 52,1% of companies respond the usually form team to solve common problems. Approximately 26% of companies create teams only exceptionally. It means bad transferring of tacit knowledge.
- Companies responded that they preferred the oral method of communication. However, they are investing enormous resources in information technology. It shows that most organizations do not have a clear strategy for knowledge management.
- After checking results, there is apparent ignorance of knowledge management strategies among the majority of respondents. Explanation might be poor awareness of employees as well as respondents who said they have an IT system to support knowledge management, often they answered that they preferred the oral transmission of information.

Summary

The aim of the research was to identify the current state of knowledge management in industrial businesses. To achieve the objectives, a qualitative research in form of questionnaires was performed. Of the 300 questionnaires sent, 119 ones were returned and subsequently evaluated, which represents a 39.7% return. The surveyed area was focused on use of management methods in businesses. The obtained results show that 68% of enterprises carry out formal meetings at least once a week, informal meetings take place in 50.4% of enterprises at least once a week. Teamwork is preferred to deal with frequent problems in 52.1% of businesses and 21.9% of businesses do not create teams at all. Concerning the delegation of tasks, 70.6% of companies delegate their task, which implies that the permeability also at vertical levels is very good. Method of communication preferred by 71.4% of businesses is verbal communication, the remaining companies prefer communication in writing or via email. Based on other results, it is evident that in 45.4% of businesses the information is transmitted exactly in harmony with organizational structure, 37% of businesses use information system to transfer information and 17.6% of respondents do not regulate the flow of information in any way. The research also showed that in 42.9% of businesses tasks and work activities are accurately defined, 55.4% have the work partly declared and the remaining companies indicated that their staffs act completely according to their intuition. The results also indicate that companies should draw a clear strategy for knowledge and to acquaint their staff with it. The research shows its ignorance,

although the company had IS with knowledge management, the staff often did not act accordingly, or they did not know the strategy selected.

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EFFECTIVENESS OF RESEARCH, DEVELOPMENT AND INNOVATIONS SUPPORT FROM PUBLIC SOURCES

Rut Bízková

In the year 2014, TA CR released the publication 1989+25=research useful for the society. It was a historical overview of organisational regulations and amendments which occurred in the field of research and development in the Czech Republic since 1989. At present, TA CR supports the project in which something similar is ascertained by means of oral history method - what was the support of research and development like in the last regime and which way it has changed in time, how were the previous decisions made and simultaneously perceived by the people, who were "in the centre of the matter."

One conclusion is quite obvious and probably no one will be surprised: historically, it was always examined if the state support is (sufficiently) effective and it was always concluded that it was not. In different times the notion of "efficiency" was heaving different contents. In 2000-2005, discussion were held on the formation of public research institutions concept and on the necessity to reform the whole system of support of research, development and innovations, to simplify it and to reduce the number of places from which state support is provided. At the same time, the main focus of research was getting transferred from the institutes of the Academy of Sciences of the Czech Republic to universities – at present 2/3 of research results are attributable to universities and 60% of researchers in public sector work here.

One of the main tools of simplification of research, development and innovations support was in 2009 the foundation of Technology Agency of the CR. At present TA CR plays the role of a main provider of support of collaborative applied research, i.e. cooperation of research organisations and companies on common projects in such a manner that the companies invest quite huge amount of financial means into a project – mostly 70% of its share in the project is paid from private sources, 30% gives the State, which at the same time provides 100% of eligible costs to cooperation with research organisations. Cooperation of research organisations and companies supported like this means that the State decreases the risk of unnecessarily spent company funds, supports research organisations for their employees to deal with issues which are socially useful and bear economic fruits and at the same time does not expect instant return of "its" funds in no other share in the success of the solution than the taxes of the companies which were successful on the basis of the results of performed research. Establishment of cooperation of research organisations and companies supported by the State usually afterwards implies further common research solutions which are determined by the needs of companies and are not financed by the State. The reform of the research, development and innovation system included also the assessment of research results, in applied research tied to the attainment of results like patents, industrial designs, prototypes and others. Although the "coffee-grinder" as a manner of research assessment and consequent "dividing" of financial support to individual research organisations is strongly criticised, it undoubtedly increased effectiveness of research, development and innovations state support. It is visible for instance in the growth of number of patents protecting results of research. Opponents often remind that there is no bigger economic effect seen behind these patents. However, it is the same as the Green Savings programme – it has occurred due to the reduction of greenhouses gases emissions. Despite its effect is negligible in this field, today nearly everyone knows that by isolating the house economises money for energies – "in short procedure" the biggest effect of ecological education occurred ever in the Czech Republic. Similar orientation to patents and similar results invites their authors to acquaint with patent law and turns the perception of

research and development as the source of common and to everyone accessible knowledge that the applicable knowledge is great fortune which is an intangible property of an author and commercially useful. This "coffee-grinder" effect has not yet been recognised. Upon such experience, however, it is time to make a shift in assessment of success or usability of research a bit further – from examining a result and assessment of effectiveness of state research, development and innovations support which is easily quantifiable, to assessment of impacts and application of results in practice. This issue is more complicated, such type of assessment is not much known and used in Europe because state support of research is different in different countries. In the Czech Republic, where the share of the added value created in industry is extremely high, in particular direct economic impacts of research results, as a case may be, innovations based on research, are important. It is worth going on assessing impacts by the method of counterfactual analysis, i.e. comparison of economic results of a sample of companies supported and not supported by the State, companies with similar characteristics. However, at the same time it would be good to assess all economic impacts of realised research, i.e. what state support of research meant for local environment, in which the research is conducted, what social impacts, in particular impacts on employment, such research has, how the export territory of companies is kept and broaden, how the research helped to make the environment in a particular country or region attractive (and effective) for business, living, social life. So far, we in the Czech Republic are not much able to do so, in particular we do not believe in "essays" because our experience shows that the most beautiful verbal assessment is made by those who do not do much. Both – quantitative and semi-quantitative/qualitative assessment were objects of the project Streamlining of TA CR, which was performed by the Agency in 2014-2015 with the support from Human Resources and Employment operational programme. After Finnish (counterfactual analysis) and American (StarMetrics method) model we thus have the basis for assessment of impacts of the supported research.

However, it is clear from the ongoing TA CR programmes that the tool of support - if it is to be effective in the long run – cannot be only one but that the tools have to be different and change in time. Huge TA CR Competence Centres, Alpha and Epsilon programmes for four- to eight-year cooperation of research organisations and companies and on the other hand minor Gamma programme - 1st Subprogramme may be the example. If the state support is to be effective, it is necessary to switch from grants to companies to grants of partial relief, e.g. in the form of interest-free loans.

Administrative demands of getting the support of research and control of its application is extremely important for effective support. Distress from extreme difficulty of administrative works is often substantiated. However, the amendment of Act No. 130/2002 Coll., on research, development and innovations support is necessary for attainting the situation when the State does not burden applicants by documentary evidencing of something which it already knows because it established public administration registers to this end. Materially it is not such a great problem – the act is now (January 2016) in the Parliament and for its adoption only good will to make the change suffice. Similarly, legislation regulation is needed in other spheres, usually amending the existing act. Supporting documents from the application of research, development and innovations support programmes which TA CR has and from projects the Agency made itself exist. Just necessary things must be made.

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EFFECTIVENESS AND EFFICIENCY OF OUTSOURCING IN SLOVAKIA

Marina Faďoš

Abstract

Outsourcing has become important for achieving business goals of Slovak companies. Almost half of the companies from Slovak Republic, who have taken part in our survey, were using outsourcing. The majority of them outsourced services. By analysing data obtained from the survey, we have confirmed that usage of outsourcing in the Slovak Republic is both, effective and efficient. Companies had more advantages than disadvantages from outsourcing, and they were more satisfied than dissatisfied with outsourcing relationship. They haven't wasted time, they were very efficient. The majority of companies were satisfied with outsourcing relationship.

Keywords: outsourcing, effectiveness of outsourcing, efficiency of outsourcing

JEL Classification: M2, D22, D23, C12

1 USAGE OF OUTSOURCING

Outsourcing was defined as a transfer of business operations, which were performed internally, to an external company. A company that provides outsourcing services has been specialized for providing services in a chosen field, and it is able to perform them better and cheaper than the company that hired them. Companies by transferring high cost operations to outsourcing provider can focus more on core business (Burkholder, 2006).

Outsourcing has become a global trend among companies. Revenues of worldwide companies who used outsourcing, rose from 45,6 billion US dollars in 2000 to 104,6 billion US dollars in 2014 (The Statistic Portal, 2015). Favourite destination of worldwide companies, to outsource their business was India, and they usually outsourced manufacturing (53%) and IT services (43%). Companies have decided for outsourcing because of reduction of costs (44%), to obtain IT resources they internally didn't have (34%), to free internal resources (31%) and so they could focus more on the customer (28%) (Statistic Brain Research Institute, 2015). 40% of worldwide companies used, or plan to use outsourcing, from which 57% used outsourcing because of its efficiency (Grant Thornton, 2014).

1.1 Outsourcing in the Slovak Republic

There are many macroeconomic factors which could have influence on companies in Slovak Republic, which made them decide to use outsourcing. Influence of inflation on Slovak companies described Majerčík and Bohdalová (2014), influence of economic crisis were described by Bohdalová and Greguš (2009). We didn't see necessity to analyse macroeconomic factors, our aim was to analyse experience with outsourcing, which companies from Slovak Republic had.

The research was made in 2013 for purposes of bachelor thesis (Faďoš, 2013). On the questionnaire responded 78 of companies from Slovakia, from which 41,03% were using

outsourcing, which is almost the same percentage as the worldwide usage of outsourcing (40%) (Grant Thornton, 2014). The majority of companies who fulfilled the questionnaire had from 101 to 500 employees (44,9%), annual turnover from 3 500 000€ to 20 000 000€ (43,6%) and they were from production or commerce industry (70,5%). The typical respondent who used outsourcing has also 101 to 500 employees (43,8%), annual turnover from 3 500 000€ to 20 000 000€ (46,9%) and it was from production or commerce industry (78,1%) (Faďoš, 2013).

To prove that the usage of outsourcing depended of company's turnover, we have set two hypotheses.

H_0: Usage of outsourcing didn't depend of the company turnover

H_1: Usage of outsourcing have depended of the company turnover

Usage of outsourcing depended of the company turnover (*p*-value=0,591 for Chi-Square test, which was calculated and interpreted as Render, Stair, Hanna and Hale (2014) demonstrated), and by measuring of association, we discovered weak relationship between them (*Cramer's V*=0,116; *Contingency Coefficient*=0,115; *Phi*=0,116, which were calculated and interpreted as Bruce, Patel and Shmueli (2010) demonstrated). We couldn't claim that by knowing the annual turnover of the company, we could ensure that, the companies have used or haven't used outsourcing.

Table 1 - Usage of outsourcing by annual turnover of the Company

		Annual turnover			
		Up to 3 500 000 €	3 500 000 € - 20 000 000 €	More than 20 000 000 €	Total
Outsourcing	No	18	19	9	46
	Yes	9	15	8	32
Total		27	34	17	78

Source: own resources

The majority of companies in Slovak Republic outsourced services (65,6%). In the table below were listed sectors to which companies outsourced their activities.

Table 2 - Outsourcing sectors

	Responses		
	N	Percent	Percent of Cases
IT	18	26,1%	56,3%
Financial Sector	11	15,9%	34,4%
Logistics and Production	19	27,5%	59,4%
Services	21	30,4%	65,6%
Total	69	100,0%	215,6%

Source: own resources

2 EFFECTIVENESS AND EFFICIENCY OF OUTSOURCING

Companies were considered effective, if actions that made didn't bring them more problems than benefits, and were satisfied with the outsourcing relationship. If the time that has passed before outsourcing provider started to provide his services to the company, was as short as possible, usage of outsourcing was efficient (Lacity & Willcocks, 2015). This time was divided into three phases: preparation for outsourcing, negotiation with outsourcing provider and time spent on transferring to outsourcing provider.

2.1 Effectiveness of Outsourcing

Companies used outsourcing because they wanted to reduce costs (68,75%) and focus on core business (65,63%). From Outsourcing provider they expected guaranteed quality of services (65,63%), decrements of costs (59,38%) and the possibility to focus more on core business (43,73%). 85,7% of companies who wanted to reduce costs also expected guaranteed quality of services, all of them expected precise planning of costs for maintenance and development from Outsourcing provider and to overcome their growth obstacles. In the table below could be found answers to questions: Why have you used outsourcing? What were the reasons?

Table 3 - Reasons for using outsourcing

Reasons for using outsourcing	Responses		Percent of Cases
	N	Percent	
To reduce costs	22	33,3%	68,8%
To focus on core business	21	31,8%	65,6%
To gain access to expertise	7	10,6%	21,9%
To innovate more	3	4,5%	9,4%
To ensure income growth	5	7,6%	15,6%
In order to improve the quality of our products/services	5	7,6%	15,6%
Because of variable cost structure	2	3,0%	6,3%
To centralize activities in enterprises	1	1,5%	3,1%
Total	66	100,0%	206,3%

Source: own resources

31,8% of companies saw a major risk of using outsourcing in finding the right partner, and 19,7% was afraid that the price of outsourcing will be high. The main disadvantages that companies saw in outsourcing were providing data to outsourcing provider (43,8%) and a fear from hidden costs (40,6%). The majority of the companies who saw a major risk from using outsourcing, in finding the right partner thought that, the major disadvantage of outsourcing is a loss of management control (37,5%). Disadvantages were listed in table below.

Table 4 - Disadvantages of using outsourcing

Disadvantages of using outsourcing	Responses		Percent of Cases
	N	Percent	
Providing data to outsourcing company	14	32,6%	43,8%
Hidden costs	13	30,2%	40,6%
Lower focus on customers	2	4,7%	6,3%
Loss of management control	7	16,3%	21,9%
Binding to the financial well-being of another company	5	11,6%	15,6%
None	2	4,7%	6,3%
Total	43	100,0%	134,4%

Source: own resources

48% of companies who used outsourcing services had a problem with the human factor and differences in corporate culture, 45,2% of them had a problem with quality of outsourcing services, and 41,9% with low flexibility for change. 40% of companies who expected that with the use of outsourcing services they could focus on core business had problems with management and monitoring of outsourcing. Half of companies who expected reduction of costs had from using outsourcing services problem with the long-term decrease of customer satisfaction. All companies who expected to overcome growth obstacles with outsourcing had no major problems from it. 40% of companies who saw as the main disadvantage from using outsourcing hidden costs and providing data to outsourcing company had problems with management and monitoring of outsourcing. In the table below were listed problems that companies had from using outsourcing.

Table 5 - Problems from using outsourcing

Problems from using outsourcing	Responses		Percent of Cases
	N	Percent	
Human factor and differences in corporate culture	15	25,0%	48,4%
Guaranteed quality	14	23,3%	45,2%
Low flexibility for change requests	13	21,7%	41,9%
The long-term decrease of user satisfaction	2	3,3%	6,5%
Deviation from charging expectations	5	8,3%	16,1%
Problems with management and monitoring of outsourcing	2	3,3%	6,5%
No major problems	9	15,0%	29,0%
Total	60	100,0%	193,5%

Source: own resources

To measure satisfaction of companies with outsourcing relationship, we have set a scale that is listed below in table below.

Table 6 – Satisfaction scale

1 – Absolutely dissatisfied, Outsourcing provider have not respected the obligations from the contract
2 – Dissatisfied, Outsourcing provider respected only the minimum of obligations, and created many problems and damage
3 – Dissatisfied, Outsourcing provider respected only the third part of obligations, and created many problems
4 – More dissatisfied than satisfied, Outsourcing provider disrespected more than half of the obligations from the contract
5 – Merely satisfied, Outsourcing provider respected almost half of the obligations from the contract
6 – Merely satisfied, Outsourcing provider respected half of the obligations from the contract
7 – Satisfied, Outsourcing provider respected more than half of the obligations from the contract
8 – Satisfied, Outsourcing provider respected almost all obligations of the contract
9 – Very satisfied, Outsourcing provider respected all obligations from the contract, few problems who pop up from it, were very quickly solved
10 – Absolutely satisfied, Outsourcing provider respected all obligations of signed contract.

Source: own resources

Table below contains information about the company's satisfaction with outsourcing relationship.

Table 7 - Satisfaction with outsourcing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	9,4	9,4	9,4
	4	1	3,1	3,1	12,5
	5	9	28,1	28,1	40,6
	6	1	3,1	3,1	43,8
	7	6	18,8	18,8	62,5
	8	6	18,8	18,8	81,3
	9	5	15,6	15,6	96,9
	10	1	3,1	3,1	100,0
	Total	32	100,0	100,0	

Source: own resources

The majority of the companies were merely satisfied and selected option 5. More than half of companies (56,3%) were satisfied with outsourcing relationship and selected one option from 7 to 10.

56,3% of companies was satisfied with outsourcing process and 62,5% didn't withdraw from outsourcing relationships. To prove that, dissatisfied companies are eager to withdraw from outsourcing contract, we have set two hypotheses. To test them, we had to create two categories. In the first category are those who selected option 1 to 6 from scale of satisfaction, and this group was named "dissatisfied". In the second group were others, and this group was named "satisfied". Hypotheses were:

H_0: Dissatisfied companies would withdraw from outsourcing relationship rather than satisfied companies

H_1: Withdrawal from outsourcing has not been related with satisfaction with outsourcing relationship

Withdrawal from outsourcing contract depended on satisfaction with outsourcing relationship (*p*-value=0,198 for Chi-Square test, which was calculated and interpreted as Render, Stair, Hanna and Hale (2014) demonstrated). But there was weak relationship between them (*Cramer's V*=0,228; *Contingency Coefficient*=0,222; *Phi*= -0,228, which were calculated and interpreted as Bruce, Patel and Shmueli (2010) demonstrated), so we couldn't claim that dissatisfied company would rather withdraw from outsourcing contract than satisfied company. In the table below was listed information about withdrawing from the contract.

Table 8 - Relationship between withdrawal from the contract and satisfaction with outsourcing

		Satisfaction category		
		Dissatisfied	Satisfied	Total
Withdrawal from the contract	No	7	13	20
	Yes	7	5	12
Total		14	18	32

Source: own resources

Companies were using outsourcing because of advantages that outsourcing provides. Reasons for using outsourcing were also advantages that companies had from outsourcing. When we compare advantages that companies had with disadvantages, we could conclude that companies had more advantages than disadvantages from using outsourcing (*Percent of Cases* for reasons which were considered as advantages from outsourcing was 206,3% in compare with disadvantages where *Percent of Cases* was 134,4%).

Companies also have been more satisfied (56,3%) and merely satisfied (31,2%) than dissatisfied with outsourcing relationship. Because of this, we could conclude that usage of outsourcing in Slovak companies was effective.

2.2 Efficiency of Outsourcing

To measure efficiency of outsourcing in Slovak companies, we have taken into account the time that was spent on preparation for outsourcing, negotiation with outsourcing provider and the

time that has been spent on moving the processes to the outsourcing provider. Outsourcing relationship was efficient if preparation phase lasted less than six months, negotiation with outsourcing provider, one month or less and transferring of processes to outsourcing provider also one month, completely less than eight months. Outsourcing relationship which was not considered efficient was the one, where all phases together lasted longer than 20 months. In the table below was shown durance of preparation for outsourcing.

Table 9 – Durance of preparation time for outsourcing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than six months	18	56,3	56,3	56,3
	Six months to a year	10	31,3	31,3	100,0
	One to two years	3	9,4	9,4	68,8
	Longer than two years	1	3,1	3,1	59,4
	Total	32	100,0	100,0	

Source: Faďoš (2013)

Preparation for outsourcing lasted less than six months in 56,3% of companies, which was considered efficient. If it lasted from six months to a year, which happened in 31,3% of companies, it was considered acceptable.

Table 10 - Durance of negotiation with Outsourcing provider

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 month and less	13	40,6	40,6	40,6
	2-6 months	18	56,3	56,3	96,9
	More than 6 months	1	3,1	3,1	100,0
	Total	32	100,0	100,0	

Source: Faďoš (2013)

Negotiation with outsourcing provider lasted less than one month in 40,6% of companies, which was considered efficient. If it lasted from two to six months, which happened in 56,3% of companies, it was still considered acceptable.

Table 11 – Durance of transferring processes to Outsourcing provider

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 month	11	34,4	34,4	34,4
	2 months	6	18,8	18,8	56,3
	3 months	8	25,0	25,0	81,3
	4 months	3	9,4	9,4	90,6
	6 months	3	9,4	9,4	100,0
	12 months	1	3,1	3,1	37,5
	Total	32	100,0	100,0	

Source: Faďoš (2013)

In majority of cases, transferring processes to Outsourcing provider lasted less than one month (34,4%) and this was considered efficient. Transferring of processes which lasted two months (18,8%) and three months (25%) were also considered efficient.

We couldn't expect the ideal case where only those who spent less than eight months in total, were efficient. Because of that, scale of efficiency was made, which can be found in the table below.

Table 12 - Efficiency scale

Less than 14 months	Efficient
More than 14 months to 24 months	Acceptable
More than 24 months	Inefficient

Source: own resources

After summing and categorizing information by efficiency, using the scale above, we could conclude that using of outsourcing in Slovak companies was efficient (65,63%), only 12,50% of companies used outsourcing in inefficient way.

Table 13 - Efficiency of outsourcing in Slovak Companies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Efficient	21	65,6	65,6	65,6
	Acceptable	7	21,9	21,9	87,5
	Inefficient	4	12,5	12,5	100,0
	Total	32	100,0	100,0	

Source: own resources

Conclusion

Companies in Slovak Republic, like worldwide companies, were using outsourcing for similar reasons. The majority of them, both companies in the Slovak Republic and worldwide companies were using outsourcing to reduce their costs. 41,03% of companies in Slovak Republic were using outsourcing, which is comparable with the usage of outsourcing worldwide (40%).

By analysing the advantages and disadvantages from using outsourcing, we have come to the conclusion that companies in Slovak Republic had more advantages than disadvantages from using outsourcing, which means that the usage of outsourcing was effective. The majority of companies was satisfied with outsourcing and have not withdrawn from a contract with outsourcing provider, of which was also proven that usage of outsourcing by companies in the Slovak Republic was effective.

Usage of outsourcing by companies in Slovak Republic was also efficient because it has passed less than 14 months from the moment when companies decided to use outsourcing to the moment when they actually started to use it. 65,6% of companies was using outsourcing in an efficient way.

If the companies that provided outsourcing services had been more careful and respected all aspects of the contract, companies that used outsourcing, would have been more satisfied with the whole process and wouldn't withdraw from the contract.

In the conclusion usage of outsourcing by companies in Slovak Republic was effective and efficient, but there is still space for improvement and shortening of processes that precede usage of outsourcing.

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PUBLIC-PRIVATE PARTNERSHIPS IN ESTONIA

Maret Güldenkoh, Uno Silberg

Abstract

Business traditions in Estonia were broken in connection with the incorporation of Estonia into the Soviet Union and the accompanying implementation of the socialist economic model. In 1991, after Estonia regained independence, private entrepreneurship started to grow fast. Twenty-four years later entrepreneurship has a substantial role in the Estonian economy.

This article focuses on Estonian public and private sector cooperation since the accession of Estonia to the EU (since 2004).

This article aims to identify public-private sector partnerships, measures taken by the public sector to reduce the administrative burden of the private sector, business activity and the receipt of tax income in the Estonian State budget. The performance of the aim showed that the public sector has active cooperation with the private sector, thus ensuring the growth of business activity, and the receipt of tax revenues to the state budget.

The Estonian government has introduced several measures to reduce the administrative burden on the private sector, which has guaranteed to the maximum extent the options of the private sector and transparency of the information displayed to the public.

Keywords: Public-Private Partnerships, entrepreneurs, the administrative burden, tax receipts, tax compliance

JEL Classification: H79, H25, M19

Introduction

Business traditions in Estonia were broken in connection with the incorporation of Estonia into the Soviet Union and the accompanying implementation of the socialist economic model. In 1991, after Estonia regained independence, private entrepreneurship started to grow fast, among other things entrepreneurs began to restore previous farms and many set-up family businesses. Twenty-four years later entrepreneurship has a substantial role in the Estonian economy.

Public-private partnerships ensure the functioning of the country and contribute to the economic recovery of the country. The public-private partnership must be effective, and involve the entire private sector, and not lead to increase in the administrative burden on the private sector.

The purpose of this article is to explain the public-private partnership in Estonia. To achieve this goal have been set up the following research tasks: outlines of the public-private partnerships are given, the business activity of the enterprises is analyzed, and the role of the public sector in the reduction of administrative burdens for businesses and tax receipts is explained.

This article focuses on the period after Estonia's accession to the European Union (EU) and concerns the commercial activity, the activity of the public sector in the year 2015 to lower the administrative burden of the private sector. The public-private actions and the receipt of tax revenues, which have improved thanks to cooperation between the private and the public sector.

This article has been compiled using a combination of research methods, the statistical data has been obtained from the Centre of Registers and Information Systems of the Ministry of Justice.

1 PUBLIC-PRIVATE PARTNERSHIPS IN ESTONIA

Public-Private Partnerships (PPP) are a business relationship between a private-sector company and a government agency for the purpose of completing a project that will serve the public. Public-private partnerships can be used to finance, build and Operate Projects Such as public transportation networks, parks, and convention centers. Financing a project through public-private partnerships can allow a project to be completed sooner or make it a Possibility in the first place.

Public-Private Partnerships are long-term contractual arrangements between the government and a private partner whereby the latter delivers and funds public services using a capital asset and sharing the associated risks. Through harnessing, the private sector's expertise in combining the design and operation of an asset a PPP can provide the service in a more efficient manner compared to traditional forms of procurement. There are a number of conditions that should be in place for a PPP to be successful. The system of government budgeting and accounting should provide a clear, transparent and correct record of all PPP activities in a manner that will ensure that the accounting treatment itself does not create an incentive to take the PPP route. In some cases, budgeting and accounting systems make it possible to avoid typical spending controls and use public-private partnerships to circumvent spending ceilings and fiscal rules. (OECD, 2012)

The PPP area is regulated by both the EU public procurement law, as well as Estonia as a whole, which is why the situation in the market is so opaque, anti-competitive and causing severe market failures in the context of the EU internal market. It is important in the government level define policy objectives, whether in the form of an action plan, instructions or other documents. (Sannik, 2013) In the field of PPP, the cooperation of local governments with the private sector has increased, cooperation is performed in various projects, however, not always has precise knowledge been obtained of the nature and opportunities of these projects.

Given the problematic nature of PPP in the EU jurisdiction, local governments are often not aware of the negative aspects of PPP projects, such as the decrease in the intensity of competition, legally and economically expensive, general nature of controls, etc. The recurring problem in PPP projects is finding a partner without a call for proposals which in the eyes of the public makes PPP projects a target of accusations of not being sufficiently transparent and encouraging the possibility of corruption. It happens that the people do not understand that this is a PPP project, and, therefore, the ongoing project is not always reflected correctly in the accounting sense and the necessary risks are often disproportionately left to be borne by the public sector. The structure of PPP is largely dependent, which form of partnership is desired to be used? In choosing the necessary form for a partnership one should primarily take into account the size of the risks, the length of the contract, the specificity of assets, the market situation and the capability of the parties. Selection of the required form of partnership is different from country to country according to national law. (Sannik, 2013) Cooperation between the Estonian private sector and the public sector is becoming more efficient, before implementation of projects, the public sector must perform a tender, which must involve a minimum of three representatives from the private sector. Often from among the tenderers is selected the one whose price is lower, not the one which might be more efficient to carry out the project.

On the example of Estonia, PPP projects are primarily held on the principle, where right of superficies is set in favor of the representative of the private sector, and the representative of the private sector builds or arranges for the building of the necessary infrastructure (e.g., schools, municipal housing, sports complex) together with its own financing, which generally takes place via banks, by setting additional mortgages and pledges, and the public sector provides the return on investment in terms of future royalties. On the implementation of PPP projects, most problems have been encountered in identifying the risks, so that the clarity from the side of the public sector, what risks have been transferred to the private sector, would be guaranteed. On the implementation of PPP projects, it is often customary that some of the risks do not become apparent until later in the course of the project. (Sannik, 2013) It happens that the representative of the private sector, who won the tender, is unable to execute the offer because the offer had been too optimistic and in the case of such an offer cannot be guaranteed the quality of materials and meeting the deadlines.

Risks in a PPP project of a monetarily assessed value and the determined by legal instruments; it is important in the partnership agreements to efficiently address and identify the risks so that the parties thus would have clear objectives and activities required for achieving these goals. On conclusion of a partnership agreement, and on risk management, it is necessary to understand the basic steps of the PPP, and the associated risks, and to ensure regular monitoring and the appropriate communication between all parties. In summary, risk management can be affected by the conclusion of correct partnership agreements, the public sector continues bearing the risks that are actually under the direct control of public sector and are to be borne by the public sector in the event of organizing a regular procurement method. State intervention aimed at achieving greater justice is necessary. Although the concurrent result is usually a decrease in economic efficiency. The theory of market failure calls for state intervention in the economy only if it is possible to justify the intervention with the particular market failures. (Sannik, 2013)

The costs associated with risk distribution are the most important step in assessing the cost-effectiveness of PPP since the efficiency of the private sector in this respect is the most assured. On the assessment of profitability is also crucial the experience of the private sector in participation in the PPP projects, who can most apply their knowledge in this regard. Compared with conventional procurement, wherein making a decision regarding the procurement method it must be taken into account a case of a traditional acquisition, in the public sector there are more risks associated with the construction costs, maintenance costs, possible change of cyclical financing costs, then the expensive nature of PPP can be understood, which may not always show the profitability of PPP, since it all boils down to the financial indicators arising from the distribution of risks. (Sannik, 2013)

In Estonia, issues related to PPP have become topical, so the conditions of access to procurement contracts to all the representatives of the private sector should be thoroughly considered and the market situation should be ensured, where all of the representatives of the private sector can equally stand for the competition, which in turn will ensure the growth of business activity.

2 BUSINESS ACTIVITY IN ESTONIA

The efficient business operations of entrepreneurs will ensure business activity in Estonia. Since Estonia joined the EU, the business activity has grown steadily. Entrepreneurs can freely sell goods and services and market products within the EU.

The World Economic Forum in the global competitiveness study classified the countries into groups on the basis of three development stages: countries with a factor based, investment based and innovation-based economies. The classification is based on two indicators: GDP per capita and the share of exports of raw materials (Xavier et al. 2013, 14). This distribution reflects the impact of business environment on the business activity in the national economic development phases. The 2012 study has singled out groups of countries that are moving from one stage of development to another. Estonia belongs among the transition economies, which is moving from an investment based economy to an innovation-based economy (Xavier et al. 2013, 19). In Estonia, among the early phase entrepreneurs dominates the opportunity-based enterprise (10.4%), which implies seeing the possibility and the desire to increase their income or independence. Need-based business (1.9%) refers to the lack of alternative options for obtaining or maintaining income. In Latvia and Lithuania, the share of need-based early-stage entrepreneurs is respectively 2.8% and 2.9% while only 1% in Finland and 0.8% in Sweden. (Paes et al., 2014) Traditionally creation of new businesses is accompanied by a lower rate of inflation in the country.

In assessing the relationship between the number of companies and inflation and at the same time checking all other indicators including cost, one can reach the conclusion that inflation will decline when there are more businesses. The reason for this is that greater competition forces prices down. However, during the creation of new businesses inflation initially actually accelerates. Rising inflation is due to the higher demand for labor since a workforce is required for the creation of businesses; in addition to the performance of administrative tasks, a business plan should be figured out, a product should be created and customers should be found. Increased demand for labor raises wages, which in turn leads to inflation. Once the shock wears off, and there are many companies, new ones will be added in conventional amounts, inflation starts to slow down. (Uusküla, 2015)

In Estonia, the private sector is represented in the role of entrepreneurs: companies (Limited Liability Company, limited partnership, general partnership, commercial association) and sole proprietor. An entrepreneur is a natural person who offers goods or services on his or her behalf and for whom selling goods or services is a permanent activity, and a company (Commercial Code, 1995). Among entrepreneurs are still marginally represented branches of foreign companies, European companies, and European Economic Interest Groupings.

As of 01.07.2015 in Estonia are active 199,255 companies, of which 78.24% are registered as a private limited company. Many in the private sector are operating in the capacity of family entrepreneurs, i.e., the majority of the share capital is held by the family, or the sole proprietor has involved family members in his or her business activities. The growth of entrepreneurs including family entrepreneurs has increased year after year. Compared to the year 2004, the number of entrepreneurs rose by 2007, when joined the Schengen zone, to 24.5%. By 2011, the number of entrepreneurs had increased by 43.4% compared to the year 2007 and as of 01 July 2015 by 52.97% (Table 1).

Table 1 - Entrepreneurs registered in Estonia 01.01.2014-01.07.2015 (The Commercial Register..., 2015)

data	Companies					Sole proprietors	Branches of foreign and Societas Europa/Europan Business	total
	Public limited companies	Private limited companies	Commercial associations	General partnerships	Limited partnerships			
1.01.2004	6743	54387	855	342	630	21464	365	84786
1.01.2005	6 241	59 767	775	365	660	21 830	388	90026
1.01.2006	5 945	66 200	695	378	708	21 671	415	96012
1.01.2007	5799	76852	669	380	758	20642	438	105538
1.01.2008	5614	86480	649	393	810	19601	468	114015
1.01.2009	5344	92554	624	417	932	17788	486	118145
1.01.2010	5094	99308	612	456	1631	32187	487	139775
1.01.2011	4819	108603	607	509	1505	34797	493	151333
1.01.2012	4449	118752	602	758	1725	34022	497	160805
1.01.2013	4149	128067	592	1745	1894	33362	497	170306
1.01.2014	3851	135681	1676	2625	2128	32315	526	178802
1.01.2015	3689	148775	1699	2638	2273	32431	548	192053
1.07.2015	3641	155893	1711	2631	2334	32483	562	199255

Source: compiled by the authors

Registration as an entrepreneur is easy, it can be done electronically, and the procedure primarily takes only one day. Upon registration as an entrepreneur, entrepreneurs have been provided with a number of benefits. For example, a sole proprietor is able from 2011 onwards to transfer or bequeath with tax exemption to his or her property used in the business activity to a person who continues his or her business activities (Income Tax Act § 37 subsection 7, 2015). The sole proprietors have given over their business activity to a private limited company, which will continue operating in the same field. Due to the income tax benefit 7.13% (2482) sole proprietors have changed their legal form from the year 2011 up to the year 2014; in the same period the number of private limited companies increased by 24.93%, out of which in real terms have been created 17.80% new private limited companies (Table 1).

A private limited company can be started as a claim, i.e., share capital contribution is made later, or the private limited company is founded without making a contribution if the amount of the planned capital does not exceed EUR 25,000 (Commercial Code Amendment Act, 2010). Amendment to the Act came into force in 2011 and since then has increased the number of private limited companies on the foundation of which not share capital contribution has been carried out. For example, in August 2015, 1276 private limited companies were founded, out of which 73.67% were without share capital contribution, in September 1419 private limited companies were founded, out of which 74% were without share capital contribution (New.....2015).

Business activity in Estonia has increased and the public sector must take measures to ensure that it would remain this way, and do everything to ensure that the administrative burden would not increase.

3 THE CONTRIBUTION OF THE PUBLIC TO REDUCING THE ADMINISTRATIVE BURDEN ON BUSINESSES IN ESTONIA

The public sector must in every way encourage business activity in the country, and the availability of the information displayed to the public. For example, it is desired to improve the quality and comparability of the accounting related information targeted at the general public, and to reduce the administrative burden on small and micro enterprises.

SIn the European Union, the focus has been lying on the harmonization of financial activities since the 1960s (Gornik-Tomaszewski, 2005). Harmonization of financial activities reduces the differences in reporting between countries (Andreea-Ioana; Pali-Pista 2013; Saudagaran 2009:2–39), the objective being harmonization of the differences arising from the national peculiarities of the Member States through accounting principles. 1978 saw the first harmonization of corporate accounting policies with the Reporting Directive 78/660/EEC, which adjusted the annual accounts of companies (Fourth ..., 1978).

The legal environment must meet the needs and the development of the society in order to ensure economic environment promoting entrepreneurship, innovative solutions, and investments. The changed the geopolitical situation and the European Union's legal framework will lead to changes in the Estonian legislation governing the field of accounting. (Hirvoja-Tamm, 2010)

Estonia is implementing the renewed Accounting Directive 2013/34/EU into its national legislation, resulting in a reduction of administrative burden for the private sector and in simplification of the requirements for small businesses, while increasing the clarity and comparability of the financial statements of the undertakings which have a livelier cross-border economic activity and a higher number of external stakeholders, and safeguarding the essential needs of the users to maintain the accounting information necessary for them.

Rather than reducing administrative burdens that are the goal of Directive 2013/34/EU, in Estonia the effect is just the opposite. The implementation of the Directive will result in an increase of the administrative burden and the obligation of duplication of reporting, which in turn can lead to a lack of transparency in the economic environment. The accounting entities will fail to submit the financial reports to the register in a timely manner, which in turn puts into question the information contained in the reports. Establishment of the audit limits would result in a reduction in the auditing obligation, an estimated 97-99% of entrepreneurs will remain unaudited. (Güldenkoh, Silberg, 2014)

The Accounting Directive does not regulate the organization of the accounts, but only the requirements for the information reflected in the annual report and for the disclosure of the report. According to the Account Directive, the amount of the information disclosed in the annual report depends on the size of the economic indicators of the undertaking. The Accounting Directives gives the Member States an opportunity to to provide for a number of simplifications options for the compilation and disclosure of the annual financial statements of small-scale enterprises and micro-enterprises. (Directive…, 2013).

On the application of some provisions, discretion is left to the Member States in order to be able to maintain the country-specific peculiarities and create national legislation on the basis of the directives. In addition to modernization of company law, the need for updating of the legal framework of accounting and auditing was raised. (Güldenkoh, Silberg, 2014)

According to the Account Directive, the amount of the information disclosed in the annual report depends on the size of the economic indicators of the undertaking in the fiscal year. The Member States should not demand from micro-enterprises and small businesses disclosure of more information in the annual report than required or permitted by the Accounting Directive.

The Accounting Directive provides for the maximum simplification options for micro enterprises and small businesses concerning preparation and publication of reports. In many cases, maximum simplification has been left to be decided by the Member State. On making appropriate choices for Estonia, the public interest as the primary decision criterion, and offering the entrepreneurs the maximum range of options has been taken into account.

Determination of entrepreneurs takes place according to financial accounting standards on the basis of the date of the balance sheet data. The Ministry of Finance defined the determination of micro-entrepreneurs through the extent of public interest.

A **micro-enterprise** is a company registered in Estonia, which corresponds to **all of the following conditions** on the balance sheet date of the annual report (Accounting .....2015):

- total assets of up to EUR 175,000;
- liabilities are not higher than the shareholders' equity;
- one shareholder, who is also a member of the board;
- is not liable for VAT.

As a result of the determination of the microenterprise in such a way, it has managed to reduce the administrative burden for Estonian businesses without having to undermine the credibility and transparency of the business environment.

Abandonment of the possibility of a compilation of a simplified annual report is not justified in the case of micro-enterprises. If the micro-entrepreneur fails to comply with the prerequisites for application of the special regulation of a micro-enterprise provided for in the law, the micro-enterprise is based on the provisions given for small businesses.

A **small business** is a company registered in Estonia, out of whose characteristics can have **only one** of the following conditions on the balance sheet date (Accounting …2015):

- total assets of EUR 4,000,000;
- sales revenue of EUR 8,000,000;
- The average number of employees during the financial year of 50 persons.

A **small enterprise** is a company registered in Estonia, who is not a micro-enterprise, or a small business and out of whose characteristics **only one** can exceed the following conditions on the balance sheet date (Accounting… 2015):

- total assets of EUR 20,000,000;
- sales revenue of EUR 40,000,000;
- The average number of employees during the financial year of 250 persons.

An **enterprise** is a company registered in Estonia, out of whose characteristics at **least two** exceed the following conditions on the balance sheet date (Accounting …2015):

- total assets of EUR 40,000,000;
- sales revenue of EUR 20,000,000;
- The average number of employees during the financial year of 500 persons.

The Ministry of Finance considers it justified to apply the simplification of the annual report allowed by the Accounting Directive for the target group of micro-enterprises (with regard to who the public interest for all accounting information is minimal) who wish to use it. In such a

way, it was managed to reduce the administrative burden for the Estonian businesses without having to undermine the credibility and transparency of the business environment. If a microenterprise or a small business considers that it is useful for it to disclose additional information required from medium-sized businesses and large companies or other information, it should never be prevented from doing so. Application of the regulation concerning the annual report of a small business and a micro-enterprise is the matter of discretion of the company. A small entrepreneur is not forbidden to draw up the annual report before the implementation of the Directive according to the existing conditions. A micro-entrepreneur is also not forbidden to draw up the annual report according to the rules concerning a small business or according to the rules in force before the implementation of the Directive. (Accounting ... .2015)

Such classification of enterprises by the public sector ensures a reduction in the administrative burden of the private sector and in addition to the clarity of the reporting obligation will also lead to a reduction of the administrative burden of entrepreneurs on filing tax returns and on registering employees.

4 INCREASING THE INCOME TAX RECEIPT IN ESTONIA

Tax revenues account for a large proportion of the income of the public sector, i.e., of the state revenues. The private sector is the major taxpayer in the country. In order that the receipt of tax revenues would be timely and the planned receipt and increase of the revenues would be executed, the administrative burden of the private sector should be reduced in this area.

The goal of the state budget of Estonia in 2015 was to ensure responsible public finances supportive of an equitable competitive environment, to increase people's well-being and sense of security, to raise Estonia's defense capability and to ensure national security. The volume of the state revenue in 2015 is planned at EUR 8.445 billion, which is 7.0% more than projected for the year 2014. According to the plans, tax revenues will increase in connection with the anticipated receipts improved by 6.1% and non-tax revenues will grow by 14%, due to increases in the volume of foreign funds. The principles of tax policies remain the same: tax system remains stable and transparent. The goal is to collect taxes efficiently and equitably, by preventing tax fraud, and thus to improve the competitive environment. The tax burden for 2015 remains 32.7%. The drop in labor taxes provides a more growth-friendly tax structure for the economy. The income tax rate and the unemployment insurance tax rate will fall and the monthly tax-free income ceiling will rise. The state budget expenditure will grow by 6.0% compared with the year 2014. According to the goal set by the State Budget Strategy, the structurally adjusted budget of the government sector remains in surplus (0.8% of the estimated GDP). The structural surplus shows that there are no sustainability problems in the budget. The nominal government budget deficit is 0.5% of the estimated GDP, but the state has no need to take out a loan to cover the deficit. (Riigieelarve, 2015)

The society’s acceptance of tax avoidance as a regular behavior affects people’s readiness to pay taxes in a negative direction (Porcano, 1988). Tax evasion and attitudes towards tax compliance differ not only in the comparison between different societies but also inside the societies (Poiesz, 1988). Tax compliance is a complex decision that is motivated by a variety of factors (Gummings et al., 2009). The strategy to improve tax compliance must be comprehended more widely than the improved enforcement only because beside the economic factors there are socio-psychological and political factors as well (Randlane, 2013). Tax non-compliance is a universal phenomenon. It takes place everywhere – in all societies, in all professions, in all industries, in all religions and in all economic systems (Kirchler, 2007). According to the OECD, a taxpayer is tax compliant, if all the fundamental obligations of the taxpayer are correctly performed: legal registration of economic activity, timely provision of a

tax declaration or tax return, reporting of accurate information and timely payment of taxes (OECD, 2009).

The complexity (Taylor, 2003) of a tax system and its perceived fairness are the political factors which influence the readiness to pay taxes. The easier the tax system is, the less there are possibilities for tax evasion and the less the redistribution of revenues occurs. The individual's willingness to pay taxes is affected by economic, political and social factors and their mutual influence. (Randlane, 2013) Tax morale is larger than the question of why people do not cheat on their taxes even if they could (Torgler, 2007). Research results have shown that the tax related behavior of an individual is a complex issue and is not based only on the economic behavior of that individual (Frey and Torgler, 2007). All modern societies are grounded on the compulsory payment of taxes. Paying taxes is a duty for citizens. The primary interest of the state is that citizens follow this function and behave in compliance with the tax rules. (Randlane, 2013)

Estonia's state budget revenues in 2015 are scheduled for 82.49% of taxes (State Budget Law, 2015). The biggest tax payers are from the private sector. The public sector will increase its cooperation with the private sector and will do everything possible to a stable and sustainable functioning of cooperation. The coordinators between the private and public sector are the Tax and Customs Board, were the data of the Estonian state taxpayers are converged. The private sector declares the tax liability and transfers it to the Tax and Customs Board, which directs further the received tax revenue.

Tax compliance, as a term, describes the taxpayer's willingness to pay taxes (Kirchler, 2007). Essentially, this means that a person voluntarily declares and pay taxes in a timely manner, and his or her tax accounting is in line with the current regulations of the tax law. For the most part, however, a tax non-compliant behavior is understood as tax evasion or tax fraud (Randlane, 2011).

In order to facilitate cooperation with taxpayers, the public sector has been working to reduce the tax burden or the private sector and to make the economic activity more transparent. A single tax environment and the possibility of submitting electronic declarations has been established. The public sector can receive a quick and transparent overview of the tax behavior and performance of tax obligations of the taxpayers. The taxpayer must just declare the taxes in a timely manner and to meet the tax liability. Everything happens in a single electronic environment and the taxpayer (a private sector representative) is not required to submit paper documents, everything can be done electronically, which speeds up the data submission, and through which fraud can be prevented. For the private sector, an opportunity has been created to use a variety of electronic interfaces to upload the data from the accounting programs to the electronic environment generated by the tax authorities. The operation of programs helps to avoid mistakes related to human activities and inaccuracies in reporting. This does not guarantee the 100% accuracy of submission of data since the data is entered into programs by the business operators. In the future, the state plans to introduce an electronic billing system in which the bills begin to move through the electronic billing interfaces and no differences can emerge in the transmission of data and their presentation.

In order to improve tax compliance, a mandatory annex of the VAT declaration was introduced in Estonia since November 2014, on which all the transactions of over one thousand EUR must be declared by trading partners (Value Added Tax Act, 2015). This approach increased VAT receipts. On the one hand, the public sector received information of the taxpayers' transactions, allowing to check the declaration of the tax liability by the transaction partners, on the other hand, the taxpayers got the opportunity to submit electronically, the Annex of the VAT declaration.

Submission of declarations in such a form has improved the tax behavior of the private sector and also have increased the VAT receipts compared to the same period of the previous year. For example, in January 2015, VAT payers submitted 177,232 sale transactions by partner transaction pairs to the extent of EUR 2.18 billion, the consistency between the seller and buyer to the accuracy of a cent was in 43% of transactions. The VAT payment obligation declared in the VAT declaration submitted in January was 151.2 million euros, which is 14 million, or 10.2% more than at the same time last year. (Tax and Customs Board, 2015) In March 2015, the tax revenue was received in the amount of EUR 399.8 million, which is 9.3% more than in 2014. Out of this, the VAT collected to the state budget was 131.3 million, which makes 10.7% of the projected outturn of the state budget. In the 1st quarter of 2015, the VAT received to the state budget was EUR 441.1 million, which makes 23.7% of the projected outturn of the state budget. In January and February 2015 the taxable turnover decreased by 4.3% compared with 2014, while tax receipts grew by 4.3%. Tax arrears in March increased by 19.5 million euros, of which the VAT debt was 16 million. Most of it accounted for the debts of liquidated enterprises. (Ministry of Finance, 2015)

The tax revenue of the Estonian state has increased and the fulfilling of the national budget in the year 2015 is guaranteed (Table 2).

According to the 2015 state budget, the planned annual tax revenue was EUR 6,968,235,137 (the state budget, in 2015), with the nine months 79.83% of the budget has been completed (Table 2). Equally active with the receipt of the tax revenue, the projected tax revenue in the state budget is exceeded by approximately 15%, which is necessary to reduce the budget deficit.

Table 2 - The comparison of the filling of the state budget in the year 2014-2015 per month (Payment of the state budget... 2014, 2015)

Private sector taxes	01.01-30.09.2015	monthly average	01.01.-31.12.2014	monthly average	difference %
Income tax of natural persons	967 598 079,67	107 510 897,74	1 133 897 379,04	94491448,25	13,78
Income tax of legal persons	379 446 986,39	42 160 776,27	344 722 892,43	28726907,7	46,76
Social security tax	1 982 912 210,49	220 323 578,94	2 232 394 843,74	186032903,6	18,43
Property taxes	62 259 196,37	6 917 688,49	63 195 963,47	5266330,289	31,36
Value added tax	1 400 096 008,73	155 566 223,19	1 696 946 130,56	141412177,5	10,01
Excises	724 335 276,02	80 481 697,34	836 024 142,39	69668678,53	15,52
Gambling tax	18 703 605,11	2 078 178,35	23 228 870,35	1935739,196	7,36
Customs duty	27 310 477,18	3 034 497,46	30 322 768,31	2526897,359	20,09
total	5 562 661 839,96	618 073 537,77	6 360 732 990,29	530061082,5	16,6

Source: compiled by the authors

Employers, (both private and legal persons) as of 01.07.2014, are required to register their employees in the electronic environment of the Tax and Customs Board where the workings of all natural persons, in which case emerges a tax liability in Estonia, are registered. This registration must take place regardless of the form of the contract and of the temporal duration thereof. The performance of work in the private sector on a voluntary basis without remuneration should also be entered in the register. (Taxation Act, 2015) Creation of a register of employees reduced the administrative burden on the private sector because they are no longer required to submit data to various official bodies, but provide the information to the same register, where other authorities (Health Insurance Fund, Labor Inspectorate, and the Statistical

Office) can access the information. Also, the introduction of the register of employees increased receipt of labor taxes and personal income tax.

The business activity of the private sector ensures the sustainability of the country and the cooperation between the public and the private sector ensures the stability of both the economic and the financial sector.

Conclusion

Twenty-four years after Estonia regained independence, entrepreneurship has a substantial role in the Estonian economy. Public-private partnerships ensure the functioning of the state and contribute to the rise of the economic activity in the country, the partnership must be efficient and the administrative burden of the private sector must not increase as a result of the partnership.

The purpose of this article was to explain the public-private partnership in Estonia. This article focused on the period after Estonia's accession to the European Union (EU) and concerned the business activity, the activity of the public sector in the year 2015 to lower the administrative burden of the private sector and to increase the tax revenues.

In the area of PPP, the cooperation of local governments with the private sector in Estonia has increased and project organization and finding partners have become more transparent. In the case of PPP projects, risks can be reduced with the conclusion of proper partnership agreements. The business activity of the private sector has been steadily increasing; compared to the accession to EU in 2004, by 2015 the number of registered enterprises has increased by 53%, from who most of the tax revenues of the state are received. Tax behavior has improved, 80% of state revenue have been filled within the first nine months of 2015.

The public sector has reduced the administrative burden on the private sector: it has made registration of a company easy, set up the electronic environment for submission of reports, and reduced the volume of the submitted annual report by the distribution of business operators into categories. On making appropriate choices, the Estonian state has taken into account the public interest as the main decision criterion and offered the private sector with the maximum range of options. The business activity of the private sector ensures the sustainability of the country, whereas the cooperation between the public and the private sector ensures the stability of the country.

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THE EFFICIENCY OF THE PUBLIC SECTOR IN EUROPEAN COUNTRIES

Bojka Hamerníková, Jan Kubát

Abstract

The efficiency of the public sector represents an important factor in terms of achieving stability and sustainability of public finance. The public sector efficiency and its theoretical reflection constitute a relatively large area of economics research and are subject to a long-term discussion. The public sector efficiency is topical issue, even in the Czech Republic. The aim of this paper is to present results of the analysis of effectiveness of the public sector in selected European countries. Article continues on Hamerníková, Maaytová, Kubát (2015). In the article is used DEA method and procedure by Afonso, Schuknecht a Tanzi (2006).

Keywords: public sector, efficiency, DEA

JEL Classification: H10, H11, D61

Introduction

The public sector efficiency is topical issue, even in the Czech Republic. The efficiency of the public sector represents an important factor in terms of achieving stability and sustainability of public finance. The principal aim of the article is to determine the efficiency of the public sector in selected European countries.

1 THEORETICAL BASIS

The public sector efficiency and its theoretical reflection constitute a relatively large area of economics research and are subject to a long-term discussion. The causes behind the great length of this discussion are numerous. The main question is how to articulate the outputs of the sector. Also the choice of the methods and especially the indicators to convey and measure how effective it is presents a problem.

The difficulty determining the public sector efficiency, its segment, and institutions causes that inventors of new methods are increasing creative. The application of methods such as Data Envelopment Analysis (DEA) serves as an example of this innovative approach. The method was developed by Debreu (1951) and Farrell (1957), later Färe et al. (1994), Seiford and Thrall (1990). DEA can be focused to inputs (1) or outputs (2). Both approaches examine the public sector efficiency and only slightly differ in results (Coelli et al., 2005).

The study by A. Afonso, L. Schuknecht and V. Tanzi (2003) became the pioneering work in this area. To analyse the efficiency of the public sector, the authors proposed:

- An indicator of the performance of the public sector – the PSP (Public Sector Performance)
- An indicator of the efficiency of the public sector – the PSE (Public Sector Efficiency) which measures the performance of the public sector (PSP) in relation to the expenditure spent in achieving that performance – the PEX (Public Expenditure).

The authors compared 23 OECD member countries in the period of 1990–2000. In 2006, the authors published the results of another research, using new EU member countries and emerging markets as an example (Afonso, Schuknecht, Tanzi, 2006).

In 2013, another study by A. Afonso, A. Romero and E. Monsalve was published, applying a similar approach to the analysis of the public sector and its efficiency as the two already mentioned studies by Afonso, Schuknecht and Tanzi of 2003 and 2006 (António Afonso, Alma Romero, Emma Monsalve, 2013). That study focused on the public sector efficiency analysis in 23 Latin-American and Caribbean countries (LAC) over the period of 2001–2010.

In our previous analysis (Hamerníková, Maaytová, Kubát 2015), we applied the approach of Afonso, Schuknecht, Tanzi (2003, 2006) and Afonso, Romero, Monsalve (2013). To establish the efficiency, we selected 12 European countries, which included Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, Slovenia and three senior EU members – Greece, Ireland, and Portugal – in the period of 2006-2013.

The PSP indicator was calculated in the exactly same way as in Afonso (2006), with the updated time series instead of 1994-2003, 2004-2013. The arithmetical average of total government expenditures per GDP of the 12 countries moved from 40.2% to 44.8%. The PSE is calculated as PSP divided by the relevant expenditures per GDP. Poland had the best value of PSE among the 12 countries again due to stability and economic performance in 2013. The second best PSE in 2013 was calculated for Romania due to good records in education, health and economic performance that were reached by the relative low expenditures (Hamerníková, Maaytová, Kubát 2015).

2 DEA APPLICATION TO EXTEND THE EFFECTIVENESS ANALYSIS OF PUBLIC SECTOR

To compare the efficiency of the countries we used the data envelopment analysis with variable returns of scale. We calculated both, input and also output oriented efficiencies. As a single input, the total government expenditures per GDP was used.

The 6 outputs were constructed and calculated according to the (Afonso 2006) and (Hamerníková, Maaytová, Kubát 2015). This paper analyzed different countries and also applied the DEA method on one input as in (Hamerníková, Maaytová, Kubát 2015), but six outputs and not only one.

In our previous article (Hamerníková, Maaytová, Kubát 2015) we formed the six input variables too, but we made one final output variable from them by the average. So finally, we calculated DEA with one input and six outputs. The indicator average GDP growth from (Hamerníková, Maaytová, Kubát 2015) was replaced by the indicator Macroeconomical environment.

The compared countries cover all 28 EU states and also Iceland, Norway and Switzerland. The growth indicator (10 years average) would benefit the new EU states, because they logically grew more than the original EU countries. Also compared to (Hamerníková, Maaytová, Kubát 2015), we used updated data from the The Global Competitiveness Report 2015–2016.

The DEA was calculated in R by the Benchmarking package, (Peter Bogetoft and Lars Otto).

3 RESULTS

The input oriented VRS DEA results are shown in the following table. Input TE equals 1 means efficient country.

Table 1 - Input, DEA VRS input efficiencies, Input (expenditures/GDP) and Virtual efficiency input

Country	Input TE	Rank Input	Expenditures/GDP	Virtual Expenditures/GDP
Austria	0.689	19	51.40	35.42
Belgium	0.779	11	53.35	41.55
Bulgaria	0.877	3	37.36	32.76
Croatia	0.697	18	47.00	32.76
Cyprus	0.780	10	41.99	32.76
Czech Republic	0.936	2	42.43	39.71
Denmark	0.650	23	55.45	36.04
Estonia	0.837	7	39.15	32.76
Finland	**1.000**	**1**	**53.89**	**53.89**
France	0.588	25	55.70	32.76
Germany	0.730	16	44.90	32.76
Greece	0.617	24	53.08	32.76
Hungary	0.678	20	49.61	33.63
Iceland	**1.000**	**1**	**46.96**	**46.96**
Ireland	0.777	12	44.49	34.57
Italy	0.659	22	49.71	32.76
Latvia	0.848	5	38.65	32.76
Lithuania	0.847	6	38.70	32.76
Luxembourg	**1.000**	**1**	**42.53**	**42.52**
Malta	0.803	9	42.10	33.81
Netherlands	**1.000**	**1**	**46.15**	**46.15**
Norway	**1.000**	**1**	**43.64**	**43.64**
Poland	0.751	14	43.63	32.76
Portugal	0.669	21	48.99	32.76
Romania	0.865	4	37.86	32.76
Slovakia	**1.000**	**1**	**40.24**	**40.24**
Slovenia	0.823	8	49.04	40.34
Spain	0.739	15	44.33	32.76
Sweden	0.769	13	51.34	39.49
Switzerland	**1.000**	**1**	**32.76**	**32.76**
United Kingdom	0.708	17	46.29	32.76

Source: own calculations

Efficient countries that are highlighted in bold are:

- Finland
- Iceland
- Luxembourg
- Netherlands
- Norway
- Slovakia
- Switzerland

The 7 efficient countries have either quite high input (expenditures per GDP), but also high outputs like Nordic countries or they have low input and quite good outputs like Slovakia.

To become efficient a country should decrease its government expenditures per GDP to virtual expenditures/GDP as shown in the last column of the

Table 1 and keep its outputs. For example, the Czech Republic should decrease its government expenditures per GDP from 42.43% to 39.71%, it represents savings of 6.4%, to become efficient among the 31 analysed countries.

The output oriented VRS DEA results as well as outputs are shown in the next table.

Table 2 - DE VRS output efficiencies, Outputs and Virtual efficiency outputs

		Outputs						Virtual optimal outputs					
Country	Output TE	Administration	Human. capital	Health	Distribution	Stability	Economic. perform.	Administration	Human. capital	Health	Distribution	Stability	Economic. perform.
Austria	1.013	1.070	0.946	1.009	1.034	1.233	1.291	1.070	0.946	1.023	1.034	1.233	1.308
Belgium	1.008	1.062	1.137	1.006	1.050	1.252	1.004	1.062	1.147	1.015	1.058	1.263	1.004
Bulgaria	1.058	0.760	0.883	0.966	0.915	0.990	0.722	0.760	0.883	1.022	0.915	0.990	0.722
Croatia	1.039	0.703	0.970	0.985	0.979	0.359	0.667	0.703	0.970	1.024	0.979	0.359	0.667
Cyprus	1.020	1.017	0.976	1.003	0.958	0.760	0.882	1.017	0.976	1.023	0.958	0.760	0.882
Czech Republic	1.017	0.876	0.909	0.993	1.068	1.018	1.029	0.876	0.909	1.010	1.086	1.018	1.029
Denmark	1.012	1.190	1.096	1.006	1.027	0.562	1.223	1.190	1.109	1.018	1.039	0.562	1.223
Estonia	1.038	1.120	1.053	0.982	0.950	0.558	0.883	1.120	1.094	1.019	0.950	0.558	0.883
Finland	**1.000**	**1.300**	**1.149**	**1.010**	**1.057**	**0.708**	**1.031**	**1.300**	**1.149**	**1.010**	**1.057**	**0.708**	**1.031**
France	1.006	1.002	1.056	1.016	0.990	1.320	0.915	1.002	1.062	1.022	0.990	1.320	0.915
Germany	1.013	1.165	1.025	1.010	0.996	1.177	1.124	1.180	1.025	1.023	0.996	1.177	1.124
Greece	1.017	0.733	0.967	1.007	0.929	-0.211	0.613	0.733	0.967	1.024	0.929	-0.211	0.613
Hungary	1.053	0.808	0.903	0.973	1.020	0.320	0.789	0.808	0.903	1.024	1.020	0.320	0.789
Iceland	**1.000**	**1.151**	**1.035**	**1.024**	**1.076**	**0.685**	**1.184**	**1.151**	**1.035**	**1.024**	**1.076**	**0.685**	**1.184**
Ireland	1.008	1.154	1.090	1.010	0.992	0.841	0.939	1.154	1.099	1.019	0.992	0.841	0.939
Italy	1.006	0.690	0.953	1.018	0.956	0.204	0.875	0.690	0.953	1.024	0.956	0.204	0.875
Latvia	1.060	0.924	0.946	0.964	0.918	0.513	0.764	0.924	0.946	1.022	0.918	0.513	0.764
Lithuania	1.054	0.890	1.037	0.967	0.926	0.730	0.817	0.890	1.094	1.019	0.926	0.730	0.817
Luxembourg	**1.000**	**1.249**	**0.978**	**1.016**	**0.986**	**1.172**	**1.726**	**1.249**	**0.978**	**1.016**	**0.986**	**1.172**	**1.726**
Malta	1.015	0.988	0.933	1.007	1.021	1.688	0.970	0.988	0.933	1.023	1.021	1.714	0.970
Netherlands	**1.000**	**1.215**	**1.194**	**1.011**	**1.061**	**1.032**	**1.357**	**1.215**	**1.194**	**1.011**	**1.061**	**1.032**	**1.357**
Norway	**1.000**	**1.266**	**1.041**	**1.013**	**1.095**	**1.537**	**1.807**	**1.266**	**1.041**	**1.013**	**1.095**	**1.537**	**1.807**
Poland	1.038	0.894	0.925	0.983	0.982	3.083	0.798	0.894	0.925	1.021	1.019	3.201	0.798
Portugal	1.018	0.901	1.008	1.006	0.932	0.284	0.702	0.901	1.008	1.024	0.932	0.284	0.702
Romania	1.058	0.805	0.954	0.966	0.935	0.876	0.875	0.805	0.954	1.022	0.935	0.876	0.875
Slovakia	**1.000**	**0.755**	**0.866**	**0.979**	**1.074**	**1.407**	**0.770**	**0.755**	**0.866**	**0.979**	**1.074**	**1.407**	**0.770**
Slovenia	1.013	0.799	1.018	1.006	1.071	0.656	0.901	0.799	1.018	1.019	1.085	0.656	0.901
Spain	1.005	0.828	1.022	1.019	0.939	0.552	0.703	0.828	1.022	1.023	0.939	0.552	0.703
Sweden	1.004	1.225	0.939	1.015	1.064	1.426	1.122	1.230	0.939	1.019	1.068	1.426	1.122
Switzerland	**1.000**	**1.272**	**1.074**	**1.021**	**1.013**	**3.409**	**1.546**	**1.272**	**1.074**	**1.021**	**1.013**	**3.409**	**1.546**
United Kingdom	1.013	1.187	0.914	1.010	0.989	0.861	0.970	1.202	0.914	1.023	0.989	0.861	0.970

Source: own calculations

The same countries that were efficient in input oriented VRS DEA are of course efficient in output oriented VRS DEA method, but the efficiency and ordering of the inefficient countries changed.

To become output efficient (measured by variable returns of scale) a country should increase its outputs according to the following table and keep its input unchanged. The highlighted cells shows the output that an inefficient country should increase and its "efficient" level.

E.g., based on our analyses, to become more efficient among the analysed countries the Czech Republic government should focus on increasing indicators of health and distribution and decrease its expenditures per GDP. Increasing the distribution indicator (Gini) that the Czech Republic has had very good compare to the other analysed countries doesn't look realistic. To increase the health indicator looks slightly more doable. The Czech Republic is below the average in the life expectancy and on the average in the infant mortality rate compared to the analysed countries. To limit the government expenditures and keep the same outputs looks like the path towards efficiency.

Table 3 shows peer countries and their shares. The peer countries show the path towards efficiency for the inefficient countries.

Table 3 - DEA VRS output peer countries and their percentages

	peer countries (output)				peer shares (output)			
Country	peer1	peer2	peer3	peer4	peer1	peer2	peer3	peer4
Austria	Iceland	Switzerland	x	x	65.6%	34.4%	x	x
Belgium	Iceland	Netherlands	Norway	Switzerland	19.4%	67.1%	1.2%	12.3%
Bulgaria	Iceland	Switzerland	x	x	32.4%	67.6%	x	x
Croatia	Iceland	x	x	x	100.0%	x	x	x
Cyprus	Iceland	Switzerland	x	x	65.0%	35.0%	x	x
Czech Republic	Norway	Slovakia	Switzerland	x	81.0%	11.4%	7.6%	x
Denmark	Iceland	Netherlands	Switzerland	x	15.6%	34.5%	49.9%	x
Estonia	Netherlands	Switzerland	x	x	16.2%	83.8%	x	x
Finland	Finland	x	x	x	100.0%	x	x	x
France	Iceland	Switzerland	x	x	31.9%	68.1%	x	x
Germany	Iceland	Switzerland	x	x	76.0%	24.0%	x	x
Greece	Iceland	x	x	x	100.0%	x	x	x
Hungary	Iceland	x	x	x	100.0%	x	x	x
Iceland	Iceland	x	x	x	100.0%	x	x	x
Ireland	Netherlands	Switzerland	x	x	21.1%	78.9%	x	x
Italy	Iceland	x	x	x	100.0%	x	x	x
Latvia	Iceland	Switzerland	x	x	41.5%	58.5%	x	x
Lithuania	Netherlands	Switzerland	x	x	16.2%	83.8%	x	x
Luxembourg	Luxembourg	x	x	x	100.0%	x	x	x
Malta	Iceland	Switzerland	x	x	62.2%	37.8%	x	x
Netherlands	Netherlands	x	x	x	100.0%	x	x	x
Norway	Norway	x	x	x	100.0%	x	x	x
Poland	Iceland	Norway	Switzerland	x	5.0%	3.8%	91.2%	x
Portugal	Iceland	x	x	x	100.0%	x	x	x
Romania	Iceland	Switzerland	x	x	35.9%	64.1%	x	x
Slovakia	Slovakia	x	x	x	100.0%	x	x	x
Slovenia	Iceland	Norway	x	x	54.3%	45.7%	x	x
Spain	Iceland	Switzerland	x	x	81.4%	18.6%	x	x
Sweden	Iceland	Norway	Switzerland	x	32.8%	41.7%	25.4%	x
Switzerland	Switzerland	x	x	x	100.0%	x	x	x
United Kingdom	Iceland	Switzerland	x	x	57.7%	42.3%	x	x

Source: own calculations

The interpretation is following: to become output efficient the country should have outcomes as the combination of peer countries and their shares. E.g. for the Czech Republic, the peer countries are Norway (81.0%), Slovakia (11.4%) and Switzerland (7.6%). In general, the Czech Republic - to become government expenditure efficient among the analysed countries can learn (inspire) in Norway (mainly) and Slovakia with Switzerland. To become efficient among analysed countries, the Czech Republic should increase its health to the level of 1.01 and distribution to 1.086, which means increases of 1.7% for the both outcome indicators. In general, the path towards efficiency lies in the combination of decrease in expenditures/GDP together with increase in health and distribution indicators.

Conclusions

The efficiency of the public sector represents an important factor in terms of achieving stability and sustainability of public finance. The public sector efficiency and its theoretical reflection constitute a relatively large area of economics research and are subject to a long-term discussion. The principal aim of the article is to determine the efficiency of the public sector in selected European countries.

This paper analyzed different countries and also applied the DEA method on one input as in (Hamerníková, Maaytová, Kubát 2015), but six outputs and not only one. In the (Hamerníková, Maaytová, Kubát 2015) we formed the six input variables too, but we made one final output variable from them by the average. So finally, we calculated DEA with one input and six outputs. The compared countries cover all 28 EU states and also Iceland, Norway and Switzerland.

We conclude that to become output efficient the country should have outcomes as the combination of peer countries and their shares. The path towards efficiency for the Czech Republic lies in the combination of decrease in expenditures/GDP together with increase in health and distribution indicators.

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Annex

Table 4 - Data for DEA outputs

Year of data	2014	2015	2015	2015	2015	2013	2015	2013	2006-13	2005-14	2006-13	2006-13	2013	2012	2015
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Variable Country	Corruption index	Burden of government regulation	Judicial independence	Strength of auditing and reporting standards	Quality of math and science education	Life expactancy	Infant mortality rate	100 - Gini	Inverse coeff.of variation of GDP growth	100/Average inflation	Average GDP growth	100/Unemployment rate	GDP per capita PPP USD	Secondary school enrolment ratio	Macro condition
Austria	72	3.4	5.2	5.8	4.6	80.9	2.9	73	0.6	48.0	1.3	22.6	45081	97.7	5.13
Belgium	76	2.8	5.8	5.6	6.0	80.4	3.3	74.1	0.6	48.0	1.1	12.9	41573	107.3	4.79
Bulgaria	43	3.2	2.7	4.6	4.2	74.5	9.3	64.6	0.6	22.3	2.3	10.7	15732	93.1	4.94
Croatia	48	2.1	3.2	4.2	4.8	77.1	3.6	69.1	0.0	37.6	-0.1	8.3	21351	98.4	4.19
Cyprus	63	4.0	4.7	5.0	5.0	79.8	2.5	67.6	0.2	53.3	0.6	13.5	31198	95.3	4.16
Czech Republic	51	2.8	4.3	5.3	4.3	78.3	2.8	75.4	0.4	43.3	1.6	15.6	29018	96.6	5.97
Denmark	92	3.3	6.3	5.7	4.8	80.3	2.9	72.5	0.0	52.8	0.1	17.1	43782	124.7	6.29
Estonia	69	4.0	5.7	5.6	5.2	76.4	2.3	67.1	0.2	25.0	1.9	10.2	25823	107.1	6.15
Finland	89	4.2	6.6	6.5	6.1	80.8	1.9	74.6	0.1	52.7	0.6	13.2	39869	107.7	5.37
France	69	2.9	5.1	5.5	5.1	82.0	3.5	69.9	0.5	67.6	0.9	11.1	37592	109.7	4.66
Germany	79	3.9	5.8	5.8	5.2	81.0	3.1	70.3	0.4	62.6	1.3	13.8	43887	101.3	5.98
Greece	43	2.4	3.8	4.1	4.3	80.6	3.6	65.6	-0.5	44.8	-2.5	6.9	25667	108.5	3.26
Hungary	54	2.6	3.6	4.7	4.0	75.3	5.3	72	0.1	24.0	0.2	10.5	23336	101.6	4.94
Iceland	79	4.1	5.7	5.3	4.8	83.1	1.6	76	0.4	16.4	1.8	19.1	42035	112.0	5.2
Ireland	74	4.3	6.3	4.8	5.0	81.0	3	70	0.1	67.3	0.5	9.6	45677	119.1	4.45
Italy	43	1.9	3.6	4.2	4.6	82.3	2.9	67.5	-0.2	53.2	-0.7	11.9	35075	99.2	4.09
Latvia	55	3.5	4.2	5.0	4.6	74.0	6.9	64.8	0.2	20.6	1.9	8.1	22534	97.7	5.56
Lithuania	58	3.1	3.9	5.0	5.1	74.2	3.3	65.4	0.3	26.9	2.6	9.1	25715	105.9	5.56
Luxembourg	82	4.4	6.2	6.1	4.8	81.8	1.5	69.6	0.5	45.6	2.0	20.4	91048	100.0	6.16
Malta	55	3.5	4.8	5.7	5.0	80.7	5.1	72.1	0.9	46.0	2.2	15.2	29127	86.3	5.18
Netherlands	83	3.9	6.3	6.0	5.5	81.1	3.2	74.9	0.3	56.6	0.9	23.4	46162	129.9	5.7
Norway	86	4.1	6.5	6.3	4.9	81.5	2	77.3	0.8	52.4	1.1	31.6	65640	111.1	6.83
Poland	61	2.8	4.2	5.0	4.4	76.8	4.5	69.3	2.0	39.3	4.0	10.2	23994	97.7	5.11
Portugal	63	2.9	4.6	4.4	4.5	80.4	3	65.8	-0.2	57.4	-0.5	9.0	27509	112.9	3.57
Romania	43	3.1	4.0	4.3	4.8	74.5	9.7	66	0.5	18.5	2.7	14.4	18972	95.0	5.44
Slovakia	50	2.4	2.6	5.3	4.0	76.3	5.8	75.8	0.8	38.5	3.7	7.8	26497	93.9	5.21

Year of data	2014	2015	2015	2015	2015	2013	2015	2013	2006-13	2005-14	2006-13	2006-13	2013	2012	2015
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Variable	Corruption index	Burden of government regulation	Judicial independence	Strength of auditing and reporting standards	Quality of math and science education	Life expactancy	Infant mortality rate	100 - Gini	Inverse coeff.of variation of GDP growth	100/Average inflation	Average GDP growth	100/Unemployment rate	GDP per capita PPP USD	Secondary school enrolment ratio	Macro condition
Country															
Slovenia	58	2.6	3.5	4.3	5.3	80.3	2.1	75.6	0.2	43.0	0.8	14.4	28859	97.6	4.45
Spain	60	2.7	3.5	4.6	3.8	82.4	3.5	66.3	0.1	45.1	0.2	5.7	33092	130.8	4.03
Sweden	87	4.1	5.9	6.0	4.5	81.7	2.4	75.1	0.4	85.1	1.5	13.2	44646	98.4	6.08
Switzerland	86	4.5	6.3	6.0	5.9	82.7	3.4	71.5	1.0	203.6	2.0	24.8	56940	96.3	6.54
United Kingdom	78	3.9	6.2	5.9	4.4	81.0	3.5	69.8	0.4	36.9	0.9	14.5	38255	95.4	4.17

Sources: own calculations

1 - Transparency International - CORRUPTION PERCEPTIONS INDEX

2, 3, 4, 5, 15 - The Global Competitiveness Report 2015–2016

6, 7, 9, 10, 11, 12, 13, 14 - World Development Indicators (World bank)

8 – Eurostat

Firstly, the data for outputs were transformed by division of the indicator mean among the countries. Only indicator 7 was transformed differently, as (1-value/1000)/(1-average(value)/1000)). After the transformation, we formed the final 6 indicators as

- Administration – average of transformed indicators 1, 2, 3 and 4,
- Human capital – average of transformed indicators 5 and 14,
- Health – average of transformed indicators 6 and 7,
- Distribution – equals transformed indicators 8,
- Stability– average of transformed indicators 9 and 10,
- Economic performance– average of transformed indicators 12, 13 and 15.

THE MAIN PARAMETERS OF CONTROLLING IN A SMALL OR MEDIUM-SIZED ENTERPRISES

Karel Havlíček

Abstract

This article focuses on describing the main aspects of the controlling in small and medium-sized companies. The author bases the conclusions long-term research, based on which he maps the distinguishing of the environment of process management of small and medium-sized enterprises from large enterprises and describes the process model based on the principle of management and controlling, which he has long examined and published about. It differs from approaches used so far, particularly in the system based on management accounting. It is also based on a balance between business planning and controlling, which includes risk management. They aim of the article is to highlight the differences between management and financial accounting in a small and medium-sized company, to propose key parameters of strategic and operative controlling and to highlight the results of its failure.

Keywords: Small and medium-sized company (SME), planning, operative controlling, strategic controlling, risk management

JEL Classification: M21, M40

Introduction

Management of the performance of small and mid-sized enterprises (SME)[1] has undergone many changes in recent years. As a result of geo-political changes on world markets, development of information systems and technology and reduction of barriers to opening of new markets, SME have many opportunities to establish positions for themselves on previously difficult to reach territories. In recent years, there has been significant growth in commercial and investment activities of SME across continents. Of course, besides opportunities, there are also many risks for enterprises from developed countries, since economically advanced regions are becoming, thanks to their openness, a destination for companies from around the world. Talk has begun in Europe about what is known as a hyper-competitive environment,[2] as a result of which more than 90% of SME do not survive the first five years after their founding.[3] However, SME are one of the pillars of the European economy, where this segment generates

[1] The European Union defines small and mid-sized enterprises as companies that each employ fewer than 250 workers, have turnover of less than EUR 50 million and whose balance sum in the company's balance sheet does not exceed EUR 43 million.

[2] The hyper-competitive environment means that it is a sector where there is ten times (or more) greater offer than demand, as noted by Kašík, Havlíček (2015).

[3] In the United States, 80% of all newly established SME will end their activities within 5 years. And in the EU, as many as 95% will. Source: http://www.ipodnikatel.cz/Ukonceni-podnikani/jak-v-podnikani-nezkrachovat.html. Similar data was reported at the expert conference organised by the Ministry of Industry and Trade as part of the Enterprise Europe Network project, focused on financing of seed funds http://www.strukturalni-fondy.cz/getmedia/7622765d-a435-4a57-8664-170559086b3c/Prezentace_Hladik.pdf. The data was also confirmed by the regular conference "What next with a family company?" which was focused on family businesses, based on the results of a study by PWC http://www.amsp.cz/uploads/dokumenty/Rodinne_firmy_na_krizovatce.pdf and http://ekonom.ihned.cz/c1-25664310-zazit-krachy-to-vadi.

60% of GDP and creates 81% of new jobs.[4] The European economy, like, for example, the American economy, practically diversifies the risk of dependency on large corporations. The vulnerability of SME became apparent during the global economic crisis, making more relevant the discussion about the optimum model for management of SME performance. World literature is usually devoted to describing that management of large companies' performance and does not differentiate the specifics of the functioning of SME. Based on long-term research,[5] I attempted to map the SME environment, describe its main differences and suggest a process model for management of performance. It differs from approaches used so far, particularly in the system approach to controlling, based on management accounting (Drury, 2005). My overall understanding of SME management is based on a balance between company planning and controlling, which also includes risk management.

1 M-C MODEL

The Management-Controlling Model (M-C Model)[6] is based on an interdisciplinary concept of SME management, based on the understanding of the connection between strategic planning and operative planning, evaluation and management of risks. Management activities for managing enterprises are based on definition of a strategy (Mallya, 2007), followed by operational plans (Havlíček, 2012). Control of future deviations from the targets is the responsibility of the controlling departments (sometimes belonging to the the financial department) that in small and medium-sized companies are usually responsible for risk management arising from discovered discrepancies. Given that the plans (strategic and operational) must have defined objectives, controlling is also aimed at detection of deviations and subsequent management of specific strategic and operational targets. The entire model is based on the specifics of SME, which particularly include:

- a different system for managing relationships with owners (often part of executive management of SME),
- a different system of financing, based on the company's balance sheet,
- a different system of reporting financial results, stemming from optimisation measures,
- a different system of managing decisive processes, based on personnel capacity,
- a different system of managing supporting processes, based on the company's size.[7]

[4] For example: http://www.eurochambres.eu/Content/Default.asp?PageID=63

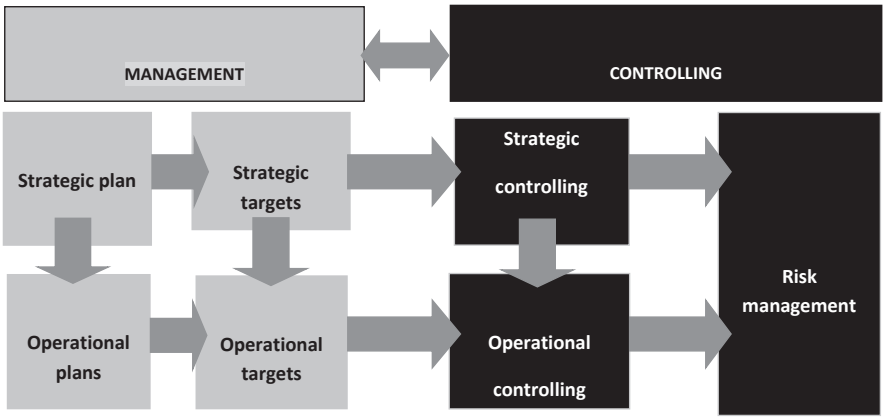
[5] I conducted research of the environment for SME during 2010-2015 as the chief problem solver for the Association of Small and Medium-sized Enterprises and Crafts of the Czech Republic (AMSP ČR) and in cooperation with the Czech Statistical Office (ČSÚ), and it included 30 quantitative surveys (CATI), focused on analysis of the business environment for SME, identification of decisive process planning and financial management of SME. Each research study included answers from 500 respondents and domestic SME.

[6] I have focused systematically for many years on a process model of company management based on the M-C model. In the publication "Úloha manažerů v řízení podniků" ["Role of Managers in Company Management"], Eupress, Prague, 2009, I described process planning and its relationship to management activities. In the expert monograph "Management & Controlling malé a střední firmy" ["Management & Controlling of small and medium-sized enterprises"] (Havlíček, 2012), I systematically devoted attention to the process of controlling, based on management accounting, which includes risk management.

[7] The differences among SME are apparent from long-term researches by the Association of Small and Medium-sized Enterprises and Crafts of the Czech Republic in cooperation with the Czech Statistical Office, which have included a total of 30 quantitative research studies (CATI), focused on analysis of the environment. Identification of decisive process planning and financial management of SME. Each research study included answers from 500 respondents and domestic SME.

Management processes, based on management of plans, visions, missions and related strategic and short-term goals have been described in detail in my doctorate study research at the Business Management Faculty of the University of Economics in Prague, and I have focused intensively in the last few years on the processes of controlling, based on management accounting, as part of preparation of habilitation process at the Faculty of Finance and Accounting at the University of Economics in Prague, and the findings from this research are summarised in a total of 15 review articles and the professional publication "Small Business. Management and Controlling" (Havlíček, 2014). Within the scope of my research activities, I have observed models of the approach to controlling promoted by individuals such as Peter Horváth[8], Sergey Falko[9], Bohumil Král[10] and Wolfgang Becker[11]. The main perspective regarding controlling in the M-C model is Péter Horváth's concept of controlling: *Controlling is a management tool whose purpose is coordination of planning verification and ensuring of an informational data warehouse in order to improve company results* (Horváth, 2002).

Figure 1 - M-C model of business management and controlling for SME



Source: Havlíček, 2012

[8] Professor Péter Horváth is a professor emeritus at the University of Stuttgart and is considered one of the founders of modern controlling. He is also one of the most quoted authors internationally regarding controlling. Since 2002 he has headed the International Performance Research Institute in Stuttgart. He is also the author of the 12th expanded issue of the publication Controlling, Vahlen, München, 2011.

[9] Professor Sergey Falko is a professor at the Economic Faculty of the Moscow State Technical University of Baumann. He also heads the Association of Controlling of the Russian Federation and is the chairman of the Scientific Board of the renowned magazine Controlling (www.controlling.ru). He is the most quoted Russian author focused on controlling and is the author of a number of books in which strategic and financial controlling is applied towards production processes in particular.

[10] Professor Bohumil Král is a professor at the Faculty of Finance and Accounting at the University of Economics in Prague. He has long focused on controlling, based on management accounting, and he is the author of the accounting publication Manažerské účetnictví, 3 updated versions, Management Press, 2010.

[11] Prof.essor Wolfgang Becker is a professor and head of the Department of Controlling at Bamberg University, and he is one of the main experts on controlling in Germany as well as the author or co-author of more than a hundred publications focused on controlling.

2 CONTROLLING OF SME BASED ON MANAGEMENT ACCOUNTING

A fundamental basis for controlling in SME is comparison of actually achieved results with the plan, monitoring, identification of non-conformities, suggestion of measures and management of problematic and crisis situations.

In view of the described specifics of SME, controlling for this segment is based on management accounting. Involvement of owners in the business processes, a different balance view of the company, high tax optimisation and the need to have information available immediately about the actual desirable condition of SME are basic reasons why I recommend basing the M-C model on management accounting. The objective is to provide basis materials for management of the reproduction process under conditions when decisions have already been made about the basic parameters and to expand the scale of provided information to include information that enables evaluation of different variants of the company's future development (Král, 2010). It is therefore essential to apply management accounting as well as cost accounting, for decisions (Král, 2010). While cost-focused management accounting (Fibírová, Šoljaková, Wágner, 2007) monitors the main business process in terms of performance and responsibilities, management accounting for decisions focuses on a comparison of existing and future performance. The entire process is concluded with process risk management.

This basically means that staff responsible for controlling must prove what kind of impact a future non-conformity resulting from non-fulfilment of strategic or operational goals will have on key financial indicators of SME. The ideal solution is for the company to have decisive accounting reports: profit and loss account, cash flow report and balance sheet, evaluated based on accounting information from management accounting.

2.1 Management accounting in profit and loss (PL) management

The profit and loss plan from the point of view of management accounting (Šoljaková, 2009), is based on various ideas of costs in comparison to financial accounting. Whereas in actually billed costs both approaches do not differ, depreciations and interest, which we perceive in financial accounting as actually billed, are understood in management accounting as calculation-based (depreciations do not originate from the acquisition price of permanent assets, but reproduction prices and interest express a cost, which is not interest-bearing, and we can look the same way at calculation-based company HR costs). The management view works with alternative (opportunistic) costs, the lost amount when resources are not used for the best possible alternative.[12]

So, the basis of an PL statement in terms of management accounting is targeted allocation of costs, which we gradually subtract from revenues from sale, set in allocation based on products, customer segments or territories (Havlíček, 2012). Deduction of costs is carried out in allocation to direct and indirect costs.

The structure of the PL statement in terms of management accounting can be broken down further into a budget of costs and revenue originating from main gainful activities and side activities, such as the sale of fixed assets and financial investments (Synek, 2007).

[12] The concept of costs is described in detail in, for example, the publication by Král, B. and Associates, on Management Accounting. Third supplemented and updated edition. Prague: Management Press, 2010.

2.2 Management accounting in cash flow (CF) management

The cash flow plan in management accounting is based on the application of a combination of the direct and indirect methods (Havlíček, 2012). Cost-based management accounting is based on the view of cash flow from the direct method, while accounting for decisions is based on the indirect method, based on operational profit (Earnings befor interest and taxes - EBIT) and adjusted by revenue and costs, which do not relate to the movement of resources during the period. This method, based on management responsibility for work with activity ratios (turnover of inventory, turnover of receivables and turnover of liabilities), can be used to plan cash flow for entire budgeted periods (usually one year). We can then use the direct method, based on direct subtraction of cash outflow from cash inflow, to clarify cash flow in the form of forecasting, but maximally within a horizon of a few weeks.

An important tool of management accounting is “free cash flow (FCF),” which means how much free cash the business has generated (cost accounting) or will generate (accounting for decision making) for a certain period. It involves the amount of money that could be taken out of the company without disrupting its anticipated development (Mařík, 2006). This is a fundamental controlling indicator for management of SME, which considers even essential investments in later years that are necessary for the running of a business. For example, methods ensuring the company's value are based in particular on FCF. Free cash flow is a super-structural indicator, which is an important indicator based on which we are quickly able to predict a company's ability to generate at least a minimum amount of free cash necessary for minor investments or unplanned expenditures in the form of dividends or, for example, extraordinary loan repayment instalments. In terms of SME controlling, FCF is an indicator, which in many cases can accurately predict the future available amount of cash better than EBITDA, for example.

2.3 Management accounting in balance sheet management

A balance sheet in management accounting of SME is differentiated from financial accounting particularly in asset items, since their value could be significantly distorted particularly in SME. Small companies often do not undergo regular audits, and if they are audited, objectivity of the audit process cannot be ensured. Therefore, the company's actual property situation according to financial accounting need not necessarily correspond to reality. Controlling must be based on the fact that the value of assets in SME is usually over-estimated (due to dubious receivables, non-sellable warehouse stock, different values of financial investments or other fixed assets, etc.). The importance of management accounting during balance sheet management grows when a company goes through a crisis, and it is necessary to restructure the company, while as a result of non-payment of debts, liabilities will rise, and the market value of assets usually rapidly declines during a crisis.

A balance sheet stemming from management accounting is based on alternative appreciation of fixed assets, based in particular on reproduction prices. Another important measure is alternative displaying of leasing transactions, based on reporting, appreciation and depreciation of long-term leased fixed assets. In mid-sized production companies, alternative appreciation of products can also occur, based rather on the level of variable costs.

3 KEY PERFORMANCE INDICATORS OF SME

Controlling must provide a realistic view into the future and based on financial indicators stemming from management accounting must prove the impact of non-fulfilment of operational

and strategic goals of all company departments on the company's overall financial situation. Priorities must be set, so that we can solve a problem that impedes the company and prevents it from accomplishing its goals. It is focused on the future. Controlling is interested in the past particularly in situations when initiatives are provided for future management. Depending on the future time and depending on the nature of the targets, we distinguish operational and strategic controlling.

The bases for **strategic controlling** are a strategic plan and strategic goals, and their main purpose is to maintain the company's long-term stability. Strategic goals are evaluated based on qualitative and quantitative parameters (Havlíček, 2012).

Table 1 - Decisive financial indicators of strategic controlling

Controlling balance optimisation	Balance equilibrium is continuously evaluated and optimised, and a series of what are known as balance rules is used. The basis is the management balance sheet of the business.
Controlling of ownership indicators	Regular evaluation and management of ownership indicators, such as ROE, ROI, ROS, ROA, ROIC and EVA.
Controlling of indebtedness	Continuous evaluation and management of key indicators of indebtedness, such as balance indebtedness or revenue and cost-related indebtedness TIE.
Controlling of investment decisions	Selection of an optimum method of evaluating investments, with consideration for potential for returns on investments, the lifespan of investments and the continuing value of investments.
Controlling of company value	Ongoing monitoring, evaluation and forecasting of the company's value, selection of a method of company appreciation (revenue, market, property).

Source: Havlíček, 2013

Operational controlling is focused on operational plans, specifically the processes of operational planning, control and evaluation of financial analysis indicators based on the short-term plans of costs and revenues, cash inflow and cash outflow and balance sheet items. Usually it is evaluated on the basis of quantitative parameters (Havlíček, 2012). Operational controlling in SME is linked to the fulfilment of the basic short-term goals with a direct impact on financial indicators. These are set by the financial department or are based on the requirements of banks, which determine them as non-exceedable financial indicators (covenants) for operational loans.

Table 2 - Decisive financial indicators of operational controlling

Controlling of free cash flow	Continuous evaluation and planning of the future value of free cash flow (FCF) with consideration for generation of available resources for owners, small and large investments and the company's value.
Controlling of operational indicators	Monitoring, evaluation and work with operational financial indicators linked to short-term sales and financial activities. This particularly involves indicators of liquidity and activities

	(turnover of receivables, turnover of liebilities and turnover of stock).
Controlling of short-term debts and relationships	Management of the company's balance sheet from a short-term point of view, application of balance rules and optimisation of relationships with providers of external capital, with consideration for the effectiveness and diversification of risks.
Controlling calculation-based	Setting, evaluating and regimentation of calculations of own costs and calculations of prices.
Controlling of direct financial risks	Evaluation and management of currency, interest, commodity and credit risks.

Source: Havlíček, 2013

4 POTENTIAL RISKS FROM FAILURE OF CONTROLLING

Failure of strategic controlling

Failure of strategic goals in the first phase may not necessarily be extremely obvious. The cause of the crisis is related to the company's internal processes and usually begins with a wrongly set up strategy, and performance declines as a result. The final negative consequence is usually loss of liquidity related to a decline or complete loss of confidence from groups involved. Loss of confidence does not occur randomly, but the fundamental problems that lead to it have a more extensive character, and their cause is usually the failure of strategic controlling. The key factor is the perspective of time, while there are often several years of difference between the failure of the strategy and failure of performance (we usually set strategic objectives at 2-5 years), and the differences between loss of performance and liquidity is often only a few weeks or months at most. A performance crisis can be attributed to non-fulfilment of economic results (profits and losses), most often in connection with a decline in sales. A liquidity crisis is characterised by missing cash flow and involves the company facing payment problems. This results in a loss of confidence that is accompanied by a loss of key suppliers, banks and employees. So that subsequent restructuring is effective, it should be carried out in the opposite sequence (cash-flow turning point, revenue-cost turning point, personnel restructuring, restoration of confidence, and only then financial restructuring).[13] Strategic controlling fulfils a decisive role for elimination of failure of performance in a mid-term horizon and also creates a basis for negotiations with financial institutions regarding long-term, mainly investment financing. Its failure can result in reduction or suspension of loans necessary for financing fixed assets.

Failure of operational controlling

Non-fulfilment of operational financial indicators is the result of failure of sales, marketing, production and other operational activities. It is characterised by quick failure of sales, loss of market positions, short-term decreases in quality and lack of preparation for production. A critical feature of failure of financial and operational controlling is non-fulfilment of desired parameters for indicators of activities and liquidity. Failure of purchasing mechanisms leads to increases in warehouse stock, involving underestimation of management needs, and securing of receivables leads to increased turnover of receivables. This has a fundamental impact on the

[13] The author focuses on restructuring of SME in detail in several publications. For example, on the topic of operational and financial restructuring, he wrote the article "Restructuring of small and medium enterprises". Kiev: Actual Problems of Economics, Editorial Office, Issue 09, 2013.

management of liabilities and cash, and working capital. Over a short-term horizon, the company, whether or not it has a properly set strategy, will end up having problems managing solvency. The measures then must be focused mainly on specific areas, and through immediate corrective measures related to sales, production, marketing and financial matters the set indicators must get to the required state. An important role is played by banks, which usually weigh the values of these indicators for operational financing and in smaller companies indirectly substitute financial controlling. So operational controlling eliminates short-term disruptions in the business processes and creates a basis for short-term financing. Its failure usually means non-fulfilment of covenants required by banks and is followed by reduction or limitation of credit lines.

Conclusion

Based on systematic work related to research regarding the behaviour of SME and based on numerous scientific projects and joint and independent publications which have been properly reviewed, it is my opinion that the absence of strategic and operational controlling, based on management accounting, has a completely fundamental effect both on immediate and long-term performance and on the existence of companies themselves. However, thorough application of controlling, which needs to be perceived inter-disciplinarily, but of course always in accordance with financial management, based on cost-based accounting and decision-based accounting, will enable companies to achieve their required results continuously. A small and medium sized company that uses controlling with the M-C model is able to function continuously and to react to fluctuations in the micro and macro environments, can successfully eliminate failures of internal processes and can prepare for crisis situations in advance and plan corrective measures. This makes a company more trustworthy and reliable from the point of view of involved persons, such as banks, suppliers, customers, potential investors and the state.

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E-GOVERNMENT MORE USER FRIENDLY

Martina Klierová

Abstract

The present article draw attention to the possible development potential and promote progress in the field of public services, leading to more efficient public sector as well as the private sector. Therefore, within this area, we will focus our attention on the elimination of so called "black spots". These include for example dissemination, sharing and exchanging knowledge, best practices and information in partnership between the private and public sectors, representing a decisive contribution to society and the overall direction of the EU. Based on this fact, it is important to focus attention on the development of public services, put emphasis on strategies based on innovation and potential of ICT and thus create conditions for high quality administrative service for the clients of public administration - eGovernment.

Keywords: eGovernment, Information and Communication Technology, private sector, public sector, public services

JEL Classification: H4, H7

Introduction

Public administrations in Slovak republic, as in many other EU Member States, have undertaken major efforts in recent years to become more transparency, efficient, and accessible to the people they serve. Efficiency of public administration, public sector and public services lies primarily in saving time and money and orientations for the clients of public administration who are taking an active part involved in its operation and events. eGovernment is based on ICT, which largely predetermines the degree of applicability to the construction process ensuring the efficient delivery of public services. In the Effective eGovernment strategy, the European Commission has undertaken several steps for the development of a new generation of sophisticated eGovernment services, which include eSignatures, eIdentification (eID), strengthening the Competitiveness and Innovation Programme (eParticipation) and so on.

The work of the article concentrates on new forms of organization and governance made by ICT, including their implementation requirements (Change Management). The findings can therefore be applied to the support of the government, public administration and public sector in using new eGovernment tools and other ICT solutions.

1 EFFECTIVE EGOVERNMENT

The public sector as a summary of the intended relationships and organizational forms of institutions and public sector organizations, ensuring the realization of public interests and to maximize the optimum satisfying the needs of citizens. Quality and functioning public administration is an important part of a functioning state and society. In today's terms, it is therefore necessary for public administration regarded as an implementer of public services that should reflect the requirements and expectations of public administrations´ clients.

Citizens and businesses demand that public services adapt to their needs, demonstrably reducing their administrative burden and to make such services more efficient and transparent manner, leading to the credibility of this institution. For customers of public administration is an importance of prompt deployment of innovative features and sophisticated database systems, to quickly solve the current problems of the electronisation and build conditions for the participation of citizens and businesses in this area.

Public administrations need to adapt to keep up with the rapid transformation of our society.

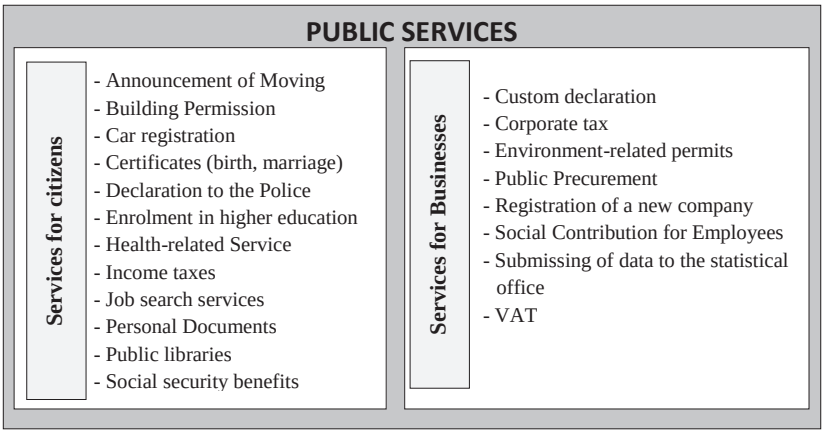
Despite the fact that eGovernment is quite difficult to define, we can speak of eGovernment as a means and tools using information technology (especially the Internet) to improve public services for citizens, businesses and society.

The European Commission's eGovernment Action Plan 2011- 2015 supports the provision of a new generation of eGovernment services. It identifies four political priorities based on the Malmö Declaration:

- Empower citizens and businesses,
- Reinforce mobility in the Single Market,
- Enable efficiency and effectiveness,
- Create the necessary key enablers and pre-conditions to make things happen.

Main goal of this plan is to optimise the conditions for the development of cross-border eGovernment services provided to citizens and businesses regardless of their country of origin (Fig. 1 – Basic public services). The objective is to increase the take-up of eGovernment services. The first target of the action plan is that more by 50% of citizens and 80% of businesses should use eGovernment services.

Figure 1 – Public services



Source: European Commission Directorate General for Information Society and Media (2005)

1.1 The public administration in Slovakia

Slovak republic public administration is marked by a number of transformation processes, which in many cases operate contradictory. Huge shift in this direction came with the ESO (Effective Reliable Opening) reform, which emphasizes the effective functioning of public administration, increasing the quality and range of services, transparency and the needs of a client, which can be regarded as a breakthrough in relation citizen - public administration. The central body of public amdinistration dealing with the issues of modernization of public administration - Ministry of Interior - appeals to streamline structures and optimize performance and public administration processes, increase citizen satisfaction by providing sophisticated services in an attractive, simple and efficient manner and transparency of public administration.

Building a modern system of public administration, with a view to increasing the quality and comprehensiveness of the solutions can be categorized into four areas:

Satisfaction of citizens, businesses and the general public:

- pro-client orientation of public administration;
- use of e-government without distinction of any kind to all citizens, including the disabled, the socially disadvantaged, etc.;
- reducing administrative burden on citizens and businesses when dealing with official matters;
- increase the transparency of official processes;
- reducing the time dealing with officialdom;
- the growth of interest of the public to interact in public affairs - participation.

Digitalization of public administration processes:

- an integrated IS - Automatic update of data on citizens, businesses and companies;
- increasing portfolio of electronic public services;
- centralization of the system, services and applications.

The effectiveness of the public administration:

- streamlining the structure of government;
- the common PA infrastructure in the area of eGovernment;
- increasing performance of individual components of HR, following the elimination of duplication;
- remove barriers in public procurement - 100% implementation of electronic public procurement in all areas.

Human resources in public administration:

- qualification;
- improvements in computer and information literacy, specific IT project and managerial skills, language level, etc.;
- develop competence.

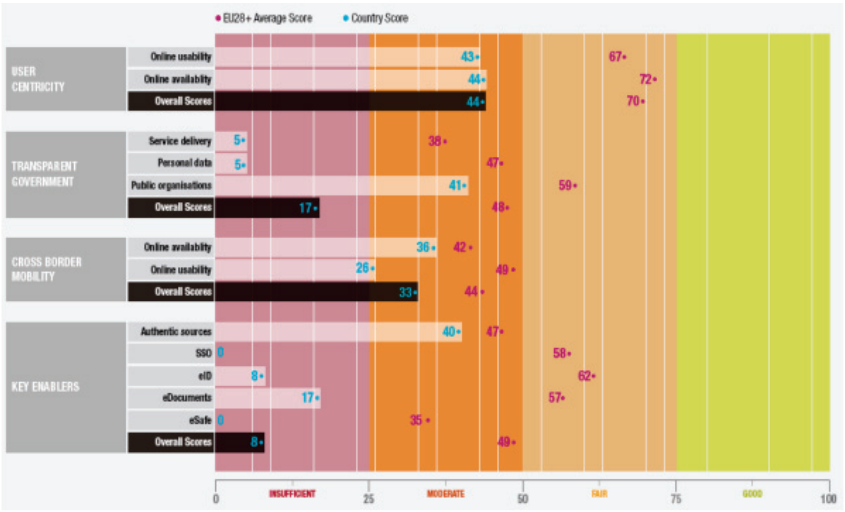
1.2 eGovernment in Slovakia

The key point in the provision of public services is a proactive approach to the issue of eGovernment. eGovernment in Slovakia have for their objective the improvement of accessibility, simplicity, economic performance and overall efficiency of public services and democratic processes. As part of eGovernment it is important to mention that relates not only to the whole public administration, but also the entire public sector and significantly reshaping the positions and possibilities of its clients.

The result of the latest eGovernment Benchmark1 study, which monitors the development of eGovernment in Europe, based on specific indicators (Fig. 2 – eGovernment performance). These indicators are clustered within four main top-level benchmarks (European Commission):

- **User Centricity** – indicates to what extent (information about) a service is provided online and how this is perceived.
- **Transparent Government** – indicates to what extent governments are transparent regarding: their own responsibilities and performance, the process of service delivery and personal data involved.
- **Cross Border Mobility** – indicates to what extent EU citizens can use online services in another country.
- **Key Enablers** – indicates the extent to which 5 technical pre-conditions are available online: Electronic Identification (eID), Electronic documents (eDocuments), Authentic Sources, Electronic Safe (eSafe), and Single Sign On (SSO).

Figure 2 – eGovernmnet performance across politicy priorites of Slovakia



Source: ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=5568

Citizens services within eGovernment are as follows:

- **Announcement of Moving** (Ministry of Interior, Municipalities) – process of changing of address by electronic service by using the eID card, online request about social, legal or health issues;
- **Building Permission** (Minicipalities) – information to download;
- **Car registration** (Ministry of Interior) – information and forms to download (new, used, imported cars);
- **Certificates of birth/ marriage** (Ministry of Interior, Municipalities) – the information necessary to obtain a birth or marriage certificate;
- **Declaration to the Police** (Ministry of Interior, Slovak Police) – official declaration for theft of personal goods;
- **Health-related Services** (Ministry of Health) – official electronic form to start the procedure in order to book an appointment, online request about social, legal or health issues;
- **Enrolment in higher education** (Ministry of Education, Science, Research and Sport, Higher education institutions) – the possibility of electronic input through an electronic application to study, electronic input through the status of prospective applicant;
- **Income taxes** (Ministry of Finance, Tax Directore of SR) – information and forms to download, online tax declaration (eSignature);
- **Job search services** (Ministry of Labour, Social Affairs and Family, Central Agency of Labour, Social Affairs and Family) – electronic supply of preselected jobs related to a given profile;
- **Personal Documents** (Ministry of Interior) – the possibility of electronic input through an official electronic form in order to obtain a driver's licence and an international passport, the personal document is made known via SMS, or email;
- **Public libraries** – the possibility to search for a specific title and to perform an online reservation;
- **Social security benefits** (Ministry of Labour, Social Affairs and Family, Social Insurance Agency, Health Insurance Companies, Ministry of Education, Science, Research and Sport, Higher education institutions) – information and forms to download, eService 'Individual account of policyholder' (overview of health, pension and unemployment insurance details).

Businesses services within eGovernment are as follows:

- **Corporate tax: declaration, notification** (Ministry of Finance, Tax Directorate of the Slovak Republic) - information and forms to download, online tax declaration (eSignature);
- **Customs declarations** (Ministry of Finance, Customs Administration) – declaration of customs (eSignature);
- **Environment-related permits** (Ministry of the Environment, local environment offices) – the procedure for environment-relatedpermits;

- **Public procurement** (Office for Public Procurement) – online notice to the National Journal of Public Procurement;
- **Registration of a new company** (Ministry of Justice, Trade Registry) – register a new company
- **Social contributions for employees** (Ministry of Labour, Social Affairs and Family, Social Insurance Agency) – forms to download, businesses with more than five employees are required to submit regular monthly social contributions forms via the web-based data intake system;
- **Submission of data to statistical offices** (Statistical Office of the Slovak Republic) – submission of statistical data to the Statistical Office
- **VAT: declaration, notification** (Ministry of Finance, Tax Directorate of SR) – completely carry out the VAT declaration via the website (eSignature).

2 OPEN AND FRIENDLY EGOVERNMENT

Slovakia's success in the provision and use of eGovernment services can be compared with the rest of the EU and the government declared ambitions regarded as modest. Although most public institutions now post large amounts of information through its own website, but does not allow solving complex agenda. From the services point of view, is the greatest fault of the low number of functional and available eServices. The amount of online services (a central repository - 725 electronic forms) is provided on one-sidedly, for example, download forms have not the possibility of electronic records. Faster on this issue are progressing services for businesses (Social Insurance, Tax Directorate). However, in this system is lack of interactivity and optimization of processes. It is also important to pay attention to eliminate the deficiencies, duplication and barriers that in connection with the use of those services are closely related. eID card, which allows the input to the effective use of the services of a wide range of public sector and input elements of the electronic mailbox of the client, should be issued automatically to all citizens with all the particulars in connection with client needs. This will increase the awareness of clients, liaise with citizens and their participation in building the system. Focus attention on the maximum possible use of the available technologies and processes interdependencies to build the infrastructure that will be seen as clients and customers that will adapt to their requirements.

In building a comprehensive and fair functioning network do not forget to use the knowledge and know-how of the general public and experts. Do not be affraid of openness and discussions in this area, covering all areas of public sector and the services, and to deal with the new challenges that are feasible under conditions of SR.

Conclusion

Providing of sophisticated services faster, more modern and efficient way is the basis to optimize infrastructure and the respect of citizens, businesses, government and the entire public sector. The growth of citizen satisfaction, simple and uniform way of communication, cooperation between citizens, businesses, government, self-government and IT community in achieving the charitable goals, the availability of eGovernment services, reduce administrative and time burden on citizens and businesses and regulation of public administration may only be implemented with the active participatory of all state components of this system. Public sector offers should be based on providing quality service, effective management of public

funds and building relationships with citizens, without the existence of this sector we can not imagine.

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FROM THE FINANCIAL TO THE SOCIO-ECONOMIC EFFICIENCY OF INVESTMENT PROJECTS

Michael Kroh

Abstract

The author deals with the problem of socio-economic efficiency of large investment projects. The pressure on the assessment of the socio-economic efficiency of investment projects has its objective foundation in the growing need for social control of investment in the interest of sustainable development and objectification comparison of non-profit projects. It comes out from the fact that the concept of efficiency is variable in its content and that individual interests are not automatically identical with the social interests. Created methodology lets us to convert identified natural values and multiplier effects on the monetized items of CBA analysis. It is nothing to impede the expansion of this method to other categories of socially significant investments, including private ones.

Keywords: socio-economic efficiency, investment projects, Internal Rate of Return, environmental impact of investment projects, social impact of investment project, Cost-Benefit-Analysis

JEL Classification: H89

1 FROM THE FINANCIAL TO THE SOCIO-ECONOMIC EFFICIENCY OF INVESTMENT PROJECTS

In connection with the increase of public investments the problem of evaluating their effectiveness emerged, because most of them can not apply the traditional "banking" approaches aimed only a financial return of projects. Many public investments are not based on the maximization of profit, but bring social benefits even in situations where they are free from any financial income. We can name a newly built bike trail or a traffic roundabout as examples of such investment. It is clear that a private capital would invest in such projects only in exchange for some benefit, for example increase the image, advertisements or tax advantages. Yet, such projects are necessary and useful for the life of modern society. Their importance is therefore increasing.

Also a purely financial approach to evaluation of the effectiveness appears to be insufficient in the sphere of the private investment with the growing importance of social and environmental factors in society, above all at so called “major” projects. However, an only couple-millions-project can have fatal consequences for the environment and social conditions in its immediate vicinity.

Banks and other financial investors are coming out of the legislative approach, the investment and the project are acceptable to them, if they obtain the appropriate official (especially construction) permission. Then a normal analytical procedure starts and the provider of finance evaluates the project at the base of the traditional methodology of calculation of indicators of efficiency and returns. The usual tool for it is called cost-benefit-analysis (CBA).

The legislation is however quite benevolent as for the assessment of environmental impacts of the investment projects and social impacts are practically missing if there is not a setback project. But this is not a subject taken into account in this article. An analysis of the impact of

the project on environmental development is prescribed only for "major projects" and it still often reduced on so called simplified form of the EIA (i.e. EIA - Environmental Impact Analysis). There is logical that the interests of individual investors and the public interest interfere because a thorough assessment of the environmental and social impacts takes several months. Therefore the expulsion of most of the projects from the assessment, including public, as a compromise is used and the usual cause of an effort to rush is to meet the deadline for drawing subsidies from EU funds. However, the European Commission refuses to grant cash as well at the final assessment of many of them because of the lack of EIA.

The EIA analysis itself is not enough for a truly thorough examination of the socio-economic efficiency of the project and its potential comparison with other projects in competition for the grant (it deals with only technical and environmental factors), but gives some necessary basic data for it. If it is missing, the assessment of the socio-economic efficiency, even if it is prescribed, appears to be more marked by subjectivism of "expert assessment". It is precisely the methodology of converting physical units into monetary indicators that is the cornerstone of the CBA analysis.

The basis for the methodology of CBA is the "Guide to cost-benefit analysis of major projects", the latest version thereof was prepared by the Italian and French economists for the European Commission in 1997[1]. Patrik Sieber developed it in 2004 under the heading of the Ministry for Regional Development to our terms[2]. The more detailed European methodology is developed on the energy, transport, education, museums and archaeological parks, health infrastructure, forests and parks, telecommunications, industrial zones, as well as industrial projects.

It is not the purpose of this paper to analyze and comment different approaches to the transfer of individual social and environmental units to economic indicators. It is a very sophisticated method that has been sufficiently utilized in other areas of exploration of the impact of human activity, for example, when analyzing the impact of climate change. It is also about the method that leaves some flexibility subjective view of an expert whose conclusions, however, should be properly documented and reasoned with arguments. It may, however, be a pretext for questioning the whole method. However, if such arguments support well prepared opposition, it could be even an enrichment of the evaluation process, as well as dissent opinions contribute to its higher quality.

As for a general economic theory, the point is something else. The distinction of financial and socio-economic aspects at the CBA shows that the economic efficiency has a different content and criteria for its determination at different levels of economic exploration. Economic theory therefore cannot only examine the effectiveness from the position of individual private investors and their financial profit as such an approach is only partial, abstracting from the impact on the environmental and social factors. One cannot also automatically assume that the indicators of financial and socio-economic efficiency will be equal at each project. It is therefore not true that what is good for the individual investor, must be always and under all circumstances good for the whole society, too. Investment (public and private) has a contradictory character and impact, what the economic theory should respect.

It must be acknowledged that even the socio-economic analysis in the context of CBA should be reconciled with some simplification. It is very difficult to take into account all the factors, because analyzing the process is too complicated. It is however not possible to abstract from the *essential* factors. Not ignoring the financial effects on the state budget (the collection of VAT and income tax to corporations and their employees) and measurable environmental quantities of dust, noise, waste, pollution, emissions, etc., it is necessary to take into account the social impacts, many of which may be subject of complex-mediated mechanism of market competition. In this regard I can also express criticism on the side of political decision-making,

which quite often takes into account only the immediate, visible and well "marketable" investment results in the elections. As an example, we can appoint a large foreign green-field investment in highly competitive industries, which is to bring under the condition of state aid a certain number of new jobs. It is certainly positive, especially disregarding from the quality of these employment opportunities. However, the state should try to estimate in assessing the suitability of such investments (or to ask such information directly from an investor within the permitting process) how many outputs (goods and services) will be destined for the internal market and how to export. The capacity of the internal market is not unlimited and it can be assumed that the arrival of new powerful players can kill weaker domestic competitors and thus somewhat reduce the positive effect of creating new jobs. The economic benefits of new investment will be reduced as well as by liquidation of existing jobs that must be counted in the analysis of a CBA as an expense. Similarly, we need to correct indicators and selection of income tax or VAT when calculating future financial effects for the state.

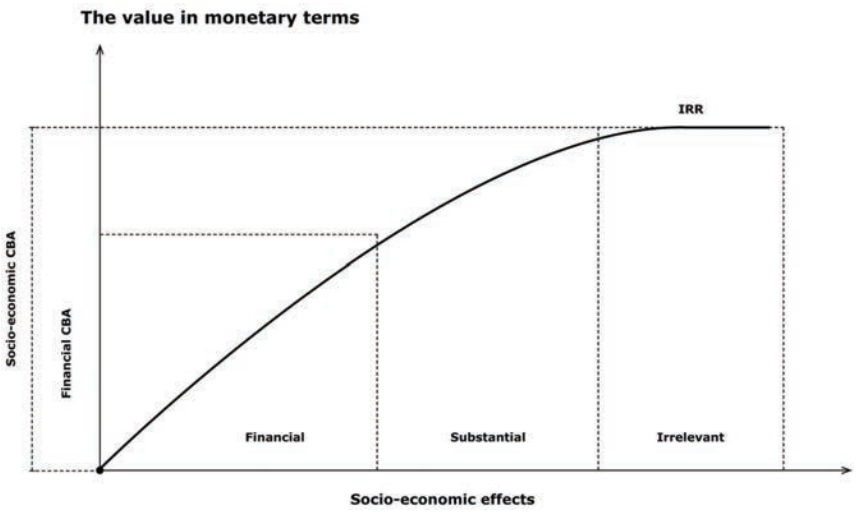
Well known "Multiplier effects" are other methodological problem. Some of them are relatively easy to determine from financial part of business plan. If we assume an increase in production and jobs, an increase of the collection of taxes on corporate incomes and individuals can be roughly derived as well as the excise duty if a product is subject to this tax. We know also potential benefits that the investor has eventually acquired under the investment incentives. When calculating the tax effect we cannot ignore the one-off effect of VAT collection of the works carried out.

More complicated is to determine the effects of subcontracted material and services. It is not clear in advance whether it will be a supply of domestic sources or from abroad, also savings resulting from the project may occur and this will reduce the unit cost of materials. Regarding services, many of them are well known. There are fixed in nature and do not increase significantly. Services belonging to the variable costs also may not grow proportionally with income, for example, due to higher quality technology. At public projects an extremely complex structure effects of increasing business activities in the region can also origin as a result of the growth of its attractiveness for tourism and this has an impact not only in collecting taxes, but also on employment (reducing the volume of unemployment, the increase in the consumption of goods and services etc.).

We could go on almost indefinitely in the list of multiplier effects, but such a procedure would lose logical sense. If we “move away" from the immediate and stronger impacts to a more mediated and weaker ones, the influence on calculation of indicators of efficiency and return (IRR, the present value of the investment or payback period) is no longer so significant, their values change slightly. There is therefore no need at all costs to try to include the evaluation of everything that we could imagine as the impacts of the project (see graph).

The last methodological problem, which I would like to deal with, is the limit of indicators of socio-economic efficiency and return. Usually, so called Risk interest rate (base rate + risk

Figure 1



Source: the author

premium) is determined as the lower limit of the internal rate of return (IRR - Internal Rate of Return). This item varies with time. Interest rates are currently low, but in the long run some shift upwards could not be excluded. Taking into account that major investment projects have longer payback period we have to adjust it therefore, through a risk margin interest rate for discounting, to a level that reduces the risk of significant deviation of an indicator value due to changes in economic conditions. Although even by this risk surcharge the interest risk rate reaches not more than 3-4%, in the moment of achieving a level close to the minimum threshold a assessor should judge the project thoroughly investigating the source values used, because such investments can be a high risk in the long run from a societal perspective. The remaining indicators - the payback period and the present value of an investment - are very closely linked to IRR and methodologically not very problematic. The current value of the investment should be at least non-negative, and the payback period calculated with regard to the socio-economic effects should be less than financial (the "Bank CBA"), because the socio-economic effects should outweigh the costs and improve the efficiency of the project.

In conclusion, let us summarize. The pressure on the assessment of the socio-economic efficiency of investment projects does not represent only fantasies of "Brussels bureaucrats" that hamper investors, but it has its objective foundation in the growing need for social control of investment in the interest of sustainable development and objectification comparison of non-profit projects. It comes out from the fact that the concept of efficiency is variable in its content and that individual interests are not automatically identical with the social interests. Created methodology lets us to convert identified natural values and multiplier effects on the monetized items of CBA analysis. It is nothing to impede the expansion of this method to other categories of socially significant investments, including private ones.

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BUSINESS IN PUBLIC AND PRIVATE SECTOR - COMPETITION OR CO-EXISTENCE?

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Abstract

The aim of the paper: to identify (theoretically describe) selected aspects of public and private sectors' status in the economy. Metodology, analysis and discussion: using statistical methods (descriptive statistics, time series, indexes, correlation) an analysis is performed to find out the status and development of the private and public sector in Slovakia in the period 2004-2013 along with an analysis of their effectiveness through indicators: employment, wage and capital intensity. Results: the observed results induce the need for public and private sectors' stronger co-existence in the future as a factor of economic growth. Mentioned relates to the consequences of globalization and geopolitical interests and risks in the global economy.

Keywords: public sector, private sector, competition, partnership, entrepreneurship, Slovakia, USA, Japan, China, Russia

JEL Classification: H1, E6, D4, M1, M2

Introduction

In the search for an optimal model of working economy debates often result in consensus that the starting point is a model based on four pillars - *the inviolability of fundamental civil rights and freedoms; parliamentary democracy; private ownership and entrepreneurship; free market*. Achieving this status identifies Fukuayma (2002) in expressive way as the "end of history" and sees it as the development of civilization and the triumph of Western and American democracy.

Social and economic development has confirmed that cooperation between people, division of labour and trade increase the well-being of all involved. For the proper functioning of the economy must be respected norms of behaviour based on the above four pillars. Where these conditions are met, there will be kept an order and rules (Chovanculiak, 2015). Via spontaneous processes and voluntary cooperation between people even with the absence of a public authority may be established a private order. Laws and rules are not only created in parliament, but polycentric between private actors (Stringham, 2015).

It is obvious that the topic of the functioning of public and private sector in business is more complex; market (business) environment is much more complicated and, moreover, due to the development of international division of labour has become a global with all factors that determine its quality. Experience shows that the problems with the abuse of market power and market failures require a more comprehensive view of institutional, organizational, legisla-tive, financial and other aspects of the operation of the economy (business sector) as an entity.

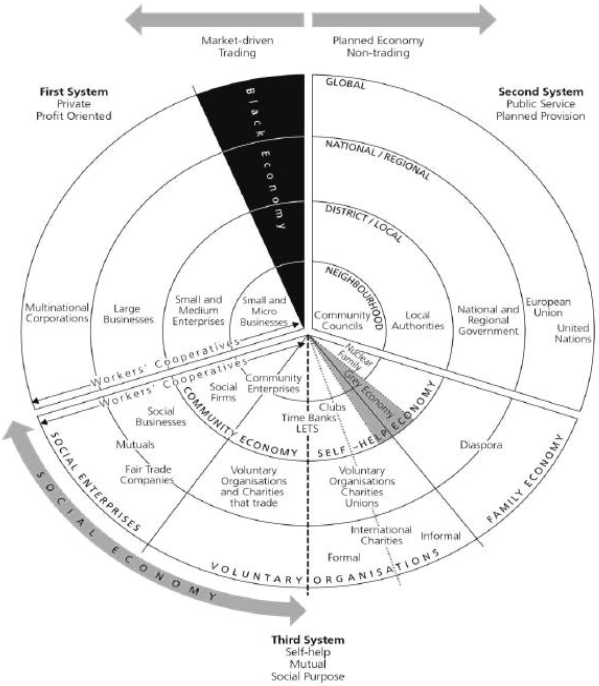
In the above context *the aim* is to identify selected aspects of public and private sector position in the economy, to document status and evolution of both sectors in Slovakia in the context of efficiency criteria and to show the necessity of their co-existence.

1 PRIVATE AND PUBLIC SECTOR

1.1 Institutional and organizational functioning of public and private sector

Kay (2011) describes three economy systems (Fig. 1). Each system operates at a local, regional and global level as seen by the concentric circles. The whole diagram has been divided into "trading" (left-hand side) and "non-trading" (right-hand side). The illegal economy is in the First System as it is most often involved with individual gain. At the local level (inner circle in the diagram) and in the Third System there are community enterprises, social enterprises affecting a local area, clubs and voluntary organisations in the neighbourhood self-help economy and families. In the Second System there are community councils, community centres, etc.; and in the First System there are small businesses, corner shops, petty criminals, etc. At a local level there are strong links between organisations operating within the each of the three systems. This is where local social capital is located.

Figure 1 - Three Systems of the Economy



Source: Kay, A. 2011. The Development of Social Enterprise from the point of view of Social Inclusion.

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1.2 Co-existence and competition

Globalization of economic processes and EU membership are accompanied by many changes that require different behaviour of enterprises, government and all the actors who work in the economy. Changes require new strategies to enhance partnership and cooperation between public, businesses and non-profit sector (Kačírková, 2007). Mentioned author notes that the areas of public and private sector usage are wide and include support for the economy, infrastructure development, research and development, technology transfer, public services, urban planning and urban development, environmental protection, cultural activities, educational sector, tourism and social policy. The starting point for the co-existence of business in the public and private sector is equality of all ownership forms, enshrined in the Constitution.

Globalisation has also multiplied the competitiveness of the business environment and conditions for entrepreneurship. Competition is understood as spontaneous (and dynamic) discovery process and competition between people (companies) in economic processes on the best use of resources in order to maximize usefulness. According to Smith, it is the institution that best protects the individual interests of the people: *"competition is an expression of the desire for improving their own living conditions ..."* and *"mutual competition within the generally accepted and effective enforcement of the rules pushes down the price of goods towards their natural level"*(Smith, 2001, xiv – xv). Competition is a prerequisite for self-improvement, motivational pressure to be better, more successful, more creative, and more innovative in delivering better quality goods and services (also based on differences to obtain a benefit). It brings differentiated remuneration according to effort, bigger choice and freedom of choice, more substitutes and elastic demand of prices, thus lower prices and higher quality. It is "*an ongoing dynamic process of discovery and opportunities search*" (Hayek, 1948).

Co-existence in order to increase competitiveness in the form of a partnership is an effective trend in business. Partnership is understood as a horizontal relationship between two or more entities, which can be businesses, state and local governments, social, cultural, educational, research and other non-profit organizations, professional associations, as well as other companies and self-employed individuals, involved in the realization of business (EK, 2013).

1.3 Public versus private?

Possible view to examine the effectiveness of public and private sector can be a development of the national economies 'efficiency in which is the business sector, on the basis of the existing economic system, created mostly on private or public/state ownership. We will review developments of the four major economies in the world in recent years: 1. USA, 2. Japan, 3. China 4. Russia. In the first two countries is business sector mainly based on private ownership, in the other two it is based mostly on public ownership, respectively on the control of large companies from the state. Due to the limited size of the paper we present a limited outline of their development, characteristics and problems.

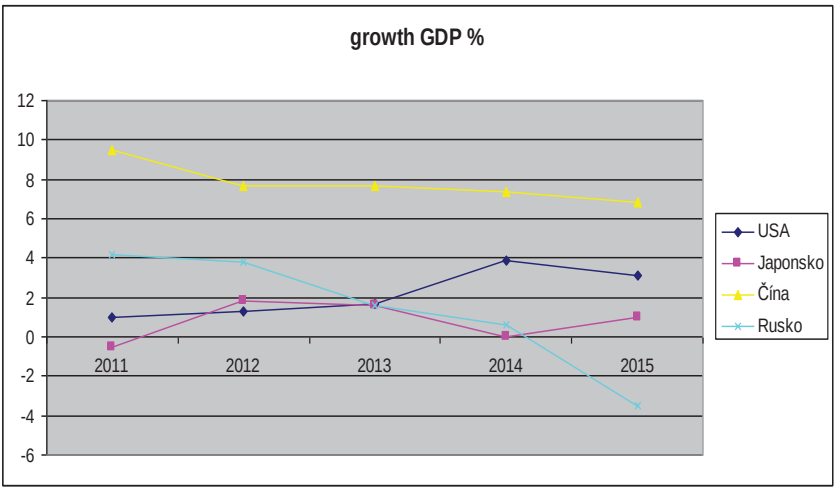
In the USA runs relatively strong economic growth, and since 2010 is not recorded major fluctuation in economic activity or turnover over the economic cycle. Since 2015, it predicts the trajectory of a slow expansion. However, the US economy is in some ways worse off than it was 5-10 years ago (e.g. without a job are more than 9 mil. people).

In Japan episodes of business cycles were more frequent broken by recessions than in other advanced economies. Japan in 2014 came within short period back to the sixth recession, but the last two years brings a recovery with more permanent view. There is a significant decline in export.

The Chinese economy has the highest dynamics in the world. It is currently considering moving to the lower growth targets and to strengthen environmental responsibility. It has the largest foreign exchange reserves, active foreign trade balance and is the l argest exporter of the world. The accumulated financial assets invest to promote Chinese interests in the world. Expands mainly to weaker economies in the world. Chinese firms belong to the largest companies in the world.

After a quick recovery from recession in 2009, *the Russian economy* stands on the verge of a new recession (escalation of negative external factors: penalties, a drop in oil prices, etc. and internal factors: the depreciation of the ruble, decline in domestic demand, inefficient allocation of resources, low level of innovation, etc.). The Russian economy is working close to the limits of its potential. Growth benefited from rising prices of raw energy materials and increase of the existing capacities usage.

Figure 1 – GDP development in USA, Japan, China, Russia



Source: own calculation based on Obadi, 2015.

Development in these countries can be described as uneven, but also non-synchronous. Despite the existence of quantitative and qualitative differences in the development of reviewed economies as a product of business activities, certain generalizations can be made.

Common features of the countries reviewed: GDP growth is significantly dependent on the external environment; concentration of business activities in transnational corporations (TNC); the share of profits and capital on GDP is increasing at the expense of the share of labour; more likely to employ part-time jobs; weakening of aggregate demand; low interest rates; decline in energy prices; not achieving the pre-crisis economy level; innovative activity, the decline in domestic investment; support of foreign investors; shift of investment to domestic consumption; search for investment opportunities in foreign markets; investment mainly in infrastructure; growth of inter-regional differences.

Common problems of the countries reviewed: structural problems, dependence on foreign countries, income inequality;unemployment; working poorness; high gross public debt (Japan

230%, China 245% of GDP); exclusion of newly created money into the real economy; aging of population, decline in domestic demand, excessive growth of financial markets; problems on the real estate market (Obadi a kol., 2015).

Result is that the effectiveness of the business sector in the conditions of globalization is not significantly depend on the form of ownership, but mainly on external: national, international conditions (geopolitical power pressures, the impact of TNC, input prices, etc.) and internal conditions (quality of management, innovation , investments, etc.).

2 PRIVATE AND PUBLIC SECTOR IN SLOVAKIA

To present public and private (business) sector in Slovakia will be used legal entities (companies) as a statistical characteristic. To present status, development and features of tested statistical file are applied methods of descriptive statistics (tables and graphs), time series analysis, index analysis, correlation analysis (Soucek, 2007). Statistical file comprises of all legal entities entrepreneurs (LEE) listed in the Commercial Register (CR) in the Slovak Republic. Individual entrepreneurs (IE) are not the object of the statistical survey in the context of legal entities quantification in the private sector. Tab. 1 lists the numbers of IE to get a comprehensive view of the entire business sector in SR.

For the structuring and division of legal entities (LE) in SR we will use the methodology of the Statistical Office (SO) of SR. According to the SO is public and private sector made up of these legal entities:

1. Private sector economic subjects

a) firms owned by private domestic
   - private listed in CR
   - companies (joint stock company, ltd.)

b) firms with foreign ownership

c) firms with international ownership (mainly private)

d) cooperative firms

2. Public sector

a) state-owned enterprises

b) enterprises owned by local governments
   - municipal offices enterprises
   - regional governments enterprises

c) firms with international ownership (mainly public)

3. Non-profit sector:

a) contributory

b) allowance

c) other (owned by associations, parties and churches)

Development of the legal entities number in SR in the period 2004 - 2013 is shown in Tab. 1

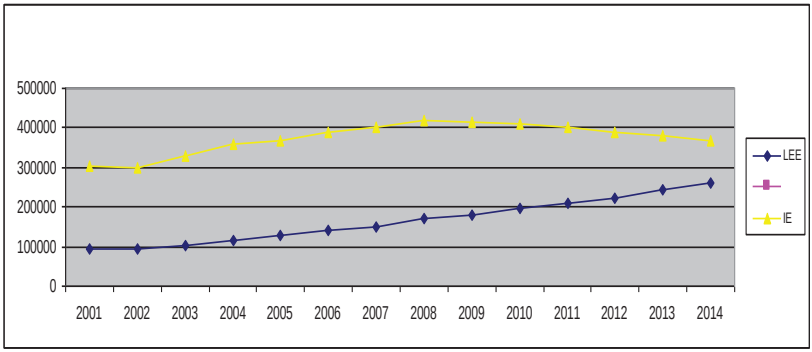
Table 1 – Legal entities (LE) in Slovakia

Legal entities in SR	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Growth in %
Total LEE and IE	474663	493871	527486	549413	588181	593219	607397	612412	610381	624173	131,50
A. LEE	**114285**	**126777**	**139240**	**149772**	**169960**	**179352**	**197089**	**210087**	**222929**	**241960**	**211,72**
LEE - enterprises	**74207**	**83710**	**93411**	**101574**	**119933**	**127409**	**143001**	**153881**	**164771**	**181914**	**245,14**
1) private sector	**73399**	**82943**	**92692**	**100886**	**119280**	**126739**	**142321**	**153230**	**164100**	**181252**	**246,94**
a) trade companies	67143	76632	86317	94580	112149	119268	134336	145110	155689	171941	256,08
in this foreign	7524	8874	10540	12077	15288	17011	19698	21884	24167	26561	353,02
in this international	5996	6443	6665	6785	7239	7147	7417	7450	7296	7588	126,55
b) cooperative	1564	1542	1501	1492	1535	1553	1580	1573	1542	1546	98,85
c) others listed in CR	4692	4769	4874	4814	5596	5918	6405	6547	6869	7765	165,49
2) public sector	**808**	**767**	**719**	**688**	**653**	**670**	**680**	**651**	**671**	**662**	**81,93**
a) state enterprises	35	30	22	21	23	23	21	20	20	21	60
b) local gover. entrepr.	773	737	697	667	630	647	659	631	651	641	82,93
3) non profit institut.	**40078**	**43067**	**45829**	**48198**	**50027**	**51943**	**54088**	**56206**	**58158**	**60046**	**149,82**
a) in this contributory	6612	6654	6649	6643	6592	6643	6662	6615	6601	6463	97,75
b) in this allowance	962	895	816	792	751	726	717	701	681	661	68,71
c) in this others	32504	35518	38364	40763	42684	44574	46709	48890	50876	52922	162,82
B. IE indiv. entrepr.	**360378**	**367094**	**388246**	**399641**	**418221**	**413867**	**410308**	**402325**	**387452**	**382213**	**106,06**
a) self employed entrep.	336640	344870	364185	374382	392841	387876	384202	375722	359575	352709	104,77
b) free professions	13683	12752	15175	16752	17189	17974	18378	19069	20382	21925	160,24
c) farmers	10055	9472	8886	8543	8191	8017	7728	7543	7495	7579	75,38

Source: own calculation based on data from the Slovak Statistical Office

Total number of all legal entities (LEE and IE) in the Slovak Republic in the period 2004 to 2013 increased by 31.5%, LEE by 111.72% and IE by 6.06%. The growth rate of the LEE number is also higher in the longer period 2001 - 2014 (Fig. 2). The number of LEE in Slovakia increased to 278.34% and 121.75% for the IE.

Figure 2 – Development of LEE and IE number in SR in period 2001 – 2014



Source: own calculation based on data from the Slovak Statistical Office

The ratio of *enterprises* in the private sector in 2013 was 99.6% to 0.04% in the public sector. In 2004 this ratio was 98.91% to 1.19%. (Note: Till 1989 this proportion was almost the opposite in Slovakia). It can be noted an extreme polarization in both society-social systems in Slovakia. Would there be a need for greater balance of sectors in the economy? The proportion of LEE *subjects* in the private sector in 2013 is 75% (in 2004 it was 64%), public sector 0.02% (in 2004 it was 0.03%) and in non-profit 24.8% (in 2004 was 35.07%). There was strengthening of the private sector. In the *private sector* the number of enterprises increased to 247%, foreign to 353% and international to 127%. In the *public sector* the number of enterprises declined to 82%, out of which the number of state enterprises to 60%.

2.1 Employment in the public and private sectors

Development of the employees' number is one of the possible indicators of the public and private sector efficiency (Tab. 2). (Note: the choice of efficiency indicators is limited by the data available in the Statistical Office of SR database). The number of private sector employees increased to 141.93%, of public sector employees fell to 93.16%. Based on Pearson's correlation coefficient analysis it can be concluded that the strength of tightness depending on the number of establishments and number of employees in the private sector is very high (0.94132). In the public sector the force of tightness depends only mildly (0.41693). From the aspect of the relationship between the number of enterprises and number of employees, private sector appears to be more flexible.

Table 2 – Correlation between number of companies and employees

	No of employees. 2005	Share of employees 2005 %	No of employees 2013	Share of employees 2013 %	Growth index in employees in %	Growth index in companies number in %	Pearson coeficient
Private sector LEE	735 149	59,84	1043 465	69,418	141,93	246,90	0,94132
Public sector LEE	493 461	40,00	459 692	30,582	93,16	81,90	0,41693
Total	1 228 610	100,00	1 503 157	100,00	122,35	X	x

Source: own calculation based on data from the Slovak Statistical Office

Public sector is not possible to evaluate negatively based on this dependence, as public companies (especially state ones) have higher number of employees (Tab. 3, 4, 5).

Table 3 – Average number of employees in private sector

PRIVATE SECTOR	2005	2006	2007	2008	2009	2010	2011	2012	2013	Index %
No of companies LEE	82943	92692	100886	119280	126739	142321	153230	164100	181252	218,5
No of employees	735149	749958	778212	794794	839468	846798	1028606	1027975	1043465	141,9
No of empl./companies	8,86	8,09	7,71	6,66	6,62	5,95	6,71	6,26	5,76	65,0

Source: own calculation based on data from the Slovak Statistical Office

65% decrease in the ratio points out that individual companies do not increase number of employees, they reduce. Number of employees in the private sector is increasing with growth in the number of enterprises. It can thus be concluded that increase in the added value in the enterprise was rather caused by number of employees growth.

Table 4 – Average number of employees in public sector

PUBLIC SECTOR	2005	2006	2007	2008	2009	2010	2011	2012	2013	Index
No of employees	493461	525858	516798	505172	468858	500345	473150	475318	459692	93,16
No of companies LEE	767	719	688	653	670	680	651	671	662	86,31
No of empl./companies	643	731	751	774	700	736	727	708	694	108,00

Source: own calculation based on data from the Slovak Statistical Office

There has been a development in the public sector by 108% increase in the number of employees/enterprises. The growth must therefore take place primarily in local and regional governments companies, because in state-owned enterprises (Tab. 5) there was a significant decrease in employees mainly from 2012.

Table 5 - Average number of employees in state companies

STATE COMPANIES	2005	2006	2007	2008	2009	2010	2011	2012	2013	Index %
No of companies	30	22	21	23	23	21	20	20	21	70,00
No of employees	104915	100082	97793	90444	84328	81081	76201	20010	16968	16,17
No of empl./companies	3497,2	4549,2	4656,8	3932,3	3666,4	3861	3810	1001	808	23,10

Source: own calculation based on data from the Slovak Statistical Office

The decline occurs since 2012, when due to loss-making state enterprises were reducing some employees (e.g. Slovak railways, Cargo, etc.)

2.2 Wage and capital intensity in the public and private sectors

To measure and evaluate the performance of public and private sector it can be used basic indicators for economic performance measurement, resp. companies (eg. GDP, NI, GVA,..).

The problem in databases Statistical Office of SR is that, data are not divided into public and private business sector. We were looking for the possibility of at least partial evaluation. Some insight into the effectiveness can be provided with the participation of the basic production factors at the performance of public and private business sector. We will use the methodology of Morvay (2013), who dealt with the proportions of the four selected components of gross value added (GVA): compensation of employees, operating surplus (revenue / profit of corporations), mixed incomes (income of self-employed persons who has the character of profit and wage) and consumption of fixed capital (depreciation, income serving for capital renewal). This approach is based on the income approach, which is used to calculate national income. We will evaluate the participation of two production factors at the GVA creation (Tab. 6): labour (wages and wage compensation) and gross capital through intensity indicators (% of input to 100% of output generated):

$$\text{wages intensity} = \frac{\text{wages in public and private sector}}{\text{GVA in SR}} \times 100 \qquad (1)$$

$$\text{capital intensity} = \frac{\text{gross capital of public and private sector}}{\text{GVA in SR}} \times 100 \qquad (2)$$

Table 6 - Development of share in selected production factors on GVA

	2005	2006	2007	2008	2009	2010	2011	2012	2013
GVA in SR in mil. EUR	44888.700	50771.600	56791.900	61951.700	58079.100	61223.100	63581.900	66090.800	67142.800
Wages in mil. EUR	9049.047	10260.153	11289.361	12461.65	12019.515	12548.835	13245.902	13821.595	13960.266
Wages intensity in %	20.16	20.21	19.88	20.12	20.70	20.50	20.83	20.91	20.79
Gross capital in mil. EUR, constant prices	14568.4	15909	18227.4	19286.6	13651	16227.6	17463.2	15014.4	15001.4
Capital intensity in %	32.45	31.33	32.10	31.13	23.50	26.51	27.47	22.72	22.34

Source: own calculation based on data from the Slovak Statistical Office

The development of labour cost (the quota, wages intensity) is relatively stable (around 20%). Wages and salaries grow in proportion to the growth of GVA. If capital intensity decreases at unchanged wage intensity, it could mean that there is an increase in profit quotas, taxes and charges at the expense of capital (investment) quota. Change in the GVA structure, resp. in GDP confirms also Prega et al. (2015): „*in 2014 was accounted 1% of productivity growth at 4.3% growth in real wages. In the last period in the Slovak Republic was created a "cushion",*

thanks to which is wage increase possible (Tab. 8) and does not have to necessarily threat the competitiveness of companies and Slovakia. This cushion is the size of the share of gross operating surplus (profit + depreciation) on GDP versus the share of employees' compensation to GDP. The development of this share on GDP confirms the expected reduction". (Tab. 7).

Table 7 – Wage and capital ratio in public and private sector of SR

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Wages in mil. EUR	9049.047	10260.153	11289.361	12461.65	12019.515	12548.835	13245.902	13821.595	13960.266
Gross capital in mil. EUR, constant prices	14568.4	15909	18227.4	19286.6	13651	16227.6	17463.2	15014.4	15001.4
Wages in public and private sector in %	38.32	39.21	38.25	39.25	46.82	43.61	43.13	47.93	48.20
Gross capital in %	61.68	60.79	61.75	60.75	53.18	56.39	56.87	52.07	51.80

Source: own calculation based on data from the Slovak Statistical Office

On the basis of the labour and capital ratio there is a shift from capital (investment) demanding sectors to labour demanding one. This means that investments into innovations are reduced. The data obtained in Tab. 7 confirmed also data published by the Statistical Office of the Slovak Republic: GDP growth in 2014 (2.4%), growth in the number of employed people (2.1%). Thus GDP growth has essentially been achieved by employment growth and other factors such as capital (and increased productivity) almost completely absented.

Table 8 – Average nominal wage in EUR

Average nom. wage in EUR	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Growth
Private sector	643	701	758	822	828	861	862	894	908	978	152.1 %
Public sector	566	633	621	743	758	774	836	853	853	909	160.6 %
Difference	77	68	137	79	70	87	26	41	55	69	89.61 %

Source: own calculation based on data from the Slovak Statistical Office

Even the international auditing and consulting firm Grant Thornton in examining the dynamics global index (DGI) notes that human capital is the engine in dynamics of Slovakia. Slovak economy is maintained by human labour (http://hn.hnonline.sk).

Conclusion

Efficiency in business does not significantly depend on the form of ownership, but especially on the quality of the business environment (external factor) and the quality of company management (internal factor).

A new phenomenon is the relationship of the state (public sector) and TNC (private sector). Fundamentally were disturbed links between democracy strapped to stately anchor aged entity and effective economic power which was unlinked from state.

In the business sector (private and public) in Slovakia has been a shift of the government sector (0.04%) to the private sector (99.6%) and capital (investment) demanding sectors to labour demanding sectors, also the wage increase and the tax and charges obligations may undercut the competitiveness of Slovakia.

Active employment policy in SR has resulted in the increased number of employed. This factor, however, has its limitations. Area of concern is domestic and foreign investment into product and technological innovations which do not have limited nature and in the future are the most important factors of competitiveness of Slovakia.

A possible solution to this problem is coexistence and cooperation (partnership) of public and private sector in the form of voluntary cooperation of their mutual organizations to increase capacity, resource sharing, responsibility, revenues and risks in order to achieve common goals. Significant opportunities in this direction bring the concept of Quadruple Helix.

The changes in respect of public and private sector are formed on the background of globalization processes and geopolitical trends. Addressing power and geopolitical issues, influencing the development on the planet, access to sources of strategic raw materials, the use of military and civilian technology cause blurring of differences between geopolitical, economic and military targets. In this sense, there is a complex linking of interests, goals and efforts between countries and economic entities.

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EFFICIENCY OF EXPENDITURE ON ACTIVITIES OF THE REGIONAL ADMINISTRATION IN INDIVIDUAL REGIONS OF THE CZECH REPUBLIC IN THE YEARS 2005-2014

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Abstract

The objective of this paper is to compare expenditure on regional administration activities (i.e. expenditure of Section 6172 of the sectoral classification of budget composition) reported by individual regions of the Czech Republic in 2005 - 2014, taking into account their area and population. The paper aims to identify any disparities in the public administration performance efficiency at the level of higher territorial self-governing units and to point out specific ways of assessing public administration performance, currently being viewed as one of the significant weaknesses of the Czech Republic. The necessary data have been collected from publicly accessible sources, particularly the websites of the Czech Statistical Office, Ministry of Finance of the Czech Republic, and individual regions. Various procedures relying on the DEA model (Data Envelopment Analysis) have been used for the purpose of data processing. The results confirm not only the initial hypothesis consisting in the existence of significant differences in the efficiency of expenditure on regional administration activities, but also the need for effective monitoring and gradual improvement (through systemic measures) of the public administration performance, as one of the parameters of the overall competitiveness of the Czech Republic.

Keywords: regions, public administration, efficiency, Data Envelopment Analysis

JEL Classification: H72, H83

Introduction

Most theoretical sources mainly view public institutions as a set of entities formed for the purpose of administration of an independent and somewhat peculiar public sector (for example, see Nahodil et al., 2014; Wokoun et al., 2011; or Bailey, 1999).

In its Resolution no. 713 of 27 September 2011, the Government of the Czech Republic adopted a comprehensive strategic material "Back to the Top: The International Competitiveness Strategy for the Czech Republic in 2012 to 2020", which refers to high-quality public institutions as the key factor in the development of a competitive and innovation-based economy, while also stating that the institutional environment is rated as one of the Czech Republic's weakest points in all international comparisons (Government of the Czech Republic, 2011).

Public institution in the Czech Republic also comprise regions, which were formed as higher territorial self-governing units on the basis of the Constitutional Act no. 347/1997 Coll., on the Establishment of higher territorial self-governing units and on Amendment to the Constitutional Act of the Czech National Council no. 1/1993 Coll., Constitution of the Czech Republic, with effect form 1 January 2000. However, the specific internal structure and the actual self-governance competences were defined on the basis of Act no. 129/2000 Coll., on Regions (Regional system). The first regional council elections took place on 12 November 2000.

Regions, without question the youngest component of the Czech public administration, represent very interesting targets for examination in terms of the efficiency of public institutions performance. With the same starting conditions, identical legislative framework for their activity, and only fifteen-year history, they are fully comparable entities with similar efficiency of results of their activities (assessed using the so-called 3E model: Effectiveness, Efficiency, Economy) (Ochrana, Půček, 2012).

This study compares and assesses the efficiency of expenditure on regional administration activities within individual regions of the Czech Republic in the period of 2005-2014, taking into account their area and population. Initial hypotheses are formulated as follows: There are significant differences in the efficiency of expenditure on regional administration activities when comparing individual regions under review (H0). Lower efficiency of expenditure on regional administration activities is mainly reported in regions with significantly lower population density (i.e. significantly below average) as well as regions dealing with above-average unemployment rates (H1).

1 METHODS

Data Envelopment Analysis (DEA) has been applied to process available data in the course of the research. The objective of DEA models is to identify relatively efficient vs. relatively inefficient units within a group of reviewed units, characterized with certain inputs and outputs. DEA models rely on the comparison of assessed units with regard to the best units of the given dataset, making it possible to simultaneously operate with various types of inputs and outputs, both financial and nonfinancial (Šubrt et al., 2011).

The assessed units comprised thirteen individual regions of the Czech Republic; the dataset of the units under review did not include the City of Prague, as the status of the city is very unique among the territorial self-governing units within the Czech Republic, as also documented by special legislative regulation in the form of Act no. 131/2000 Coll., on the City of Prague, as amended.

Two inputs and two outputs were used to put together the DEA mode for the purpose of comparing the efficiency of the said units. The DEA model inputs included total expenditure on regional administration activities of each region and expenditure on regional administration activities of each region in the form of wages and salaries of permanent employees. The population and area of individual regions were used as the model outputs.

The unit efficiency was reviewed in a ten-year period, specifically from 2005 to 2014. Inputs were not adjusted for inflation rate, since this is not necessary for the purpose of the DEA method; multiplying annual inputs for all units by the same constant does not affect the results in any way in this case.

2 DATA COLLECTION

Data – in the form of the model inputs and outputs – have been collected from publicly accessible sources, particularly the websites of the Czech Statistical Office, Ministry of Finance of the Czech Republic, and individual regions of the Czech Republic. With the exception of input data for the Central Bohemian Region for 2005 – 2009, the dataset used for the assessment of efficiency of individual units may be characterized as complete and sufficiently consistent.

Inputs in the form of total expenditure on regional administration activities of each region comprise noninvestment expenditure in Section 6172 (Regional Administration Activities) of

the sectoral classification of budget composition that includes, in compliance with the Decree of Ministry of Finance no. 323/2002 Coll., on Budget composition, as amended, any and all expenditure categories associated with the actual administrative activities of individual regions pursuant to Act no. 129/2000 Coll., on Regions (Regional system), as amended. The aforementioned expenditure did not include any amounts immediately relating to projects financed from EU funds.

The second input refers to the noninvestment expenditure component of Section 6172 that falls within item 5011 of the sectoral classification of budget composition and includes any and all expenditure associated with wages and salaries of permanent employees, without mandatory insurance premiums paid by an employer. For both inputs, data were primarily collected from Statement FIN 2-12M: Ministry of Finance of the Czech Republic: Statement for evaluating budget fulfilment. In case the aforementioned Statement was not available, sources in the form of secondary statements and materials available at individual regions' websites were used.

The population – as the first input of the DEA model – refers to the population as of 31 December of each year within the period under review. The second output, i.e. area of each region, is shown in square kilometers; areas of all regions remained constant in the period under review (2005 – 2014).

3 DATA ANALYSIS

The above described data inputs and outputs were processed as part of the data analysis, with a view to use the DEA method to determine efficiency of individual units, represented by regions, in all years under review, i.e. from 2005 to 2014. In addition to efficiency of all units for individual years of the period under review, we also calculated efficiency of the units for separate five-year periods, specifically for 2005-2009 and 2010-2014, on the basis of arithmetic means.

In addition to the efficiency of the units, the so-called hypothetical effective inputs were quantified. These express the level of individual inputs needed to ensure given units reach the efficiency level in the year in question.

Adequately, it is also possible to mathematically express hypothetical effective outputs which indicate how much it is necessary to increase outputs to ensure that the relevant unit is efficient in the given year. However, as we use the population and area of individual regions as outputs, it is a rather hypothetical construct in this case.

In case of efficient units, the hypothetical inputs and outputs are equal to real inputs and outputs.

4 RESULTS

The data analysis on the basis of the selected DEA model in the form of an input-based model led to the following results for the set of 13 assessed units (Regions of the Czech Republic), for the above specified inputs and outputs:

Table 1 - Efficiency of units in the form of regions of the Czech Republic in 2005 – 2014

Region / Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	*∅05-09*	*∅10-14*
Central Bohemia	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	1	1	1	1	1	*N/A*	*1*
South Bohemia	1	1	1	1	1	1	1	1	1	1	*1*	*1*
Plzeň	1	1	1	1	1	1	1	1	1	0.976	*1*	*1*
Karlovy Vary	1	1	1	1	1	1	1	1	1	1	*1*	*1*
Ústí nad Labem	1	0.999	1	1	0.963	0.978	0.984	0.939	0.940	**0.748**	*1*	***0.735***
Liberec	1	0.946	1	0.989	0.982	0.943	0.977	1	1	0.912	*1*	*0.920*
Hradec Králové	1	1	0.978	0.933	0.954	0.950	1	0.986	1	**0.891**	*0.990*	*0.939*
Pardubice	0.984	0.925	**0.888**	**0.885**	0.995	1	1	1	1	0.938	*0.954*	*0.979*
Vysočina	0.943	0.915	**0.853**	**0.813**	**0.825**	**0.842**	**0.891**	0.969	0.931	0.943	***0.866***	*0.919*
South Moravia	1	1	1	1	1	1	1	1	1	**0.700**	*1*	***0.678***
Olomouc	**0.851**	**0.829**	**0.785**	**0.772**	**0.815**	**0.810**	**0.786**	**0.828**	**0.821**	**0.709**	***0.821***	***0.732***
Zlín	**0.896**	**0.886**	**0.808**	**0.770**	**0.785**	**0.788**	**0.787**	**0.784**	**0.809**	**0.697**	***0.838***	***0.689***
Moravia-Silesia	1	1	1	1	1	1	1	1	1	1	*1*	*1*

Source: processed by author

The analysis results indicate that there really are significant disparities at the level of higher territorial self-governing units of the Czech Republic in terms of performance/efficiency relating to their expenditure on regional administration activities.

The following regions are relatively efficient in this regard: South Bohemia, Karlovy Vary, and Moravia-Silesia, and also Plzeň and South Moravia with the exception of 2014 (whereas the inefficiency identified for the South Moravian Region in 2014 is rather significant). Central Bohemia is also one of the relative efficient units; however, it was only evaluated for the period of 2010 – 2014 due to primary data unavailability.

The following regions show relative efficiency of their expenditure on regional administration activities in some years of the period under review only: Ústí nad Labem (with significant inefficiency 2014), Liberec, Hradec Králové, and Pardubice. The results indicate that the Vysočina Region and especially Olomouc/Zlín Regions deal with significant inefficiency of expenditure on regional administration activities.

The summary results shown in Table no.1 only indicate the overall efficiency for individual units under review; however, they do not provide any insight into its internal structure and/or results. For this purpose, it is necessary to use other tools available under the applied DEA model and express the fictive levels of inputs that would be viewed as optimal for individual units / years under review (i.e. such levels that would ensure overall efficiency of units).

Taking into account the number of assessed units and inputs, the calculations of fictive input levels performed on the basis of the DEA model are only shown for three selected regions below: Plzeň, with its relative efficiency (save for 2014) of its expenditure on regional administration activities; Liberec – that is nearing the relative efficiency of expenditure; and the highly inefficient Zlín Region.

Table 2 - Efficiency of selected units (Plzeň, South Bohemia, and Zlín) in 2005 - 2014

Region / Year		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Plzeň											
Real expenditure; Section § 6172, total	*'000 CZK*	189,658	202,814	207,645	212,337	224,266	234,158	243,922	256,013	262,680	**278,468**
Real expenditure; Section 6172, item 5011	*'000 CZK*	102,823	108,061	111,482	115,657	124,294	132,768	140,592	143,562	148,686	154,832
Population (as of 31/12 of each year)	*No.*	551,528	554,537	561,074	569,627	571,863	572,045	571,709	572,687	573,469	575,123
Area (as of 31/12 of each year)	*km^2*	7,561	7,561	7,561	7,561	7,561	7,561	7,561	7,561	7,561	7,561
Relative unit efficiency	-	1	1	1	1	1	1	1	1	1	**0.976**
Efficient expenditure; Section 6172, total	*'000 CZK*	189,658	202,814	207,645	212,337	224,266	234,158	243,922	256,013	262,680	**271,713**
Efficient expenditure; Section 6172, 5011	*'000 CZK*	102,823	108,061	111,482	115,657	124,294	132,768	140,592	143,562	148,686	154,832
Liberec											
Real expenditure; Section § 6172, total	*'000 CZK*	170,578	**218,917**	214,503	243,849	259,931	267,936	**244,368**	243,971	239,281	**239,912**
Real expenditure; Section 6172, item 5011	*'000 CZK*	96,712	**101,076**	96,230	**110,834**	**118,446**	**123,792**	**126,042**	125,221	126,003	130,529
Population (as of 31/12 of each year)	*No.*	429,031	430,774	433,948	437,325	439,027	439,942	438,600	438,594	438,609	438,851
Area (as of 31/12 of each year)	*km^2*	3,163	3,163	3,163	3,163	3,163	3,163	3,163	3,163	3,163	3,163
Relative unit efficiency	-	1	**0.946**	1	**0.989**	**0.982**	**0.943**	**0.977**	1	1	**0.912**
Efficient expenditure; Section 6172, total	*'000 CZK*	170,578	**182,105**	214,503	243,849	259,931	267,936	**238,697**	243,971	239,281	**218,829**
Efficient expenditure; Section 6172, 5011	*'000 CZK*	96,712	**95,642**	96,230	**109,647**	**116,308**	**116,706**	**123,117**	125,221	126,003	130,529
Zlín											
Real expenditure; Section § 6172, total	*'000 CZK*	224,261	237,020	**289,965**	303,590	320,723	**317,258**	**335,361**	**358,588**	**350,024**	331,833
Real expenditure; Section 6172, item 5011	*'000 CZK*	**114,042**	**120,598**	**137,954**	**153,894**	**161,499**	**169,103**	**169,163**	**169,321**	**167,787**	**167,773**
Population (as of 31/12 of each year)	*No.*	590,142	589,839	590,780	591,412	591,042	590,361	589,030	587,693	586,299	585,261
Area (as of 31/12 of each year)	*km^2*	3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963
Relative unit efficiency	-	**0.896**	**0.886**	**0.808**	**0.770**	**0.785**	**0.788**	**0.787**	**0.784**	**0.809**	**0.697**
Efficient expenditure; Section 6172, total	*'000 CZK*	224,261	237,020	**234,223**	303,590	320,723	**250,150**	**263,923**	**280,970**	**283,052**	331,833
Efficient expenditure; Section 6172, 5011	*'000 CZK*	**102,204**	**106,821**	**111,434**	**118,542**	**126,743**	**133,334**	**133,128**	**132,671**	**135,683**	**116,938**

Source: processed by author

The analysis results that also include the fictive input levels for potential efficiency of expenditure on regional administration activities offer interesting insight into the economy of individual units under review.

For example, the Plzeň Region would have to reduce its overall expenditure in Section 6172 (Regional Administration Activities) of the sectoral classification of budget composition in 2014 by CZK 6,755 thousand; however, the payroll expenses (i.e. items 5011 of Section 6172) were efficient compared to other units under review.

On the other hand, both Liberec and Zlín reported more frequent inefficiency in item 5011 of the sectoral classification of budget composition, i.e. wages and salaries of permanent employees of the Region; in case of the Zlín Region, the level of payroll expenses is permanently inefficient throughout the whole period under review (from 2005 to 2014) compared to other evaluated units.

5 DISCUSSION

Findings and interpretations

It is apparent from the above presented results (particularly from Table no. 1) that there really are significant differences at the level of higher territorial self-governing units (regions) of the Czech Republic in terms of performance/efficiency relating to their expenditure on regional administration activities. Therefore, the hypothesis (H0) can be considered as confirmed.

The aforementioned findings support the statement made in the strategic Government material "Back to the Top: The International Competitiveness Strategy for the Czech Republic in 2012 to 2020" that states that "there is no comprehensive overview of what public administration is doing or a well-elaborated concept of what public administration should provide, as well as how that should be done, and at what cost" (Government of the Czech Republic, 2011).

Also very interesting is the relatively strict distribution of efficiency rate of the expenditure on regional administration activities for the units under review, where particularly Bohemian regions – i.e. in the West, Central, and South Bohemia – appear to be relatively efficient, together with the Moravian-Silesian Region as well as the South Moravian Region (with the exception of 2014). On the other hand, Moravian Regions (with the exception of the two above mentioned regions with centers in the form of significant regional metropolises) are significantly inefficient, specifically Olomouc, Zlín and to a significant extent also Vysočina.

The reasons for existence of identified disparities were examined by the second initial hypothesis (H1) that stated that lower efficiency of expenditure on regional administration activities is mainly reported in regions with significantly lower population density (i.e. significantly below average) as well as regions dealing with above-average unemployment rates.

Table 3 - Comparison of selected indicators for units represented by regions of the Czech Republic in 2005 – 2014

Region / Year	Indicator	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Central Bohemia	Unemployment rate (%)	5.2	4.5	3.4	2.6	4.4	5.2	5.1	4.6	5.2	5.1
	Population density (pop./km^2)	105	107	109	112	113	115	116	117	118	119
	Relative unit efficiency	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	1.000	1.000	1.000	1.000	1.000
South Bohemia	Unemployment rate (%)	5.0	5.1	3.3	2.6	4.3	5.3	5.5	5.7	5.2	5.9
	Population density (pop./km2)	**62**	**63**	**63**	**63**	**63**	**64**	**63**	**63**	**63**	**63**
	Relative unit efficiency	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Plzeň	Unemployment rate (%)	5.1	4.6	3.7	3.6	6.3	5.9	5.1	4.8	5.2	5.1
	Population density (pop./km2)	**73**	**73**	**74**	**75**	**76**	**76**	**76**	**76**	**76**	**76**
	Relative unit efficiency	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.976
Karlovy Vary	Unemployment rate (%)	**10.9**	**10.2**	**8.2**	**7.6**	**10.9**	**10.8**	**8.5**	**10.5**	**10.2**	**9.0**
	Population density (pop./km2)	92	92	93	93	93	93	91	91	91	90
	Relative unit efficiency	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Ústí nad Labem	Unemployment rate (%)	**14.5**	**13.7**	**9.9**	**7.9**	**10.1**	**11.2**	**9.8**	**10.8**	**9.4**	**8.5**
	Population density (pop./km2)	**154**	**154**	**156**	**157**	**157**	**157**	**155**	**155**	**155**	**154**
	Relative unit efficiency	1.000	0.999	1.000	1.000	0.963	0.978	0.984	**0.939**	0.940	0.748
Liberec	Unemployment rate (%)	6.5	7.7	6.1	4.6	7.8	7.0	7.2	9.3	8.3	6.5
	Population density (pop./km2)	136	136	137	138	139	139	139	139	139	139
	Relative unit efficiency	1.000	0.946	1.000	0.989	0.982	0.943	0.977	1.000	1.000	0.912
Hradec Králové	Unemployment rate (%)	4.8	5.4	4.2	3.9	7.7	6.9	7.1	7.1	8.2	6.2
	Population density (pop./km2)	115	115	116	117	116	117	116	116	116	116
	Relative unit efficiency	1.000	1.000	0.978	0.933	0.954	0.950	1.000	0.986	1.000	0.891
Pardubice	Unemployment rate (%)	5.6	5.5	4.4	3.6	6.4	7.2	5.6	7.7	8.4	6.4

	Population density (pop./km2)	112	112	113	114	114	114	114	114	114	114
	Relative unit efficiency	0.984	0.925	0.888	0.885	0.995	1.000	1.000	1.000	1.000	0.938
Vysočina	Unemployment rate (%)	6.8	5.3	4.6	3.3	5.7	6.9	6.4	6.4	6.7	5.6
	Population density (pop./km2)	**75**	**75**	**76**	**76**	**76**	**76**	**75**	**75**	**75**	**75**
	Relative unit efficiency	**0.943**	**0.915**	**0.853**	**0.813**	**0.825**	**0.842**	**0.891**	0.969	**0.931**	0.943
South Moravia	Unemployment rate (%)	8.1	8.0	5.4	4.4	6.8	7.7	7.5	8.1	6.8	6.1
	Population density (pop./km2)	**157**	**157**	**159**	**159**	**160**	**160**	**162**	**157**	**163**	**163**
	Relative unit efficiency	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	**0.700**
Olomouc	Unemployment rate (%)	10.0	8.2	6.3	5.9	7.6	9.1	7.6	7.7	9.2	7.7
	Population density (pop./km2)	121	121	122	122	122	122	121	121	121	121
	Relative unit efficiency	**0.851**	**0.829**	**0.785**	**0.772**	**0.815**	**0.810**	**0.786**	**0.828**	**0.821**	**0.709**
Zlín	Unemployment rate (%)	9.4	7.0	5.5	3.8	7.3	8.5	7.6	7.4	6.8	6.1
	Population density (pop./km2)	149	149	149	149	149	149	149	148	148	148
	Relative unit efficiency	**0.896**	**0.886**	**0.808**	**0.770**	**0.785**	**0.788**	**0.787**	**0.784**	**0.809**	**0.697**
Moravia-Silesia	Unemployment rate (%)	**13.9**	**12.0**	**8.5**	**7.4**	**9.7**	**10.2**	**9.3**	**9.5**	**9.9**	**8.6**
	Population density (pop./km2)	**230**	**230**	**230**	**230**	**230**	**229**	**227**	**226**	**225**	**224**
	Relative unit efficiency	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: (CZSO, 2014), (CZSO, 2015); processed by author

As apparent from Table no. 3 that highlights in bold font the first three assessed units with the highest unemployment rate, lowest (as well as highest) population density, and the lowest relative efficiency within the entire period under review (2005 – 2014), the validity of the second hypothesis (i.e. H1) has definitely not been proven.

Therefore, the relative efficiency level for individual units under review cannot be reliably explained by reasons consisting in the demanding management of a large territory or administration of relatively high population within the territory of the given regions. The economic level of individual reasons – expressed as the unemployment rate – does not provide any satisfactory explanation either.

Implications for research and practice

The results of the performed analysis offer relatively unambiguous recommendations for future research and practice. With regard to research, it is necessary to understand other potential implications and reasons that could explain significant disparities that exist in terms of the efficiency of expenditure on regional administration activities between individual evaluated units in the form of regions of the Czech Republic - other than by inefficient performance of their public administration.

In terms of practice – both at the level of individual territorial self-governing units and government institutions responsible for the efficiency of public administration as a whole, the results of the performed analysis clearly indicate the need for targeted and systemic investigation, continuous monitoring, and subsequent management/control of the overall efficiency in terms of all three components of the well-known and normally applied 3E principle (Effectiveness, Efficiency, Economy).

The area of increasing the public administration efficiency has been targeted by a number of initiatives for a long period of time, including the Council of Europe, which that issued Recommendation CM/Rec (2007)7 of the Committee of Ministers of 20 June 2007 on good administration) (Council of Europe, 2014), or OECD stating basic principles of public administration in cooperation with the European Union (OECD & European Union, 2015).

With regard to the Czech public administration, good administration principles (sometimes described by the not entirely accurate term “Good Governance”) were formally introduced by

the strategic Government document "Effective public administration and friendly public services", also referred as the "Smart Administration strategy", adopted by Resolution of the Government of the Czech Republic no. 757 of 11 July 2007 (Czech Republic, Ministry of the Interior of the Czech Republic, 2006).

In terms of the actual public administration performance, it is mainly recommended to apply individual management-based methods, tools, and measures aimed at ensuring its effectiveness and efficiency and at generating desired economic savings. This may include comprehensive applications of well-known methods, such as Balanced Scorecard or Management by Objectives, customized for the public administration, as well as the application of comparative approaches in the form of benchmarking and others (for example, see Ochrana, Půček, 2012).

Limitations and suggestions for future research

One of the main limitations of this paper consists in the used data, obtained from publicly accessible sources, i.e. websites of individual regions of the Czech Republic, in terms of the expenditure on regional administration activities. Even though all regions are required to record total expenditure of Section 6172 and its item 5011 in Statements FIN 2-12M: Ministry of Finance of the Czech Republic: Statement for evaluating budget fulfilment; however, some regions do not publish the statement directly at its websites and the data had to be collected from secondary reports and datasets.

Although relevant methodological instructions of the Ministry of Finance of the Czech Republic exist, we cannot absolutely guarantee that the data recorded under Section 6172 are fully comparable for individual regions. In this regard, this is determined by the level of their budgetary and administrative discipline. Another limitation consists in the unavailability of primary data for the Central Bohemian Region in 2005-2009 – although it is unlikely that this has distorted the results of the study as a whole.

Future research should focus on interregional comparison of efficiency of expenditure in other budget categories/items that may be compared without any significant limitations; this may concern expenditure associated with the performance of independent and delegated sphere of authority of individual regions.

Moreover, it would be very interesting to perform similar comparisons at the level of local self-governments, particularly for comparable statutory cities – with/without territorial division – and other towns of different size categories.

Conclusion

The paper was aimed at identifying potential disparities in the efficiency of expenditure on administrative activities of individual regions in the Czech Republic. The level of higher territorial self-governing units was selected for the comparison due to their relative homogeneity as well as relatively short history.

The Data Envelopment Analysis (DEA) method was used to analyze inputs in the form of overall expenditure on items under Section 6172: Regional Administration Activities of the sectoral classification of budget composition and included expenditure on wages and salaries of regional administration employees, with regard to outputs represented by the population and area of individual regions, within the ten-year period of 2005 – 2014. The analysis results confirmed the existence of significant differences between individual regions under review in

terms of the efficiency of expenditure on their administration, i.e. also within the performance of public administration as a whole.

However, the paper mainly refers to the potential of as well as the need for targeted investigation, systemic influencing, and gradual controlled improvement of the public administration performance as one of the main current strategic goals of the Czech Republic.

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ANALYSIS OF THE INNOVATION POTENTIAL OF RUSSIAN REGIONS

Igor Lukasiewich, Marina Fedotova

Abstract

This study presents results of evaluation of the innovative potential of the regions of the Russian Federation, which allows you to rank and evaluate their ability to innovate, as well as define their strategy of innovation development. To define the region's innovation capacity a composite measure is offered based on an assessment of production, financial, information, scientific and technical, human, institutional and managerial capacities.

Keywords: innovation, innovation potential, innovation activity, valuation, region, Russian Federation

JEL Classification: O38, R11

Innovation is a key in the process of conducting large-scale political, economic and social reforms aimed at creating favorable conditions for sustainable economic growth [3, 6, 7].

Nowadays in the Russian Federation regions are being to play a greater role in innovation processes. This is closely related to globalization, which, on one the hand, weakens the national component, and on the other, - close ties at the regional level. Geographical possibility to effectively support communications is the most important benefit of the regional economy.

In accordance with the concept of long-term socio-economic development of the Russian Federation up to the year 2020 innovation development of Russian regions is focused on: development of scientific and technological and educational potential of large urban agglomerations with high standards of living and talented workforce, dynamic innovation and educational infrastructure; formation of high-tech-oriented manufacturing clusters oriented at high priority sectors of the economy, with concentration of such clusters in urban regions; creating production clusters on poorly developed territories, focusing on deep processing of raw materials and energy production using modern technologies [9].

Because of historical conditions, as well as significant differences in presence of natural resources, geographical location, size of population, industrial structure of economic complexes, etc., there is a wide gap between Russian regions in levels of socio-economic development and their pace of entering on a path of sustainable economic growth.

Almost 80% of the population lives in the European part of the Russian Federation, the area of which does not exceed 25% of the whole country's territory. It generates nearly 74% of nation's GDP and 80% of its industrial output [7]. Siberia and Far East provide two thirds of the production of minerals and energy commodities. Main indicators characterizing socio-economic development of the regions of the RF Federal districts for 2011 are shown in Table. 1.

Table 1 - Main indicators of socio-economic development of the regions of the RF Federal districts

Indicators	CFD	NWFD	SFD	NCFD	PFD	UFD	NFD	FEFD
Percentage of total population	26,9%	9,5%	9,7%	6,7%	20,9%	8,5%	13,4%	4,4%
Area, %	3,8%	9,9%	2,4%	1,0%	6,1%	10,6%	30,1%	36,1%
District's part of nation's GDP	36%	11%	6%	2%	15%	14%	11%	5%
Gross regional product per capita, thousands roubles.	308,3	253,2	145,0	86,3	163,3	358,4	173,4	268,3
Capital investment in %	20,1%	11,2%	9,9%	2,3%	14,7%	18,2%	11,6%	11,6%
Average personal income, roubles.	23095,8	20291,1	14402,5	12712,7	15254,4	20683,9	14964,8	20694,5

Source: Regions of Russia. Socio-economic indicators [10].

Where: CFO – Central Federal District; NWF - North Western Federal District; SFD – Southern Federal District; NCFD - North-Caucasian Federal District; PFD -Volga Federal District; SFO – Siberian Federal District; NFD – North Federal District; FEFD – Far East Federal District.

Conditions and results of innovation also vary substantially from region to region, and the gap between statistical indicators can be seen in Table 2.

Table 2 - Indicators of regional innovation

Indicators	**CFD**	**NWFD**	**SFD**	**NCFD**	**PFD**	**UFD**	**NFD**	**FEFD**
Weights of organizations involved in technological innovation, %	9,0%	9,1%	7,4%	5,6%	13,0%	10,1%	7,3%	6,7%
Volume of innovative goods, services as a percentage of all goods and services sold	4,5%	3,2%	6,6%	7,4%	9,6%	2,1%	1,4%	1,4%
% of spending on technological innovation	1,6%	1,3%	0,8%	1,2%	1,9%	2,0%	1,2%	8,5%

Source: own elaboration based on data from [10, 11]

Table 3 - Distribution of innovation centers by region

Federal regions	Number of Scientific Organizations	Number of researchers	Number of technoparks	Num-ber of ITC	Technoparks for each scientific organization	ITC for each scientific organization
Russian Federation	3622	388,9	83	89	22,9	24,6
Central	1426	206,4	31	37	21,7	25,9
South	312	16,4	6	6	19,2	19,2
North-West	531	54,6	3	16	5,6	30,1
Far East	156	6,63	4	5	25,6	32,1
Siberian	425	29,5	6	16	14,1	37,6
Urals	225	22,1	12	2	53,3	8,9
Volga Region	547	53,3	11	7	20,1	12,8

Source: own elaboration based on data from [10, 11]

So, in terms of the number of persons employed in R&D per 10 thousand workers, the minimum value was 850 times smaller than the maximum value amongst all Federal districts in 2011: 377 workers in Moscow and less than 0.5 workers in Yamalo-Nenets Autonomous region. At the same time the gap in Gross regional product (GRP) per capita was also significant, but still less than the ratio between the maximum and minimum values from 2010 which was 83.

According to a number of innovation indicators, a ratio between regional levels of innovation at times exceeds thousands of times. In particular, the share of domestic research and development costs in GDP in 2011 in Nizhny Novgorod, Kaluga areas exceeded 4.5%, while in the Republic of Khakassia, Yamalo-Nenets autonomous district, Pskov Oblast it does not rise up to 0.01%.

Analysis of regional distribution of research infrastructure organizations suggests that the ratio of technoparks, ITT and the number of researchers is the lowest in regions where there is the greatest scientific and technological potential. Central Federal District, in which almost all characteristics are determined by Moscow and the Moscow region and which is extremely saturated by scientific organizations and universities, has a relatively small number of infrastructure organizations. At the same time, more than half of all research scientists are concentrated in the Central Federal District.

Thus, in this region (as well as in Moscow), the relative involvement of researchers in the innovation infrastructure activities is the lowest. This fact can be explained by various reasons. The main one is that in CFD researchers are practically integrated into the prevailing system of interaction with enterprises and innovate without any intermediaries. While in the rest of regions connections between science and industry under market conditions are actually being formed and are more receptive to the new infrastructure (Table 3).

It should be noted that using only the official statistics does not reflect on the formation of innovation processes and conditions that stimulate or impede them.

In this regard, in studying basic components of the innovation process the authors widely use indirect statistical indicators and data obtained as a result of econometric modeling [1, 8].

As a criterion for evaluating the scientific capacity and building a ranking of regions we propose the so-called index of innovativeness, based on well-known methods and taking into account «European Innovation Scoreboard» ranking.

As a result of the study regions were divided into 5 groups according to the calculated index of innovativeness (Table 4, annex 1).

Group no. 1 is the leader in all respects. It concentrates the most highly qualified human resources and is most successful at transferring innovation into the market place.

Group no. 2, which can be roughly described as "potential innovative leaders" or "regions that are ready to innovate", consists of market leaders (corresponding to the level of "capital city"), but still trailing in human potential. Regionally, members of this group are the heaviest users of advanced technologies, and produce the largest amount of product innovation.

Group No. 3 is assembled in the regions where the largest resulting index weights have indices of human resources. They are slightly below the Group of potential innovative leaders. However, their "market" index values, especially the "index of entry into the market" are lagging behind significantly. This can be explained by inefficient use of human resources, lack of strong links between scientific research and manufacturing or lack of scientific and industrial bases in the region. This group can be described as a group of regions with unrealized intellectual potential.

Group no. 4 is very uniform when it comes to "market" and "human potential" indices, and in most of this group regions there are large cities, some are located near Moscow, therefore in these regions there are human resources available for the creation of new knowledge. The fourth group is inferior to the third group's "new knowledge creation index", but is on the same level with the third group based on market index values for both groups. Thus, Group no. 4 regions can be characterized as major production centers, based on technology transfers, **with an average innovative potential**, giving a substantial utilization of products that require advanced technology, however, without an adequate number of professionals to create new knowledge.

Group No. 5 contains regions that are currently not among the leaders in any of the indicators, and their educational system and their production base would not allow them to move to the next level, as well as it contains regions-outsiders.

From the obtained results it follows that the leader in the sphere of innovation activity in Russia is Moscow.

It should be noted that for the first time, compared to previous studies, the rating gap between the capital and its immediate neighbours began to decline and stood at 15%. Republic of Tatarstan took the second place in ranking (last year it was ranked fourth). It contains Russia's largest special economic zone, four Industrial parks, technopolis, 14 technoparks and etc.

The Yamalo-Nenets autonomous district demonstrated the most rapid growth of innovation activity in 2011, which climbed in the ranking to the 25th position. The region actively develops innovation infrastructure. Funding for science and innovation areas has grown by several times over previous years. The region has a considerable innovative potential. The high growth of activity in the sphere of innovations (for a rise by 10 positions in the ranking) was noted in the Kemerovo and Belgorod regions. However, these results are largely determined by the low base effect.

The main "outsiders" ranking includes the Moscow suburbs (drop in the rankings by 27 positions), Kamchatka Krai (fall in the ranking by 12 positions) and Voronezh region (11 positions).

In general approximately 9% of rated regions managed to retain their positions. About 42% of regions increased their activity, while 49%, by contrast, showed results lower than last year. The number of regions in the category "low innovation activity", compared with the previous year remained unchanged. The number of regions in the category of "high innovative activity"

increased by only one member. In the end the common measure of innovative activity for the year 2011 stayed almost at the same level (rose by 1.5%) as it was for the year 2010.

From these results it can be concluded that the innovative development of regions until 2011 has already been formed on the basis of advanced economic growth zones, which include:

the largest metropolitan area with the most dynamic economic growth that drives the influx of population and investment;

major regional city-centers , the growth of which drives an increase in a concentration of service industry and manufacturing;

territories focused on raw material mining and processing, the development of which is less stable and depends on market prices, but significant budgetary receipts allow to develop human capital and infrastructure.

In the future, significant contribution to regional development centers should come from the centers with advanced economic growth, which include

agglomerations and industrial centers of southern and middle Volga region, the Urals, a territory which develops research and educational centers and focuses on powerful high-tech industry, as well as commodity production and processing. These regions had one of the highest unrealized potentials of innovative development; towns of Siberia with a higher level of development of human capital and the development potential of an innovative economy, as well as ports in the North and the Far East (Cities of Tomsk, Novosibirsk, Krasnoyarsk and Irkutsk).

Summary

This work is dedicated to the exploration of innovative potential and development prospects of the regions of the Russian Federation during economic reforms.

Regions were identified into several groups: leaders in scientific and technological capacity, regions-leaders to implement and promote the scientific development to the final product, business-oriented regions, and those that rely on borrowing technologies. In addition, an analysis of the regions of the Russian Federation was conducted in terms of human capacity for innovation, new knowledge dissemination, and ability to bring product innovation to the market. The results obtained can be used to develop a regional economic development strategy.

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Appendix 1

Table 4 - Ranking on national level of innovation

Ranking in 2011 г.	Member of RF	Ranking in 2010 г.	Index of innovation
1. Very high level of innovation			
1	The city of Moscow	1	0,89239
2. High level of innovation			
2	Republic of Tatarstan	4	0,29717
3	St. Petersburg	5	0,26658
4	Nizhniy Novgorod oblast	3	0,19038
5	Tomsk oblast	6	0,19017
6	Samara Oblast	11	0,13573
7	Novosibirsk oblast	10	0,07769
8	Bashkortostan Republic	9	0,07660
9	Altai Krai	8	0,07366
10	Penza region	14	0,07254
11	Tyumen oblast	12	0,06896
12	Tula oblast	15	0,06855
13	Saratovskaya oblast	16	0,06796
14	Khabarovsk Krai	13	0,06744
15	Tverskaya oblast	7	0,05673
16	Chelyabinskaya oblast	17	0,05595
17	Vladimir oblast	19	0,05011
3. Average level of innovation			
18	Kaluzhskaya oblast	25	0,04778
19	Moscow Oblast	2	0,04732
20	Khanty-Mansiysk	20	0,04573
21	District of Perm Krai	22	0,04487
22	Ivanovskaya oblast	23	0,04411
23	Krasnodar region	32	0,04199
24	Kemerovo region	34	0,04179
25	Ulyanovsk region	21	0,04161
26	Krasnoyarsk Krai	24	0,04157
28	Sverdlovsk oblast	26	0,04058
29	Voronezhskaya oblast	18	0,04003
30	Kurganskaya oblast	37	0,03981
31	Kaliningrad region	35	0,03956
32	Omsk oblast	30	0,03865
33	Region of Chuvashia	28	0,03758
34	Yaroslavskaya oblast	31	0,03049
35	Belgorod oblast	45	0,03015
36	Udmurtia	29	0,02909
37	Rostov oblast	33	0,02905
38	Volgograd oblast	36	0,02894
39	Kamchatka Krai	27	0,02614
40	Leningradskaya oblast	46	0,02483
41	Kurskaya oblast	42	0,02413
42	Yamalo-Nenets autonomous district	67	0,02398
43	Arkhangelsk oblast	51	0,02383
4. Moderate/weak innovation activity			
44	Primorskiy Krai	38	0,02383
45	Stavropol Krai	40	0,02376

46	Vologda region	55	0,02355
47	Oryol region	39	0,02332
48	Republic of Komi Republic	41	0,02280
49	Mordovia	44	0,02241
50	Ryazanskaya oblast	43	0,02206
51	Astrakhanskaya oblast	53	0,02175
52	Tambovskaya oblast	47	0,02101
53	Irkutskaya oblast	48	0,02082
54	Republic Altai	49	0,02014
55	Bryansk oblast	63	0,01922
56	Kirov oblast	50	0,01798
57	Orenburg oblast	52	0,01728
58	Smolensk oblast	58	0,01697
59	Lipetsk oblast	54	0,01661
60	Republic of North Ossetia-Alania	57	0,01587
61	Pskovskaya oblast	59	0,01437
62	Murmanskaya oblast	56	0,01411
63	Amur region	69	0,01265
64	Kostroma oblast	62	0,01160
65	Novgorodskaya oblast	60	0,01143
Low level of innovation			
66	Respublika Kareliya	66	0,00976
67	Respublika Sakha (Yakutiya)	72	0,00908
68	Republic of Buryatia	68	0,00852
69	Republic of Mari El	61	0,00826
70	Zabaykalsky Krai	64	0,00824
71	Republic Adygeya	78	0,00794
72	Republic Tyva	65	0,00660
73	Magadanskaya oblast	73	0,00627
74	Republic of Kabardino-Balkaria	70	0,00624
75	Republic of Dagestan	71	0,00606
76	Chechnya Republic	77	0,00589
77	Sakhalin oblast	74	0,00508
78	Republic of Khakassia	75	0,00396
79	Republic of Karachaevo-Circassian	76	0,00373
80	Republic of Kalmykia	79	0,00358
81	Republic of Ingushetia	80	0,00295
82	Nenets autonomous district	82	0,00179
83	Chukotka	83	0,00097

Source: own elaboration based on data from [8, 10, 11]

REALISATION OF MARKETING ACTIVITIES ACCORDING TO CORPORATE SIZE

František Milichovský

Abstract

Realisation of marketing activities has become crucial in global markets. Their role is due defined corporate strategy and requirements of owners. Main aim of this paper is present correlation between positions of marketing activities realisator and corporate size. The author put the question, how are marketing activities pursued according to their size. There were made correspond analysis, performed by IBM SPSS 22 which includes the calculation of the singular values, inertia and quality display. Observed results help to obtain relevant answer on defined research question. For transparent representation of the structure of dependence and interpretation is used symmetric correspondence map. Such limitation of the paper is possible to signify focusing only on Czech industrial market.

Keywords: marketing activities, corporate size, marketing effectiveness

JEL Classification: L21, L25, M31

Introduction

Opening of national markets and globalization with movement of production factories to low cost areas more and more influence corporate strategies on their way to reach and hold global competitiveness. By this approach new forms of competition as well as new competitors are defined (Ambrozová et al., 2015). Thus, a rapid increase and higher level of involvement of domestic and foreign entities in all global activities have been indicated. In the time of economic crisis the companies are involved more frequently in assessment of their own efficiency and effectiveness, using their internal audits for such purpose.

Companies have to monitor own processes and activities irrespective to reached results. These processes and activities must implemented individual parts of marketing activities.

In industrial companies it is important to focus not only on present, but especially on future, because results of previous periods could be rather misrepresenting. Industry has become a field with significant impact on economic and social situation in the Czech Republic. Industrial production considerably participates in social-economic and social stability, especially in the processing industry.

Specification of marketing activities

Marketing activities are the sub-elements in the marketing process. The marketing process includes, according to Kotler et al. (2007) four parts, namely:

- analysis of marketing opportunities,
- selection of target markets,
- creation of the marketing mix,

– management of marketing efforts.

These four sections contain the necessary marketing role and activities that affect the final marketing strategy. Own definition of marketing activities could be conceptualized from different perspectives. Main perspectives are (Kotler, Keller, 2012):

– time perspective,
– market perspective,
– product life-cycle perspective,
– marketing mix perspective.

Siu (2002) and McNamara (1972) describe marketing activities as a set of areas in which is necessary to focus on the enterprise. This designing adapt Mohamad, Ramayah and Puspowarsito (2011). In the consumer market (B2C), this file can be divided into nineteen individual marketing activities:

1. market research,
2. quality control,
3. pricing,
4. credit expansion,
5. relationships with dealers,
6. relationships with customers,
7. public relations,
8. advertising,
9. the business of recruiting,
10. business training,
11. storage,
12. distribution or sale,
13. control of sales,
14. packaging,
15. estimate sales,
16. product plan,
17. production plan,
18. inventory management,
19. services associated with the products.

The summary of the marketing activity is defined as the major activities that must be implemented by the marketing department or its alternative. Despite the development of information technology are mentioned marketing activities are still very relevant, as it helps the company to manage the necessary knowledge and support business processes (Webb et al. 2011).

Compared specified list of marketing activities are marketing activities under the concept of Total Quality Management included in all corporate activities. Their goal is a management approach that is shaped and partly driven by the customer to achieve full customer satisfaction

(Nenadál 2002). The business activities are covered by the TQM approach to the quality of the loop, which includes the various phases of the above marketing activities (Nenadál et al. 2008; Bagad 2008).

Whole process of defining final marketing strategy has been liable to three parts (1) planning and definition, (2) implementation an execution, and (3) control and evaluation. By application these three steps on defined marketing activities there is possible to observe accurate effectiveness (Dudzevičiūtė, Peleckienė 2010).

Marketing activities, which enter into total corporate activities, have direct influence on business outcomes, especially on financial results. That is mainly due the efficiency of activities and customer satisfaction, which have impact on sales (Ambler 2000).

1 METHODOLOGY

The main aim of this paper is to identify impacts of the engineering (as one of the most important industry field in Czech economy) on realized marketing activities in Czech companies and determine whether relationship are there between the realization of marketing activities and engineering field in the Czech business environment.

Main hypothesis is that there is point of realization marketing activities depended on corporate size in connection with engineering. Engineering becomes very important part of industry production during last decade. Corporate size is defined according to regulation of European Commision (Table 1).

Table 1 – New limits for splitting of companies into individual categories

	Staff headcount	Annual turnover		Annual sum of balance
Micro company	< 10	≤ 2 mio €	or	≤ 2 mio €
Small company	< 50	≤ 10 mio €	or	≤ 10 mio €
Medium company	< 250	≤ 50 mio €	or	≤ 43 mio €

Source: Evropské společenství, 2006

From marketing performance area were used only data focused on engineering companies in Czech Republic in 2013. According the chosen NACE groups, there was defined basic population which consist 7239 engineering companies in Czech Republic. Sample was created by 366 companies that were chosen in random way from company data set. There were returned questionnaires from 147 respondents.

To process the results of the questionnaire survey there were used both of descriptive statistics and correspond analysis. The data were processed by using the statistical program IBM SPSS Statistics 22. The conclusions provide characteristics of the limitations of our research and its potential further direction. For purpose of the article by correspond analysis method the data were processed. In the fact this method focuses on the multidimensional observations.

Correspond analysis describes relation between both two nominal variables in pivot table and individual categories. In pivot table there is category combination which should become significant or not. If any categories are similar or associated, there are located in graph near themselves. Correspond analysis itself is focused on association rate, usually by chi-square

measure. There are nominal variables as input into correspond analysis, and kind of premise, that there is no ordering between variables (McGarigal, Cushman, Stratfgord, 2000; Beh, 2010; 2008).

Correspond analysis processes dimensional homogenous data which consist only positive values or zeros. Chi-square range has become coefficient which excludes zeros, and help to define relations between rows and columns.

Calculation of correspondence analysis includes three steps (Řezanková, 2010): (1) pivot table transformation into table with support of Pearson chi-square; (2) individual value decompositions are applied into defined table, then there are calculated new values and new vectors; (3) new matrix operations serve as input to graph design.

Basis for two dimensional pivot tables is data matrix n×2, in which categorical variable A get r values (a_1, a_2, .. a_r) and categorical variable B get s values (b_1, b_2, .. b_s). Due realised observation there is created table by two dimensional separations of both variables. In the table is used n_{ij} frequency, which represents intersect of both variables This n_{ij} provides number of observations, where are both a_i and b_j. Except n_{ij} there are used marginal frequency n_{i+}, where ow observation with a_i value are observed (similar approach is for n_{j+} in column).

In that table there are applied relative frequencies (Beh, 2010; Kudlats, Money, Hair, 2014):

$$\sum_{i=1}^{r}\sum_{j=1}^{s} p_{ij} = \sum_{i=1}^{r} p_{i+} = \sum_{j=1}^{s} p_{+j} = 1 \tag{1}$$

Set structure is described by contingent relative frequency $p_{j/i}$ in two possible ways:

1. from point of variable B view, if variable A reaches value a_i;

$$p_{i/j} = \frac{n_{ij}}{n_{i+}} = \frac{p_{ij}}{p_{i+}} \tag{2}$$

2. from point of variable B view, if variable A reaches value a_j;

$$p_{i/j} = \frac{n_{ij}}{n_{+j}} = \frac{p_{ij}}{p_{+j}} \tag{3}$$

Any changes in these values transform variable dependence, which is usually measured by Pearson chi-square test (Beh, 2008):

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{s} \frac{\left(n_{ij} - \frac{n_{i+} \times n_{+j}}{n}\right)^2}{\frac{n_{i+} \times n_{+j}}{n}} = n \times \sum_{i=1}^{r}\sum_{j=1}^{s} \frac{\left(p_{ij} - p_{i+} \times p_{+j}\right)^2}{p_{i+} \times p_{+j}} \tag{4}$$

After estimating the theoretical frequencies there is designed chi-square statistics. This statistic has chi-square distribution and number of degrees of freedom (r-1)(s-1). On this basis, it is decided if exist dependency between variables in the population, and by using correspondence analysis is also possible to determine the structure of dependence.

2 RESULTS

In own questionnaire survey there were questions on which individual respondents in companies had to answer from point of marketing and performance view. For purpose of this paper, main aim was to find how are marketing realised by engineering companies in connection with their size.

Load indicators (Mass) in table 2 indicate load line which represents the percentage of information across the table in appropriate category. That loads are obtained as the ratios of the row and column marginal frequencies (n_{i+}, n_{+j}) in whole table of individual categories (n).

Score in dimension describes individual variables score in two main dimensions. These dimensions don't represent any specific area, because they are reduced to from multi-dimension space. All data in rows and columns have been usually in multi-dimension space, which are reduced into two. Providing information of raw data has not been modified after multi-dimension space reduction of these variables. Inertia indicator represents the share comprehensive information on the profile (on the relevant point). This characteristic is independent of the number of dimensions. Corresponding map includes a graphical representation of both row and column categories according to their dimension scores (Hebák et al., 2007; D'Esposito, Stefano, Ragozini, 2014).

Table 2 – Overview points for row and columns (symmetrical normalization)

	Mass	***Score in dimension***		***Inertia***	***Contribution***				
					of point to inertia of dimension		***of dimension to inertia of point***		
		1	***2***		***1***	***2***	***1***	***2***	***Total***
Small companies (1-49)	,578	-,330	-,219	,029	,149	,272	,903	,097	1,000
Medium companies (50-249)	,286	-,102	,503	,009	,007	,707	,146	,854	1,000
Large companies (more then 250)	,136	1,618	-,124	,150	,844	,020	,999	,001	1,000
TOTAL	***1,00***			***,188***	***1,000***	***1,000***			
not dealt with at all, only subconsciously	,728	-,357	,085	,040	,220	,052	,986	,014	1,000
own department	,068	1,688	,443	,083	,459	,130	,984	,016	1,000
central from mother company	,190	,817	-,331	,056	,301	,204	,962	,038	1,000
Outsourcing	,014	-,728	-2,147	,010	,020	,614	,354	,646	1,000
Other	,000								1,000
TOTAL	***1,00***			***,188***	***1,000***	***1,000***			

Source: own work

Table 3 – Significance summary of observed dimensions

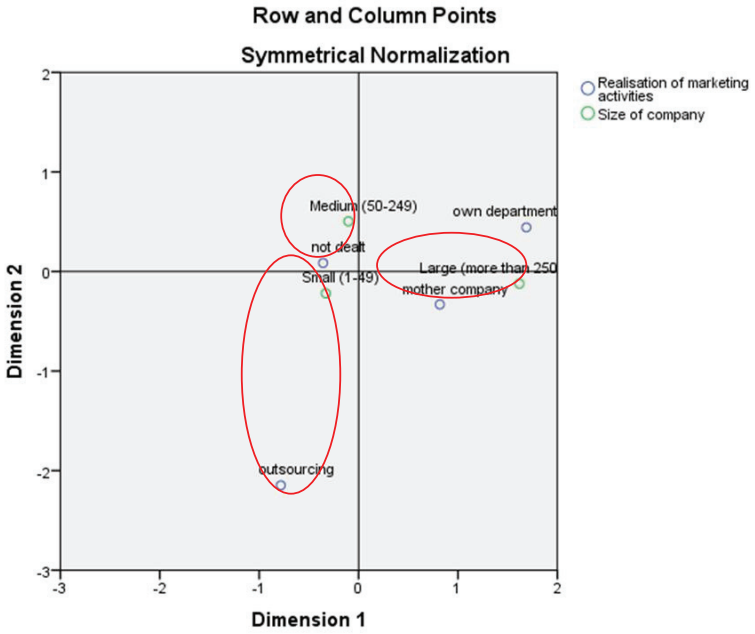
	Singular value	*Inertia*	*Chi-square*	*Sig.*	*Proportion of Inertia*		*Confidence singular value*	
					Accounted for	*Cumulative*	*Std. deviation*	*Correlation*
1	,422	,178			,945	,945	,091	-,137
2	,102	,010			,055	1,000	,052	
TOTAL		***,188***	***27,707***	***,001***	***1,000***	***1,000***		

Source: own work

Results of correspondence analysis are included in graphs, which illustrate relations between individual categories and variables. Graph 1 shows row and column points of two dimensional solution. By using symmetrical normalization simplifies examining the relationships between individual categories of the variables. Both dimension 1 and dimension 2 provide only „describing space", in which were realisation of marketing activities and size of company.

Gained results are confirmed by significance value of Chi-square test. According to computation this significance is at value 0,001 (see Table 3).

Figure 1 – Symmetrical correspond map of row and column points



Source: own work

In graph there are brightly observed three different groups of individual categories. Large companies usually prepare and do marketing activities (such marketing campaigns, market research etc.) according to direction of Mother Company. Medium companies do not dealt these activities because of their accurate market position. Small companies often use services of outsourcings because of the cost level.

These situation is based on performance requirements within all individual parts in analysed engineering companies. Analysed companies are focused mainly on financial measuring (over 84% of all companies measure own performance at least three times per year. In the same frequencies of evaluation marketing field is measured only in almost 15 % of all cases (see Table 4).

Requirements for financial results are given from almost all managers. Successful financial measuring is due quality financial indicators, which are given e.g. by Hornungová (2015).

Marketing goals measurability helps the company to define required benchmark to be achieved. In connection with measurability of the marketing objectives are the costs, spent for the marketing activities. Almost 70% of all companies participating in the survey do not monitor their marketing costs. The highest indicated share upon total costs amounts to 5%. Depending on the total cost amount, the sum of marketing costs could be very high (however, the exact amount is considered as an important internal information).

Table 4 – Segments of final productions

	Never	***Rarely (1-2 per year)***	***Sometimes (3-6 per year)***	***Regularly (more than 7 per year)***	***Total***
Financial field (costs)	0,00 %	16,33 %	52,38 %	31,29 %	***100,00 %***
Operational field	0,00 %	48,98 %	27,89 %	23,13 %	***100,00 %***
Manufacture field	2,72 %	11,57 %	48,98 %	36,73 %	***100,00 %***
Process field	10,20 %	38,78 %	36,73 %	14,29 %	***100,00 %***
Marketing field	31,29 %	53,75 %	6,12 %	8,84 %	***100,00 %***

Source: own work

Conclusions

Engineering industry is one of the most important fields in Czech Republic, which is characterized by a wide range of products and close connections with other industries. Due to globalization of markets (not only the engineering market) begins to create more competition and pressure on the provision of value, especially on quality, price and volume of production (Ambler, 2002). For these reasons, companies must focus on monitoring the effective implementation of marketing activities. The reason for this monitor is that it is not appropriate to follow any activity without measuring their impact on the enterprise (Halachmi, 2005).

Marketing activities is difficult to divide into separate group. All activities are influenced and bonded with each other. Own realisation of marketing activities are crucial for company in improving internal and external environment.

Realisation of marketing activities is specific because of the corporate size and total costs which are earmark for this realisation. Level of costs is given by the way, if company use "foreign" services such outsourcing or advisement of mother company. Own realisation is not depended in situation if company has own marketing department.

According to results of the research, there are obvious closed connection as follow:

- large company and mother company (central realisation of marketing),
- medium-sized company does not dealt with at all, only subconsciously,
- small company and outsourcing.

Marketing activities is difficult to divide into separate group. All activities are influenced and bonded with each other. Own realisation of marketing activities are crucial for company in improving internal and external environment. Therefore, it has become significant competitive advantage.

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LEVERAGE AND CORPORATE PROFITABILITY. EVIDENCE FROM THE ROMANIAN LISTED COMPANIES

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Abstract

The paper aims at providing new empirical evidence on the impact of leverage on corporate profitability, with application to the Romanian companies listed on the Bucharest Stock Exchange. Panel data are analyzed for 50 companies belonging to different fields of activity during 2002-2014 using a fixed effect model. After we control for size, liquidity, and tangibility of assets, the results reveal that leverage has a negative influence on corporate profitability.

Keywords: profitability, debt, Bucharest Stock Exchange, panel data

JEL Classification: C33, G30, G32

Introduction

There is a large body of corporate finance literature that has focused on the channels through which the company profitability might be enhanced. The relationship between leverage (or capital structure) and performance was early and well documented (Modigliani and Miller, 1958). A positive relationship between the two would lead to the idea that companies with better access to debt would be more privileged in terms of efficiency. A negative relationship on the other hand is explained by the appearance of bankruptcy costs that overcome the benefits of tax shields (Kraus and Litzenberger, 1973; Harris and Raviv, 1991). Regardless the nexus between debt financing and firm performance, the evolution of firms' indebtedness is of importance not only at firm level, it has serious implications on macroeconomic level as well. Financial access of the corporate sector might amplify the shocks to the economy (Bernanke et al., 1999). The research topic is therefore important, especially in the context of the recent financial crisis, triggered also by excessive indebtedness. Central and Eastern European countries do not make an exception.

The rest of the paper is organized as follows. Section 2 describes the main theoretical and empirical literature that has approached the relation between capital structure or leverage and firm performance. Section 3 presents the database, the methodological background for our analysis, the model and estimation approach. Section 4 discusses the results. Section 5 concludes.

1 THEORETICAL AND EMPIRICAL BACKGROUND

In the literature the connection between capital structure and performance was proved to function in both directions, as a reverse causality. The trade-off theory, one of the most important capital structure theories, alongside pecking order, explains both directions of causality. According to Modigliani and Miller (1963), the benefits of the tax shield derived from the interest paid on debt financing lead to a positive influence of the leverage on firm performance. The disciplining effect of debt might also bring a positive effect of leverage on performance. Having less free cash-flow on their disposal, the managers of highly leveraged firms should be motivated to perform. However, the agency conflicts between managers and

shareholders may lead to underinvestment and a negative influence of the leverage on the firm performance (Jensen, 1986; Stulz, 1990). Highly leveraged firms will be charged with a higher cost of capital, which will lead to an adverse effect on firm performance.

Most of the papers tested empirically one or the other direction of influence. Despite several decades of research, there is still no consensus and there is also a lack of empirical evidence as far as concerns the relationship between debt financing and corporate performance in Central and Eastern European countries.

Along the time, the importance of leverage for the firm profitability has attracted much debate and mixed empirical findings. We summarized in a chronological order the most recent empirical papers that have had such an approach, with application on European samples (Tab. 1).

Table 1 – Review of the empirical literature

Author/s	**Sample**	**Analysis period**	**Methodology**	**Results**
Schiantarelli and Sembenelli (1999)	**Italian** and **UK** firms	1976-1991 (UK) 1977-1990 (Italy)	GMM estimation	Positive relationship between long term debt and medium term performance
Baum et al. (2006)	**German** industrial firms	1988-2000	GMM estimation	Firms that rely more heavily on short-term liabilities are likely to be more profitable.
Weill (2008)	Manufacturing firms from 7 European countries: **Belgium, France, Germany, Italy, Norway, Portugal, Spain**		Stochastic Frontier Approach	Effect of leverage on corporate performance vary across countries (positive for 5 countries), and depends on particular institutional factors of each country
Margaritis and Psillaki (2009)	**French** manufacturing firms	2002-2005	DEA analysis	Higher leverage associated with increased efficiency
Nunes et al. (2009)	**Portuguese** firms		GMM estimation	Negative effect of leverage on profitability
Kebewar (2013)	**French** service sector	1999-2006	GMM estimation	The debt ratio has no effect on corporate profitability
Gabrijelcic et al. (2013)	**Slovenian** firms	2001-2011	Fixed-effect model	Negative effect of leverage on profitability
Chandrapala, P. and Knápková (2013)	**Czech** firms	2004-2008	Fixed-effect model	Negative relationship between leverage and profitability
Vătavu (2014)	**Romanian** listed companies	2003-2012	GMM estimation	Negative relationship between leverage and profitability
Močnik and Širec (2015)	**Slovenian** fast-growing firms	2008-2009	GMM estimation	Profitability negatively related with firm size and leverage ratio, but positively to labor costs

Source: realized by author

The majority of the papers which focused on quantifying the connection between debt and profitability used panel data analysis, with GMM estimation technique, but their results are contradictory. While some papers find no significant connection between the two variables

(Kebewar (2013)), others notice a negative effect of the debt, resulting in lower efficiency for the firms (Nunes et al., (2009), Chandrapala, P. and Knápková (2013), Gabrijelcic et al. (2013), Vătavu (2014), Močnik and Širec (2015)), while a third category finds empirical support for a positive relationship (Schiantarelli and Sembenelli (1999), Margaritis and Psillaki (2009)), especially when leverage is proxied by the short term debt when the liability structure is taken into consideration (Baum et al. (2006)).

2 DATA AND METHODOLOGY

2.1 Sample

In 2015, on the regulated market of the Bucharest Stock Exchange (BSE), were traded 82 companies. The companies were structured by BSE into Premium and Standard category, beginning with 2015. Within the Premium category we can find only 22 companies, with a free float market capitalization of over 40 million euro in the last three trading months.

The final sample of the companies resulted after using three deletion filters. First, we have excluded from the beginning the companies belonging to the financial sector, given the specificity of their activity. Secondly, we have excluded all the companies that were suspended from trading, due to insolvency or other legal issues. Lastly, we have excluded those companies for which there was no available data for the considered period. It resulted in a sample of 50 companies, belonging to different fields of activity.

The dataset employed in this paper covers the 2002-2014 period. The source of data is represented by the annual financial statements provided by companies on the BSE website, alongside with information provided by Tradeville, one of the main financial services intermediary on the Romanian capital market. However, the final database was put together manually, computed and constructed by us.

2.2 Methodology

Our research approach intends to assess the relation between debt and profitability of the company, having in consideration the companies listed on the Romanian capital market. In statistical notation, the model can be described as it follows:

$$ROA_{i,t} = \alpha_0 + \alpha_1 Debt_{i,t} + \alpha_2 Size_{i,t} + \alpha_3 Tang_{i,t} + \alpha_3 LR_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $ROA_{i,t}$ is the dependent variable, the profitability of the company, proxied by the return on assets, measured as the annual net earnings divided by its total assets, $Debt_{i,t}$, the independent variable, which accounts for the indebtedness of the company and is computed as the ratio between total debt (both short and long term), and total liabilities. We are using also some control variables such as: $Size_{i,t}$, the size of the company, proxied by the natural logarithm of total sales, $Tang_{i,t}$, tangibility, measured as the ratio of tangible assets divided by the total assets of the firm, as well as $LR_{i,t}$, the liquidity ratio, which is computed as the ratio between current assets and current liabilities and $\varepsilon_{i,t}$ is the error term.

The research hypothesis, we formulate is:

H_0 *: Does the higher indebtedness result in better firm performance? Or in other words, is debt acting like a disciplinary mechanism and improve the firm performance?*

From a methodological point of view, we will first run an OLS model regression. The major problems with the pooled OLS model is that it does not distinguish between the companies, ignoring the heterogeneity or individuality that may exist among these. An individual-specific effects model allows for heterogeneity across companies.

The main question is whether the individual-specific effects are correlated with the regressors. If they are correlated, then we will have a fixed-effects model and if they are not, we will deal with a random effects model. We will apply Hausman-Test to check which model (Fixed Effect or Random Effect model) is more appropriate.

3 RESULTS

Table 2 reports the estimates of the performance equation. We present the estimates of the panel data with OLS (1), fixed effects (2), random effects (3), and the corrected fixed effect model with cross-section weights (PCSE) standard errors and covariance. After running the Hausman test we could not obtain a significant P-value (p<5 %), therefore, we rejected the null hypothesis, that Random Effects model is more appropriate. Then, we used Wald test to see whether the Pooled Regression Model or Fixed effect model is more appropriate. It pointed out again that the fixed effect model is more appropriate.

Table 2 – Econometric results

VARIABLES	**(1)** **OLS** **Panel least squares**	**(2)** **FE** **Fixed effect**	**(3)** **RE** **Random effect**	**(4)** **FE** **Fixed effect** **Cross-section weights (PCSE) standard errors & covariance**
Debt	-0.0898***	-0.0389***	-0.0580***	-0.0389**
	(0.0126)	(0.0151)	(0.0137)	(0.0175)
Size	0.00156	0.0088**	0.0031	0.0088**
	(0.0019)	(0.0043)	(0.0028)	(0.0041)
Tangibility	-0.1090***	-0.1468***	-0.1229***	-0.1468***
	(0.0146)	(0.0243)	(0.0192)	(0.0292)
Liquidity	-0.0008	-0.0013*	-0.0009	-0.0013**
	(0.0007)	(0.0000)	(0.0007)	(0.0006)
Observations	642	642	642	642
Number of companies	50	50	50	50
R-squared	0.1187	0.3695	0.0698	0.3695
Adj. R-squared	0.1131	0.3127	0.0640	0.3127
DW-stat	0.8914	1.1959	1.0926	1.1959
Hausman-test			16.55	
Prob			0.0024	

Note: Standard errors in parantheses

***p<0.01, **p<0.05, *p<0.1

Source: realized by author

The results of the econometric analysis outline that:

- *Debt is negatively related to firm profitability.* The negative effect could be explained by the agency costs theory of Jensen and Meckling (1976), according to which shareholders are likely to engage in riskier projects, given the fact that the earnings belong to them, while potential losses are to be shared with the debtholders. As their behavior is anticipated by the debtholders, they will be charged with a higher cost of capital, that would impede on talig advantage of the attractive investment oppotunities, which will finally lead to an adverse effect on firm performance. It seems that excessive debt decreases the profitability of the firm and increases financial distress costs;
- *Size is positively related with firm profitability.* The positive effect was likely to appear due to the fact that larger firms are expected to diversify better their products and production activities, face better the competition and be better managed. In the same time, larger firms can also experiment economies of scale and can have cheaper access to capital, which both have a positive effect on profitability;
- *Tangibility is negatively related to firm profitability.* Although, in the literature, tangibility has been often positively related to profitability, given the fact that higher fixed assets will serve as a larger collateral, our results point emphasize the negative effect of tangibility. A possible explanation could come from the fact that a large volume of tangible assets can reduce the investment opportunities, decreasing the volume of required liquidity;
- *Liquidity is negatively related to firm profitability.* This result can be explained also by the existence of agency conflicts between shareholders and managers. The latter ones tend to invest in projects meant to increase their reputation and leave the firm to grow beyond an optimal level.

4 CONCLUSIONS AND FURTHER RESEARCH

In this paper, we analyzed the connection between non-financial firms' profitability and leverage, after controlling for the size of the company, the tangibility of the assets and liquidity. We tested this relationship by using a sample of 50 companies listed on the Bucharest Stock Exchange for the 2002-2014 period. The hypothesis we checked was that indebtedness has a positive influence on the firms' profitability. We found instead strong empirical support for the negative relationship between debt and profitability. In other words, the higher the extent the debt is used, the lower the profitability of the firm. Our results are consistent with the most recent empirical studies with application on Central and Eastern European countries obtained by Gabrijelcic et al. (2013), Chandrapala, P. and Knápková (2013), Vătavu (2014) and Močnik and Širec (2015).

Future research might shed light on the importance of liability maturity structure when testing the influence of debt on the firms' profitability (short-term and long-term). On the other hand, a sectorial analysis would also be useful, in order to outline the similarities and differences between the fields of activity. Lastly, more determinants of profitability should be taken also into consideration (taxation, growth rate, etc.), since the value of R^2 is rather small (0.37), which implies that there are more important factors which have not been included in the model and the robustness of the model could increase.

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"WICKED PROBLEM": MEASURING EFFICIENCY - PERFORMANCE IN THE PUBLIC SECTOR

Juraj Nemec

Abstract

The idea that organizations should measure (and actively manage) their performance is a core element of recent public sector reforms in many countries. However, measuring efficiency (performance) in the public sector conditions represents typical "wicked problem". This paper first introduces main problems connected with efficiency – performance measurement, as known from the theory. Its core part delivers four case studies summarising existing published examples of practical problems connected with efficiency – performance measurement. The first example shows that in the Czech conditions the prevalence of economy to efficiency in public tendering evaluation creates important problems. Second and third cases demonstrate visible pervasive effects connected with performance financing. The last case shows existing gaps in the Czech practice of performance measurement – performance appraisal for public employees and especially the fact that salaries and bonuses are not at all linked to performance.

Keywords: efficiency, performance, public sector, measurement

JEL Classification: H76, H89

Introduction

Measuring efficiency (or performance in broader sense) became an important part of administrative reforms motivated by the New Public Management (NPM) ideology. The idea that organizations should measure (and actively manage) their performance is also a core element of recent public sector reforms in many countries. However, measuring efficiency (performance) in the public sector conditions represents typical "wicked problem" (problem, which is difficult or impossible to solve).

However, measuring efficiency - performance, especially if the final goal is to compare states, organisations or to appraise, is rather complicated task. A badly implemented system may create large pervasive effects and distort the behaviours of the actors.

The goal of this paper it to summarise main problems connected with efficiency – performance measurement and to document their existence on concrete examples. In this paper first the theory is briefly summarised. Its main part includes four case studies, documenting different efficiency – performance measurement problems on concrete example form Czech and Slovak conditions.

1 MEASURING EFFICIENCY - PERFORMANCE

Efficiency - performance measurement is the collection of deliberate activities, which includes defining a measuring object, formulating indicators, collecting data, analysing data, and reporting (Van Dooren, Bouckaert, and Halligan, 2010). Problems immediately arise in the first step, when measurability is usually discussed as a crucial factor in determining the quality of

performance data and performance measurement. This dimension of performance research copes with questions such as:

1. What should be measured, and how should it be measured?
2. How should the measurement criteria be made operational?
3. Does measurement measure what it intends to measure?

International literature clearly shows that efficiency - performance measurement in the public sector is a complex and challenging issue, because of many reasons, like (see for example (Andrews, Boyne, and Walker, 2006):

- in many cases social and non-financial costs and benefits are expected to be measured,
- it is a complex exercise, because it usually combines objective and subjective measures,
- the measures often draw together data from a number of sources,
- should combine qualitative and quantitative approaches, etc.

Moreover, efficiency and performance carry multiple and often ambiguous meanings and there are various opinions on how they should be defined. They deal mainly with the following key concepts and topics (see Wright and Nemec, 2003):

Economy: concerned with the conversion of inputs to outputs, trying to ensure that minimum inputs will be used to achieve defined outputs.

Efficiency: analyzing the ratio between inputs and outputs.

Effectiveness: aimed at ensuring that efficiently produced outputs are directed to achieve the desired outcomes.

Inputs: represent all resources used to produce expected outputs, outcomes and impacts

Outputs: represent goods and services delivered from inputs. Outputs are usually measured by quantitative non-monetary figures (e.g. number of surgical operations)

Outcomes: represent a more difficult concept, and are used to measure what was really achieved. Outcomes include both quantitative and qualitative dimensions (e.g. the number of surgical operations and their success). Compared to inputs and outputs, outcomes are very difficult to measure, especially if we want to calculate them in monetary terms (for example to conduct social cost-benefit analysis).

Impacts: represent the most complex measure to evaluate real achievements over the long-term period (e.g. the decrease of unemployment in respective regions as the result of a macroeconomic programme).

Performance indicators: performance indicators (expected to be "FABRIC" – focused, appropriate, balanced, robust, integrated and cost effective) may be divided into subgroups:

- Cost (input) indicators, closely related to unit costs.
- Output, outcomes, impact indicators, used to quantify the achievements of the organization or public project/programme. All these indicators are used for example under the system of EU structural funds project management.
- Quality indicators. As there are more concepts/dimension of quality, the ways and tools to measure quality/to establish quality indicators have more possible dimensions, like:
    i. fitness for purpose, querying whether something is suitable for job it has to perform

ii. standards: by standards it is possible to check, if the product is delivered as expected, and if the process of delivery is as expected

iii. consistency: is about achieving all standards/providing the same (or almost the same) service at any time

iv. customer satisfaction – satisfaction of people for whom the good is produced or the service is delivered

Equity: the concept of equity in this sense is focused to assure that any service targeted to special group (people who need such a service) will be delivered to these who need it most, rather than being delivered on an equal basis.

The selection of proper efficiency – performance dimension is may be less complicated issue in 3E area (efficiency, economy and effectiveness) where some common consensus exists, however the practice has real problems to follow theoretical propositions (case 1). Compared to 3E, performance measurement is really "black box". Blalock (1999) points out that performance measurement systems tend to be so focused on the measurement of a limited set of outcomes that the true complexity of a program's design is frequently ignored in the information production process. Consequently, too little information may be collected about important elements of program implementation, of the interventions considered unique to a program, or of a richer array of outcomes that may be very significant.

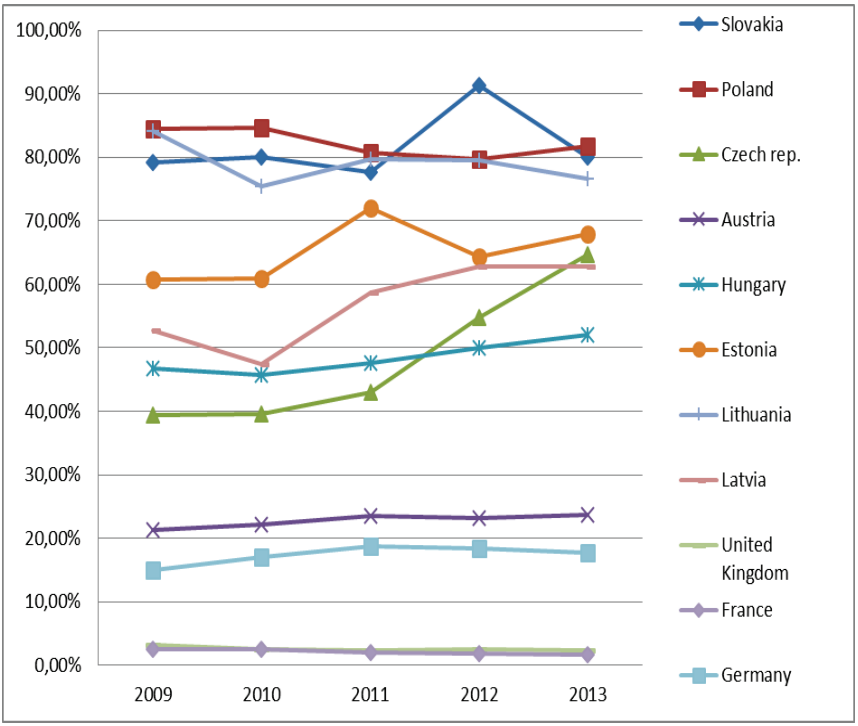
The approach to the actual use of efficiency - performance data is an issue (cases 2 and 3). Moynihan and Pandey (2010) argue that governments have devoted extraordinary effort to creating performance data, wagering that it will be used to improve governance, but much remains unknown about the factors associated with the use of that information. Van Dooren, Bouckaert, and Halligan (2010) describe various distortions connected with the use of performance information and output as well as the performance target paradox. Boyne, Meier, O'Toole and Walker (2006) addressed the question of which aspects of management influence the performance of public agencies, noting that empirical studies of the impact of management on the real performance of public organizations are scarce.

Performance measurement should measure as well as secure both the accomplishment of right objectives and the utilization of right ways leading to their achievement (Pilarova, 2008). There are some flaws to this type of evaluation. Performance evaluation often focuses on outcomes, but it is very difficult to identify measurable outcomes for some job positions or specific organizations, and measurable outcomes do not necessarily make up an organisation's performance or an employee's complete job content. Organisations and employees often concentrate only on those criteria on the basis of which they are evaluated, while neglecting the others (Kellough, 2012). Outcomes achieved by an individual employee do not necessarily depend only on that employee. When organizations focus only on evaluating the performance of their employees, they may fail to meet objectives that are difficult to measure, e.g. customer assistance (Daley, 2005). The subject of an evaluation is often an employee's work and social behaviour at an organization; in this case, the evaluation is often based on the conviction that desirable behaviours lead to efficient performances. In connection with this, 'behaviour-based rating scales' based on required employee behaviour have been developed (Kellough, 2012).

2 CASE STUDY 1: ECONOMY VERSUS EFFICIENCY IN PUBLIC PROCUREMENT: DO WE MEASURE WHAT WE NEED TO MEASURE?[1]

The data in Figures 1 and 2 indicate that the number of economy based procurement decisions in CEE regions is much higher than in any of the Western countries. The Czech Republic represents a particularly interesting case, with a significant recent trend towards the use of economy as a criterion. It is too complicated to say whether such trends are good or bad, but existing data fully document how problematic is the use of economy for selecting future suppliers of services and works. The purpose for such situation is documented for example by data collected by OTIDEA (2013 – responses of 152 suppliers and 450 procurement officials). Eighty-five percent of procurers use lowest price as a criterion to select the winner because they are afraid of complaints by bidders. Seven percent of suppliers and six percent of procurers have the opinion that selection for works based on lowest price is not a problem. Sixteen percent of suppliers have offered prices below real costs. Twenty percent of procurers do not have experience with a situation in which an unrealistically low price won the contract; more than fifty percent of them had accepted such offers. Simplification of the PP law and higher managerial flexibility was desirable for seventy percent of procurers.

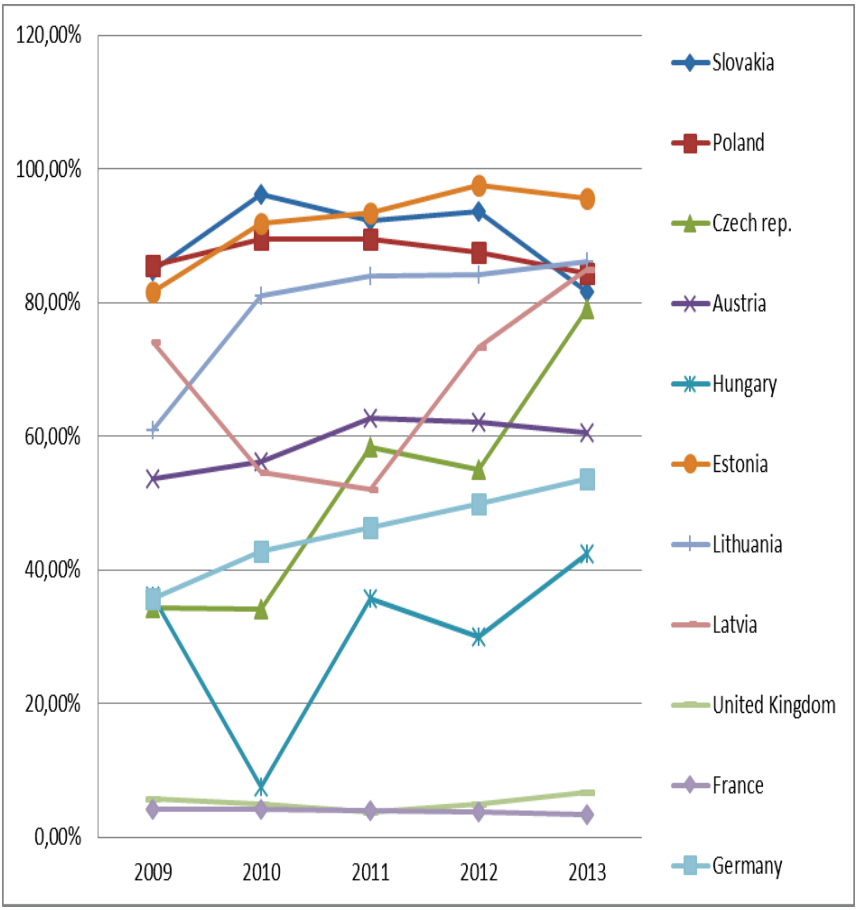
Figure 1 - Lowest price as the award criterion in public procurement of services



Source: own research based on data from Tenders Electronic Daily, 2014

[1] The source for this case is conference paper Nemec et al, 2014.

Figure 2 - Lowest price as the award criterion in public procurement of works



Source: own research based on data from Tenders Electronic Daily, 2014

3 CASE STUDY 3: PERFORMANCE FINANCING – SLOVAK UNIVERSITIES (NUMBER OF STUDENTS IMPACT): PERVASIVE EFFECTS OF PERFORMANCE FINANCING[2]

For more than ten years Slovak universities are financed on the base of performance and the main criteria are number of students and research results. One clear outcome of the system, where most money flow according to the number of students is increased number of students during the first years after implementing the new formula based system (Table 1).

[2] The source for this case is conference paper Nemec et al, 2014.

Table 1 - Number of newly accepted students Slovakia

	1990/91	1995/96	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
New full time students	13 404	20 809	24 279	24 270	26 974	24 150	32 488	35 542
% of new full time students from 18 (19) old population	15.9%	21.8%	27.2%	27.2%	30.4%	27.2%	36.7%	41.3%
New part time students	1 868	3 881	9 665	12 763	8 057	15 057	15 718	17 254
Total	15 272	24 690	33 944	37 033	35 031	39 207	48 206	52 796

Source: MŠ SR

Formally is performance system transparent and fair. However, because more than 80 % of running costs grants is allocated via this mechanism, pervasive motivation is created. The management of a university can maximize the level of the public grant by maximization of a number of accepted students. The outcomes are straightforward, and can be proved – capacities of school buildings are overloaded, the level of entry examinations is decreasing, or such examinations may be even cancelled and all interested accepted. Lowering entry requirements and overloading of capacities means high risk of lower quality of the final product (especially if the relation between accepted and graduates is supervised by the Ministry of Education) – if the quality of marginal student decreases, the average quality shall decrease, too.

4 CASE STUDY 3: PERFORMANCE FINANCING – CZECH UNIVERSITIES (PUBLICATIONS IMPACT): PERVASIVE EFFECTS OF PERFORMANCE FINANCING[3]

Everybody from the Czech academic environment knows RIV – and all its pros and cons. According to our opinion, transparency and performance based research financing is must, however the Czech practice clearly shows how difficult is to set any proper system (impossible?). Several theoretical issues mentioned in the first part are clearly visible on RIV example (what to include, how to set indicators and weights, etc.) and visible pervasive effects occur. Similarly to the Slovak case above we just document the last issue (Czech data and typical CEE reaction).

[3] The source for this case study is conference paper Jahoda, 2013.

a/ RIV points of a Czech University

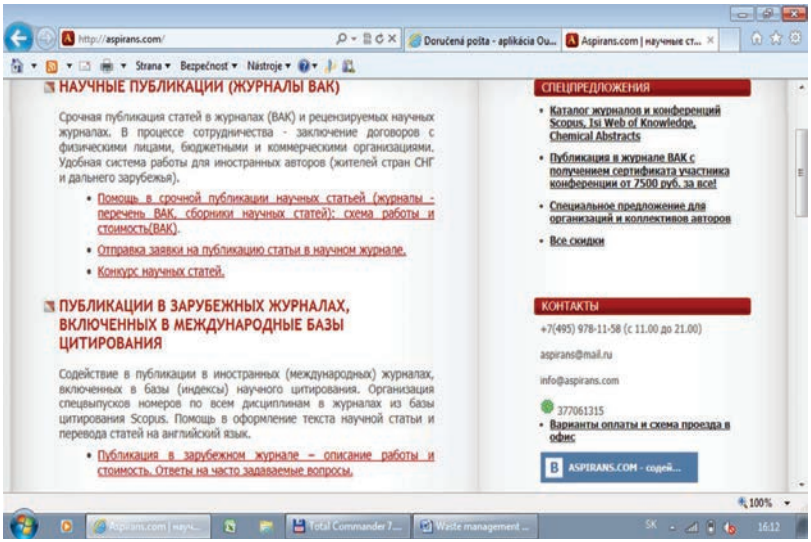
		rok					
		2008	2009	2010	2011	2012	Total
		BODY	BODY	BODY	BODY	BODY	BODY
		Sum	Sum	Sum	Sum	Sum	Sum
druh2	BC	431,153	221,935	192,742	622,661	132,535	1 601,026
	D	1,615	43,683	49,010	174,737	48,370	317,415
	Jimp	79,624	381,925	120,970	102,303	134,959	819,781
	Jneimp	12,959	0,000	0,000	0,000	0,000	12,959
	Jrec	127,741	159,187	217,986	245,281	63,547	813,742
	Jsc	450,554	548,363	776,355	972,436	901,460	3 649,168
	neu	0,000	0,000	0,000	0,000	0,000	0,000
	Total	**1 103,646**	**1 355,093**	**1 357,063**	**2 117,418**	**1 280,871**	**7 214,091**

a1/ How Jsc points are obtained:

Explanation to the second Figure: the role of „own“ journal

	2008	2009	2010	2011	2012	Total
Own journal/total points	24,1	40,5	49,8	41,7	65,4	44,5
Own journal/journal based points	39,6	50,3	60,5	66,8	76,2	60,6

b/ How some CEE scholars by-pass (conference paper + participation certificate at 7500 RBL, Scopus journal paper for 900 USD etc.)



5 CASE STUDY 4: PERFORMANCE APPRAISAL AT THE LEVEL OF THE CZECH SELF-GOVERNMENTS: MEASUREMENT CRITERIA AND THEIR NON-USE IN DECISIONS MAKING[4]

There are no legal regulations in the country providing for a specific procedure that would have to be followed by organizations of public administration and the public sector in evaluating their employees. When evaluating their employees, public servants can follow methodical recommendations published by the Ministry of Regional Development of the Czech Republic in 2005 ('Evaluation of Employees in Public Administration').

To obtain more detailed information about the practice of performance appraisal at the self-government level, the authors carried out an empirical survey to determine how the evaluation of public servants is organized and implemented, and what its benefits are in practice. Small sample of seven organisations was selected from best performing public bodies (that received awards for quality / innovation). The surveyed municipal offices (MO) have from 150 to 200 employees (public administration executives) and the regional offices (RO) have about 650 employees.

The majority of the authorities worked with some performance appraisal system, however no system was in place in two (MO3 and RO2) of the seven participating authorities (one of authorities - a metropolitan authority – responded that they do not consider such evaluation to be necessary!).

In all of the authorities, employees are evaluated by means of defined criteria, sometimes elaborated in the form of a competency model. At the same time, their work is evaluated from the point of view of the fulfilment of objectives set in a preceding period of time. The interviews show that evaluating the achievement of set objectives is perceived as a supplement to the basic evaluation by means of the criteria. Although the representatives of authorities mentioned it, nobody assigned it any considerable significance.

The criteria of evaluation used by authorities are formulated differently at individual authorities and vary in structure and number. Although individual authorities are divided into various departments (sections, units) and their employees have different job descriptions based on that, all employees are usually evaluated according to the same or very similar criteria. They actually differ only in the terminology defining the given characteristics. Only two authorities distinguish between evaluated employees: at one municipal authority, a superior officer selects those from the range of criteria that are relevant for a given position and job description of the evaluated employee; at the regional authority, service personnel are evaluated according to several criteria selected from a broader scale determined for all employees.

All of the authorities use the following three criteria when evaluating their employees: compliance with regulations, timely performance of tasks, and the ability to work under stress. In the majority of the authorities, initiative, flexibility, independence, and reliability are also evaluated. Apart from the level of spoken and written language, authorities care about the economic efficiency of their employees. In contrast, the criterion of behaviour towards clients is a part of the evaluation at only two authorities.

An analysis of the documents that were provided for the purpose of the research showed that only one authority had a verbal description of individual criteria available. In all probability, the other authorities do not consider this necessary although the meaning of individual criteria may be perceived differently by various evaluators. Another, better approach is when evaluators have a verbal description available for individual degrees of an evaluation scale for each

[4] The source of this case study is book chapter Spalkova and Spacek, 2015.

criterion, as with the regional authority. However, this approach is unique in practice. A verbal description of the individual degrees of the evaluation scale is more common.

The interviews also indicate that the systems of performance appraisal implemented in practice are not connected to the implemented systems of performance and quality management.

The core problem discovered is that performance appraisal is not connected to remuneration in the majority of the authorities, i.e. the link to a salary — a performance component — is missing. Only one HR manager stated that performance appraisal was introduced with the aim of interconnecting it with remuneration: 'Once a year, when we have a blanket evaluation of the whole authority, salaries may be adjusted in connection with that … I enter the respective mark in our system and a salary may get adjusted according to it' Another HR manager pointed out that, 'The objective was not to connect evaluation to remuneration, not at all. We were considering whether we would take this into account somehow … but there are not many provisions in the legislation that would enable this … I must admit we have not yet learned how to do it … there are not efficiency bonuses (as is the case in business companies) … this would require other than subjective criteria (it is easier in the industry sector, the number of rejections … fulfilment of standards), here, in public administration, we are not able to develop proper criteria.'

Conclusions

The theory expects that efficiency – performance management is necessary, but also to large extend a "mission impossible". Because of the existence of unlimited number of theoretical studies documenting all aspects, issues and problems of efficiency – performance measurement, the main goal of this paper is to link theory with existing and well known cases, documenting failures in the Czech and Slovak practice. We hope that such type of paper provides value added especially because it clearly links the theory and the practice.

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EFFICIENCY OF VALUE ADDED TAX IN CROATIA

Hrvoje Šimović, Milan Deskar-Škrbić

Abstract

This paper evaluates the efficiency of the Value Added Tax (VAT) in Croatia. Considering that Croatian tax system is consumption-oriented, VAT is the most important form of taxation. During the economic recession from 2009-2014, Croatia has increased its standard VAT rate twice and now has one of the highest rates in the European Union. Croatia also implemented other tax policy measures in order to stabilize VAT revenues and decrease budget deficit. Important milestone for VAT was the passage of the Cash Payment Fiscalization Act, in order to improve the percentage of charged VAT during cash transactions. Despite the aforementioned measures, VAT efficiency in Croatia did not increase. The analysis on the efficiency of VAT was observed through the implicit tax rate and standard VAT efficiency indicators such as Efficiency Ratio (ER), C-Efficiency Ratio (CER) and VAT Revenue Ratio (VRR).

Keywords: Value Added Tax, VAT efficiency, implicit tax rate

JEL Classification: H21, H25

Introduction

Value Added Tax (VAT) was introduced in Croatia in 1998 and since then has changed frequently, partially because Croatia was in the middle of Stabilization and Association process in order to join the European Union (EU), but most significant tax changes were made due to discretionary tax measures. In that period Croatia transitioned from a single rate to a differential rate system. As it is commonly known, the VAT efficiency mostly depends on different tax base distortions, i.e. reduced tax rates and exemptions (see Ebrill et al., 2001) so this paper will put special emphasis on this type of changes.

Main purpose of this paper is to analyze the VAT efficiency during the recession in Croatia, in the period 2008-2014. In order to achieve the aim of this research, the Introduction is followed by a macroeconomic analysis of the Croatian economy, especially in the context of GDP trends and household consumption. In the third part, the basic VAT principles and its changes in the observed period are analyzed. In the fourth chapter, analysis on VAT efficiency was conducted using implicit tax rate and standard efficiency indicators. The last chapter is the Conclusion.

1 MACROECONOMIC FRAMEWORK: TAX BASE AND TAX REVENUES

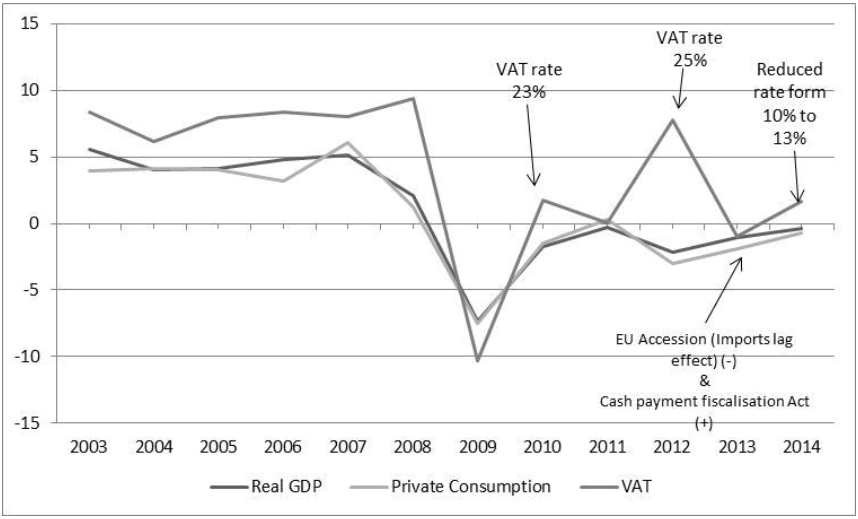
Croatia is the only country in the EU that has been in a recession for six consecutive years. It is estimated that in the year 2015, GDP will increase by around 2%. Even Greece had a GDP growth rate of 0.8% in 2014, while Croatia's GDP dropped by 0.4% at the same time. Moreover, considering the expenditure approach, the largest component of GDP is household consumption (average of 60%).

Since VAT is a type of consumption tax it is clear that household consumption (also called private or personal consumption), as the largest component of GDP, highly influences total

VAT revenue. Since household consumption can be used as an approximation for the tax base, reducing tax base while maintaining the same VAT rate, results in the loss of VAT revenue.

Annual GDP trends, private (or household) consumption and VAT tax revenues are shown in Figure 1. It is evident that the trends in GDP and household consumption are almost identical. The Figure also shows that the VAT revenue growth rate before 2008 was more stable and higher than GDP and household consumption growth rates. After the crisis began in 2008, the level of household consumption fell sharply, followed by a decline in VAT revenues by 10.3% in 2009. Recovery of household consumption, which still hasn't achieved its pre-crisis levels, was followed by an increase in VAT revenues. Loss in tax revenues and the need to finance the budget deficit resulted in an increase of VAT rate, from 22% to 23% in 2009 and finally to 25% in 2012. Moreover, lower VAT revenues were affected by the changes in the reduced VAT rates and the lag in the collection of VAT on imported goods from the EU after Croatia's accession to the EU.

Figure 1 - GDP, VAT revenue & private consumption (y/y, %)



Source: authors' calculation & Eurostat

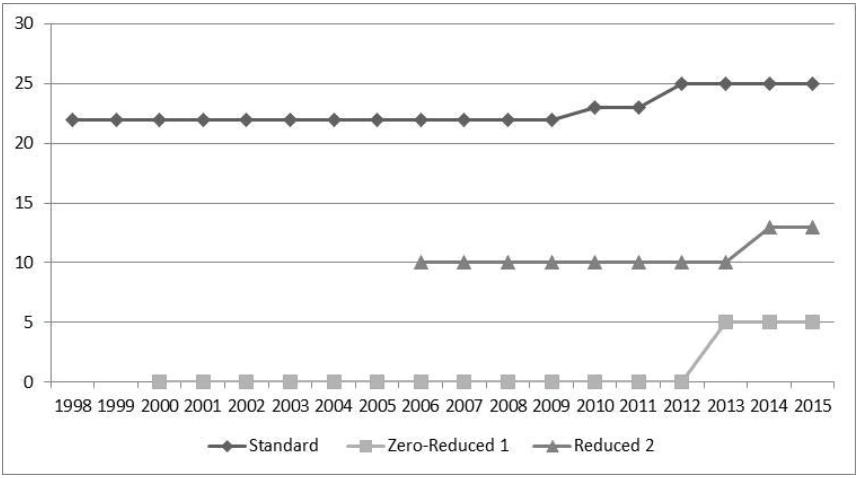
2 DEVELOPMENTS IN CROATIAN VAT: 2008-14

It has been previously shown that total VAT revenue depends heavily on its tax base, i.e. the level of household consumption. It is important to emphasize the existence of a series of exemptions in the VAT system, as well as reduced and zero VAT rates. High number of exemptions and reduced or zero rates distort tax base and reduce the efficiency of VAT (see numerous studies such as Ebril et.al., 2001; Copenhagen Economics, 2007 & 2013; Keen, 2013; Bettendorf & Cnossen, 2014).

Regarding the exemptions, there are no major distinctions between the VAT in Croatia and the VAT Directive 2006/112/EC. Goods and services that are exempt from VAT include many services of general economic interest such as culture, education and health care.

Other important exemption refers to small businesses, i.e. threshold for VAT registration. From the introduction in 1998 to 2012, VAT registration threshold amounted to 85,000 HRK (around 11.000 EUR). During 2013 that threshold was increased to 230,000 HRK (around 30,000 EUR). This is in line with the existing practice in the EU (European Commission, 2015), as well as the trend of an eroding tax base.

Figure 2 – VAT rates developments



Source: authors

Reduced VAT rates probably have the strongest impact on the lowering of the tax base. Figure 2 shows the evolution of VAT rates from the time they were firstly introduced in 1998 up to 2015. As it was previously mentioned, Croatia initially had a single VAT rate system, but then under the influence of socio-political pressure quickly granted the zero rate on several goods and services supplied in the general economic interest. As EU permits a reduced rate of minimally 5%, the zero rate had to be increased to 5% after entering EU, following the VAT Directive 2006/112/EC (see Table 1).

Table 1 shows reduced rates for goods and services they apply to, as well as the most significant changes in the period 2008-2014. Figure 2 and Table 1 clearly show that Croatia has gradually, more and more, violated the neutrality and functionality of the VAT. Besides the zero rate, Croatia introduced a new reduced rate of 10% in 2006 and slowly extended the list of goods and services it applies to.

It should be pointed out that Croatia has made some progress in improving the efficiency of the VAT. In 2013 Croatia implemented Cash Payment Fiscalization Act which represents an additional tool for monitoring the charging of the VAT in cash transactions. However, this Act was followed by an expansion of the base for the reduced rate of 10% (see Table 1). This reduced rate started applying to catering services, i.e. services for preparing and serving food, drinks and beverages, which are commonly paid for in cash. This surely diminished the positive effects of fiscalization which is later shown in this analysis.

Table 1 – Reduced rates developments 2008-14

Reduced rate of 5%	Reduced rate of 13%
a) all kinds of baked bread, b) all kinds of milk, c) books, d) medicines (determined by the Croatian Institute for Health Insurance), e) Surgical implants (pacemakers, artificial joints, stents etc.), f) Cinema tickets, g) Daily newspapers (on paper), h) Scientific journals.	a) Tourist services (services of accommodation, agency commission for these services etc.), b) Catering services (restaurant services, preparing and serving food, drinks and beverages etc.), c) Other daily and periodic newspapers and magazines, d) Oils and fats for human consumption, e) Baby food, f) Supply of water (utilities), g) White sugar, h) Concert tickets.
Changes 2008-14	Changes 2008-14
2013 – increase from 0% to 5% (Croatian accession to the EU) 2013 – broaden to (g) (before 10%)	2012 – broaden to (d)-(h) 2013 – broaden to (b), and narrowed for (c) (only periodicals) 2014 – increase form 10% to 13%

Source: authors according to VAT Act (Zakon o porezu na dodanu vrijednost)

3 EFFICIENCY OF VAT

This part will analyze the VAT efficiency according to a two set of indicators. Croatian tax system is consumption oriented and, considering the EU average, consumption taxes are the largest component in the total tax revenue in Croatia. For this purpose, implicit tax rate (ITR) on consumption will be firstly calculated and analyzed, and compared with the standard VAT rate. In the second part, VAT efficiency will be analyzed by using standard efficiency indicators such as Efficiency Ratio (ER), C-Efficiency Ratio (CER) and VAT Revenue Ratio (VRR).

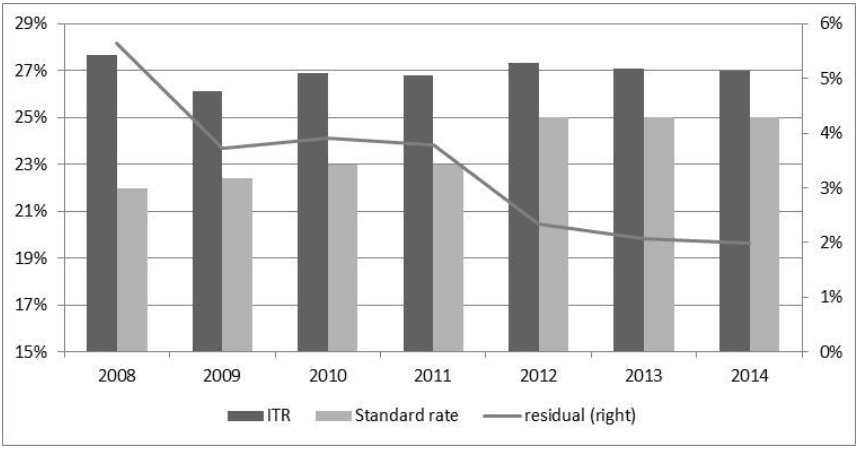
3.1 Implicit tax rate on consumption

Using the standard European Commission (2014) methodology it is possible to calculate an ITR on consumption. ITR is the Ratio of Taxes on Consumption (R) and Final Consumption Expenditure of Households (FC):

$$ITR = \frac{R}{FC} * 100 \quad (1)$$

In Croatia, besides VAT, there are excises, local taxes on consumption and some other minor and less significant taxes. ITR can be interpreted as an effective tax rate, i.e., the rate used for taxation of consumption in Croatia. Figure 3 shows ITR on consumption in comparison to a standard VAT rate.

Figure 3 – Implicit tax rate vs. standard rate



Note: VAT rate in 2009 is weighted average because VAT rate increased in august 2009.

Source: authors' calculation

Figure 3 shows that in the whole observed period ITR is in average 27%. It reached its lowest point in 2009 because of significant revenue losses with the beginning of the crisis. ITR is relatively stable considering that the standard VAT rate has increased twice in the observed period. The residual between ITR and the standard VAT rate is continuously reducing, which indicates that VAT is becoming more and more dominant in comparison to other consumption taxes. In other words, in the observed period the contribution of ITR on consumption is mostly observed through the increased VAT rate, leaving excises and other taxes without significant changes. This can draw to the conclusion that there is enough space in the future to increase existing excises and introduce new ones, as opposed to further increases of the VAT rate.

3.2 VAT Efficiency measures

Considering that there is not a single definition of an efficient VAT system, it is impossible to determine a precise VAT efficiency measure. In this part of the research two most frequent VAT efficiency measures according to Ebrill et al. (2001:40-42) will be analyzed: Efficiency Ratio (ER) and C-Efficiency Ratio (CER).

ER can be expressed as:

$$ER = \frac{R}{Y*r} * 100\ , \tag{2}$$

where R is the total amount of VAT revenues, Y is the nominal GDP and r the standard VAT rate.

CER can be expressed as:

$$CER = \frac{R}{FC*r} * 100\ , \tag{3}$$

where R is the total amount of VAT revenues, FC final household consumption and r is the standard VAT rate.

In theory, tax system should be considered totally efficient in case when it covers the whole tax base with a flat rate and when the administration can collect the tax liability in full. According to OECD (2015), one relatively appropriate indicator for that purpose is VAT Revenue Ratio (VRR).

VRR can be expressed as:

$$VRR = \frac{R}{(FC-R)*r} * 100\ , \qquad (4)$$

where R is the total amount of VAT revenues, FC final household consumption and r is the standard VAT rate.

Table 2 shows results for VAT efficiency in Croatia according to all three aforementioned measures. It is evident that in the beginning of the crisis, i.e. in 2009, compared to 2008 there was a decrease in efficiency according to all indicators. Relatively lower level of efficiency is present in the whole period after 2009 and only in 2014 there is a significant improvement in VAT efficiency. Regardless of certain advantages and disadvantages of particular efficiency indicators, in professional and scientific circles C-Efficiency was proven to be the most appropriate and most used efficiency measure (Ebrill et al., 2001; Keen, 2013).

Table 2 – VAT efficiency measures 2008-14

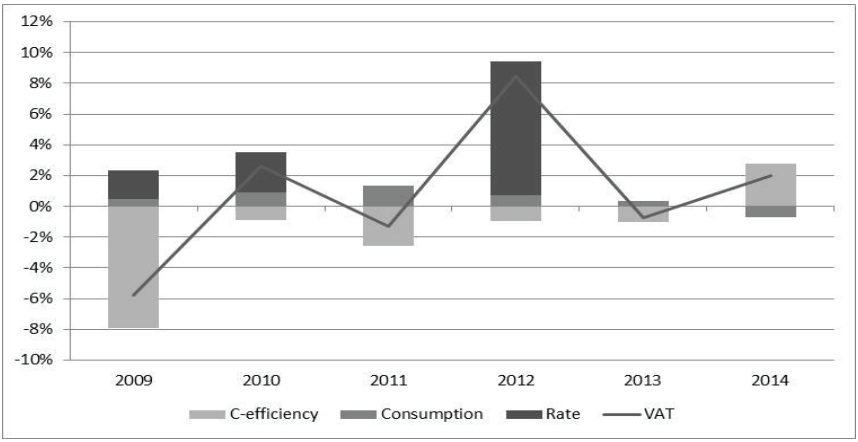
	2008	2009	2010	2011	2012	2013	2014
VRR	116.7	105.8	105.3	101.9	102.8	101.5	105.0
ER	54.0	49.9	50.0	49.3	49.2	48.9	49.8
CER	92.9	85.5	84.7	82.6	81.8	80.9	83.2

Source: authors' calculation

It is important to point out that the increase of the standard VAT rate and the passage of the Cash Payment Fiscalization Act in 2013 did not contribute to an increase in VAT efficiency. On the contrary, in the observed period efficiency has decreased. Lower collection of VAT in 2013 should be attributed to the admission of Croatia in the EU, which resulted in a time lag of VAT collection from imports. Considering that Croatia became a part of the internal market of the EU, charging VAT on imported goods is now realized when these goods are sold on the Croatian market. Moreover, lower collection of VAT should also be attributed to applying the reduced VAT rates on catering services, i.e. preparing and serving food, drinks and beverages, as previously mentioned.

In order to determine the impact of individual factors on VAT efficiency, i.e. VAT revenue growth/decline, it is necessary to conduct a decomposition of VAT revenue changes according to efficiency measures, changes in tax base (household consumption) and changes in the tax rate.

Figure 4 – Decomposition of VAT revenue changes (in %)



Source: authors' calculation

Picture 4 shows the decomposition of VAT revenue changes according to three factors: C-Efficiency, household consumption and standard VAT rate. Contribution of reduced tax rates has been left out due to the impossibility to separately cover only the consumption considering reduced VAT rates from national accounts. It is evident that the increase of the standard VAT rate had the strongest contribution in the VAT revenue growth, while C-Efficiency affected the VAT revenue negatively. This can be attributed to the previously mentioned distortion of tax base through reduced rates and exemptions. The only exception is 2014, where positive effects of Cash Payment Fiscalisation Act are visible for the first time. Household consumption in the observed period has been slowly recovering and had a very slight impact on VAT collection.

Conclusion

Croatian tax system is consumption-oriented and consumption taxes are the most important and effective form of tax revenues. As a small, open and import-oriented economy, household consumption is the most important component of GDP in Croatia. In that context, stability and effectiveness of revenues from the VAT are the key segments in stabilization of public finances and fiscal imbalances. On the other hand, Croatian government has been trying to satisfy certain socio-political goals by introducing and expanding the use of reduced VAT rates in the observed period, thereby undermining VAT efficiency. To compensate the negative effects the Government increased the standard VAT rate and imposed more control over charging VAT in cash transaction. As a result, Croatia now has one of the highest standard VAT rates in the EU (Hungary 27%, Croatia, Sweden and Denmark 25%).

The efficiency analysis has confirmed the initial hypothesis. Economic crisis and a decrease in household consumption led to a decline in the C-Efficiency of VAT, while the recovery of VAT revenues was primarily due to increased standard VAT rate. It is necessary to point out the causes of the decline in the efficiency that can be found primary in reduced rates and exemptions that distort the basic logic of VAT. If the reduced rates were to be abandoned and household consumption level stabilizes and recovers, there is definitely space in the future for reducing the standard VAT rate.

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THE EUROZONE STABILTY AS THE MAIN PRECONDITION FOR MORE EFFICIENT MACRO AND MICRO ECONOMIC DEVELOPMENT IN THE EU

Dušan Šoltés

Abstract

The paper deals with some experiences as gathered from our research in the area of the European Integration within the EU in general and with the current handling of the ongoing global economic and financial crisis in particular by the Union itself. That in addition to various other negative impacts on the Internal market and the overall macro and micro economic development in the EU has brought with itself also a direct thread to the very existence of its common currency Euro. The paper in more details presents some of the main reasons for these negative development and impact on Euro that are mainly the internal problems of the Eurozone. In principle they started right when it was launched as the Maastricht criteria were met in full only by two out of twelve initial Eurozone members. In conclusions the paper contains also some proposals for removing existing problems and thus creating also one of the main preconditions for the more sound and efficient economic development on the macro and micro levels in the Eurozone and the whole EU.

Keywords: Euro, Eurozone, PIGS countries, Maastricht criteria, Maastricht Treaty, Quantitative easing

JEL Classification: E42, E52, F15, F16

1 WHY IN PARTICULAR EURO HAS BEEN SO NEGATIVELY EFFECTED BY THE GLOBAL FINANCIAL CRISIS

In this respect it is important to realize that the entire process of preparation and implementation of Euro has been a long term process that has originally started as an integral part of the process of the development of the European Economic and Monetary Union (EMU). In view of this relatively complicated inception of Euro as a common EU currency, it is important to take into account that the first initial steps towards future common currency have been laid down by the so-called Werner Plan yet in 1971. It was in order to overcome at that time threatening currency crisis that led to abolition of until that time existing a system of stable exchange rates among major world currencies. As a result, finally the ECU – European Currency Unit was introduced as a special currency unit that was not existing as a real currency but was serving as a kind of some financial and accounting and non-cash unit. However, only after 17 years in 1988 the European Council has adopted a strategy of gradual introduction of a true and real common European currency within the framework of the Economic and Monetary Union and on the basis of the so-called Delors' Report in three relatively independent stages:

1) This first stage of 1 July 1990 – 31 December 1993 was marked by an abolition of any limitations on the free movement of capital within the EU. During this period on 7 February 1992 also the so-called Maastricht Treaty on the European Union has been signed that among others adopted also the famous Maastricht convergence criteria that are serving as the basic criteria for EU member states to become eligible for entering into the European common currency that at that time had not yet had its official name.

2) Again with some delay the second stage 1 January 1994 - 31 December 1998 has introduced some institutional provision for the future common currency viz. the EMI - European Monetary Institute. During this stage also the name of the future common currency i.e. Euro has been approved in December 1995. After another year, in December 1996, the design of future Euro banknotes and coins has been approved and in June 1997 the so-called Stability and Growth Pact has been adopted as the necessary precondition for adoption of the future common currency.

However, the most important outcome of this stage has been the decision made by the Council of the EU that on the 2nd May 1998 has - although unanimously - adopted for the fate of the future Euro a rather controversial decision that altogether 11 EU member states are "meeting" the Maastricht convergence criteria and thus they are eligible for adoption of Euro since 1 January 1999. With the effect of 1 June 1998 the EMI has been replaced by the ECB – European Central Bank as the central institution being responsible for Euro as the new EU common currency.

3) The third, last and the most important stage in Euro preparations and implementation started on 1 January 1999. On that date, the mutual exchange rate system among the particular currencies has been unchangeably fixed up. What as it has been proved later was not the most favourable decision for the new common currency as it has thus fixed up also some differences in economics of the member states and thus putting some of them into somehow permanent disadvantageous position. Since that date, also the Euro has become the official "common" currency of the EU for 12 EU member states including the latest entrant i.e. Greece. They have adopted the new common currency Euro on 1 January 2002. On that date also again by a certain paradox - with the three years delay after the date when the Euro has become the official currency of the EU - finally also the new Euro banknotes and coins have been put into real circulation and practical utilization.

2 SOME MAIN PROBLEMS AND WEAKNESSES OF THE OVERALL PREPARATION AND IMPLEMENTATION OF THE EU COMMON CURRENCY

In a brief summary, the main problems and weaknesses of Euro due to its above complex and long preparation and many surrounding controversies have been as follows.

The entire process of preparation and implementation of Euro as a common currency has been too long, it was lasting for more than 30 years since inception of the Werner Plan so the momentum of the new currency has been during those years to some extent lost especially as far as the citizens of the EU are concerned with a quite natural question – if it is so complex and complicated and with so many compromises what is it all good for.

In spite of such a long preparation, one of the biggest systems shortcomings of the new common currency has been the fact that due to above longevity and complexity of its inception, it has been prepared only as a special currency in the form of common banknotes and semi-common coins but without any harmonization in the fiscal and other related policies. So from the very beginning it was only a common currency in circulation but not in any of at least elementary fiscal especially taxation common policy. Due to this fact the Euro in different member states countries has very different "value" so to achieve one of its main objectives i.e. mutual comparability of prices in different countries is absolutely impossible

Another important negative aspect of the new currency has been an unclear and confusing institutional provision and responsibility for the new currency. In addition to the ECB – European Central Bank as the main regulating and control authority for Euro it is also the shared responsibility of all central banks in all Eurozone member states what in practice means that

there is a natural space for a kind of irresponsibility in taking a due care for their common currency. This inconsistency has come up and been manifested in full only since the beginning of the global financial and economic crises when all countries instead of their common approach to protect Euro started mainly to protect their own national interests through various national "initiatives" like e.g. a "scraping car bonus", etc. And it has been so since the very beginning of Euro although not so much demonstrated as after the outbreak of the crisis. Otherwise, it could not happen that the catastrophic situation with public finances in Greece has been "discovered" only after more than 10 years since introduction of the Euro as a common currency and after "permanent and systematic" monitoring of the Maastricht criteria strict observance. And this is not only the grave mistake and irresponsibility of the ECB, but also all other institutions that are responsible and/or co-responsible for controlling macroeconomic performance and in particular Maastricht criteria like it is in case of the European Commission but also the Eurostat and to some extent also the European Parliament.

The Maastricht Treaty has had at least on "paper" very demanding, strict and obligatory so-called Treaty obligations i.e. criteria to be met not only by applicant countries in order they could become eligible for becoming the Euro club and/or the Eurozone members but also by permanently by all Eurozone members. In failing to do so it has been possible to punish the particular country by adequate fines as applied towards violators of any part of the treaty or any other part of the EU legislation. But unfortunately from the very beginning the interpretation of the Maastricht criteria in practice and requirements for their permanent observation has been very controversial, full of double standards etc. What finally led to the current deep crisis of Euro not because the global crisis but mainly due its internal controversies we have just presented.

3 THE KEY PROBLEM OF EURO: "THE DOUBLE STANDARDS" IN MEETING THE MAASTRICHT CRITERIA

As mentioned in the end of the previous part, one of the main deficiencies of Euro as a new common currency of the EU has - in addition to some others as described above - been not a very systematic handling and application of the so-called Maastricht convergence criteria. As the key selection criteria on eligibility or non-eligibility of the applicant country for joining the Eurozone they were supposed to play the key role in selecting future Eurozone member countries and also in achieving a permanent stability and strength of Euro. Basically, those criteria as the Treaty duties and obligations should not allow any different interpretation and/or derogations in case of the Eurozone applicant countries.

Finally, the following specific convergence criteria (in addition to some more general criteria on macroeconomic stability, etc.) have been adopted and have become a part of the Maastricht Treaty:

- the price stability and/or inflation – not more than 1.5% above the level of three best performing EU member states
- the state budget and/or government deficit – not exceeding 3% of the GDP
- the ratio of total government debt to the GDP shall not exceed 60%
- the interest rate should not exceed by more than 2% those of three best performing countries in the above inflation for at least one year before the examination
- participation in the exchange-rate mechanism of the EMS for at least two years without any fluctuation above or bellow that mechanism.

As usual in the EU by a certain unwanted paradox, the biggest problems to meet these criteria had had those countries like Germany or France that were most demanding in their most tough and demanding formulation. In order to meet them, finally they had to resort to various (temporary) not-so-clear measures in order to pass through them and qualify themselves for becoming future Eurozone members. Although it had to be clear for them that such their "successful finish" could not on a long term basis secure their non-problem participation in the Eurozone as according to the Treaty terms, all these criteria must be met on a permanent basis otherwise, the violating country will be severally punished by a high financial penalty to be paid for the entire period of non compliance.

Finally, in spite of all various measures often being on the threshold of unfairness, eleven EU member states "met" these criteria but…

The detailed analysis of their performance in the decisive period before the adoption of Euro shows that in full these criteria were met only by 3 (three!?) out of "eligible" 11 EU member states:

- France, but it had also some big problems and needed some "innovative" solutions in revaluation of their gold reserves in order to meet the criterion on the budget deficit, but finally has not succeeded in their sustainability
- Finland
- Luxemburg.

Again by a certain paradox we may see that among those three countries meeting the Maastricht criteria in full was missing also the country considered to be a main economic engine of the EU and the proponent of the most though formulation of these criteria!

It is evident that such a composition of three only member states – moreover two of them too small for being considered even as a representative sample or prototype of any future common currency - could not represent the first group of the users of the future EU "common" currency. Hence, in interpretation of individual criteria were finally and again as usual in the EU adopted such various supporting clauses existing in the Treaty as the last resort that made them eligible even in cases that their total debt (on these criterion otherwise failed altogether 7 out of 11 "eligible" countries) exceeded the limit of 60% of the GDP by almost 100% and was hovering on the levels of 113-116 % like in case of Italy and Belgium! But could one imagine that the top representatives and thousands of well paid employees of the most important EU institutions stationed in Brussels would be paid in Belgian Franks instead in their "own" new common currency – Euro?!

Hence, finally the selection of eligible countries was a process of various politically and otherwise motivated compromises that enabled to choose those 11 "eligible" countries and later on also Greece as the 12th Eurozone first members, that "met" Maastricht criteria or as one of "saving" clauses stated "demonstrated that any exceeding above the reference level was only exceptional and temporary and the ratio remains close to the reference value …".

With the difference of more than ten years since those "temporary… exceptional…close to be…" exceptions were used, we could state that most of them remain until now almost on the same high levels as when their were approved. What has changed it was the fact that some additional problems with other criteria have just appeared. Hence for some time there was the strong general tendency to soften some criteria as they are too tough, rigid and as such "breaking" any sustainable economic development in the Eurozone member states. These tendencies have intensified especially when also France and Germany started to have serious problems with keeping their budget deficits within the required limit of 3% of the GDP. As it

was already problem of two main engines of the EU it is not surprising that finally not those two "EU engines" were punished by the severe financial penalties but… the particular criterion was… somehow softened exceptionally for them but not e.g. for new applicants for Euro from the NMS – New member states?! They have to meet original Maastricht criteria in full and on permanent basis.

In order to finish this part on some different application of the Maastricht criteria – otherwise typical approach in the EU - we dare to add only that: only Greece originally was used as an example that the EU authorities concerned were very consequent in demanding the meeting of the Maastricht criteria. Thus in this only case, they clearly demonstrated that Maastricht criteria are not a rubber ones that could be somehow adjusted to any not properly performing countries. Therefore, later on, Greece had to meet all criteria in full in order to become the 12th member of the first Euro group of states that introduced the "real" Euro on 1 January 2002, This Greece case is a difference to some other much bigger states that even until now have not managed to reduce their enormous exceeding of their total debts as it is in the case of Italy or Belgium, but… Also now, during the critical situation with Euro, mostly only Greece is singled out as an example of a country that has not been respecting its obligations towards Euro. As the only country that has been carelessly manipulating with the indicators on the Maastricht criteria and with other important macroeconomic indicators while some other countries not being much better than Greece like e.g. Italy, Spain, Portugal, but also Ireland are mostly not mentioned at all or only very marginally?! For example in case of Italy, it has in more than ten years not managed to reduce its total debt at all as now it is much higher than in time it has joined the Eurozone. Although it has been accepted to the Euro zone on the basis that it has been showing a positive development in this respect but now Italy's total debt has been over 135 per cent?! Hence, where has been that positive development is not clear even until now!

Hence there is an immediate question where have been all those already mentioned regulatory and control institutions of the EU like the ECB, EC, EURSTAT, EP that they in more than 10 years have been unable to discover violators of the Maastricht criteria not only in case of Greece but also all others?! But, unfortunately also in the EU, it is true that we all are equal, but some are just "more equal" especially if you are big and strong enough country.

These and various other criteria and "criteria" for Euro are on the other hand in some sharp contrast with the real situation in using Euro, that in addition to the EU member states has already been used instead of national currency in numerous states that are not EU members and have not met any Maastricht or other criteria as e.g. it is in case of Monaco, Andorra, San Marino, Vatican (even with a special privilege to mint its own Euro coins?!). However, also some other countries that are even not EU neighbours like Montenegro or Kosovo are also Euro "users" in Europe. All these and some other cases have of course, nothing to do with any monetary or other common policy of the EU, it is just a politics and towards a tourism business oriented tolerance, if we realise that the set of Vatican coins with the face value of 3.88 Euro is possible to buy in the souvenir shops for only not less than 400-500 Euro?! Quite a good business isn't it?! However, definitely it is unfair and discriminatory towards the EU own, especially new small members that have to meet without any derogations all Maastricht criteria and prove also its sustainability, while its own big members did not need that and the same also those external states-users of Euro like e.g. Kosovo or Montenegro. Although, in some respects, they are bigger than some of the smallest Eurozone member states like Malta, Cyprus but also Slovenia.

4 CURRENT PROBLEMS OF SOLVING EURO CRISIS ESPECIALLY THROUGH THE "QUANTITATIVE EASING" AND RESTRICTIONS COULD FINALLY LEAD EVEN TO THE DEMIS OF THE EU "COMMON" CURRENCY AND ENTIRE EUROZONE

After such a complicated and often controversial development, a careless regulatory and control mechanism from the side of the particular EU institutions led by the ECB and the EC it is no surprise that the Euro has been so negatively effected by the ongoing global economic and financial crisis.

At the beginning, on one side especially from the side of Germany there was originally no intention to help Greece to get out from the crisis under the slogan that German workers would be not working till the age of 65, in order the Greeks could retire as early as at the age of 55 with many extra benefits, perks, etc. There was forced an opinion that the EU is a market economy with the rules also for bankruptcy that should be applied not only in the case of unsuccessful companies but also of states. But soon after, when it has been finally discovered or at least publically admitted that Greece is not the only member state of the Eurozone being on the verge of bankruptcy and that most of so-called "toxic" loans to Greece were quite logically from big German and French banks of up to estimated 200 billion Euro?! Due to this fact, the general strategy of the EU towards Greece has been completely changed.

The saving Greece and thus also Euro and Eurozone has become a case of the EU solidarity and mutual help as it has been enshrined in the basic Treaties. It is pity that it is applied only mostly in case when big members feel to be threatened and not also towards small new member states regarding e.g. a free movement of their citizens, CAP – Common Agricultural Policy subsidies, etc. And so on and so forth.

Finally, after many heating debates, the EU leaders at new and new "summits" that already totally lost their exceptionality, have come to the plan to save and help to Greece and to prevent anything similar in the future by adopting to main instruments in this respect like i.e.:

- A massive loans to Greece in exchange to substantial macroeconomic reforms
- A so-called "Euro Wall" i.e. a large fund that in the future could be used immediately in similar cases to help to any Euro member states in case of similar crisis.

But again it would not be the EU if again also this plan would not be creating some controversies. The first is that the sources for both of them were sought not where the problems were made but under the false and often otherwise overlooked principle of "solidarity". Hence, again it was sought within all members of the Eurozone and of course without any kind of direct accountability for this disastrous situation of Euro. Only in such a way it could happen that e.g. for the particular "Euro Wall" originally, it was proposed that the Eurozone countries would have to contribute to that by the different per cents of their GDP.

In such way only it could happen that e.g.:

- Slovakia that is by far one of the poorest country in the Eurozone with only the GDP per capita 21,245 USD has had to contribute by one of the highest percentage of the GDP although it has been in the Eurozone only about one (!) year after the outbreak of the crisis so in this respect it could not made any harm to Euro
- Luxemburg as the richest member with the GDP per capita 78,395 USD has allocation only 2.80% although it has been a founding member of the Eurozone and thus also directly co-responsible for the ignorance of the Maastricht criteria from their very start. Although it is also true that it is only one of 2-3 countries that really and fully met the Maastricht criteria from scratch

- Even more interesting are the cases of those who on the long-term basis and from scratch have been and still been violating the Maastricht criteria without any punishment. Hence, one would be expecting that at least in this case they would be allocated by a proportionally high contribution to this fund that to the large extent has to be created mainly due to their irresponsibility but... As we may see the contributions of Greece, Italy, Belgium, Spain as the main culprits in this respect but also France and Germany as the main architects of the Euro are only between 4.44 – 5.02%. By a certain paradox these limiting figures are also regarding Belgium and Italy that since inception of Euro have been violating the total debt within the Maastricht criteria still by around 100%! And of course they GDP per capita is between 29.109 in case of Italy to 35.422 USD in case of Belgium.

What is even more interesting, it is the fact, there was taken absolutely no action in this respect towards the EU institutions that are paid by EU citizens/tax payers like the EC, EP, ECB, EUROSTAT etc. as they have directly been responsible for controlling member states regarding their meeting of Treaties obligations and the EU legislation requirements in full and without any derogations. If this were the case also regarding Euro and the Maastricht criteria there would not be needed any Euro Wall. Such and really a huge Fund of collected fines from the violating member states would have been completely full after their long years of irresponsible disrespect to the Maastricht criteria. But it could not be the case of the EU being infamous for its special interpretation of the Treaty duties, responsibilities, expected "solidarity" and generally applied "double standards", etc.

As a result, all above EU institutions have not been anyhow negatively effected by their irresponsible behaviour towards Euro and the Eurozone governance. There have been taken no personal consequences towards e.g. the European Commission although it is absolutely true that in this respect it has totally failed in its key mission i.e. protecting interests of the EU regarding its common currency what is its main Treaty obligation. The same is regarding the ECB. What consequences have been taken against its top executives that they let Euro to slide into such a deep crisis threatening the very existence of the Euro. Again by a certain paradox, the ECB has inaugurated its super modern, exclusive and of course also super expensive new Headquarters right in the time of the top Euro crisis and when Greece was on the verge of its bankruptcy and potential but quite real ejection from the Eurozone. And when its citizens have been ordered by the so-called "Troika" of the European Commission, the ECB and the IMF a new round of strict austerity measures. Although it is clear, it is no way to get the country out of its deep crisis that is nowadays even worse than it was before adopting those contradiction austerity measures! Similarly, with all responsibility we could state that the current policy of the ECB regarding the so called "quantitative easing" i.e. printing and putting into circulation within the Eurozone trillions of the new Euro money is definitely not the way how we could save the Euro of its chronical diseases. As that is mainly caused by the very low discipline of the Eurozone members regarding their Treaty obligations and also in the opportunistic policy of the key EU institutions that are not able to take a firm steps against those (currently practically all) Eurozone member states being responsible for their disrespect towards their Treaty obligations in general and the Maastricht criteria in particular!

Conclusions

In conclusion we could state that it will need many more years and mainly more systematic and consequent policies and not only monetary to make Euro what it has originally been intended i.e. a common EU and internationally highly recognized currency. The current Euro crisis as we have at least partially presented it in the previous parts of this paper has definitely not

contributed to the respect, prestige and confidence towards this very special "common" currency. It is really a question what will be its future development, "enlargement" and position in the world. It is more than clear that not only Greece, Portugal, Spain, Ireland, Italy, Cyprus, etc. are definitely not the last countries that have been so negatively effected by the current deep and still not finishing Euro crisis. There are many more EU countries as potential candidates to follow their problems and to the extent of the original PIGS (Portugal, Ireland, Greece, Spain) to current PIIGSC i.e. adding Italy and Cyprus. It will be very soon PIIGSCB and it is already often mentioned in connection with its declining ranking also F (France) and so on and so forth. And that is already almost a half of the current Euro zone. And there exist even an opinion of many experts that perhaps there will be, if not a total demise of Euro as a common currency, then at least its split into two categories, or ejection of some members, etc. It is simply just not possible to ignore own criteria for so many years and hope that somehow it will be settled down. Especially the new European Commission should be in this respect more decisive and tough towards the EU and Eurozone member states. The European Commission has to start to fulfil its main function in full and without any derogations i.e. to fulfil its Treaties obligations i.e. protecting the interests of the Union as such! On the other hand from the Eurozone member states it is also required more discipline and self-criticism and mainly responsibility. Especially its big and strongest members should be very active not only in searching ways and means how to save their biggest banks that have made bad the so-called "toxic" loans in Greece in billions and billions of Euro, but also in their ability to respect by themselves initiated various safety walls, debt limits, austerity measures, etc. Speaking about Greece we cannot omit one interesting fact. The country with its only about eleven million citizens represents just about 2% of the total populations of the EU, so it is then a real question how such a small country and now – due to the continuing "medicines" from the Troika - even smaller economics could threaten the very existence of the entire Eurozone and even the whole EU with its more than 500 million citizens?! The latest developments clearly show that although the so-called debt-break of 60% of the total debt of the Eurozone members has not yet been even implemented in full, there are already rumours that some of its initiators are already asking for postponing deadline for reaching that debt ceiling?! The biggest paradox is that it is absolutely nothing new as already in the Maastricht Treaty that introduced Euro legally yet in 1999, it has been clearly stated that the countries that want join the Eurozone have to have the total debt not more than 60% of the GDP! And that was already more than 15 years ago and as we know the basic Treaties and thus also the Maastricht one is in the conditions of the EU a case of its surrogate constitution?! Hence, why do we need to introduce now during the lethal crisis the same just under the new name of the debt brake, etc.?!

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DIFFERENCES IN PRODUCTIVITY: OWNERSHIP MATTERS

Pavel Štěpánek, Eva Zamrazilová

Abstract

Rapid and significant change in the ownership structure that the Czech economy has undergone during previous two decades is pointed out. The role of public sector has heavily contracted during the Nineties along with the process of transition. Since there is a wide consensus that the difference in efficiency between public and private companies is hardly measurable as the primary goals of these two sectors are basically different, the attention is turned out to the differences in productivity within the sector of private non financial companies. The Czech economy did not succeed to cope with the risks faced by the countries which attract high inflow of FDI, namely the misbalanced dual structures. The differences between more efficient and profitable sector of foreign-controlled companies and purely domestic laggards have been posing a challenge for domestic economic policy. Moreover, investment and wages in companies under foreign control do not depend only on their own results but also on conditions of their mothers. Having on mind high share of those companies in the Czech business sector, this poses another challenge - some brief suggestions for economic policy conclude the paper.

Keywords: foreign direct investments, dual economy, real convergence

JEL Classification: E62, G01, H63

1 PUBLIC AND PRIVATE – IN CONFLICT OR SIDE BY SIDE?

According to common perception efficiency in the private sector is expressed by profit and it can be measured by profitability. In contrast to that, public services are – or rather should be – provided in areas where standard competitive market conditions and profit making motives do not (or should not) apply, meaning that distributional outcomes of those services prevail (or should prevail) on the capacity of people to pay for them. Benefits derived from public goods cannot – and actually must not – be confined solely to those who have paid for them: indeed, pure provision of such goods by private providers could or would lead to their consumption under socially optimal levels, because the private providers take not into account the positive externalities. However, it is not simple to translate this to practical policy decisions: first, political choices matter and, second, it is not simple to provide empirical evidence as to where the boundaries between the two should lie so that the aggregate efficiency in the economy is set at optimal levels. At the same time, it would be a misconception to claim, that public provision of goods is – unlike the private one – essentially an inefficient one. Indeed, the efficiency measurement criteria significantly differ between the two. Yet, provision of public goods can and should still be exercised efficiently even in purely financial terms and, vice versa, it would be a mistake to claim that private sector activities do not contribute to our overall well being.

With all this in mind, let´s turn our attention to the specific Czech case and the time period dealt with in this document´s analysis. One has to take account the transition and post-transition specifics faced by our economy. A virtually non-existent private sector at the beginning, a rapid transition pace accompanied and supported by extensive privatizations – mostly to foreign investors, a gradual growth of a local class of private entrepreneurs and enterprises, all this happened against the background of relatively turbulent political circumstances and evolving

political choices. Such a dynamic environment provides, in our view, excellent analytical opportunities to test a number of hypotheses relative to differentials in public and private sector efficiencies, using even more granularity by focusing also on comparisons of performance between domestic versus foreign-owned private companies. Measuring the differences between different kinds of ownership in the sector of non-financial companies can lead to useful policy recommendations. The general hypothesis that we will test however is, that during economic transition, privatisation and private sector provides powerful impulses to the overall efficiency growth in the economy.

2 NON-FINANCIAL COMPANIES IN CR: CHANGES IN OWNERSHIP

In the course of previous two decades the domestic non-financial companies have undergone a fundamental restructuring. The structure of ownership in the business sector has changed a lot predominantly due to massive privatisation and strong inflow of foreign direct investments (FDI).

The Czech Republic was one of the most successful countries in terms of attracting FDI. The Czech inward FDI stock – amounting to 70 % of GDP – is not only very high in the Central and East European region, but also well above average by global comparison for a country of similar development and economic structure, that is without significant stocks of natural resources. FDI inflows grew to massive proportions after 1998 for several reasons. Firstly, foreign investors acquired controlling stakes in Czech companies, taking the advantage of low asset prices after the monetary crisis in May 1997. Secondly and more importantly, a system of FDI incentives was introduced in 1998 to provide a support for a continued process of privatisation to foreign owners as well as for a new trend of greenfield investments - see eg. Bolcha and Zemplinerová (2012). Later on, reinvestment of profits became an important source of FDI inflows. Since then FDI has become a very important factor of domestic microeconomic and macroeconomic development as high stock of FDI has resulted in high penetration of companies under foreign control into domestic economy and their growing importance for domestic output.

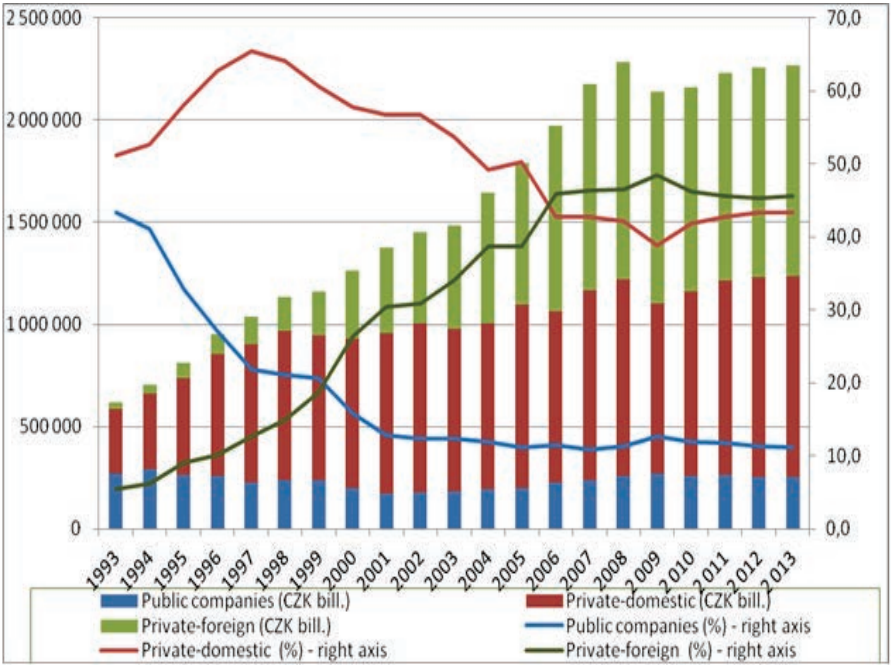
The changes in volume and structure of value added produced by Czech business sector are illustrated by Figure 1. The total volume of value added in current prices in the three sectors – public non- financial companies, private domestically owned and foreign-owned ones has quadrupled – however, the dynamics of individual sectors has differed a lot. Value added in the public sector has not changed much in the course of previous two decades oscillating around CZK 250 bill. in previous five years. Value added produced by domestic private companies tripled since 1993 and rose by 20 % since 2003. Sector of foreign companies has been reporting much higher growth indices – volume of value added was thirty times higher in 2013 than in 1993 and has doubled since 2003. These differentials in growth resulted in the changes in structure of value added in the domestic business sector.

The share of publicly owned companies declined from original 43 % in 1993 to only 12 % in 2002, which has remained relatively stable since then. On the other hand the proportion of companies under foreign control (foreign- controlled companies , FCCs) rose sharply from initial 6 % to 46 % in 2006 – since then FCCs have been creating almost half of value added in the Czech business sector. The share of domestic private companies peaked in 1997 at 65 %; along with FCCs penetration has been keeping stable around 43 % since 2006.

The share of FCCs in the Czech economy is very high also by European standards. There are not disposable data about the whole business sector, however manufacturing industry may serve as a good example. In 2011 (latest disposable data), 32 % of value added was produced by other

than domestic companies in EU-28, while the Czech figure (share of FCCs in value added produced in manufacturing) was 58 %. There were only three countries in EU outperforming CR as for this indicator. Ireland leads the imaginary ladder with 83 %, followed by Slovakia and Hungary where slightly more than 60 % of value added in manufacturing has been under control of foreign companies.

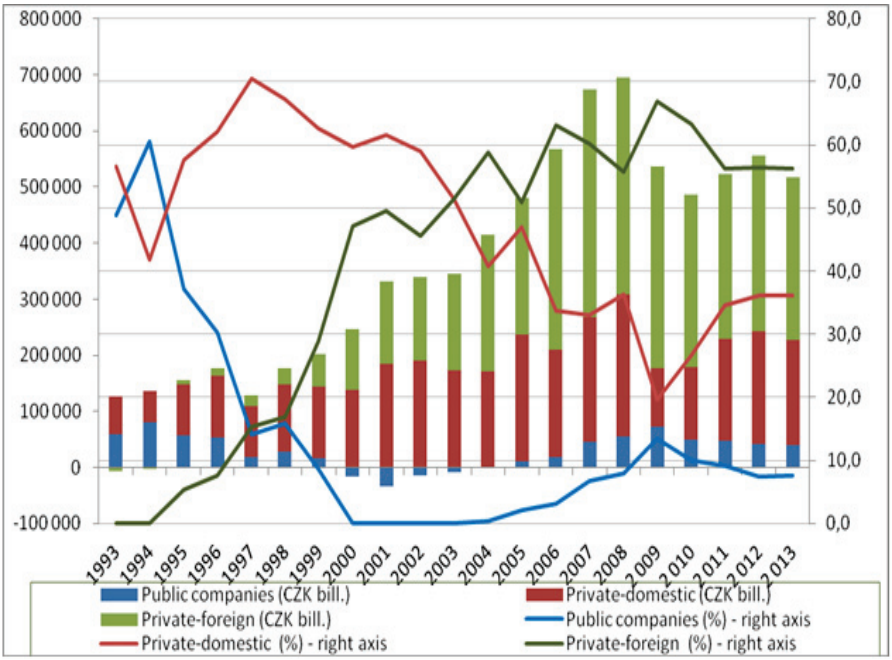
Figure 1 - Non financial companies: Structure of value added



Source: Czech Statistical Office

The developments of volumes and proportions of net profits illustrate even more important role of companies under foreign control in this respect. The beginning of new millennium seems to be the milestone – in 2000 the share of profits generated by the FCCs in domestic business sector amounted to one half. Since then this share has been oscillating around 60 %. It is noteworthy that even during the crisis in 2009 – 2010, the FCCs reported high volumes of profits (CZK 358 and 308 bill., respectively) in contrast to their domestic counterparts which were strongly hit by the crises with strong drop in profit volumes in both years.

Figure 2 - Non financial companies: Structure of net profits

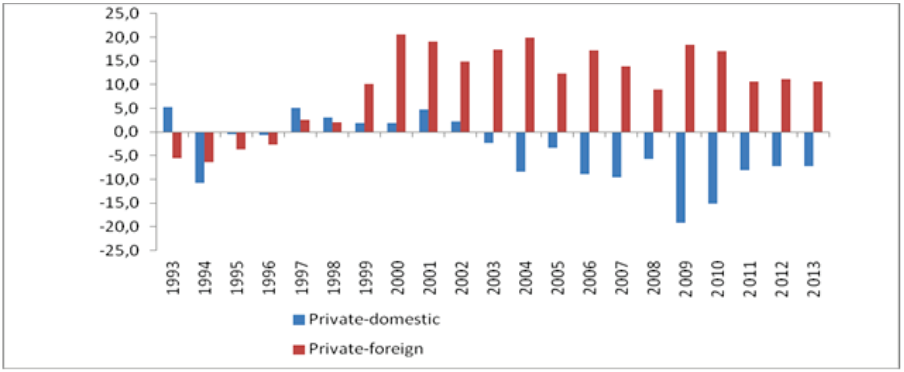


Source: Czech Statistical Office

3 NON-FINANCIAL COMPANIES IN CR: OWNERSHIP AND EFFICIENCY

Since 2000, there is quite stable a difference between the share of FCCs in value added and profit which has been amounting to 15 percentage points on average. Purely domestic companies show completely opposite picture with negative differential between share in value added and profits observable since 2003. The essential information that can be derived from these differentials is higher profitability and productivity in the sector of foreign –owned companies in comparison with domestic ones.

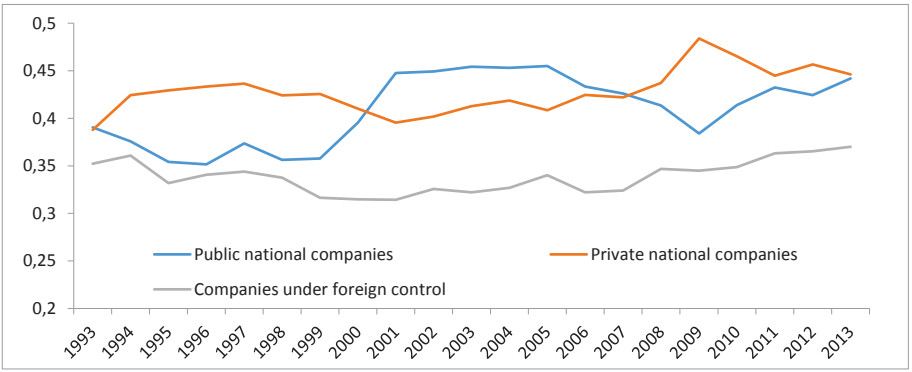
Figure 3 - The differences between the shares on value added and profits (in percentage points)



Source: Czech Statistical Office

Obviously, the Czech Republic did not succeed to avoid one of the major risks attributable to strong FDI inflow: dual economy. This means that the business sector is split into two parts: more efficient and profitable sector of foreign-controlled companies and purely domestic laggards. Foreign controlled companies have helped to boost Czech exports and industry, however, the spill-overs to domestically owned companies have not been strong enough to diminish the gap between the two sectors as for the efficiency and productivity.

Figure 4 - Unit labour costs



Source: Czech Statistical Office

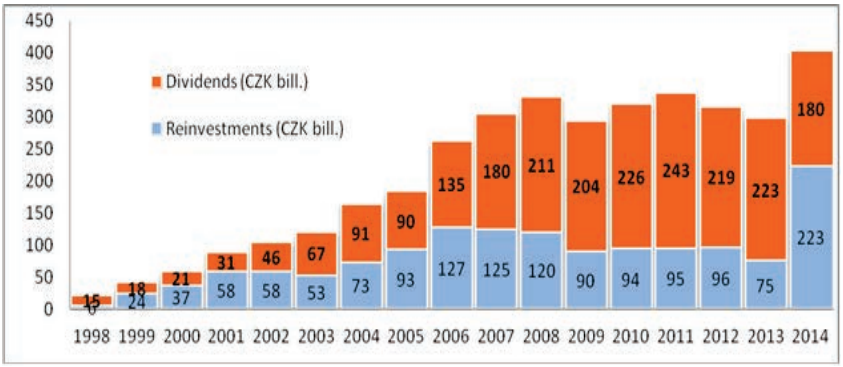
The differences in unit labour costs between domestic private and public sector are surprisingly small on average. At the same time domestic private sector unit labour costs have been systematically higher than in the sector of foreign controlled companies. The difference has been amounting to 10 percentage points on average. The usual suspect is bigger size of the companies under foreign control as medium and small enterprises are almost exclusively owned by purely national investors. However, the permanently stable size of the gap has been indicating that the positive spill-overs have been limited so far. The theory devoted to FDI ,

eg. Narula and Dunning (2000) or Narula and Driffield (2012) suggests that persisting differences in productivity between domestic and foreign private companies represent a serious obstacle to real convergence of economic development level. This is also connected with the risk of falling into medium income trap – Gorg and Greenaway (2003), (UNCTAD, 2013).

The convergence process is strongly connected with the investments. There is a wide consensus that the pre-crisis success story of the Czech economy was strongly supported by FDIs which filled the gap between domestic investment and national savings by non-debt capital. Foreign investors have brought not only capital but also modern technologies, know-how, management skills, marketing techniques and most importantly access to world markets. Therefore domestic exporters successfully adapted to most developed markets. eg. Hunya and Geishecker (2005). Investors were praised for improving market environment, increasing export efficiency and reshaping the business sector. However, there is nothing as a free lunch. Foreign investors are profit – seeking entrepreneurs and investments in the CR have paid off well. The Czech economy belongs to world top twenty in terms of return on equity from inward FDI around 13 % (UNCTAD, 2013).

It is noteworthy to remind the life- cycle of FDI (see eg. Dunning and Narulla 2002), Mandel a Tomšík (2006). Investment goes through three different stages of the so called investment development path. In the first phase, losses are most often generated. In the second phase, the efficiency of the company increases – profits generated in this stage are mostly reinvested to increase production capacity or gain further efficiency. Owners have to invest a larger share of profit until the company gets into a good and profitable shape. After that, in the third stage, an increasing share of the profit is usually paid to the stakeholders in the form of dividends.

Figure 5 - Profits of FCCs in the Czech Republic



Source: Czech Statistical Office

With the onset of the crisis, foreign controlled companies fundamentally changed their strategy for splitting profits between reinvestment and dividend payments to foreign owners. In contrast to roughly fifty-fifty split before the crisis, reinvestment in Czech companies has accounted for no more than 25 % on average in 2009 – 2013. It must be born in mind that the timing of the crisis and the life cycle of FDI might have been coincidental. On the other hand the long-term ratio between reinvestment and repatriation is only slightly below fifty-fifty according to long-term international studies (UNCTAD, 2012). Moreover the life cycle theory cannot explain for

such an abrupt change. There may be two additional factors to explain for the change in behaviour of FCCs.

First one may consist in post-crisis lack of demand which could have prevented investments in further development and/or modernization of companies. Overall cautiousness and crisis of confidence may have been supporting factors. However, the fact, that Czech exports have recovered almost immediately after the peak of the crisis and continued to grow by a solid pace since than does not fit into the picture. Secondly, the fact that the parent companies of Czech foreign controlled enterprises are almost exclusively from countries hit hard by the crisis may be a part of the answer. The profits stemming from Czech subsidiaries can help to solve the financial problems of their parents. Stable volume of profits from FDI may be required by the investors – note that the volume of repatriations have been oscillating around CZK 200 bill., each year, since 2007. We can only speculate on the long-term consequences of such policy for the companies: living on capital and a lack of technological innovation to name a few. The data for 2014 seem to raise slight optimism – with reinvestments increased to CZK 223 bill., i.e. to 55 % of profits. At the same time, the profits recorded in 2014 are record high at almost CZK 400 bill., which is an increase by almost one quarter in comparison with previous five years. Devaluation of currency has been probably a very important factor behind increasing profits of strongly export oriented FCCs. However, artificial weakening of currency is not a long-term way how to increase efficiency and productivity or how to cope with dual economy.

Conclusions

Hopefully, some policy recommendations can be drawn for policy makers from this brief analysis. First, the FDI experience indicates strong positive effects in the short and medium run; however, it is inevitably associated with long-run effects that may be counterproductive for domestic economy.

High share of companies under foreign control has led to new form of dependency which means that conditions and business strategies of multinationals will strongly affect domestic business sector. The condition of the global economy will therefore be crucial not only for exports but also for investment, wages and overall growth potential of the country.

Policy applied towards the FDI investors should bear in mind the risks of creating dual structures. The spill-overs from companies under foreign control to domestically owned businesses have not been strong enough to diminish the gap between the two sectors as for the efficiency and productivity. Very selective support of FDI inflow needs the broader strategy first - while the reality was rather the opposite in the past.

Government policies should not be very complicated or narrowly focused, instead focus on creating a stable and predictable environment that allows long run investment projects. Stable entrepreneurship environment may support the decisions to reinvest the profits in the host economy.

Last but not least is the support of domestic small and medium sized companies to diversify the sector structure to make the whole economy more resilient against external shocks. At the same time, support of linkages between domestic companies and companies under foreign control to promote positive spillovers from FCC to domestic ones is needed from the part of government.

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MODERN APPROACHES FOR ASSESSMENT OF BUSINESS SUCCESS

Lyubomir Todorov

Abstract

The study examines some feasible approaches and models for assessment of business performance as well as their advantages and disadvantages. It identifies two main approaches – the traditional accounting measures (Profitability Ratios) and the value-based approaches. A classification of value-based models is presented and some of the most popular models are explained. The main thesis of the study is that business success is a complex concept that has to be viewed from different perspectives using a variety of approaches and models.

Keywords: business success, business effectiveness, profitability, value-based management (VBM), economic value added (EVA)

JEL Classification: G30, G31, G32, M40, M41

Effectiveness and efficiency are a prerequisite for successful business. When the activity of the enterprise as a collection of various business operations and processes is highly effective, the desired return on investment and financial stability is ensured. There are two main approaches for assessment of business performance - traditional (conventional) and value-based. They assess business performance from different perspectives using different models and measures.

1 CONVENTIONAL APPROACH (PROFITABILITY RATIOS)

The traditional understanding of effective business in the private sector is mainly related to profits. This is understandable as entrepreneurs invest capital in business only if they can receive revenue that is higher than the costs incurred. That's why the traditional measures of business performance (ROA- Return on Assets, ROE – Return on Equity, ROI – Return on Investment, ROR – Return on Revenue, ROS – Return on Sales and others) are based on the accounting profit. When the effect of the business activity of a company is associated with profit, we talk about profitability. Availability of accounting profit does not always mean effective business. The accounting profit is an absolute value that cannot measure the profitability of the company and therefore business success. Such measures are profitability ratios. The accounting profit is the numerator and denominator is other business indicators, such Total Assets (TA), Equity (E), Total Revenue (TR), Sales Revenue (SR) and others. The resulting relative values measure the profitability of the company in various aspects. For example, the ratio of profits and assets (ROA) shows the annual rate of assets capitalization.

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

Put another way, ROA shows the percentage of the increase in the entire capital of the company during the year as a result from the realized net profit. The meaning of the operating profit to revenue from sales ratio, which is called Return on Sales – ROS or Operating Profit Margin – OPM, is completely different. It shows the proportion of profits as a percentage of sales

revenue. It is an indicator of efficiency, because it depends on the ratio between revenues and expenses:

$$ROS = \frac{EBIT}{\text{Sales Revenue}} = 1 - \frac{\text{Cost of Sales}}{\text{Sales Revenue}}$$

where:

EBIT – Earnings before Interest and Taxes

Hence we can express EBIT as a product of sales revenue and profitability (ROS):

$$EBIT = \text{Sales Revenue} \cdot ROS = \text{Sales Revenue} \cdot \left(1 - \frac{\text{Cost of Sales}}{\text{Sales Revenue}}\right)$$

This model is very useful for business management. Its idea is simple: the operating profit is a function of two primary factors - sales revenue and business efficiency measured by ROS. This means that profits can be increased in two ways - by increasing sales and by increasing the efficiency of the business, i.e. by changing the ratio between revenue and expenses in favor of revenues.

Depending on the specific conditions and specific activities, managers can take various actions aimed to increase sales. Here are some of them: attracting new distributors and customers (expansion of the distribution and sales network), advertising campaigns and increasing the effectiveness of advertising, updating pricing policy, seeking opportunities for entering new markets including export, finding opportunities to enhance the quality of products and services which could affect the volume of sales, registering or purchasing a brand, developing new products or services, introducing or expanding sales on credit when possible, etc. Naturally, many of these actions require additional investment, but in most cases the effect is worth it.

To increase business efficiency and, consequently, to optimize the ratio between revenues and costs, the following actions can be taken:

- ✓ Searching ways (reserves) to reduce the cost of production and services. Sometimes unexpected opportunities arise such as the supply of materials at lower prices, the improvement of the organization of the production process, technology improvement, reduction of the loss of production waste, reduction of material and energy intensity of production, etc. Some of these actions are related to additional investments in new technologies and equipment which requires additional funding. In most cases, the effect of such investments is worthwhile and they are returned quickly.
- ✓ Closing of unprofitable or low-yield industries, activities and products.

  In this respect, it is extremely useful to analyse the profitability of individual products and activities. Individual products can be ranked according to various indicators such as Sales revenue, Operating profit, Return on Sales, etc. Some of the products may prove to be highly effective, combining large revenue, operating profit and higher operating margin (return on sales). Other products may have high sales but low profitability and a small profit. Some of the products turn out to be losers. The most common reason for this is the cost that is too high. A major problem in some production companies is the incorrect calculation of the full cost (incl. administrative costs).
- ✓ Evaluating the opportunities for increase in productivity and efficiency.

One of the main problems of the business is low labor (workforce) productivity. This increases the production costs and makes products uncompetitive, especially in foreign markets. In some industries and activities, labor costs (salaries, wages, benefits, bonuses, employer portion of social security tax and medicare tax) have the highest portion in the full cost of production (services). Rising workforce productivity means fewer workers to produce more output. As a result, significant savings from wages and other labor expenditures can be realized, which will directly increase the operating profit and profitability. Moreover, increased productivity reduces the cost of production which allows reduction in selling prices. If the product has a high elasticity of demand, that would increase sales. The main factors affecting labor productivity are the technologies used, the condition of machinery and equipment, organization of the production process, workers' motivation, their qualifications and experience and working conditions.

2 VALUE-BASED MANAGEMENT AND VBM-MODELS

In the late eighties and early nineties of the XX century, not only in the US but also in Europe, the understanding of successful business began to change. The focus shifted from the accounting profit and profitability to the company value as an indicator of its success. Traditional models based on accounting profits were not enough in the new economic realities when investors were interested not only in achieving quick profits but primarily aimed at increasing the value and future prospects of the company. Then the VBM concept appeared. This is a concept of business management which has as its main objective the maximization of the value of the company and respectively the wealth of its owners (shareholders). According to this concept, the company should be seen as a mechanism for value creation and wealth for shareholders. The value of the company depends primarily on its potential to generate income in the future, i.e. on its discounted future cash flows. Value is created only when the rate of return on invested capital exceeds weighted average cost of capital. Financial liabilities decrease the value of the company. Managers should address their attention to the key factors that can increase the value of the company (Key value drivers). These factors should be wanted in relation to the above-mentioned three fundamental variables - cash flows, cost of capital and capital structure.

The reasons that led to the rise of VBM concept are the following:

- ✓ There is a need for business success to be considered and evaluated from a different angle - from the investors' point of view. The traditional measures of business performance and profitability - ROA, ROE, ROI, ROR, ROS, EPS, etc. do not take into consideration the benefits to the owners, in particular the value creation.
- ✓ Traditional measures of business performance and profitability have drawbacks (faults). They are based on the accounting profit. They are not related to cash flows and cannot measure the value creation. The accounting profit is not 100 percent cash equivalent, depends on the accounting principles and policies and can also be manipulated.
- ✓ The role and importance of the company's value has increased over the past 20 years not only in countries with developed capital markets, but in countries with emerging markets as well.

It is believed that a company functions effectively during a given period only when its value increases. This means that the fair price of its shares goes up. Determining the fair value of the company and its shares is important for the owner or shareholders, for the potential investors

and for its managers. It enables owners to measure the return on their investment. Potential investors are interested in the price which is worth paying and management teams assess the effect of their work.

2.1 Value-Based models Classification

Value-based models for assessment of business performance can be divided into two major groups:

1) Models for determining the value added or cash returns during a period (Figure 1).
2) Models for determining the value of the company at a given time (Figure 2).

Figure 1

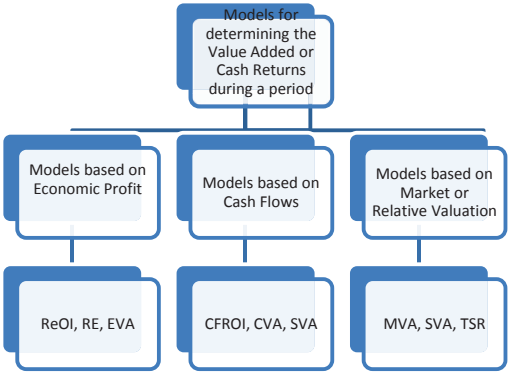

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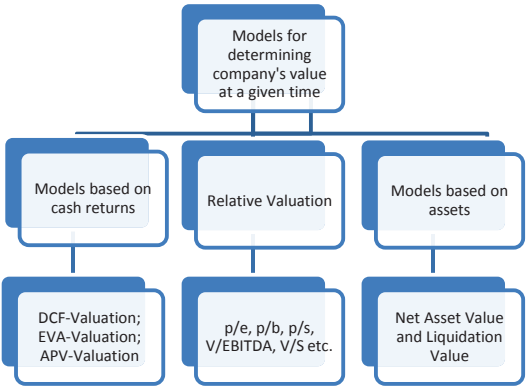
Figure 2



Source: author

Some of the most popular VBM-models are presented below

2.2 Economic Value Added - EVA

The Economic Value Added (EVA) was developed in 1990 and it was registered as a trademark of the consulting company "Stern, Stewart & Co". The model indicates whether the company has functioned effectively during the year. It measures the amount which is increased or decreased value of the company during the calendar year. Calculating EVA as IC - Invested Capital (at the end of the previous year) multiplied by the difference between the indicators ROIC - Return On Invested Capital and WACC - Weighted Average Cost of Capital.

$$EVA=\left(ROIC-WACC\right)\cdot IC \qquad ROIC=\frac{NOPAT_n}{IC_{n-1}}=\frac{NI_n+i_n\cdot\left(1-T\right)}{IBD_{n-1}+E_{n-1}}$$

where:

$NOPAT_n$ – Net Operating Profit After Taxes (for the year)

i_n – Interest expense (for the year)

T – Income tax rate

IBD_{n-1} – Interest Bearing Debt (previous year end)

E_{n-1} – Equity (previous year end)

It is believed that a company operates effectively in terms of investors only when ROIC > WACC. The fulfillment of this condition ensures the company's growth. The problem for many companies is that they have an accounting profit and therefore ROA > 0 but at the same time ROIC < WACC and, therefore, EVA < 0. WACC could be regarded as the minimum return required by investors for the particular type of business. When a company systematically has a negative EVA, this inevitably leads to a decline in stock prices and reduced market capitalization. This is because it does not meet the minimum return required by shareholders (ROIC < WACC).

2.3 Cash Flow Return on Investment – CFROI

Cash Flow Return on Investment model (CFROI) was developed and initially proposed by the consulting firm "HOLT Value Associates LP" in 2002. It was further registered as a trademark. Currently, this model is adopted and propagated by some of the biggest consulting firms like BCG – The Boston Consulting Group, D & T - Deloitte and Touche, PWC - Price Waterhouse Coopers.

CFROI indicator is seen as a modified version of the Internal Rate of Return (IRR) which is being applied to investments already made. Enterprise is viewed as a single investment. Evaluating the effectiveness of already implemented investments is carried out by making a comparison between CFROI and WACC (Weighted Average Cost of Capital). The objective of managers is to increase the spread (positive difference) between the two indicators. If CFROI > WACC, then the company works effectively and creates value for its shareholders.

As an indicator, CFROI shows the Gross Cash Flow (GCF) received from the company during a given period (calendar year) as a percentage of total investment (Gross Investment - GI).

When calculating CFROI, we usually use the average annual gross cash flow for the last few years.

$$CFROI = \frac{GCF - ED}{GI_{n-1}} \quad ; \quad GCF = NI + i \cdot (1 - T) + D;$$

$$GI_{n-1} = (TA_{n-1} - NIBL_{n-1}) + CDA_{n-1} + CAI$$

Where:

ED – Economic Depreciation

D – Depreciation and amortization (for the year)

TA_{n-1} – TotalAssets (previous year end)

$NIBL_{n-1}$ – Non-Interest Bearing Liabilities (previous year end)

CDA_{n-1} – Cumulated Depreciation on Asset (previous year end)

CAI – Current Adjustment to Inflation

Economic depreciation (ED) is perceived as an annuity (equal annual outlay), designed to cover the replacement value of the assets (cost recovery of assets) at the end of their design life. It is calculated as follows:

$$ED = \frac{(GI - SV) \cdot WACC}{(1 + WACC)^n - 1}$$

where:

SV – Salvage Value (SV should be regarded as the presumed market value of assets at the end of their design life;

n – the expected useful life of the assets in years since the initial investment. Usually, this period is different for different sectors and activities. In this respect, the largest consulting companies have their regulations.

2.4 Discounted Cash Flows Valuation Model (DCF Valuation)

It is estimated that the value of a company depends not so much on the value of the assets it holds as on the future benefits that it can bring to its owner. The value of a company (V) depends on the expected future income (cash flows) that it will receive. These cash flows have to be discounted to find their value at the present time (the time of assessment). In the most common type, DCF-Valuation model can be described as follows:

$$V = \sum_{i=1}^{n} \frac{FCF_i}{(1 + WACC)^n} + \frac{\frac{FCF_{n+1}}{WACC - g}}{(1 + WACC)^n} + PV_{NOCF}$$

where:

FCF_i – expected Free Cash Flow from operating activity for a given year of the explicit forecast period;

n – Number of years in the explicit forecast period;

FCF_{n+1} – expected free cash flow for the first year after the explicit forecast period;

g – Expected average annual growth rate of FCF after the explicit forecast period;

PV_{NOCF} – Present Value of Non-Operating Cash Flows

From the presented formula it can be seen that the value of the company (V) as a whole is formed of three components:

1) The sum of the discounted free cash flows for the explicit forecast period (PV_{FCF}):

$$PV_{FCF} = \sum_{i=1}^{n} \frac{FCF_i}{(1+WACC)^n}$$

Normally, the forecast period is between five and fifteen years.

2) The sum of the discounted free cash flows after the explicit forecast period (discounted Terminal Value – DTV):

$$DTV = \frac{\frac{FCF_{n+1}}{WACC - g}}{(1+WACC)^n}$$

The problem with the unlimited long period of operation of the business is resolved as the time horizon is divided into two stages - the explicit forecast period and after the explicit forecast period (Terminal value period). The terminal value (TV) is that part of the value of the company which is formed by the expected income for the period after the explicit forecast period. Most often, the Terminal Value is calculated with the use of the so-called Stable Growth Model:

$$TV = \frac{FCF_{n+1}}{WACC - g}$$

The period after the explicit forecast period (Terminal value period) is practically an infinitely long period. Therefore, the terminal value (TV) in this case is defined as the present value of a growing perpetual annuity. In other words, it is assumed that the company will receive this income indefinitely. Since the terminal value is determined at the end of the forecast period, it should be discounted to bring to this moment (the time of assessment). There are other models to determine the terminal value which are used in certain cases.

3) The Present Value of Non-Operating Cash Flows (PV_{NOCF}).

Sometimes it is difficult to predict the non-operational cash flows, especially for a long period of time. The third component in the formula for the value of the company (V) is often replaced by the value of all non-operating assets of the company including financial assets at the time of evaluation. Almost every company has assets that are not directly involved in its primary (operating) activity. These include investment property, rented tangible assets, securities, participations and shares in other companies and others.

The starting point at DCF-model is the determining of free cash flow from operations (FCF) for each year of the forecast period and the first year of terminal value period. FCF can be represented as follows:

$$FCF = EBIT - T + DA - \Delta OFA - \Delta W$$

where:

$EBIT$ – Earnings before Interest and Taxes;

DA – Depreciation and Amortization;

T – Corporate Tax rate

ΔOFA – investments in operating fixed assets for the year (CAPEX);

ΔW - changes in working capital;

EBIT is the difference between sales revenues and operating expenses. From the formula it is seen that the depreciation (DA) is added in addition to the gain for calculation of free cash flow. This is because they are non-cash (fictitious) expense. The investments in fixed operating assets (ΔOFA) for the year can be calculated using information from the balance sheet and the profit and loss statement as the difference between the book value of fixed assets (used in operating activities of the company) for the reporting and the previous year, plus depreciation expenses (for the year). We should take only operating fixed assets, i.e. those which are involved in the operational activities of the enterprise.

ΔW is the difference between the working capital for the year and the working capital for previous year. Working capital is the difference between current assets and current interest-free liabilities. These liabilities do not include dividends payable or other similar obligations. As can be seen, FCF does not include any cash flows related to the financing of the company, such as interest and dividends.

Free cash flow (FCF) can also be expressed in this way:

$$FCF = GCF - GI = (NOPLAT + DA) - (\Delta OFA + \Delta W)$$

where:

GCF – Gross Cash Flow

Δ GI –Gross Investment

EBIT can be determined based on the estimates of Sales revenue and the expected operating margin (Return on Sales – ROS). Revenue forecasting can be done using the following model:

$$SR = \sum_{i=1}^{m} q_i \cdot p_i$$

where:

q_i – quantity of products or services sold (by the respective type);

p_i – selling price of the product or service;

m – number of types of products (services)

The Sales Revenue model can be applied for the first few years of the forecast period when it is easier to forecast range, natural sales and selling prices of the products or services. For subsequent years, the revenues can be estimated using the expected growth rate of sales. Knowing the usual return on sales (ROS) of the company and any anticipated changes in business efficiency, EBIT can be defined as:

$$EBIT = \text{Sales Revenue} \cdot ROS$$

Usually, the annual rate of sales growth over the forecast period is determined on the basis of average annual sales growth for the past few years. The same principle applies to the return of sales and we use the average value of ROS in the last few years.

The fair price per share (p_f) we get using the following formula:

$$p_f = \frac{V - IBD}{NCSI}$$

Where:

IBD – Interest Bearing Debt (date of appraisal)

NCSI – Number of Common Stock Issued

The fair price per share is usually different from the market price. Thus we can understand whether the capital market overestimates or underestimates the company. The continuous growth of the fair value of the shares should be the priority of the management team. From the perspective of investors, this means that the company operates effectively.

Summary and conclusions

As a result of this study, analyzing the two basic approaches for assessment of business success, the following conclusions can be drawn:

1) Business success is a complex concept, which requires it to be seen from different perspectives using a variety of approaches and models. This is because different stakeholders have different perspectives (points of view). The owners (shareholders) are interested in the return on their investment. They compare it with the yield on alternative investments at a similar risk level. The investors are interested in the price worth paying for the company's shares. Management teams assess the effect of their work. It must be emphasized that both approaches have a place in the assessment of business performance and neither of them should be underestimated or ignored.

2) The two main approaches for assessing business have both advantages and disadvantages. The main advantage of conventional measures of profitability and efficiency is their easiest algorithm and the fact that they can be calculated directly from the financial statements, which is essential not only for investors and managers, but for all users of accounting information. This allows a direct comparison between different companies to be done, using the relevant financial and business indicators. In addition, traditional measures of business performance are related to current revenue and expenses which means that they can be used as a basic tool for analysis and control of sales and efficiency, total and by product type. As a failure we have to mention the fact that they are based on accounting profit. As it has already been mentioned, the accounting profit depends on accounting principles and policies, it does not have a 100-percent cash equivalent and it can be manipulated.

The main advantage of value-based approach is that it allows the creation of value and wealth for the owners to be taken into account. In other words, it allows business success to be evaluated in terms of owners and potential investors. The implementation and use of value-based models, however, involves some problems:

- ✓ Most VB-models have a complex algorithm and, therefore, a solid fundamental training of analysts is required. This explains the fact that the more complex models are used only by professional financial analysts and business appraisers.
- ✓ Some models (CFROI, CVA) require the useful economic life of assets to be determined. Sometimes it is difficult and very relative. Although analysts consider the specifics of the different sectors and activities, there is still a great deal of subjectivity.

- ✓ In determining the cost of capital (required rate of return) there is also a great deal of subjectivity. It depends on the approach and method taken and on the views of analysts. For example, when CAPM (Capital Asset Pricing Model) is used for determining the cost of equity and the company is from an emerging market country, various analysts can apply a different risk-free rate, different market risk premium, different small firm risk premium, etc. Furthermore, various analysts can make different adjustments in case the company has financial and business risk under or over than the average risk for the sector, presented by unlevered betas. All this creates problems regarding the correct pricing of equity (R_E) and consequently WACC.

3) The EVA concept, as a measure of business success is a kind of hybrid between traditional and value-based approach, because, on one hand, it is based on accounting profit, but, on the other hand, it takes into account whether a value for the owners has been created during the year in the company. In other words, the model combines the advantages of both approaches, and can be used as an analytical model not only for value creation analysis, but also with regard to the analysis and management of business efficiency. For this purpose, the following modifications in the EVA-model can be performed:

$$EVA = (ROIC - WACC) \cdot IC = NOPAT - (IC \cdot WACC)$$

$$NOPAT = NI + i \cdot (1-T) = EBIT \cdot (1-T) = (\text{Sales Revenue} \cdot ROS) \cdot (1-T)$$

$$NOPAT = \left(\left(\sum_{i=1}^{m} q_i \cdot p_i \right) \cdot \left(1 - \frac{\text{Cost of Sales}}{\text{Sales Revenue}} \right) \right) \cdot (1-T)$$

$$EVA = \left(\left(\sum_{i=1}^{m} q_i \cdot p_i \right) \cdot \left(1 - \frac{\text{Cost of Sales}}{\text{Sales Revenue}} \right) \right) \cdot (1-T) - (IC \cdot WACC)$$

where:

q_i – quantity of products or services;

p_i – selling price;

m – number of the types of products or services

The proposed model can be used for analysis and management of sales, business efficiency and value creation. It allows us to answer the following questions:

- ✓ How will the increase or decrease in sales affect operating profit and economic value added?
- ✓ How will the reduction in direct material costs (which are a component of the full cost) reflect on the cost of sales, operating profit and the economic value added?
- ✓ How will the increase in salaries and wages affect operating profit and value creation?
- ✓ How will the changes in the amount of invested capital reflect on the economic profit for the year?
- ✓ How will the changes in return on sales, i.e. business efficiency affect value creation?
- ✓ How will the changes in WACC reflect on economic profit for the year, etc.

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UNDERSTANDING THE NATURE OF THE MOTIVATIONAL DRIVER "PROFESSIONAL CHALLENGE" – A WAY TOWARDS HIGHER EFFICIENCY IN PERSONNEL SELECTION

Pavel Žiaran, Vít Janiš, Barbora Pánková

Abstract

The objective of this paper is to analyze the nature of a motivational driver "Professional challenge" through the prism of personality traits defined in a frame of a competence model. There were 177 respondents in the research of which 41% were females, aged 20–50. An online questionnaire was employed consisting of two subsets of questions exploring: (1) personality traits and (2) motivational drivers. Acquired data were processed by means of a structural equation modeling (SEM), a graphical analysis of the distance-weighted least squares method in combination with the correlation analysis. All three methods provide comparable results. Four personality traits that generate significant correlations with the motivational driver Professional challenge were identified ($p < 0.05$): ambitions, competitiveness, orientation on result and prudent thinking. Inventiveness creates weaker correlation ($p < 0.1$). Results of the research suggest interesting implications for HR management, particularly on efficient selection of personnel, in terms of choosing the right people for the right place.

Keywords: motivation, personality traits, professional challenge, SEM, HRM

JEL Classification: M12

Introduction

Understanding the nature of motivation of employees may be crucial for creating an efficient working environment. Companies focus their attention on development of a model of competencies and motivational drivers in order to increase working efficiency of employees.

The objective of the paper is an analysis of relationship between the specific motivational drivers and corresponding personality traits in the frame of a specific model of work competencies. The analysis is focused on a specific motivational driver of "Professional challenge". The driver "Quality of working environment" was used as a contrast background to demonstrate the main features of the Professional challenge motivational driver.

The reason for choosing specifically these two drivers is due to the fact that these drivers may be considered as antagonists, which will serve as an efficient platform to demonstrate differences in personality aspects related to these two distinct business drivers.

In the theoretical part of the paper, models of professional competencies and motivational drivers will be described. In the analytical part, there will be used a combination of the structural equation modeling, the correlation analysis and a graphical analysis based on three-dimensional diagrams using the distance-weighted least squares method. The conclusion will focus on the importance of understanding of motivational drivers – which personality aspects they depend on.

This paper may have practical didactic implications for HR managers, team leaders and all those who are in charge of building efficient teams and selecting the right people for the right roles.

1 THEORETICAL FRAMEWORK AND OPERATIONALISATION OF VARIABLES

1.1 Model of work competencies and motivations

A model of work competencies can be defined as a collections of knowledge, skills, abilities, experience and other characteristics that are needed for effective performance in the jobs in question (Campion, 2011). The model of competencies can be perceived as a talent-based interpretation of business needs. This perspective defines competencies as demonstrable characteristics of a person, including knowledge, skills and behaviors that enable performance (Ledford, 1995). The main purpose of the competencies is to communicate both inside and outside of the company what people must know and master in order to efficiently contribute to the business (Zingheim, Ledford, Schuster, 1996). The competence-based model of the organizational growth is important in learning organizations which wish to outperform its competition thanks to increased ability of gaining knowledge and skills of its employees. This concerns the knowledge-based organizations, where the increase in productivity is realized thanks to the new added value of the employees (Quinn et al. 1987). Table 1 displays same classic ideologies used in the competence models. The competence-based model is always a job-specific. On the other hand, Collins and Porras (1994) declare some competencies and values as universal for all visionary companies. Such as innovation, product quality and customer services, individual initiative and growth, integrity, continuous improvement and self-renewal and technical superiority.

In this research, a model generally used in variety of businesses was employed (Tab. 1). The core principles stems from the personality model defined by the Big Five personality inventory.

Table 1 – Model of competencies / personality traits

Competence	Definition
Influence	Capacity to influence the others, obtain understanding, approval and support
Social self-esteem	Understands his or her own value in the society, good predispositions for networking
Sociable	Open for communication, extroverted, enjoys social events
Cooperative	Prefers cooperative solutions
Result-oriented	Focused on solutions and activities with clear and well accomplished results
Systematic	Prefers to plan, is organized and prefers clear structures and well-defined priorities
Conscious	Respects the rules and processes
Prudent/long-term focused	Prefers to think in the long-term horizon
Inventive	Enjoys and searches for the new approaches and solutions
Autonomous	Prefers to act on his or her own initiative
Ambitious	Determined to achieve his or her goals
Competitive	Enjoys competitive environment and challenges

Source: authors

1.2 Models of motivational drivers

Work motivation can be defined as a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work-related behavior, and to determine its form, direction, intensity, and duration (Pinder, 1998). It explains how an employee is motivated to accomplish a task and how he or she will attempt to accomplish it (Meyer, Becker, Vandenberghe, 2004). Webb et al. (2015) defines following main motivational tools: leadership style, participation of employees in the decision-making process, training and development of their professional and personal potential, system of rewards including a wide range of possibilities.

This research will be focused on two motivational factors that are placed on the opposite sides of the motivational spectrum in order to demonstrate the differences in the personality aspects (Tab.2).

Table 2 – Selected competencies / personality traits used in the research

Motivational driver	Definition
Professional challenge	Prefers working positions where it is possible to develop personal competencies and skills, prefers working environment which stimulates continuous learning and thinking
Work environment	Prefers well-equipped working environment, appreciates offices which are pleasant and functional at the same time

Source: authors

2 RESARCH OBJECTIVES AND METHODOLOGY

The objective of this research is better understanding of the nature of the motivational driver Professional challenge, with possible implications for HR selection processes, with a focus on building of efficient teams and choosing the right people for the right roles, in accordance with Peter Ducker's leadership imperative of being efficient and effective.

The following research question was formulated:

- Which personality traits (or in other words, what kind of personality) determine the presence of motivational driver Professional challenge.

Three statistical methods were employed: the structural equation modeling (SEM), the correlation analysis combined with the 3-D graphical analysis of the distance-weighted least squares method.

The structural equation model (SEM) was used to analyze the relation between the motivational factors and personality traits in the frame of the competence model. SEM is a statistical method often used to develop and verify conceptual models explaining behavioral and cognitive aspects in business and management. SEM is based on two aspects. First, a combination of latent variables (constructed from the combination of observed variables), entering the measurement model. Second part is based on the structural regression model that interconnects the latent variables (Kaplan, 2007). Structural equation models are schematically portrayed using particular configurations of four geometric symbols. By convention, circles represent unobserved latent factors, rectangles represent observed variables and single-headed arrows represent the impact of one variable on another (Byrne, 2010). The advantage of the PLS Smart software used in this research lies in the fact that it supports both parametric and non-parametric variables, thanks to the mathematical method of bootstrapping (Hair 2013).

In order to create a functional SEM, the individual competencies / personality traits were grouped into a latent variable based on the cluster analysis (in the separate statistical software, using the method of Euclidean distance). The quality of distribution of the competencies into the latent variables is proved by the high mutual correlation factors with the latent variables (Fig. 1) as well as by the empirical consistency.

Table 3 – Distribution of the competencies into the latent variables based on the empirical consistency and high mutual correlation factors with the latent variable

Competences	Latent (integrating) variable
Influence, Social self-esteem	Capacity to influence
Sociable, Cooperative	Cooperativeness
Ambitious, Competitive	Competitiveness
Prudent/long-term focus, Result-oriented	Systematic/result orientation
Systematic, Conscious	Consciousness
Inventive, Autonomous	Inventiveness

Source: authors

The PLS Smart model was used for processing the data (Ringle, Wende, Will, 2005). In order to illustrate the relation between the motivational drivers and competencies, the 3-D graphical analysis of distance-weighted least squares method was used.

In the research, there were 177 participants (of which 41% were females), aged 20–50, from the north-Czech region. Tests were administered via an online survey, ensuring the data on competencies / personality traits and motivational drivers as mentioned in the previous chapters.

3 RESULTS

3.1 Analysis by means of structural equation modeling

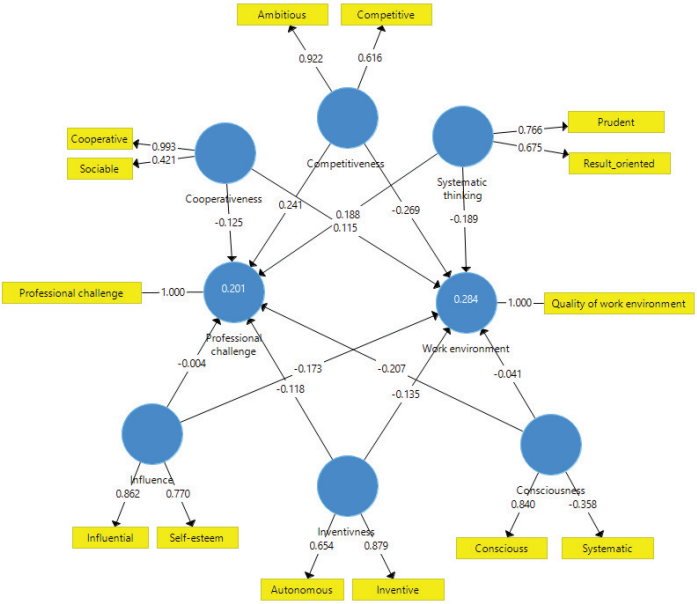
Fig. 1 displays the structural equation model and the Tab. 4 displays the statistical significance of the latent variables. Numbers in the middle of the lines represent the correlation coefficients of particular personality traits forming the latent variables. Numbers in the blue circles represent the coefficient of determination R square, which is also reasonably high, owing to the nature of analyzed variables.

Regarding the correlation coefficients, the following correlations were identified: (1) Correlation coefficients between each individual personality trait and the corresponding latent variable are reasonably high, each of them exceeding the value of 0.4. However, most of the correlation coefficients attain the value of 0.8 and more. These values confirm the quality of construction of the latent variables, which are in accordance with the empirical expectations. (2) The values of correlation coefficients between the latent variables attain a wide range of values. That shows which personality traits correspond to the given motivational driver. In the Tab. 4 can be seen also T-statistics and p-values of the given latent variables.

Interestingly, correlation coefficients of the motivational driver “Quality of working environment” are very similar in its absolute value, but with a different polarity (Tab. 4). Hence, this is the reason why the motivational driver of “Work environment” was used as a contrast agent for better illustration of the aspect of the Professional challenge motivational driver.

It is also important to mention that the indicator Average value extracted (AVE) exceeded the value of 0.5 for all the latent variables, which is considered as an important prerequisite of validity of the model (Hair, 2013).

Figure 1 – Structural equation model (SEM) – relation between motivational drivers Professional challenge and Quality of work environment and competencies / personality traits



Source: authors

Tab. 4 displays which latent variables explain the motivational driver “Professional challenge”. Personality traits that explain the best Professional challenge drivers are the latent variables “competitiveness” (consisting of personality traits ambitious and competitive) and “systematic thinking” (consisting of prudent and result oriented). These findings provide answer to the research question, which personality traits or what kind of personality should be expected when searching for a person predominantly motivated by the Professional challenge.

Table 4 – SEM model - correlation coefficients for the latent variables

	Correlation coefficients	T Statistics	P Values
Competitiveness -> Work environment*	**-0.269**	**2.849**	**0.005**
Competitiveness -> Professional challenge*	**0.241**	**2.756**	**0.006**
Systematic thinking -> Work environment*	**-0.189**	**2.389**	**0.018**
Systematic thinking -> Professional challenge*	**0.188**	**2.320**	**0.021**

Influence -> Work environment*	**-0.173**	**2.202**	**0.028**
Influence -> Professional challenge	-0.004	0.046	0.963
Cooperativeness -> Work environment	0.115	1.558	0.120
Cooperativeness -> Professional challenge	-0.125	1.335	0.183
Inventiveness -> Work environment	-0.135	1.461	0.145
Inventiveness -> Professional challenge	-0.118	1.248	0.213
Consciousness -> Professional challenge	-0.207	1.162	0.246
Consciousness -> Work environment	-0.041	0.455	0.650

Source: authors

*statistically significant latent variables are marked with the star and the bold style

This chapter can be concluded by stating that the SEM serves as an efficient tool to understand the structure and nature of a motivational driver as regards the specific personality traits, and, as a matter of fact, it does provide a good answer to the research question 1, what type of a personality is predominantly motivated by the Professional challenge.

3.2 Graphical analysis by the distance-weighted least squares method

Specific interconnections between the competencies – personality traits and motivational drivers – were analyzed by means of the 3-D graphical analysis and the correlation analysis. Five personality traits were identified in this research. They generate strong positive correlations with the Professional challenge motivational driver (ambitious, competitive, result oriented, prudent and inventive) (Tab. 5, Fig. 2).

Interestingly, these traits create strong negative correlations with the motivational driver "Quality of work environment", which confirms our intention to use this motivational driver as a contrast agent for better illustration of the former driver.

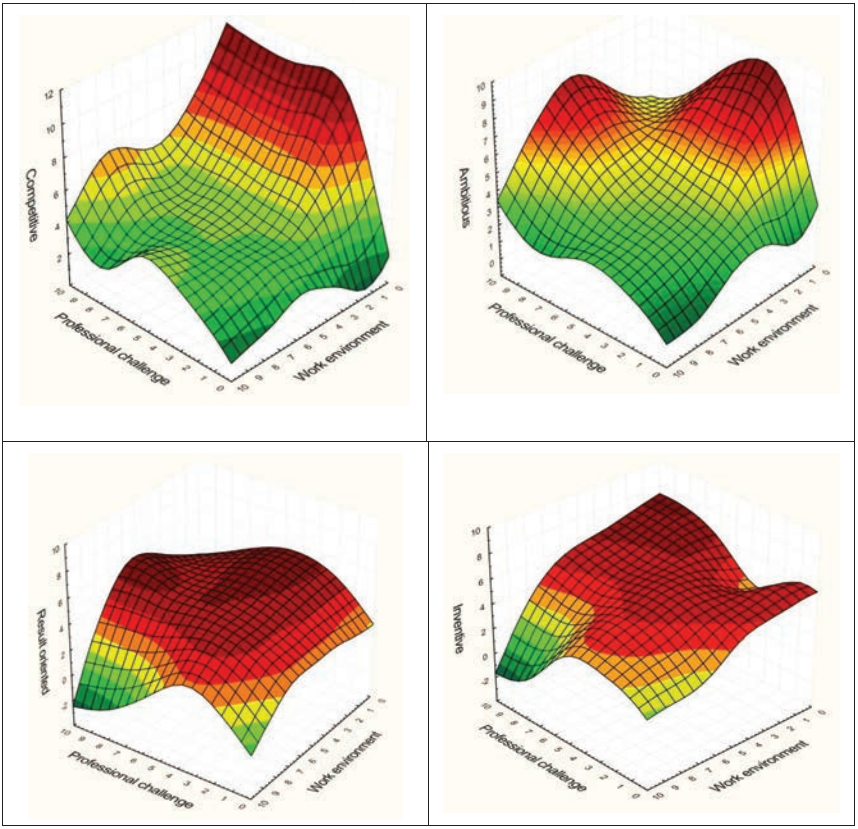
Table 5 – Correlation matrix of the selected variables which are statistically significant and create positive correlations: ambitious, competitive, result-oriented and prudent ($p < 0.05$) and inventiveness ($p < 0.10$)

	Professional challenge	**Quality of working environment**
Ambitious	,3462	-,3963
	p=,000	p=,000
Competitive	,1507	-,2122
	p=,046	p=,005
Result oriented	,2116	-,2096
	p=,005	p=,005
Prudent	,1604	-,2995
	p=,034	p=,000
Inventive	,1249	-,2883
	p=,099**	p=,000

Source: authors

Fig. 2 illustrates the nature of the motivational driver of the Professional challenge. With an increasing Professional challenge, the intensity of personality traits competitiveness and ambitions grows. A moderate growth is manifested by the personality traits result orientation, prudence and inventiveness.

Figure 2 – Personality traits highly correlate with the motivational drivers – competitive, ambitious, self-esteem and influence



Source: authors

These finding may have interesting implications for HR management and especially for the efficient selection process. If a working position requires a significant Professional challenge, it is important to search for an ambitious person that enjoys competitive tasks. It is worth noting that to a certain extent, the motivational driver Professional challenge is related to a certain level of capacity to think innovatively and to keep focus on results. Fig. 2, again, clearly illustrates the distinct and, so to say, opposite natures of the motivational drivers of Professional challenge and Work environment. That, again, may be considered as an answer to the research question.

There is a need for a methodological note: inventiveness does not create a significant correlation in the frame of the SEM model unlike when using correlation and the least squares method. The most probable reason of this discrepancy lies in the computational methods used within both tools. Certain role might also play the fact that inventiveness and autonomy were included within one latent variable in the SEM model.

Conclusion

The conducted research has revealed which personality traits determine the motivational driver "Professional challenge". The findings were confirmed by means of two independent methods, which support the validity of the research. Motivational driver "Professional challenge" is determined by the four main traits: ambitions, competitiveness, prudent and result oriented thinking, with a certain level of capacity to generate innovative ideas.

This research may have interesting implication for HR management, especially in the frame of the selection of efficient and performing personnel. Another possible implication is didactical and academic, helping to understand the nature of motivational drivers.

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