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Faculty of Economics

Proceedings of the 10th International Conference

Liberec Economic Forum 2011



19th – 20th September 2011
Liberec, Czech Republic, EU



TECHNICKÁ UNIVERZITA V LIBERCI
Ekonomická fakulta



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**MINISTRY
OF REGIONAL
DEVELOPMENT CZ**

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Student Expectations of the Financial Returns to Higher Education in the Czech Republic and England¹

Abstract

The economic development of a nation or a region depends to a considerable extent on a highly educated and skilled workforce. This includes an appropriate supply of University graduates. The motivations of students to enter higher education are potentially many and various. However financial factors are known to be of considerable importance, particularly in subjects such as economics and business administration. It would be useful therefore to have an estimation of students' expectations of the financial returns to higher education. The results which are reported on in this paper provide data concerning the expectations of first year students in three Czech faculties of economics and one English Business School. First year students were surveyed because they had recently entered higher education. The findings show that students in both countries expect higher education to be a profitable investment. Expected rates of return are found to vary by gender as well as by country and place of study. In the case of England, it is concluded that the current level of tuition fees does not act as a disincentive for students to enter higher education.

Key Words

earnings expectations, human capital, gender, higher education, policy making

JEL Classification: I23, J24

Introduction

During the last fifteen years, there has been a growth of interest in the returns to higher education by policy makers. This has been due to increasing difficulty in funding higher education as student numbers have expanded. The fact that there are often substantial private returns to higher education has been used as a reason to shift the burden of funding higher education away from the tax payer and to the student – or sometimes to the graduate [3].

In countries where there is a consensus for a welfare state financed by high levels of general taxation (e.g. in Scandinavia), university studies have tended to remain free at the point of entry. This has also been the case in countries in which the age participation

¹ A further version of this article can be found in [1].

rate has remained below the OECD average (e.g. in the former COMECON countries of Central/Eastern Europe). In such countries, the costs associated with university funding have remained “affordable” for the taxpayer. In the Czech Republic for instance, public universities have remained free at the point of entry with student numbers capped and excess demand has been mopped up by encouraging the growth of a vigorous private sector. By contrast in the UK the private sector remains very small and the “marketisation” of higher education has taken place in the public universities via the introduction of tuition fees, which cover part of the costs of tuition.

This study reports on data on students’ expectations concerning financial returns to their higher education studies in three Czech faculties of economics and one English business school. The study is unusual in focusing on the question of expectations as most studies in this area have attempted to measure *actual* returns. Only a few studies have examined the comparability of earnings expectations to reality within the educational context.

1. Measuring returns to higher education

In this study, when estimating the private rate of return, the costs will consist of foregone earnings and tuition fees but will not include living expenses. Living expenses may be covered by parents if they can afford them or by government in terms of maintenance grants for those from disadvantaged backgrounds and will be incurred anyway if a decision is made not to enter higher education. The following short cut formula can be used for calculating rates of return to education.

$$r = \frac{E_i - E_j}{S \cdot E_i} \quad (1)$$

where: E is average earnings of an individual who has a j level and i level of education respectively

S is years of schooling

r is the rate of return to education

Since the basic short-cut method formula above assumes foregone earnings as a cost of education it is designed to measure rates of return to higher education in countries where the higher education is provided to students without charge, such as in the case of public universities in the Czech Republic. In England however tuition fees have been in place since 1998. Therefore some adjustments must be made in order to compute the rate of return in England as accurately as possible.

Tuition fees for full time undergraduate students were first introduced in England and Wales in 1998 (the so called ‘old’ system) and were set at £1,000 per student per annum for all Bachelor degree courses and were subject to an inflationary adjustment (by 2005/06 the fee had risen to £1,175). The tuition fee was contingent on family income, with the possibility of a full or partial waiver for students from lower socio-economic backgrounds.

Since the fees had to be paid upfront they are added to the formula in the denominator as they were a cost to students as much as their foregone earnings during their university studies. Therefore the formula used to calculate the rates of return to higher education in England between 1998/1999 and 2005/2006 is as follows:

$$r = \frac{E_u - E_s}{S \cdot (E_s + C_u)} \quad (2)$$

where: E_u are earnings of an individual with a university education
 E_s are earnings of an individual with a secondary education
 S are years of higher education
 r is the private rate of return to education
 C_u are the costs of university education

In January 2005 the UK parliament voted to permit universities in England and Northern Ireland to charge a fee of up to £3,000¹ per annum for all Bachelor programmes (the so called 'new' system). Unlike the 'old' tuition fee system, the 'new' fee regime, which came into force in England and Northern Ireland in September 2006, does not require the payment of an upfront fee – rather it asks students to take out a loan to cover the cost of the fee. The loan is then repayable after graduation and instalments are collected alongside income tax and national insurance and are automatically deducted from wages. In other words this is similar to a graduate tax, such as that which was introduced in Australia in 1989 [2].

Given that the vast majority of students choose not to pay the tuition fees upfront and that the loan debt will be collected from graduates in instalments, at 9% of the threshold above earnings of £15,000 in the UK, for up to 25 years, the tuition fees should not count as costs. Rather they should be seen as a reduction of the benefits from an investment in higher education. Therefore the formula which will be used to calculate rates of return in England after 2006/2007 inclusive, is as follows:

$$r = \frac{E_u - [0.09 \cdot (E_u - 15.000)] - E_s}{S \cdot E_s} \quad (3)$$

where: E_u are earnings of an individual with a university education
 E_s are earnings of an individual with a secondary education
 S are years of higher education
 r is the private rate of return to education
15,000 is the threshold of £15,000
0.09 is the instalment of 9%

¹ The fees increase yearly by no more than the rate of inflation and were set at a maximum of £3,290 per annum in 2010/2011. Almost all universities have chosen to charge the maximum fee for all Bachelor study programmes.

2. Survey of Expected Earnings at Czech and English Universities

2.1 Background

The institutions surveyed in this study, in the Czech Republic and England, are equivalent in status and form, although they are not identical in terms of curriculum. Czech students have a greater amount of economics, accounting, mathematics and information systems in their curriculum than their British counterparts while the latter tend to study a larger amount of the newer and “softer” management subjects.

In the Czech Republic, faculties of economics correspond to UK business schools. Despite the Bologna process, which introduced the system of three years’ study towards a Bachelor’s degree and two years’ study towards a Master’s degree in the Czech Republic, most Czech students “graduate” with a Master award after five years’ study. This is because of the fact that the Bachelor’s degree is not perceived to be a full-value university education. In England, most students who enter higher education aged 18/19 “graduate” with a Bachelor award after three years’ study, at least initially. Many English students return to higher education at a later date to pursue a Master’s degree by part time study.

2.2 Methodology

Between the academic years 2004/2005 and 2008/2009 a survey of earnings expectations was undertaken of first year students at three Czech faculties of economics: at the Technical University of Liberec, the University of Economics, Prague and the University of Pardubice; and at the University of Huddersfield Business School (UK)¹. Students completed the questionnaire in Czech (Prague, Pardubice and Liberec) or English (Huddersfield) and altogether there were 3,139 respondents.

A large lecture for first year students, with a high attendance rate, was identified and all those who were present were asked to complete the questionnaire. Those who were from foreign countries were excluded from the sample since their perceptions of earnings in the country of study are likely to be different. First year students were surveyed, during their first term, because their decision to enter higher education had been a recent one.

¹ The survey was undertaken with the financial support of GA ČR 402/04/0039 from the Grants Agency of the Ministry of Education of the Czech Republic and of the University of Huddersfield. Preliminary findings were reported in [7].

The questionnaire began with general questions relating to gender and age. In the second part the students were asked about their expectations of income (in current prices i.e. without taking into account price inflation) in their first job immediately after graduation and then after 10 years of work experience. They were also asked about the level of earnings they would have expected if they had not entered higher education, both immediately after leaving school and after 10 years of employment. In all four cases, the expectations were obtained at three levels: minimum, most likely and maximum. For simplicity only the most likely earnings estimates are used for calculations in this paper.

3. Sample

The location and gender structure of the sample is presented in Table 1. Since the gender distribution of the sample is not even, gender differences in expectations could bias the results. Given that existing literature has shown that females tend to expect lower wages but higher returns to university education than males, the expected private rates of return in this paper are calculated for men and women separately.

Tab. 1: Sample structure

Year	Gender	Huddersfield	%	Liberec	%	Pardubice	%	Prague	%
2004/2005	Male	103	60	41	35	36	17	84	41
	Female	68	40	75	65	175	83	121	59
	Total	171	100	116	100	211	100	208	100
2005/2006	Male	46	69	29	27	21	18	160	39
	Female	21	31	80	73	94	82	252	61
	Total	67	100	109	100	115	100	412	100
2006/2007	Male	33	46	59	29	41	29	125	37
	Female	38	54	144	71	99	71	213	63
	Total	71	100	203	100	140	100	338	100
2007/2008	Male	105	60	20	32	13	14	34	29
	Female	69	40	43	68	82	86	85	71
	Total	174	100	63	100	95	100	119	100
2008/2009	Male	124	57	52	29	16	13	98	43
	Female	94	43	127	71	110	87	128	57
	Total	218	100	179	100	126	100	226	100

Source: own calculation

The location and gender structure of the sample is presented in the table.

4. Results

The findings indicate that there is a significant expected pay off to higher education. During all surveyed years, the vast majority of students expected higher returns with 10 years of work experience than as fresh graduates. This suggests that returns to higher education are expected to grow faster with experience and thus that graduates expect to benefit from their higher education studies more in the medium term than immediately after graduation. Table 2 provides the average expected rates of return (from all surveyed years) at all surveyed institutions and for both scenarios i.e. as graduates and with 10 years of labour market experience. The results show that the expected returns differ by gender and by country.

Males from the surveyed Czech universities expect very similar rates of return as graduates¹ but rates of return differ later in their working lives. Males from Prague, Liberec and Pardubice expect as graduates rates of return of 11.80%, 12.33% and 11.50%, respectively. However, 10 years after graduation the returns are expected to double in Prague, grow by 50% in Liberec and decline slightly in Pardubice. Rates of return for Czech females differ by approximately 1 percentage point, with females from Prague expecting the highest and females from Pardubice expecting the lowest returns to their higher education². 10 years after graduation the returns of Czech females are expected to increase but not as significantly as those of Czech males; the increase is around 3 percentage points.

Tab. 2: Average expected rates of return (%)

	Prague		Liberec		Pardubice		Huddersfield	
	Male	Female	Male	Female	Male	Female	Male	Female
UNI	11.80	12.35	12.33	11.32	11.50	9.91	14.27	16.30
UNI 10	23.91	16.7	18.4	14.80	11.38	12.68	21.99	21.53

Source: own calculation

Both genders in Huddersfield expect on average higher returns than their counterparts in the Czech Republic. However, males from Prague tend to expect higher returns than males from Huddersfield in the medium term. The immediate expected returns for males in Prague, Liberec and Pardubice are lower than those for males in Huddersfield. Within the Czech sample, males in Prague expect the greatest increase (almost double) in returns in the medium term when compared to returns immediately after graduation. In addition, males in Liberec expect a greater increase (ca 50%) than their peers in Pardubice, whose expected returns tend to actually decrease with experience.

Females from Huddersfield – like their male counterparts - expect the highest returns immediately and in the medium term when compared to females from Prague, Liberec and Pardubice. Within the Czech sample, females from Prague expect the highest and

¹ No statistical difference at 5% level of significance.

² Statistically significant difference at 5% level of significance.

females from Pardubice expect the lowest returns at both points in time. The increase in returns is also greatest for females in Prague and lowest for females in Pardubice. These differences between universities may be caused by the labour market conditions of the regions in which the universities are located. For example Prague, as the capital city of the Czech Republic, generally offers more job opportunities and opportunities for professional growth than any other region in the country.

It is noteworthy that on average in the Czech Republic the immediate expected returns to higher education tend to be similar for men and women and tend to differ in the medium term, with men expecting a greater increase in returns. However, in Huddersfield a gender gap seems to appear¹ at the point of graduation, with women expecting greater returns, but diminishes in the medium term.

One might expect a priori the expected returns to higher education in England to be much larger (for both genders) than those in the Czech Republic given the differences in time spent in higher education i.e. in England university studies typically last three years whereas in the Czech Republic they last five years. However, this advantage in time investment and thus lower foregone earnings is reduced by the direct costs of the investment – the tuition fees – in higher education in England. Nevertheless, the results from Huddersfield show clearly that the perceived returns to higher education are much larger than those expected by Czech students, in spite of Czech public university education being free of charge.

In addition, the age participation rate in the UK is almost double that of the Czech Republic [9]. This would suggest that the demand for university graduates will stagnate in the UK when compared to the Czech Republic and consequently the wage premium of graduates will stagnate too; thereby leading to lower returns to higher education. It seems likely that students see the main benefit of higher education to be an increased chance of being employed as a means of being able to compete for any job [4], [6], [7].

Since the demand for higher education in England has not declined since 2006/2007 [5], the current level of tuition fees can be considered as not high enough to act as a disincentive for potential students to enter higher education. However, our results suggest that students expect a higher wage premium to compensate for the perceived costs. Thus, there will be a level of tuition fees (even deferred fees), which will eventually act as a disincentive to enter higher education since students will not expect indefinitely that their future employers will be able to offer them a wage premium high enough to compensate for the perceived costs of higher education. Once the perceived costs outweigh the perceived benefits, regardless of whether or not there are actual returns to higher education, the demand for higher education might decline.

¹ Although not statistically significant at 5% level of significance

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The Financing of Czech Spas with Health Insurance Funds

Abstract

Health insurance companies are very reluctant to release funds for spa care for their insured. It is therefore understandable in the current situation, where there is a lack of funds for acute care and physicians are limited in prescription drugs, that the spa seems an unnecessary luxury. The impact of restrictive measures in the Czech health insurance system on the economic situation of individual spas is obvious. It manifests itself mainly in the amount of the contribution that health insurance companies provide for each patient. The allowance for spa treatment each year is subject to a conciliation procedure between the insurers and the Union of Medical Spas for the Czech Republic, which represents individual spa organizations. Another consequence is the decreasing number of patients who have health insurance companies that are willing to pay for comprehensive or partial coverage of spa stays. Czech spas are a part of the system of medical care in the Czech Republic, but more than other types of health care, they are dependent on direct revenues from patients. This is one of the positive effects of large-scale privatization, which the Czech spa industry underwent in the last decade of the 20th century. Most spa organizations are privately owned, and only a small part is owned and operated by state or municipal spas. Individual spa organizations must be able to deal with this issue. The solution is to increase the number of domestic and foreign self-paying patients, reduce the average length of stay and in some cases, make at least a partial shift from traditional spa treatment to newer, non-medical forms of health tourism.

Key Words

comprehensive spa treatment, health insurance, health tourism, medical spa, self-payer

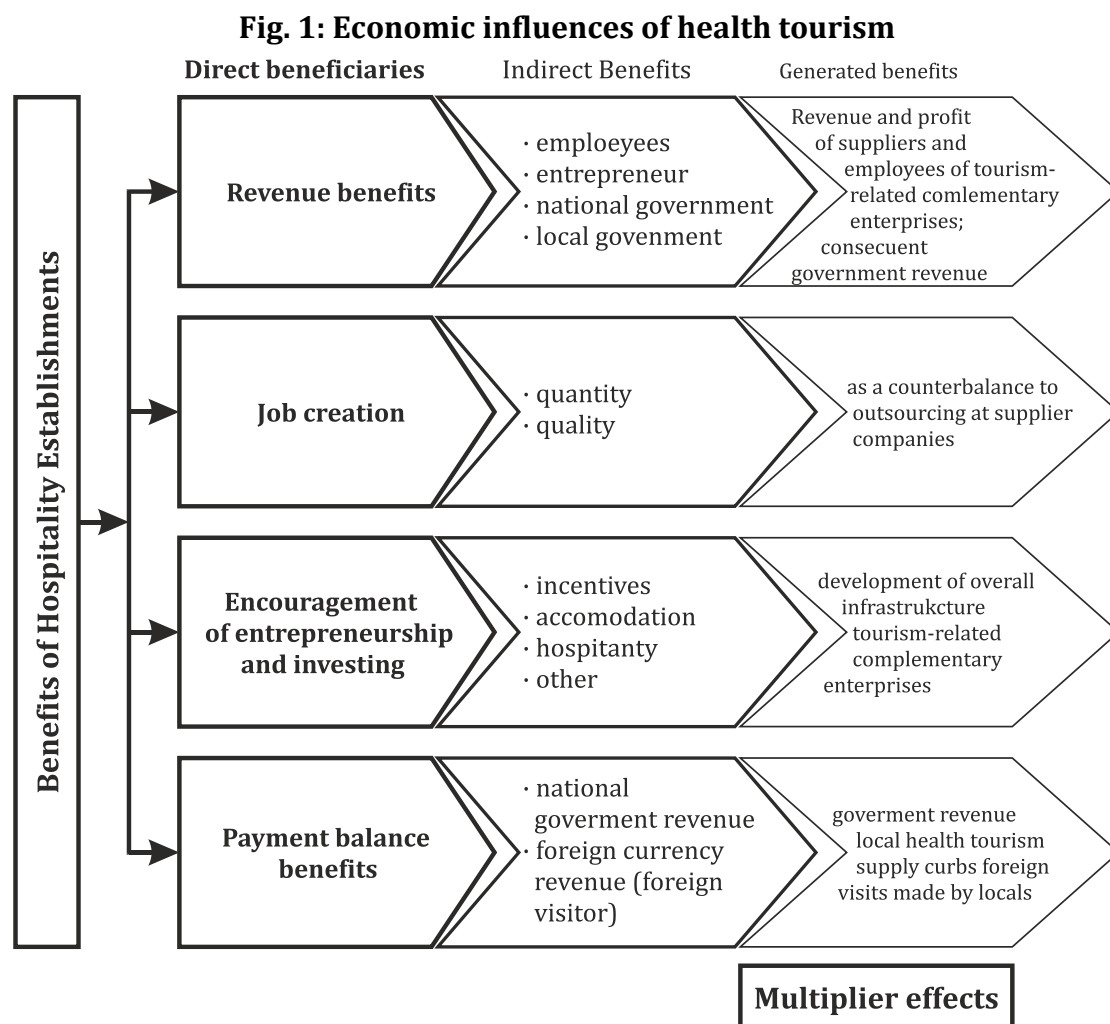
JEL Classification: H51, I18, L83

Introduction

Czech spas underwent extensive privatization after 1989. Despite this, spas are still essentially dependent on societal resources that are provided in the form of comprehensive and partial payments for spa care. Spas in the Czech Republic are still an integral part of the Czech health system, which is the subject of legislation in a number of laws including Law No. 20/1966 Coll. Health Care. It also means that it is closely associated with most of the problems that plague Czech healthcare. In addition, within the medical profession, there is a widespread perception that spas are a relic of the 19th century and are an unnecessary luxury. This position is based on the notion that the Czech spa industry has high financial demands and low therapeutic effectiveness.

The importance of spas in the Czech Republic lies in their historical context. A peculiar trait is that they are both part of the health care system in the Czech Republic and also a significant part of the tourism industry. Spas have been traditionally put in health-socio-economic categories [Nejdl, p. 8]. The benefits of spas are viewed mainly in the context of their health and economic sense, though social and environmental benefits are also sometimes mentioned.

A number of authors have concerned themselves with the economic benefits of health tourism. One of them is C. Molnar, who distinguishes between direct, indirect and induced (generated) benefits of spas. Economic enterprises, municipalities (local government) and the state are also considered recipients of the benefits of spas.



Source: Molnár, 2010, p. 107

The main problem here is not so much a theoretical definition of these benefits as their monitoring and quantification. Some effects are fairly simple and statistically well-covered (job creation), while other cases are more complicated. By far the most difficult is the measurement of indirect and induced economic benefits of spas. This problem has been sidelined for a long time in the Czech Republic. It is related, among other things, to the closure of the Balneology Research Institute in the early 90's of the last century,

when there was an interruption to the continuity of economic research, and a loss of the methodological tools used to measure the economic effects of spas.

The approach of the current departmental authorities for spas, including the Ministry of Health, is, from an economic point of view, very one-sided. As a result only the expenditure side is reflected, which is associated with the operation of the spas. Nejd K. writes [p. 10]: "From the departmental perspective, only costs associated with spas are known. Overall benefits of the spa industry are currently not monitored anywhere either randomly or systematically, nor is the Ministry of Health very interested in them, and therefore they are not taken into account when assessing the effectiveness of spas." This approach is due to many factors. It is primarily caused by the constant pressure from a lack of financial resources and the need to allocate these resources in the most efficient way. The second reason is the systemic changes that occur in health care and change the parameters and rules for funding.

1. Spas as part of Czech healthcare

Investigation of the Czech spa industry in the last decade has produced numerous questions, and among the most important are those that relate to the economic operations of spas. How is the Czech spa industry, then, from an economic point of view? Do public sources of funding, from health insurance, still play a significant role? These are just some of the questions we will address in this article.

Public health care is part of each government's program and one of the key points of our society. Health care is dealt with by both public and private medical facilities. The providers of these facilities are the Ministry of Health of the Czech Republic, regions operating within their independent jurisdictions, municipalities operating within their independent jurisdictions, legal entities and individuals.

The manner in which funds are provided to ensure health care is based primarily on the existence of public health insurance. Expenditure on health is an important part of the state budget. The main trends in spending on Czech health care are shown in Table 1

Tab. 1: Expenditures and trends in health care

Expenditure items	2005	2006	2007	2008	2009
Public expenditure	191,356	197,027	206,565	219,119	239,683
Expenditure by the department and local authorities	21,263	22,828	22,851	18,527	21,055
From this, expenditure from health insurance	170,093	174,200	183,713	200,592	218,628
Private expenditure	27,418	29,783	35,370	43,526	46,928
Total expenditure	218,774	226,810	241,935	262,645	286,611
Share of GDP in %	7.3	7.1	6.8	7.2	7.9

Source: own, using data from the Czech Institute for Healthcare Information and Statistics

In absolute terms, total expenditure in this period rose by 67,837 million CZK (31.00%), public spending by 48,327 million CZK (25.91%). Expenditure of health insurance rose in this period by 48,535 million CZK (28.53%), and private spending by about 19,510 million CZK (71.15%) which was the fastest growing rate. The share of health expenditure in the GDP hovered at around 7% in this period, and in 2009 reached a level of 7.9%. Following this, it is important to note the cost structure of the health care insurance segment and its development in the period 2004-2009. This information is shown in Table 2.

Tab. 2: Health insurance costs for health care according to segment in 2004-2009

Segment of health care	2004	2005	2006	2007	2008	2009
Total outpatient care	36,228	37,860	39,598	43,431	48,164	54,379
Total institutional care	72,238	76,542	83,688	92,378	99,184	107,992
From this, spa treatment	3,335	3,142	2,783	2,984	2,862	3,182
Cost of health care, total	156,258	163,930	167,532	181,358	193,669	213,354

Source: own, based on data from the Czech Institute for Healthcare Information and Statistics

The trends arising from Table 2 are clear. The decrease in costs for spas was both absolute and relative. The total expenditure of health insurance during this period increased by 57,095 million CZK (50.1%), while the cost of spa treatment in the same period fell by 153 million CZK (- 4.58%). Yet in 2008 these costs, compared to the costs in 2004, were even less, about 14.18%. The share of costs on health care in the period 2004-2009 decreased from 2.13% to 1.49%.

Is there therefore some way to demonstrate the effect of this basically constant (in absolute size) and relatively lower income received from health insurance companies on the profit for treatment spas in the given period? If we look at the following Fig. 2, we get a somewhat surprising result.

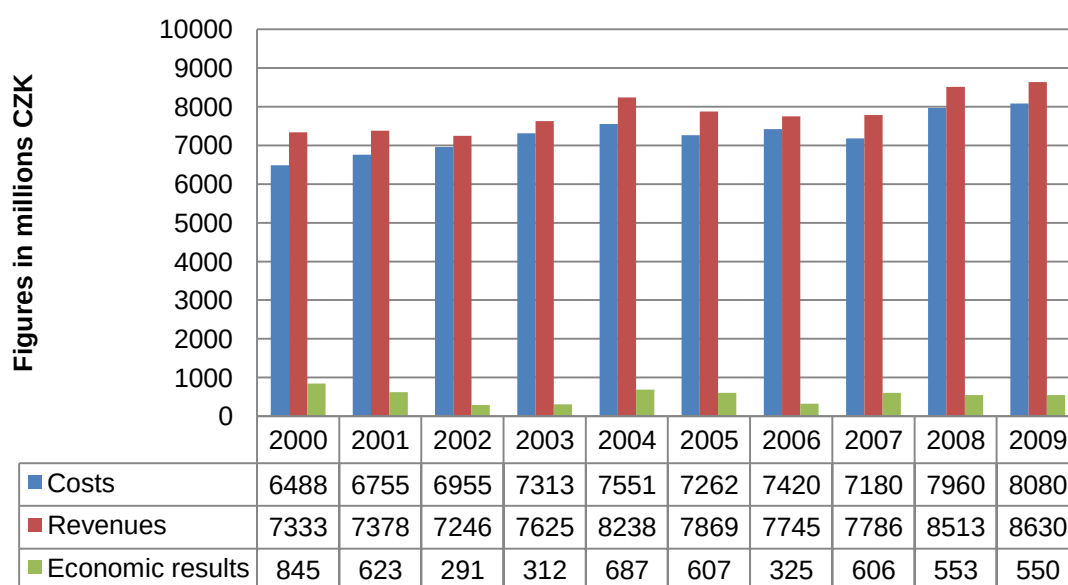


Fig. 2: Financial results for spas in the years 2000-2009

Source: own, based on data from the Czech Institute for Healthcare Information and Statistics

During the period 2000-2009 the observed indicators of costs, revenues and profits in Czech treatment spas developed very evenly, and as a whole even positively. Spas saw weaker profits in 2002 and 2003. There are clear reasons for this, which have no direct connection with financing of the health insurance companies. The cause of decline in profit was mainly the floods in 2002 and the related problems that affected not only the spa industry, but the entire tourism sector.

2. Change in the structure of visitors to Czech spas

The above results were not achieved by themselves. On the contrary – they are the result of a new marketing strategy for Czech spas, which prefers the so-called ‘customer-based’ approach and focuses on new programs and new customer segments. This of course has been reflected in the structure of visits, which in the past 10 years has changed significantly. We refer in particular to changes affecting the number of patients whose stay is covered by societal resources, or which are covered by the patient’s own means. In Figure 3, we can see the tendencies in the structure of Czech spa visitors in terms of method of payment for their stay.

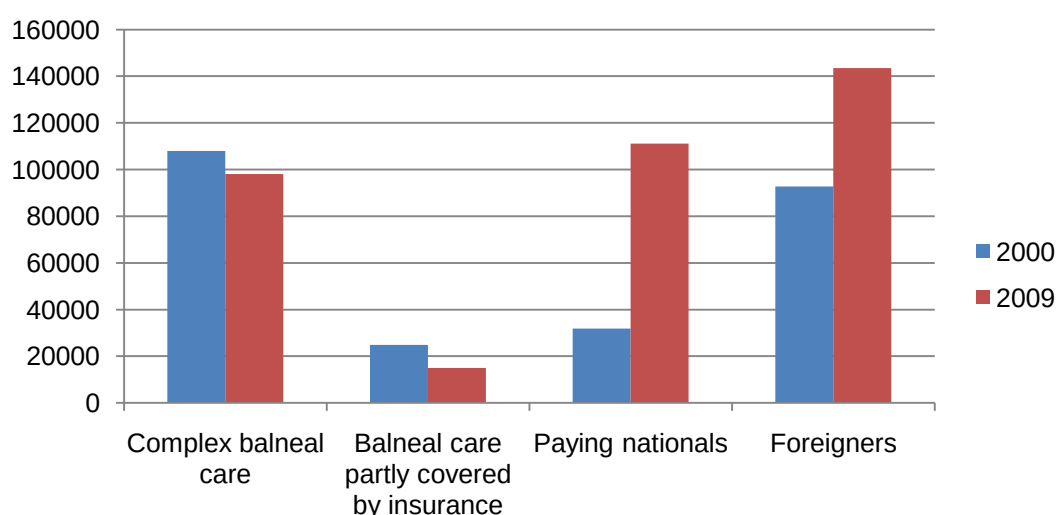


Fig. 3: The structure of spa patients in the years 2000 and 2009

Source: own, based on data from the Czech Institute for Healthcare Information and Statistics

During the period 2000-2009 there have been these major changes in the structure of Czech spa patients:

- The total number of visitors increased by 101,738 (36.25%)
- The proportion of patients with comprehensive spa stays decreased by 17,950 (- 14.24%)
- The proportion of patients with partially subsidized spa stays decreased by 9,803 (- 39.35%)
- The share of domestic self-paying patients increased by 79,222 (248.33%)

The proportion of foreign self-paying patients increased by 50,901 (54.72%) The Czech spa industry, therefore, seem to be very stable as a whole, and well able to handle the impact of adverse external influences. Its ability to adapt is related to its focus on the ever-increasing segment of domestic and foreign self-payers, and on strengthening commercially-oriented short-term wellness and similar types of stays, as well as being able to connect to other, economically interesting forms of tourism (congress, incentive, etc.).

Conclusion

There is no doubt that the Czech spa industry is, despite all the negative influences, economically viable and quite a successful study. In the past ten years, it has managed to resist many adverse circumstances. In addition to the adverse effects of the climate (floods in 2002), there have been negative economic influences (the global economic crisis, which had severe implications for tourism, including health tourism) and economic-restrictive influences (constant cutbacks in health insurance expenditures for spas in absolute and relative terms). The achieved results indicate the economic ability to absorb negative impacts and adapt to the situation. This ability has its limits, however. The price of adjustment may be in some cases a change in the character of the therapeutic spa visits, a shortening of the spa stay, and orientation toward other short-term forms of tourism. And this is a trend that in the long run may not bring only positive benefits.

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Factors Determining Quality of Municipal Web Site¹

Abstract

Since the 1990s the internet has an ever-increasing importance in human communication and public sector is no exception to the rule. Therefore the quality of municipal websites has a significant impact on the quality of services provided by municipalities. The presented paper aims to determine the factors that affect the quality of websites in municipalities up to 2,000 inhabitants.

To meet the outlined objective, following four hypotheses were examined. H1: The quality of the municipal website increases with lower age of municipality's mayor; H2: The quality of the municipal website increases with higher assets of the municipality; H3: The quality of the municipal website increases with the volume of subsidies attracted by the municipality; H4: The quality of the municipal website increases with higher population of the municipality. The research was realized on the sample gathered on the basis of systematic selection in the Královéhradecký region municipalities (n=80). The data analysis subject was focused on finding how independent variables (age of the mayor, volume of the assets, volume of attracted subsidies and municipality population) affect the dependent variable (quality of website score). The data analysis was conducted through multiple regression analysis to avoid problems with interdependencies among independent variables.

Findings confirmed statistical importance of hypothesis H4: The quality of the municipal website increases with higher population of the municipality. The validity of the other hypotheses was not proved. Research results thus show that the quality of municipal website is not so much dependent on personality of the manager, or the disposable financial situation of the municipality, but rather on how many citizens benefit from the service – in our case from the municipal website.

Key Words

website, quality, municipality, countryside, Czech Republic

JEL Classification: H83, O18, P25

Introduction

Since the 1990s initiated development of the internet era and its ever-increasing importance. Medium originally limited to serve to computer professionals in technologically developed countries became day-to-day tool of communication for majority of global population, enterprises as well as public institutions. In public sector

¹ The study was conducted in the frame of project WD-48-07-1 "Research for Regional Disparities Management" granted by Ministry for Regional Development of the Czech Republic.

Margetts (2005) talks about so called virtualization, which can be understood in three meanings:

1. Virtual face, the government organization becomes virtual in terms of its relationships with clients (e.g.: businesses, citizens) who deal only with some kind of virtual image of an organization, rather than organizations themselves.
2. Internal virtuality, which represents of not really having any central existence. Virtual organization lacks what it traditionally takes to be an organization (e.g.: bureaucracy is replaced by information systems, many activities is outsourced, etc.).
3. Virtual networks, whereby organizations exist only as consortia of groups and individuals grouped together for a particular reason – linkages are more important than organizations and the network of individuals and organizations is the most important of all.

Critical and breakage point in the virtual organization development was formation of web technologies and web information systems. “A web site follows the possibility of all kinds of transactions that would originally have been processed within an organization being processed by the web site alone. As one official in the Australian Tax Office put it in 1999, in the future ‘this organization will become its Web site’” (Dunleavy and Margetts 1999).

Bekkers (1993) affirms: “Through the use of information and communication technologies (ICT) public organizations enhance their knowledge management capacities: to algorithmize and to control decisions and activities; to standardize, formalize, and routinize those decisions and activities; to monitor and benchmark the outputs and outcomes of the organization; and to intensify the patterns of communication with all kinds of stakeholders”. Slowly but surely the communication through the website becoming a significant platform for the information exchange among public institutions and citizens. Additionally, the municipal management must react on transformations caused by the New Public Management concept implementation. The municipality have to tackle with growing requirements coming from orientation on prompt and high-quality satisfaction of customer (citizen) needs. ICTs offers new and very effective forms of citizens involvement in public affairs. Mowshowitz (1997) stresses: “Therefore, it may be expected that the institutionalization of electronic ICTs in public administration would have a fundamental impact on the way in which public administration functions.”

1. Problems with measuring quality of websites

Primary and frequent problem with measuring quality is to outline what the quality means. Jansen and Ølnes (2004) quote that as well public as private companies emphasize the importance of increased quality of services but very often fail to define what they mean by quality. Within their research on quality of Norwegian websites they developed following definition: “The quality of websites in this project is defined as that public information and services on the internet must meet a predefined standard or level that can satisfy some central user needs.” (Jansen, Ølnes 2004, p. 4) Generally

speaking, the literature sources show that the majority of authors define quality standards similarly to ISO/IEC 9123 quality model (Ølnes 2004, Komárková, Máchová a Bednarčíková 2008). Such quality standards usually reflects targets of accessibility (also called as internal quality; it represents web page encoding and used computer language), user orientation (external quality; features of the code when it is used, e.g.: speed of response) and useful services (quality in use; measured by the customer's satisfaction).

Although, of previously mentioned, there is also an aspect of legally required information that is affecting the quality. In case there is many of such required information, than differences in quality can hardly be found. In the Czech environment are required information published on the municipal website particularly influenced by: Act No. 106/1999 on Free Access, directive European Parliament and Council 2003/98/EC on the re-use of Public Sector Information (PSI) and Act No. 101/2000 on the Protection of Personal Data. These laws outline obligations as e.g.: keep prescribed structure and content of the information, the availability of documents for re-use in all formats, where possible, the material shall be made available by electronic means, practical tools that make it easier to find the material available for re-use, this could be lists of information assets or portal sites, or keep rules connected with the protection of citizens data.

Finally, the considerable problem of measuring quality is the proper performing of measurement. As Hewson (2007) considers quantitative measurement as too ambiguous, above all because of the quantity of provided data often does not match to quantity of provided information. Websites can contain data with none or little information value (titles and headings, logos, banners, pictures, etc.). Furthermore, find information how much data is of such a low quality would require extreme effort of the researcher. Therefore quantitative measurement could not be used in this study and the mix of quantitative and qualitative approach was taken in the research.

2. Objective and hypotheses

The presented paper aims to determine the factors that affect the quality of web sites in municipalities up to 2,000 inhabitants. To meet the outlined objective, following four hypotheses were examined. H1: The quality of the municipal web site increases with lower age of municipality's mayor; H2: The quality of the municipal web site increases with higher assets of the municipality; H3: The quality of the municipal web site increases with the volume of subsidies attracted by the municipality; H4: The quality of the municipal web site increases with higher population of the municipality. Selection of these hypotheses is described in detail below.

While setting the hypotheses the factors of Czech small municipality environment have to be taken into account. Often cited theory of agents assumes, that the relationship between the public sector and the citizen (voter) can be described as an agency relationship whereby the citizen is the principal and the political manager (mayor) is the agent. In this case, mayors and members of local authority are assumed to be self-

interested, maximising agents, whereby the maximisation of their wealth depends on their re-election, advancement, and current and future income, both pecuniary and non-pecuniary. Citizens are also assumed to be self-interested and to act in such a way as to increase their wealth. Voters' wealth is related to the actions of their agents. Accordingly, each citizen has an incentive to monitor the behaviour of politicians (Gandia, Archidona, 2008).

In Czech small municipality environment is the theory validity more presumable on the side of voters rather than on the side of municipal representatives. The mayor is typically the man with more free time, with the age before retirement. Ryšavý (2007) asserts that 54 % of mayors from this paper sample is older than 50 years. Due to this and other facts the motivation of mayors might be doubtful as e.g.: no chance to find other job, no one else can do this work, tradition, etc. Besides of previous, there is the other fact, with the increasing age the ICTs competencies are decreasing (Matoušková, Vymazal 2006). Therefore the first hypothesis can be assumed as: *H1: The quality of the municipal web site increases with lower age of municipality's mayor.*

Christiaens (1999) argues that municipal wealth should be positively related to openness in sharing information as a signal of the management quality. Municipal wealth is for the research purposes determined by two indicators. The first one is the average volume of municipal assets; the second average volume of subsidies attracted by the municipality. Both previous variables averages were calculated on the basis of results gathered in 2001 to 2009 period and both were converted per municipality capita. Therefore two next hypotheses are outlined. *H2: The quality of the municipal web site increases with higher assets of the municipality; H3: The quality of the municipal web site increases with the volume of subsidies attracted by the municipality.*

The last assumption considered the number of municipality inhabitants. Obviously, can be expected that with the increasing number of website "readers", the effort of website "producers" will be higher as well as the quality of the municipal website. Than the H4 hypothesis is to be tested: *H4: The quality of the municipal web site increases with higher population of the municipality.*

3. Research design and data analysis

The study exploits the form of the content analysis conducted through the internet. In this case Hewson (2007) talks about so called Internet mediated research and document analysis performed in an internet research context. Such document analysis is similar to some forms of observation, but the records are primarily placed on www with certain purpose. The internet provides various sorts (almost all) of online documents; the range start with documents of informational or artistic content, going through theoretical and scientific articles and end with stories, poetry and bibliography. Although all traditional research approaches, qualitative, quantitative and its combination are available on the internet, the combination is considered be the most effective. Therefore the mix of quantitative and qualitative research approach was taken in the study.

The research focuses on municipal website analysis in Královéhradecký region which comprise of 448 municipalities. There are 48 municipalities with the status of city among all of ones in the region. The first step in the research was to remove the city status municipalities from the sample. The purpose of such elimination was: (1) reduce differences in the population of the researched municipalities, because cities dispose of higher population in general; (2) reduce differences in the number of people to which the website serves, because among the cities are such with high tourism potential. Consequently, as the second step, the systematic sampling method was applied. Sampling interval $k = N / n$ was determined as $k = 400 / 80$, which makes $k = 5$. The sample then comprised of 20 % of municipalities (n=80). Municipalities were put into the alphabetical order; the selection of first municipality was taken with the help of the random number generator and then each fifth municipality was collected. Using this procedure is ensured that each element in the population has a known and equal probability of the selection. It is generally recognized that systematic sampling is considered as at least same functionality as random sampling (in some cases even more effective).

The presented objective of the study is to determine factors affecting municipal website quality. Therefore with regards to defined hypotheses the dependent and independent variables were determined. Aggregated score expressing the website quality was taken as the dependent variable; the age of the municipality mayor, the municipal assets, the municipal subsidies and the population of the municipality were taken as independent variables.

Tab. 1: Individual categories and its weights taken for municipal website quality assessment

Criterion	Weight coef.	Data description
Presence of requested information	2	The presence of requested information according to Act No. 106/1999 on Free Access To Information and relevant Regulation of Ministry of Informatics and the directive of European Parliament and Council 2003/98/EC on the re-use of PSI and according to other relevant regulations.
Recommended and additional information and its appropriate quantity	2	The presence of published: records of the Local Authority meetings, municipal journals, information about actual events in the municipality. Presence of ICT tools as discussion forums and photo galleries.
Navigation, structure and graphics	1.5	Website structure, orientation for the reader, graphics and the arrangement of individual informational sections.
Accessibility for disadvantaged people	1	Testing was focused primarily on testing accessibility for people with certain visual handicaps (switching to black and white version, option to enlarge the font).

Source: Author (2011)

Calculation of the only dependent variable representing quality of the website was made according to the recognized standards (Gandía and Archidona 2008; Bachmann 2010; Zlatý erb 2011). The following weighted criteria have been developed to measure website quality: the presence of requested information, presence of recommended and additional information and its appropriate quantity, web site navigation, structure and

graphics, accessibility for disadvantaged people. The assessment scale range goes from 1 to 5 points, where score 1 means minimal and 5 maximal evaluation. Search engine Google and the list of website addresses from previous research works of the author was used to find specific municipal websites. Municipal websites accessible only on microregion's portals were considered as valid, too. In case, municipal website were not found, the total zero score was recorded. Score presents aggregated sum of weighted results in individual categories. The research was conducted only by the author during March and April, 2011. Specific categories, with weight determination and the description of the data are included in Tab. 1.

The data for the independent variable age of the mayor are gathered through publicly accessible data of municipal elections accomplished in the 2006 and 2010, where the age of the candidate was available on the candidate ballots. Information about the age was updated to current age of the mayor.

Municipality assets variable represented the average year value of assets existed in certain municipality from the 2001 to 2009 recounted per capita. Similarly, the variable of the subsidies attracted by the municipality reflects the average year value of attracted subsidies during 2001 – 2009 period recounted per capita. Both latter variables are provided by the information database ARIS and its module Presentation of Data from Territorial Administrative Units and the processing of these data was done in the frame of other study (Kala 2010). The database ARIS is run by the Ministry of Finance of the Czech Republic.

The data about the municipal population were taken from the server of Czech Statistical Office and are valid to January 1, 2009. Population of chosen municipalities was in all municipalities up to 2,000 inhabitants with the only exception (Stará Paka; 2,026 inhabitants). Taking into account an assumption of high interdependability among the independent variables, which can lead to misrepresentation of the results, the multiple regression analysis is selected for the data analysis. The analysis is conducted with the help of software Statistica 8.0.

4. Results

Descriptive statistics results of the sample (n=80) show, that quality score of assessed websites reaching 18.0 points in average from 32.5 possible, i.e.: 55.4 %. The score with the highest frequency (modus) was 19.5 points. Website presentation was not found for two municipalities from the sample of 80 (2.5 %). Average age of the mayor was 51 years. Municipal assets per capita maximum reached amount of 372,634 CZK and minimum of 27,109 CZK. Even higher differences were found in received subsidies per capita, the range fluctuated from the minimal 1,375 CZK up to the maximal 156,966 CZK.

Tab. 2: Descriptive statistics of used variables

Variable	Mean	Error mean	Median	Stand. deviation
Web site quality	18.31875	0.772397	19.5	6.908532
Age of the mayor	50.95	1.077077	52.5	9.63367
Municipality assets per capita	103,499.1	6,105.196	9,1586.91	54,606.53
Received subsidies per capita	29,565.43	3,386.213	1,8517.1	30,287.21
Municipality population	415.8375	37.18777	331	332.6175

Source: Author

Due to current general discussion on favouritism of bigger municipalities in attraction of subsidies is interesting to remark, that the municipality with the highest amount of attracted subsidies per capita (Brada-Rybníček; 132) ranks among the ten least populated municipalities. The municipality with the maximal subsidies achieved 114 times higher attraction of subsidies than the municipality with the minimal subsidies within the given period of 2001 – 2009. Broader descriptive statistics of used variables is included in Tab. 2. But the descriptive results, the study focuses on the verification of formerly outlined hypotheses H1, H2, H3 and H4. Hypothesis H1 asserted the quality of the municipal web site increases with lower age of municipality's mayor. Although the descriptive statistics indeed showed that the mayor's age tend to be higher than the average (mean = 51 years, modus = 55 years, median = 52.5), the statistical dependency between quality of website and the age of the mayor was not proven. Controversially, slight, statistically not significant, negative correlation (coefficient Beta = - 0.10954) was found. Similarly as the previous hypothesis, neither in verification of hypothesis H2: *The quality of the municipal web site increases with higher assets of the municipality*, the significant dependency was not found (Beta = 0.032276). Higher dependency, but also not on the statistically significant level was found for independent variable of received subsidies and hypothesis H3: *The quality of the municipal web site increases with the volume of subsidies attracted by the municipality*. In this case the coefficient Beta = 0.146449.

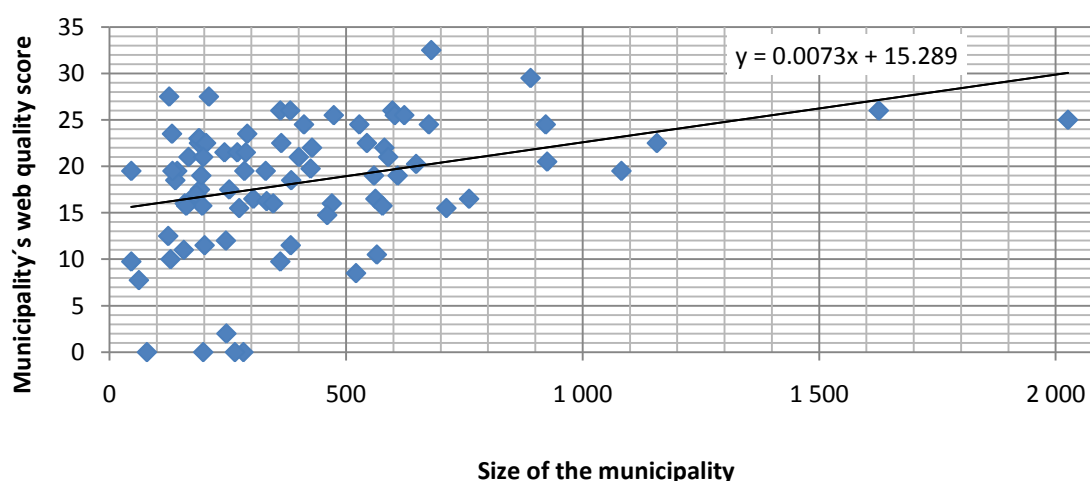


Fig. 1: Dependence between website quality and municipality population with linear regression trend

Source: Author

The only variable with statistically significant dependency and positive correlation was the municipality population (Beta = 0.330387 standard deviation of Beta = 0.110731, $t(74) = 2.9837$ and $p\text{-level} = 0.003856$). Dependency between municipality population and the website quality, including equation of linear regression trend, is illustrated in Fig. 1. *Hypothesis H4: The quality of the municipal web site increases with higher population of the municipality* can be therefore considered as valid.

Tab. 3: Regression Summary for Dependent Variable: Website quality

n=80	Beta	Stand. Err. of Beta	B	Stand. Err. of B	t (74)	p-level
Intercept			15.28509	5.365418	2.84882	0.005679
Age of the mayor	-0.10954	0.1075	-0.07855	0.077091	-1.01899	0.31153
Municipal Assets	0.032276	0.138988	0	0.000018	0.23222	0.817009
Attracted subsidies	0.146449	0.137985	0.00003	0.000031	1.06134	0.291989
Municipal population	0.330387	0.110731	0.00686	0.0023	2.9837	0.003856

Source: Author

Total results of multiple regression analysis show the correlation coefficient $R = 0.43492788$, coefficient of determination $R^2 = 0.18916226$, adjusted $R^2 = 0.13437593$, $F(5,74)=3.4527$ $p<0.00737$ and standard error of estimate = 6.4276. Detailed results of all researched variables are summarized in Tab. 3.

Discussion and conclusions

Even though there is many research studies on municipal websites worked out abroad (Gandía, Archidona 2008; Jansen, Ølnes 2004) as well as in the Czech Republic (Komárková, Machová, Bednarčíková 2008; Bachmann 2010), their orientation is rather on qualitative research of provided information than on the level of provided quality and factors that affecting the quality. Necessarily, the approach chosen in the study for measuring website quality can be a good subject for more discussions. Besides of this can be stressed out what was taken by Scott (2005, p. 151): “we need to assess the effects of local government Web sites on citizen involvement, democratic practice and public trust. In the opposite way the research is also needed on how dynamic, competitive Web culture affects citizen (and other user) demands for e-service quality, e-security, privacy and accountability.”

However acquiring of ICT competencies is associated with the age of the population, the presented study have not proved the influence of mayor’s age on website quality. Similar controversy offers also verification of Christiaens’ assertion (1999), that financial indices ordinarily demonstrate quality of organization management. Dependency of the municipality wealth on the website quality was not here found as well. These partially surprising results can be a good subject for other research studies. Is thus the website quality rather associated with the municipality historical tradition? Or is the quality more dependent on citizens’ involvement in public affairs? On the contrary of previously mentioned, the study has found significant positive correlation

between website quality and the municipality population. Research results thus show that the quality of municipal website is not so much dependent on personality of the manager, or the disposable financial situation of the municipality, but rather on how many citizens benefit from the service – in our case from the municipal website.

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Regional Economic Growth

Abstract

The paper deals with regional economic growth, its theoretical approaches and statistical methods for analysis. Inevitable part of economic development is the process of real convergence or divergence. Real convergence express catching-up process when economic levels of different countries converge to the same level. Globalization is one of the convergence determinants. Economic theories are not uniform in what tendency, convergence or divergence is dominant. Even in the same theoretical approach, individual economists have different opinions. The aim of this article is to analysis long-term economic development in different regions and to confirm or disprove expectations of economic theories. There are two models of convergence, σ -convergence and β -convergence. σ -convergence expressed via correlation coefficient presents situation, when countries converge to the same level of economic performance (i. e. correlation coefficient is decreasing). β -convergence result from Pears correlation coefficient presents situation, when the economic growth in poorer countries is higher than in richer ones. Wealth levels are equalized by divergent growth rates. The volume of regional disparities that are under research of a huge amount of authors is diminishing in the case of β -convergence.

Key Words

economic growth, β -convergence, σ -convergence, gross domestic product

JEL Classification: **O11**

Introduction

Economic growth is under view of numerous theories from the very beginning of forming economics. Adam Smith wrote *An Inquiry into the Nature and Causes of the Wealth of Nations* (published in 1776), where he pointed out that afford of every individual is “a driving engine” for economic growth. In 1928, Frank Ramsey introduced his model of economic growth that is considered as a starting point of modern growth theory. During the fifties of the 20th century, neoclassical growth models branch out. Robert Solow created production function flowing from constant returns to scale. Paul Romer and Robert Lucas developed endogenous growth theory during the eighties and nineties. They included human capital into the growth theory as a factor of slowing down diminishing returns on capital. The second branch of endogenous growth included research and development and imperfect competition as an important factor of technology progress and consequently, economic growth. [6] Theory of regional development has more concepts with different causations of regional disparities and fundamental tendency of regional evolution. Regional economic growth theory focuses

on economy, geography and sociology processes in regions (definition of region depends on level of research).

Sources of economic growth can be divided into three fundamental groups. First, growth in inputs of production, second, improvements in the efficiency of allocation of inputs across economic activities, and third, innovations. [9] There are medium term and long term growth effects. Medium term growth effect is for example evoked capital formation. These effects are temporary, contrary to long term effect, that lead in permanent change in accumulation rate and consequently permanent change in economic growth rate. [1]

1. Globalization and economic growth

Globalization means "... general liberation of barriers of an international trade, migration, capital flows, technology transfers and foreign investments."¹ This definition implies that globalization support sources of economic growth and open economies could benefit from it. But globalization's effects depend on exact form of globalization and pre-existing market distortion and the result can be thus different. [9]

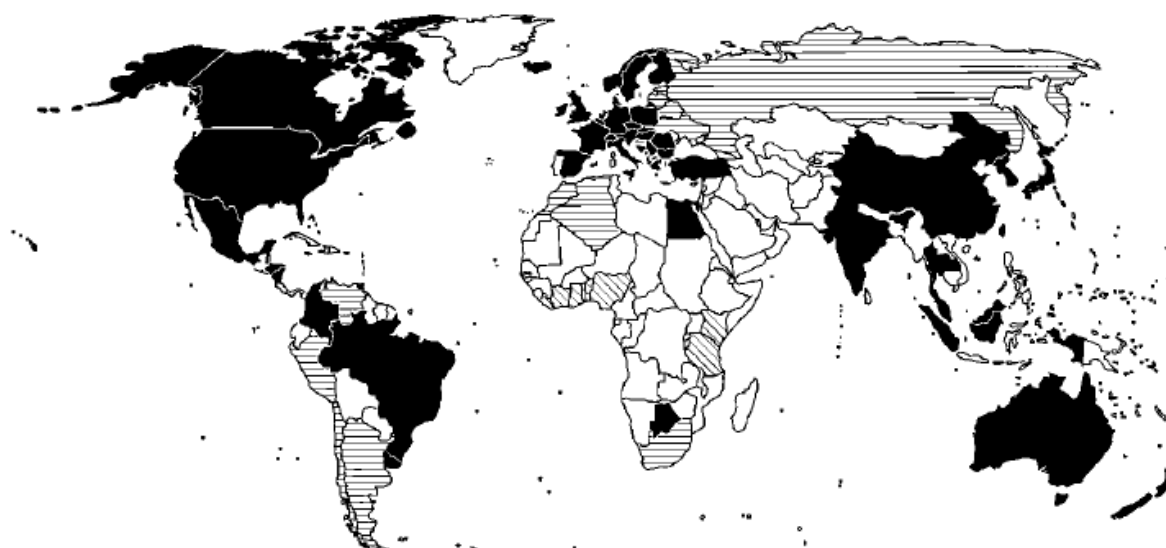
According to neoclassical growth theory, the fundamental factors of convergence are initial difference between technology progress and decreasing of capital return. On condition of diminishing capital returns, economy growth and constant returns to scale, economies should approach similar steady state. For practical application of this concept, functioning of market mechanisms and non-barriers international environment needed for free movement of capital and goods are necessarily. Globalization helps to create economic environment without barriers where companies move to decrease costs. In connection with this phenomenon, technologies transfer from more advanced to less advanced countries where investments into research and innovations are not very high but because of openness, they can obtain these technologies. Consequently, labor productivity level increases not just in the foreign companies but also in the whole economy via subsuppliers. Foreign investments are conditional on many factors such as law background, infrastructure and education level. The government can influence them by structural policy. Convergence is supported also by financial transfers, i.e. loans from international institutions (the World Bank, the International Monetary Fund) and development banks (the International Bank for Reconstruction and Development, the European Bank for Reconstruction and Development). [9]

Globalization is supposed to be affecting economies positively, i.e. in favor of convergence tendencies. Although globalization is a significant influence nowadays, there are other forces that impede the transfer of technologies, knowledge and work forces, and restrain increasing of total factor productivity. Failure of globalization can be connected with lack of openness. This idea was under research of Sachs and Warner

¹ FÁREK, J.; KRAFT, J. *Světová ekonomika za prahem nového století globálních změn (vstup do 21. století)*. 2nd Ed. Liberec: Technická univerzita v Liberci, 2006. p.13 – 14. ISBN 80-7372-142-2.

(1995), who constructed an index of openness to find out if countries are open or closed, according to trade barriers. They realized that open countries had larger economic growth and strong convergence in GDP per capita. The conclusion of this research is that countries should support export and import to achieve higher economic growth. Dowrick and DeLong (2001) empirically examined this result with the aim of disprove or claim it. They approved that openness provide a significant boost to growth, but it doesn't necessarily promote convergence. Openness itself is not sufficient for the catching up process. [2]

William Baumol and Edward Wolff defined the convergence club “as that set of economies where the forces of technology transfer, increased international trade and investment, and the spread of education were powerful enough to drive productivity levels and industrial structures to (or at least towards) those of the industrial core”¹.



Notes: Solid black: economies that are members of the convergence club. Vertical fill: economies that might be members of the convergence club. Horizontal fill: economies that used to belong to the convergence club, but have fallen out. Diagonal fill: economies that might have once belonged, but have fallen out.

Fig. 1: Convergence club in 2000

Source: [9]

The evolution of convergence club can be divided into four eras. In the years 1820–1870, it was just Great Britain, Belgium and the northeastern United States. Due to spreading industrialization, Canada, the western United States, Australia, New Zealand, Argentina, Chile, Uruguay and South Africa joined the convergence club in the years 1870–1913. This era is called the first era of globalization. In the years 1913–1950, the southern United States, the Soviet Union, Latin America (Venezuela, Peru and Brazil) and North Africa (Morocco and Algeria) joined the convergence club. In the years

¹ DOWRICK, S.; DELONG, J. B. *Globalization and Convergence* [online]. Chicago: University of Chicago Press, 2003. p. 195. [cit. 2011-02-10]. Available from WWW: <<http://www.nber.org/chapters/c9589>>

1950–2000, many economies joined and many economies dropped out as it is captured in the figure 1. This era is called the second era of globalization. [9]

According to Dowrick and DeLong, implications of the first era of globalization for the size of the convergence club were clear. *“Globalization forces were sufficient to pull the temperate economies of European settlement into the convergence club, but insufficient to pull any other regions into the club even though they had powerful effects on economic structure.”* In the second era of globalization (1950 – 2000), the implications are not so clear and there are some unanswered question about economic evolution in the world connected with the entry to and departure from the convergence club.

2. Economic growth analysis

Production function, the neoclassical growth model (the Solow growth model), endogenous growth theory and convergence are the most common tools used in the economic growth analysis. The Cobb-Douglas function relates the inputs of capital and labor and the GDP output. The two factors Cobb-Douglas production function:

$$P = b \cdot L^k \cdot C^{1-k} \quad (1)$$

where: P is the output, b is total factor productivity
 k is an elasticity of output on labor (L) changes
 $k - 1$ is an elasticity of output on capital (C) changes

Accordingly to this formula, economic growth can appear from technology improvement and capital or labor increase. The Cobb-Douglas function was criticized mainly for capital conception and its measurement. *“Neoclassical growth theory and mainly the concept of aggregate production function are criticized for reality absence and logical indefensibility of assumptions.”*¹ Polemics about this issue are still actual.

The Solow growth model result from the Cobb-Douglas production function and developed the model with involvement of savings and steady state (i.e. equilibrium) where economy approach in the case that savings are high enough to replace amortized capital. Thus, technological progress is the main factor of economic growth. Endogenous growth theory searches causes of the technological progress, that are, according to economist of this theory, given endogenously and can be supported by convenient state policies.

Inevitable part of economic development is the process of economic convergence or divergence. We can observe two types of convergence – nominal and real convergence. As Hommerová points out, *“the term nominal convergence is being identifying with the*

¹ NEDOMLELOVÁ, I.; KOCOUREK, A. Polemika o vztahu neoklasické produkční funkce a teorie rozdělování. *Ekonomický časopis*. Bratislava: 2010, vol. 58, iss. 5, p. 507. ISSN 0013-3035.

Maastricht criteria of nominal convergence".¹ Real convergence express catching-up process when economic levels of different countries converge to the same level. Economists have been interested in convergence for many decades and this economic and econometric topic has become a question under debate of mainstream macroeconomic theorists and econometricians. It was caused by the fact that convergence across economies was proposed as the main way to test the validity of modern theories of economic growth. Moreover, the data set on internationally comparable GDP levels was ready for use by the University of Pennsylvania in the middle of 1980s. [8]

There are more concepts of convergence. In this paper, I result from dividing of Sala-i-Martin (1995). There are β -convergence (absolute and conditional) and σ -convergence. Both concepts result from neoclassical theory of economic growth.

Absolute β -convergence result from Pears correlation coefficient and it presents situation, when the economic growth in poorer countries is higher than in richer ones. Wealth levels are thus equalized by divergent growth rates. The formula of absolute β -convergence can be written as:

$$\gamma_{i,t,t+T} = \alpha - \beta \cdot \log(y_{i,t}) + \varepsilon_{i,t} \quad (2)$$

where: i are economies 1, ... N

$\gamma_{i,t,t+T} = \log\left(\frac{y_{i,t+T}}{y_{i,t}}\right)$: T is economy's growth rate between t and $t + T$ (total number of years under examination) period
 $\log(y_{i,t})$ is the logarithm of economy's GDP per capita in the year t
 α is a constant

Absolute convergence appears when $\beta > 0$. In case of $\beta = 0$, there is no convergence, and $\beta < 0$, there is divergence. The formula implies that there must be a negative relationship between growth and the initial level of GDP. The disadvantage seems to be in fact that it is researching only the first (t) and last year ($t+T$) of given period. Sala-i-Martin calls β -convergence the speed of convergence. The higher is speed of convergence, the nearer β to 1.

σ -convergence is defined by Sala-i-Martin (1995) as a situation, when "... a group of economies are converging in the sense of σ if the dispersion of their real per capita GDP levels tends to decrease over time". σ -convergence appears, when

$$\sigma_{t+T} < \sigma_t \quad (3)$$

where: σ_t is the time t standard deviation of $\log(y_{i,t})$ across i .

¹ HOMMEROVÁ, D. Reálná a nominální konvergence. *E + M Ekonomie a Management*, 2004, vol. 7. iss. 3, p. 35. ISSN 1212-3609.

σ -convergence can be expressed via correlation coefficient (when countries converge to the same level of economic performance, correlation coefficient is decreasing). β -convergence is a necessary condition for the existence of σ -convergence, because for decreasing the dispersion of real per capita GDP levels, it is necessary for economies with lower real per capita GDP to have faster growth than richer ones to catch them up. Although β -convergence is a necessary condition, it is not a sufficient condition for σ -convergence. In the case poorer countries grow and rich countries decline, their levels can meet in time and at the end of process, divergence can be the result.

Absolute β -convergence has the assumption that the steady state where economies tend to grow is the same for all of them. In reality, it is not true and there are differences between steady states. If poor country is already in its steady state, there is no tendency to grow and the growth rate can be zero. Contrary, rich country can be under its steady state and thus, the growth rate is higher than zero.

The economic growth is thus conditioned by variables (e.g. capital stock, propensities to save) that cause different steady states. This is the concept of conditional β -convergence.

3. Empirical data – European Union

Economic development is an extensive topic including economic growth that can be measured by many indicators. The most frequent are indicators based on the gross domestic product (GDP), i.e. real GDP per capita (at the same currency or at PPS) and growth of GDP per capita.

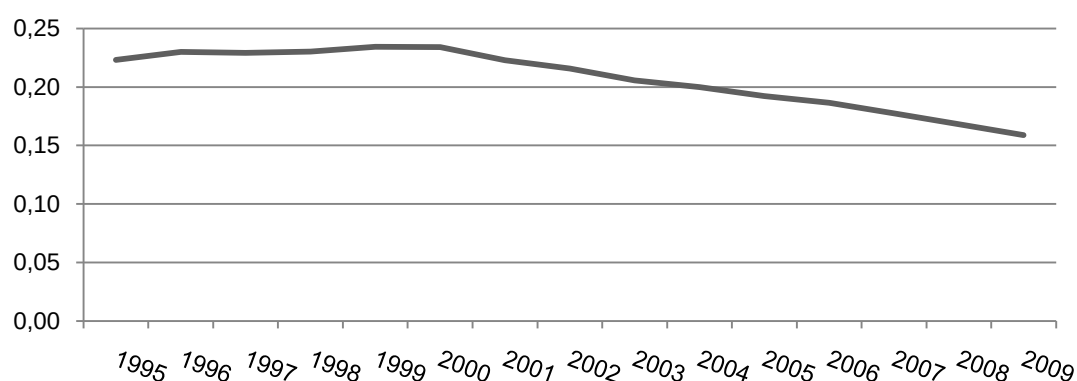


Fig. 1: σ -convergence in EU-27

Source: Eurostat, own calculations

To compare different countries, it is necessary to use indicators converted in the same currency. Although there is the euro in many European countries, it is not possible to use it for comparison because it has different purchasing power in these countries. For this reason, purchasing power standard (PPS)¹ is used. The Fig. 1 describes the

¹ PPS is an artificial common currency used for obtaining more accurate comparison, where the effect of different price level between countries is removed.

evaluation of a standard deviation of the logarithm of GDP per capita in PPS in the EU-27 in the years 1995-2009. As we can see, there is σ -convergence from the year 2000, thus differences between economies are diminishing.

σ -convergence can be measured in the whole EU, nowadays EU-27, or it can be observe in two main groups, old (Fig. 2) and new (Fig. 3) member states. Luxembourg was extracted because this economy is highly above other countries and disfigures results, what is visible in the Fig. 2. But because is it a part of EU, there are two lines showing the situation with and without it.

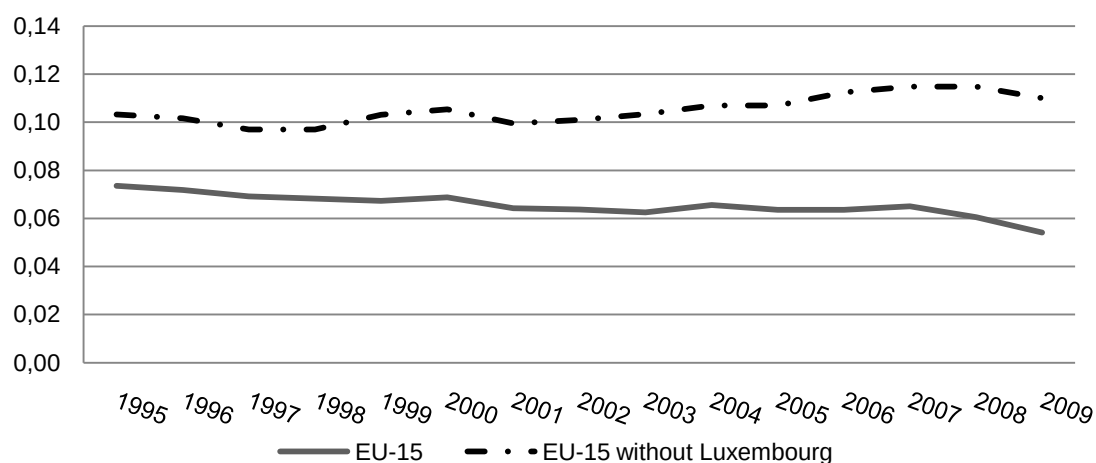


Fig. 2: σ -convergence in EU-15

Source: Eurostat, own calculations

Comparing Fig. 2 and Fig. 3, we can realize that the convergence process is more significant within the group of new member states.

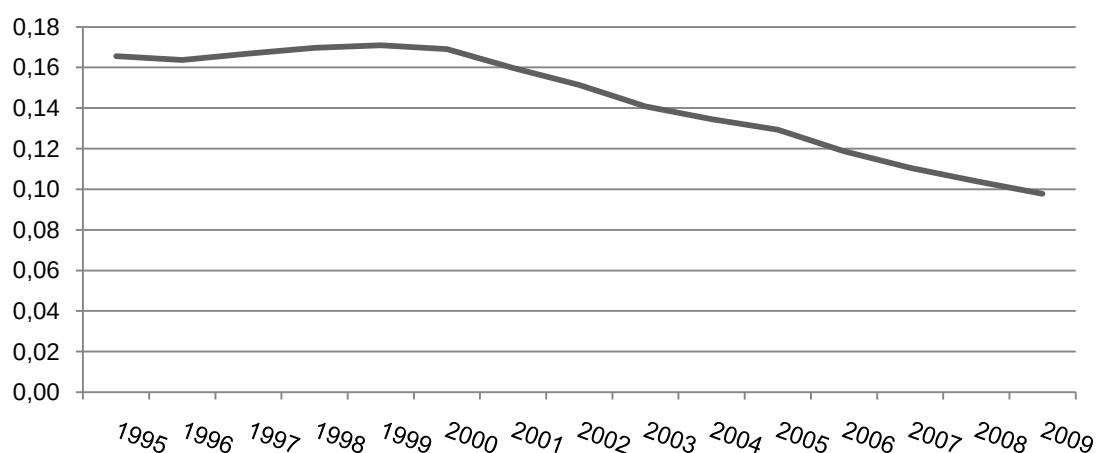


Fig. 3: σ -convergence in EU-12

Source: Eurostat, own calculations

Following Fig. 4 shows β -convergence in EU-27. As mentioned above, β -convergence means higher growth in poorer economies. This negative relationship between initial level of GDP in PPS (the axis x) and its growth rate (the axis y) is visible in the Fig. 4.

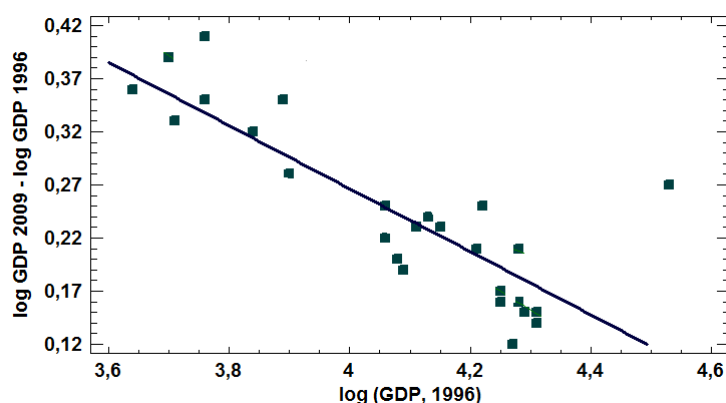


Fig. 4: β -convergence in EU-27

Source: Eurostat, own calculations

Conclusion

Economic growth was and will be very frequent topic for numerous economic theories and even new theories were created with the aim of explaining determinants and mechanism. European Union and the integration process are connected with economic growth and convergence. Most of European Union's member states gained from the entrance into the EU. Economic crises affected the economic performance of all countries but from the view of convergence that research relative relationships between economic indicators, there wasn't significant influence on the EU-27.

The speed of catching-up process differs from state to state. Cyprus, Slovenia, the Czech Republic and Malta are economies with higher level of GDP per capita in PPS. On the contrary, Romania and Slovakia have lowest levels of GDP per capita in PPS. Although there is an evidence of convergence, the gap in economic level between old and new member states remains and it will be a long-run process. The EU supports this process by structural policy with the aim to smooth away economic inequalities between member states.

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The Lean Production Concept and Its Influence on the Market Value of a Company

Abstract

In modern conditions globalization processes determine areas of development of enterprises. This development is carried out in conditions of tough competition on domestic and foreign markets. Companies have to combine material, financial and intellectual resources in order to fulfill tasks related to managing business activity. Realization of a competitive strategy must secure growth of the company's market value in a long run. This increase should be secured in the first place by means of realizing innovative projects related to creating and using different objects of intellectual property. Companies implement different managerial techniques to increase their business activity efficiency. Just in Time Production and the lean production concept may serve as examples of such techniques.

The paper analyzes influence of the lean production concept on forming the market value of a company. The role of this concept as a strategic management tool has been evaluated. Advantages of the lean production concept in revealing sources and areas of hidden losses emergence and also their identification and elimination are demonstrated. It is substantiated that presence of such innovative managerial techniques within enterprises gives an opportunity to increase efficiency and performance of economic activities and also enables to secure market value growth.

The paper demonstrates a structure of business valuation with due regard for influence of the lean production concept on formation of the value of the company. This structure systematizes key indicators and methods of company valuation that use intangible assets in its activity. The authors have suggested an approach to market valuation of the lean production concept. The method for valuating efficiency of creating and using an unidentifiable intangible asset which is based on the lean production concept has been developed.

Key Words

innovative managerial techniques, lean production concept, unidentifiable intangible assets, market value

JEL Classification: C13, D24, L10, L23, L25, M11, O31

Introduction

In modern conditions market value growth of a company is secured by means of realizing a set of investment projects that include innovative projects related in the first

place to creating and using various objects of intellectual property. It is realization of innovative projects that influences the creation of a new value of a company and contributes to formation of a cost approach to management. Seeking to increase performance efficiency and, in turn, the market value, companies use different managerial techniques. For instance, they create and implement the Lean Production concept, the Kaizen strategy, the Kanban system, Just in Time management, Business Processes Reengineering, Total Quality Management, etc. These technologies, being the results of innovative activities, are organizational and management innovations that are included into a structure of intellectual assets of an enterprise [1, 3, 4, 8, 9, 14-16].

The strategy of maximization of the market value of a company presupposes that its ability to create positive values of net cash flows and capitalize return on investments is the source of the value. For that reason the competitive strategy of a company oriented towards value maximization should be formed in such way that it would secure the earliest possible cash inflows and the latest possible cash outflows [6, 17].

The process of forming the value of a company could be regarded as a variety of an investment project. There are investment and current costs of a company and acquired results as in any other project. The difference between the sum of discounted results and the sum of discounted costs forms a newly-created value. This value can exist in forms of both tangible and intangible (including intellectual) assets of a company. New elements substantiated by implementation of innovative managerial techniques in a company, e. g., the lean production concept, could be created within the structure of intangible assets. As a result, such technology would increase growth of the market value of a company [2, 10, 11, 17].

1. Formation of the market value of the company in conditions of using the lean production concept.

The lean production concept plays a special role among strategies of targeted costs management. This concept enables to reveal “hidden” waste (i.e., sources of emergence of hidden waste of resources) that escapes superficial attention of the management, because it is a part of day-to-day production processes [3, 8, 9, 14]. “Hidden” costs may include both non-ergonomic organization of workplaces of the enterprise personnel and time wasting in management and production and technical processes. It is that “hidden” waste that becomes the main negative factor that curbs growth of the market value of the enterprise and decreases its performance efficiency. The use of the lean production concept gives an opportunity to secure revealing sources and areas of hidden waste emergence and also its identification and elimination in the best possible way [3, 4, 15, 16].

Implementation of the lean production concept requires reconsidering the whole system of organization of production activity of the company. The main idea is in determining which product does have a value for consumers and how it is related to their real needs. The company faces a task of deciding how to organize production of “a valuable product” – from raw materials supply to realization of finished commodities in the whole

organizational and management and technological chain. This means that the management identifies during the process of managing production which action, operation, and process does not add value to a product from the client's point of view. Then such actions, operations, and processes are regarded as wasting. This wasting is classified as eliminable and unavoidable. Eliminable wasting is subject to complete elimination [3, 8, 9, 14].

Modern production is based on application of highly automated systems and constant growth of the part of intellectual assets that determine industrial output of innovative goods. Development and implementation of the lean production concept into a business practice leads to emergence of current and investment expenses within a company. Investment outlay is related to the necessity of financing costs on hardware, personnel training and retraining, payment for consulting services, etc. In the end, capitalization of these expenses leads to creating a new element within the structure of intangible assets, which is conditioned by implementation of information and methodical support of the lean production concept. Efficiency of using this asset would be secured by such factors as reducing material and other costs, which are elements of the structure of the production price, minimization of the current capital to values which enable the company to maintain the required level of financial stability [2-4, 15, 16].

Such innovative management technology enables the company to increase not only efficiency and performance of business activities, but also to secure market value growth. In this case the management by means of cutting-edge approaches to formation of the competitive strategy uses systems of risk prevention, cost-cutting systems, systems that reveal hidden waste, etc. Realization of the strategy would enable to reduce time needed for product development, order processing, physical processing, etc. [2-4, 10, 12, 13, 15-17]. By means of implementing the lean production concept the formed strategy of reducing production costs covers elements of the organizational structure of the company interlinking all parts of the management system, business processes and concrete manufacturing operations. The aim of realization of the strategy is to eliminate negative influence of hidden waste and to increase value of innovative products. The lean production concept enables to release resources that have been used ineffectively, transfer these resources to other production areas, identify and eliminate "hidden" waste and, as a result, increase competitiveness level and market value growth of the company [2-4, 15, 16].

2. Development of the model of valuating the market value of the company that realizes the lean production concept

Presence of a variety of factors influencing the final figure of the value complicates management of the market value of the company. Not only the value management process becomes complex, but also the process of evaluation, including selecting approaches and methods of valuation, formation of economic and mathematic models, etc. The above mentioned facts lead to ambiguous interpretation of the final valuation results. Thus, business activity must be directed towards not only realization of steps on

improving management of the value of the business, but also towards development of methodology of valuating the newly-created value [2, 7, 10, 12, 13, 17].

Thereby, it is necessary to orient at using income, cost or comparative approaches to fulfill the task of valuating a business. The most reasonable way of evaluating business activity is by means of the income approach, since valuation of the active business that generates income is the main sphere of usage. This approach consists of a set of economic and mathematical methods of valuation based on determining expected income from the object of valuation in forecasted period. The economic sense of the income approach is in forecasting future income which is expected to be generated within the evaluated business. By means of discounting this income is discounted to the present value. In this case the value of the business, i.e., the value of the company, would be a sum of present values calculated in the forecasted period interval [1, 7, 8].

In order to evaluate and calculate the value of the business companies use such methods of the income approach as a discounted cash flow method and a capitalization of earnings method. The value in this case would consist of two elements: firstly, the sum of forecasted discounted values of the present income, calculated by the discounted cash flow method. Secondly, the discounted figure of the post-forecasted value, calculated by either the discounted cash flow method, or the capitalization of earnings method [1, 7].

Considering influence of the lean production concept on forming the marketing value evaluation of the business of the company can be carried out by standard methods or by developing original methods. Original methods are created by means of synthesis of different approaches to valuating the market value of the company [1, 7, 8]. Since the company functions in conditions of application of the lean production concept, in order to choose an approach to valuating business value it is necessary to:

1. Choose reasonably duration of the time interval during which the value is created.
2. Choose and form the discount rate, taking into consideration various parameters and drivers that influence creation of the forecasted financial flows.
3. Determine deviations in values of various assets that do not comply with the market values of these assets on the basis of the balance sheet of the company.
4. Account assets that take part in creating the value of the company, including unidentifiable assets (lean production) that are not reflected in accounting reports.

Figure 1 demonstrates a structure that systematizes key indicators and methods of calculating the value of the business of the company that uses intangible assets in its activities.

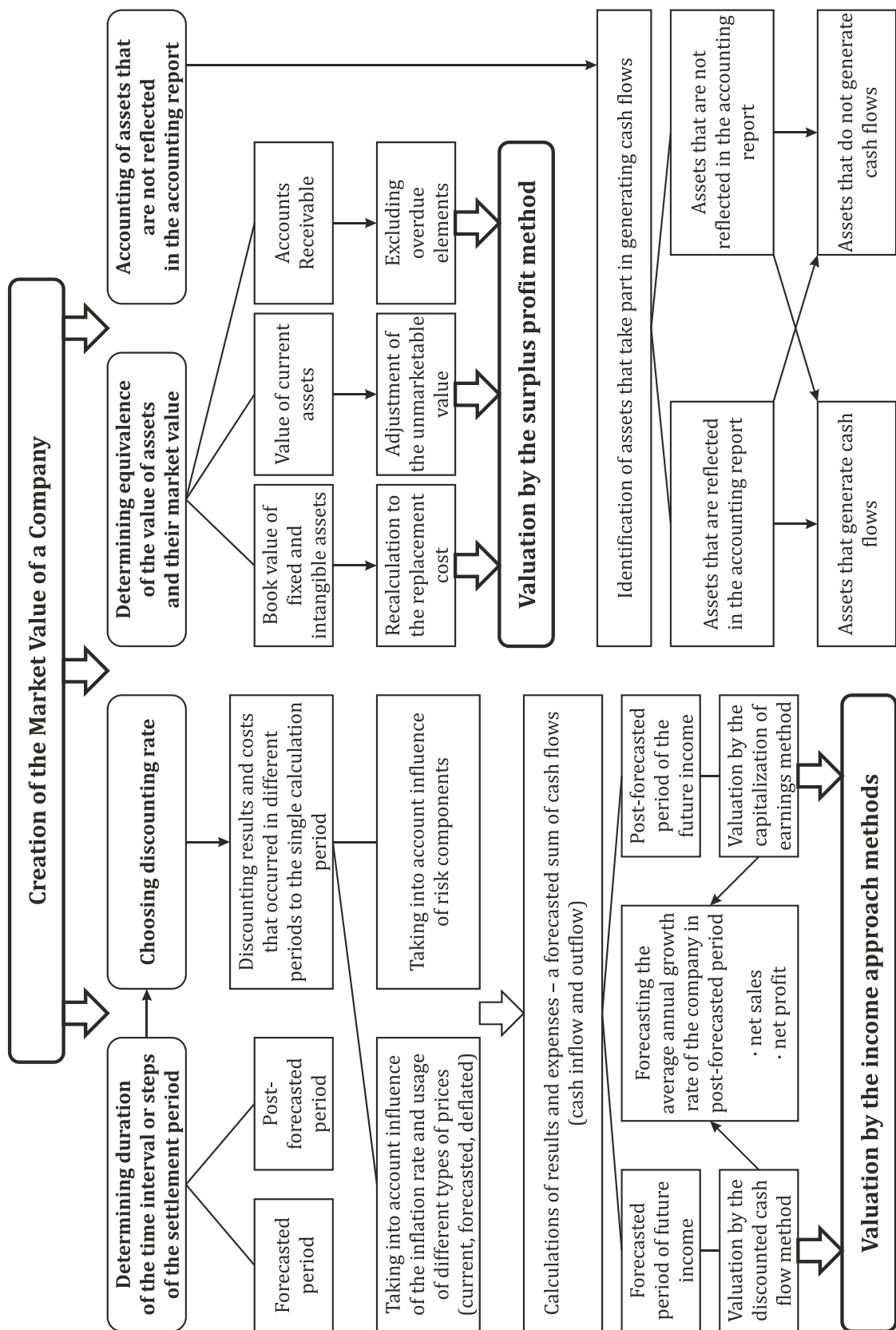


Fig. 1: Key indicators and the structure of calculating the market value of a company

Source: Author's plotting

3. Valuation of the market value of an intellectual asset that has been created by the company during the realization of the lean production concept.

During the process of valuation the market value of the company the most difficult part is evaluating unidentifiable intangible assets. These assets may not directly correlate with the value of goodwill of the company. Some of the unidentifiable intangible assets may be a part of goodwill, other may take part in its formation. The reason for that is that from the point of view of accounting goodwill is the difference between the market value of the company's assets and their price when an investor purchases them. Determining the real value of this difference may be complicated due to influence of various factors that are not always related to intellectual assets of the enterprise. Often these factors form on the macroeconomic system level and characterize investment climate in a country or region, stability of the normative and legislative base of a state, etc. [2, 17].

Thereby, important tasks are, firstly, valuation of the market value of unidentifiable infrastructure assets, and, secondly, determining efficiency of their creation and use. These tasks are interrelated, since within determining results from using the asset and costs of its creation and application calculation of dynamic (discounted) indicators, in the first place – Net Present Value (NPV), is presupposed.

It is possible to use various approaches and methods of valuation in order to fulfill these tasks, methods of the income approach to valuation in the first place. The reason for that is that during the process of realization the lean production concept the company generates extra income, e.g., by economizing on cost prices of produced goods.

It is reasonable to calculate the value of an intellectual asset that is formed during the process of realizing the lean production concept by means of the gain in cost price method, according to the following algorithm:

Step 1: drivers of saving on current expenses that are included in cost prices of produced goods are determined.

Let us assume that i is the number of a driver ($i = 1, 2, \dots, I$); I is the number of drivers of saving on current expenses, included into cost prices of produced goods.

It is necessary to take into consideration during the process of revealing drivers that, firstly, drivers can be differently directed, and secondly, new drivers that are not related to the lean production concept (e.g., changes in market prices for resources) can emerge. Thus, during calculation of the value variants should be comparable with an allowance for new drivers emergence.

Step 2: duration of influence of savings drivers on current expenses is determined – T .

These savings, being results of the use of the lean production concept, are a competitive advantage of the enterprise in cost prices and secure an opportunity to increase profits of the enterprise by means of minimizing cost prices of production of goods. Duration of influence of drivers of savings on current expenses, included in cost prices, is a period of using the lean production concept. In practice it is reasonable to determine this period by an expert method.

Step 3: for each t -th year of a settlement period a value of saving on current expenses and each factor (ΔC_{it}) is calculated. Calculation of saving is done by matching cost prices on two variants: a base variant (i.e., without the use the lean production concept) and a variant which includes the use of the lean production concept.

Step 4: for each t -th year of the effect of an advantage on price costs of goods production, resulting from use of the lean production concept, is calculated as a sum of savings – ΔC_t :

$$\Delta C_t = \sum_{i=0}^I \Delta C_{it} \quad (1)$$

where: ΔC_{it} is the value of saving on current expenses, included into cost prices of produced goods, on the i -th driver of saving in the t -th year.

Step 5: the discount rate E is chosen. The discount rate can be a constant that does not depend on the number of a calculation step (i.e., $E=const$) or it can be a variable that depends on the number of a calculation step, i.e., $E=f(t)=E_t$. Since calculation of the value of an intellectual asset which is created during the process of realizing the lean production concept is done, as a rule, in current prices, then it is reasonable to choose the discount rate as a constant that does not depend on the number of a calculation step.

Step 6: for each t -th of the effect of an advantage in cost prices of goods production, resulting from use of the lean production concept, a discounted value of saving is calculated – ΔC_t^D :

$$\Delta C_t^D = \frac{\Delta C_t}{(1 + E)^t} \quad (2)$$

Step 7: the value of the intellectual asset K^{IA} , resulting from the use of the lean production concept, is calculated. The value of this asset is determined as a sum of discounted values of saving during the whole time period of using the lean production concept. Calculation is done according to the formula:

$$K^{IA} = \sum_{t=0}^T \Delta C_t^D = \sum_{t=0}^T \frac{\Delta C_t}{(1 + E)^t} \quad (3)$$

Calculation of increase in value of the enterprise, resulting from use of the lean production concept, by the discounted cash flow method is done the following way. Two variants of enterprise's activities (with and without using the lean production concept)

are chosen by analogy with the previous case. The following indicators are determined step by step for each variant:

Step 1: Net sales for each t -th year of company's activities:

$$NS = S - VAT = \frac{S}{(1 + k_{VAT})} \quad (4)$$

where: S – sales
 k_{VAT} – value-added tax rate.

Step 2: Net income for each t -th year of company's activities:

$$NI = (1 - T) \cdot EBT \quad (5)$$

where: EBT – earnings before taxes;
 T – income tax rate.

Step 3: Depreciation charges for each t -th year of company's activities:

For example, in case of the declining-balance method the value of depreciation for each t -th year is calculated as follows:

$$D_t = k_{accel} \cdot a \cdot K_{rvt} \quad (6)$$

where: k_{accel} – accelerating coefficient;
 a – basic depreciation rate;
 K_{rvt} – residual value of fixed assets in the t -th year of depreciation charges.

Step 4: Net Working Capital for each t -th year of company's activities:

$$NWC = Inv + A/R - A/P \quad (7)$$

where: Inv – inventory stocks of the enterprise;
 A/R – accounts receivable;
 A/P – accounts payable.

Step 5: Net cash flow from operating activities for each t -th year of company's activities:

$$NCF_{op} = NI + D \pm NWC \quad (8)$$

Step 6: Net cash flow from investment activities for each t -th year of company's activities:

$$NCF_{inv} = \pm FixAs \quad (9)$$

where: $\pm FixAs$ – changes in fixed assets of the enterprise.

Step 7: Net cash flow from financing activities for each t -th year of company's activities:

$$NCF_{fin} = \pm Eq \pm LD \pm SD \quad (10)$$

where: $\pm Eq$, $\pm LL$, $\pm SL$ – changes in equity, long-term and short-term (less accounts payables) liabilities of the enterprise, respectfully.

Step 8: Total net cash flow for each t -th year of company's activities is calculated as follows:

$$NCF_{\Sigma} = NCF_{op} + NCF_{inv} + NCF_{fin} \quad (11)$$

Step 9: Discounted total net cash flow for each t -th year of the forecasting period (NDP_{disc}) is:

$$NCF_{disc} = NCF_{\Sigma} * k_{disc} \quad (12)$$

Step 10: The value of the business (net discounted income):

$$K_{bus} = \sum NCF_{disc} \quad (13)$$

where: $\sum NCF_{disc}$ – the value of discounted total net cash flow calculated by progressive total.

Step 11: The value growth that has been acquired as the result of using such intellectual asset as the lean production concept is determined by comparison of the market value of the company according to the variants.

Conclusion

As a result of its business activity the company seeks to increase efficiency of its functioning by creating intangible intellectual assets via realization of innovative managerial techniques. Increasing this indicator and creating intangible assets within competitive strategy management secures growth of the market value of the company. The company can develop and implement the created intellectual asset that is based on the lean production concept without assistance. It can be also realized via a research agreement by transferring an order to other organizations and implementing with their assistance in business activity of the company. For that reason it is reasonable to use the scenario planning method to evaluate efficiency of using the lean production concept as an intangible asset within the company.

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New Era Needs Competitive Engineering¹

Abstract

Present epoch can be presented by the Drucker words: "Nothing stays the same, everything is changing. The only thing staying the same is the change!" The future is developing the other way as expected, from the economic point of view. The change of management paradigm is huge and increasingly is not in agreement with our current experiences and expectations.

This is why the high quality materials for making the strategic decisions are needed in the crisis time. The processes of elimination of everything which will not be sufficient in new era, that means old and outdated, are used to run in time of crisis. It is well known from business praxis that in each crisis have been some companies gone but some of them became even stronger. Those have been the companies, which based on right intelligence, prepared new business plans in time, mainly based on valuable or disruptive innovations and using the right competitive strategy they realized their intentions successfully.

This means that Competitive Intelligence must be able to first of all gain the important information for strategic decision making and second through analyzing them and its evaluation bring added value for the TOP management to achieve the original competitive advantage.

Concerning the CI as a system application discipline, which none of foreign or inland authors mention, we would like to describe the CI using the term "Competitive Engineering". The reason for this is the fact that the most important activity in terms of Competitive Intelligence is the added value information creation, the gaining the information. This activity needs high level of employee's intellect, engineering level of work.

Key Words

competitive intelligence, competitive engineering, competitive advantage, intelligence analysis

JEL Classification: D80, G14, M15

Introduction

Companies occupying prominent positions in the demanding market are currently introducing **Competitive Intelligence** departments into their organizational structures. These departments are responsible for ensuring good quality materials for the business management strategic decision-making. The quality of these materials is especially

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important at the time of crisis. Only companies that prepare good business plans in time and based on adequately prepared intelligence are successful in the market. This means that Competitive Intelligence has to be able to obtain information as well as add value to this information by analyzing it correctly. By adding value to the information a business can achieve an original competitive advantage over competitors. The above suggests that the standard of the added value depends on the intelligence analysis of the information.

The English term Competitive Intelligence has been introduced by way of definition, since the Czech equivalent had not been used in a uniform way. There is a Czech term "*Konkurenční zpravodajství*", which is a word-for-word translation of the English term but businesses object against it as it is perceived rather as a term close or even identical to industrial espionage which is in direct contradiction to the principle of Competitive Intelligence.

An analysis of available literature concerned with the scope of work and procedures applied by Competitive Intelligence officers in the field of intelligence analysis suggests that apart from defining the basic activities in individual stages of the intelligence cycle there is no established or standardised method. See, for example, publications by Fuld [8], Kahaner [11], Liebowitz [13], Hall & Bensoussan [10]. Of special interest is the paper published by Carr [3], describing the working methods of 15 leading experts in Competitive Intelligence in the USA. In this paper renowned experts describe the Competitive Intelligence process as: a cycle, linear process, four-point model, scientific method or pyramid. They do not offer a clear answer to questions, such as: With what do we start working in Competitive Intelligence and in what order do we continue? Their testimony concerning the transformation of information into intelligence is rather fragmentary and vague.

Based on the foregoing we believe that the approach to creating the added value to obtained information has to change fundamentally. This means proposing a new approach to creating conditions for ensuring an intelligence analysis in the business practice. The business information intelligence analysis algorithm was described in the article by Bartes [2] "Action Plan – Basis of Competitive Intelligence Activities".

This paper aims at proposing a new perspective on understanding the concept of Competitive Intelligence, which would contribute to raising the level of practical implementation of Competitive Intelligence analysis business practice.

The following methods were employed while working on this paper: observation, analysis, synthesis, comparison and deduction.

1. Results

The basis of our understanding of Competitive Intelligence is the fact that we perceive Competitive Intelligence as a **system application discipline**, see Bartes [1]. None of the international or Czech authors describe this way of perceiving CI. Our interpretation of

Competitive Intelligence as a system application discipline provides competitive intelligence analysts to new possibilities. Realising this potential will force radical change in creating conditions that ensure the successful implementation of information intelligence analysis.

In order to achieve our goal we find it important to define the approach to the term *information*. We do not consider the term information only as an objective entity dependant on the recipient. We understand the term information in accordance with the authors Ehleman, Rosický, Vodáček [6], in the broader sense, so that *“the linking of information with the recipient and the possibilities of his conduct , where only data is considered as invariable, is a form the content of which the recipient interprets against the background of his knowledge and experience. Information in this sense acquires a subjective dimension which is added to issues connected with its transmission and transformation, its validity, competences of recipient and sender, etc.”*

This understanding of the term information suggests that the context of the potential acquisition of any added value through intelligence analysis activities is determined by the content of the obtained information and by experience and knowledge of the particular analyst as well as his intuition and creativity. That is how and to what extent the analyst is able to place the content of the obtained information in the context of his knowledge of the phenomenon under analysis. It is this particular skill that will subsequently determine the discovery of a potential business competitive advantage or an original procedure in the tough competitive environment. It is very instructive in this case to refer to the opinion of T. S. Eliot [7]: *“This is a case where one needs to consider not only terms, trends, and principles for a particular defined case but to prove a “universal intelligence”, an ability of a broad conception of the problem, orientation in many directions, with all factors, all conditions, all circumstances.”*

The business practice is proving that the principle of addressing these problems has a remarkably interdisciplinary character requiring teamwork. System engineering is used for such solutions. In the work of Molnár [14] we encounter terms such as “system” or “system approach”. Especially in the second half of the 20th century the system approach became widely spread in connection with the engineering concept of system technical, economic, ecological and social problems see Kocmanová, Němeček [12].

There is a description of system approach in methods designed to address systems which defines the understanding of system application disciplines. Methods that can be considered as system application disciplines are described by authors Habr, Vepřek [9] as follows:

1. First-hand practical applicability in addressing material and management systems in cases where traditional procedures fail to resolve problems.
2. Interdisciplinary method both with regard to using the knowledge of many scientific disciplines and the ability to address various technical and organizational systems.
3. Functional approach and functional modelling in association with other modelling procedures with the aim to achieve an evaluation of the point of departure and the target.

4. Teamwork which is the basic organizational principle in ensuring the comprehensive and interdisciplinary approach in addressing, selecting and evaluating a new solution in practice.
5. Working plan, sequence of stages, steps, activities and operations and/or algorithms in the process of addressing problems and tasks implemented through the team's working process associated with a formalisation of certain activities.

And now we will have some understanding of aspects of systems by author Chestnut [4]:

- "The system is not stable, but over time it changes.
- To achieve results there are various methods.
- To assess the systems, there is a common platform (functionality, performance, speed, accuracy, efficiency, cost, space, reliability, time factor, time resolution, lifetime, etc.).
- Surrounding the system it can greatly affect".

The description of system application disciplines provided above corresponds to the essence of Competitive Intelligence as a system application discipline focusing on obtaining and creating materials for business forecasts and strategies. As mentioned previously, the necessity to address these issues at the top level in businesses is becoming increasingly prominent. In the business practice this required level is fulfilled by the engineering activity. Professor Ondráček states that Professor Callaos [15] defined the decisive factors supporting engineering. These important factors (in Greek) are the following:

- **Scientia** (development of new scientific knowledge).
- **Techné** (development of new "made things", management of knowledge, innovation in design, design).
- **Praxis** (development of new ways of working and doing, personal or tacit knowledge, intuition, ethics).

Callaos defined engineering as follows: *"Engineering activities are based on the development of new knowledge; doing things in a new way and with new techniques and using new ways of working (praxis) with the aim to make new useful products (artefacts) or services."*

The following description of engineering by Professor Ondráček [15] closely corresponds with Callaos' definition of engineering:

"The term engineering appears in connection with everything that is created or transformed by people:

- *at the current level of knowledge, science and skills,*
- *using created means to broaden people's skills,*
- *in a formal and targeted way in order to achieve a purpose defined and quantified by people".*

These two definitions of engineering in connection with the system application discipline form our new perception of the term Competitive Intelligence. Competitive Intelligence in the modern business practice is understood as a very demanding engineering activity. This new perspective of Competitive Intelligence enables us to use a new term, Competitive Engineering, which can be defined as follows:

Competitive Engineering is a *“systematic creative and ethical application of the intelligence methodology and key methods which, using teamwork:*

- finds, identifies symptoms or data and information sources,
- analyses obtained symptoms, data and information and completes them, evaluates their importance and transforms them into evidence of phenomena,
- uses information to create integrated hypotheses (forecasts of future development) for changes and evaluates their benefits through evidence and costs of changes as efficiency of changes,
- elaborates intelligence reports for the company management decision-making“.

Now we define the Competitive Engineering field of activity as *“methodological complex in this application designed for commercial purposes and it is a company management tool for creating materials for strategic decision-making concerning for example innovation, investments, future direction of the company, etc.”*

This understanding of the term Competitive Engineering as a separate discipline can be supported by listing criteria that define the independence of the discipline. According to Vlček [17] the independence of the field is defined by the following four preconditions:

1. Severability of the subject (object) of the field from the subject of other fields.
2. Establishment of new terminology, new technical language clearly describing the new subject and new methods of the discipline.
3. Development of new methods for addressing new issues in the discipline subject.
4. Practical applicability verifying the correctness and veracity of the theory as well as the social utility of the discipline.

In the following text we are proposing some of our standpoints to these prerequisites of an independent existence of Competitive Intelligence.

The first prerequisite, the severability of the discipline subject from the subjects of other disciplines, can be documented by the absolutely essential, exclusively and explicitly defined object of the expert interest of Competitive Intelligence, i. e. the intelligence as a specific material for the strategic decision-making at the company top management level. In the civil business practice there is no other industry that could be addressed by explicit exclusivity.

The second prerequisite proving the independence of the discipline is the **new terminology, new technical language**. This fact is sufficiently documented in publications by renowned international authors such as Fuld [8], Kahaner [11], Liebowitz [13] and others.

The third prerequisite for the discipline's independence is the **development of its own methods** respecting the method and specific features of tasks in the discipline subject. This prerequisite is fully satisfied by the broadening system of methods developed specifically for the needs of Competitive Intelligence – such as the method of information intelligence analysis, see Bartes [2].

The fourth prerequisite for the discipline's independence is the **practical application** where not only our experience but also international experience documents the high importance of using Competitive Intelligence in the business practice; see Carr [3], Fuld [8], Kahaner [11], Liebowitz [13], Hall & Bensoussan [10].

2. Discussion

It follows from the above that with good fundamental understanding and practical application Competitive Engineering creates “forecasts of the future”. **And in this conception only Competitive Engineering has its importance for a business.** By understanding the essence of Competitive Engineering activity in this way we differ from most authors whose Competitive Engineering concepts slide into some “external” form of Business Intelligence most of the time.

If we take a closer look at the current outstanding results of a particular business, we will find out that they are the result of a correct decision by the management in the past. If we want this business to achieve excellent results in the future, it is important to make the right decision again and the time to make is **today!** Today, at the time of crisis, most companies are forgetting about the **necessity to make the right strategic decisions to create favourable conditions ensuring the future success of the business in the increasingly difficult business environment** because they are preoccupied with their current problems, however important and concerning their very existence these problems are, see Šimberová [16]. We believe that this ability of the business is one of those that differentiate a successful business for an unsuccessful one.

Linking the results of intelligence information with the subsequent strategic decision by the business top management can be compared to Ducker's [5] ability of “doing the right things”. It stems from this concept that in this area of activity “doing the right things” (“effectiveness”) is primary and only then follows “doing the right things in the right way” (“efficiency”). In other words, first it is important to be able to make the right decision based on good quality intelligence and then this decision has be applied in practice efficiently, to “do the right thing in the right way”. We perceive the intelligence analysis as the most important and, at the same time, the most difficult stage of the intelligence cycle.

We believe that the intelligence analysis is the “royal discipline” in Competitive Engineering activities. Working with information is not only science, it is art as well.

Conclusion

The concept of Competitive Intelligence as a system application discipline enables us to form conditions necessary for a successful creation of added value to obtained information. This activity takes place as part of the so-called intelligence information analysis which we consider to be the “royal” discipline in Competitive Intelligence. The intelligence information analysis in its essence is the most important and, at the same time, the most demanding stage of Competitive Intelligence. At this stage data obtained from primary and secondary research is analysed. This is where the value is added to the analysed information, i. e. where intelligence is created. Most of the time it is information on the future plans of competitors that is obtained in this way. This makes it possible for us to supply plausible materials to top management for their strategic decisions. Such activity has to be ensured at the highest level. In the business practice this level would be the so-called engineering activity which is implemented through important factors: science, technology and experience. A successful implementation of engineering activities in the area of intelligence analysis makes it possible to switch from the Competitive Intelligence concept to the concept of Competitive Engineering.

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On the Relationship between Globalization and Human Development¹

Abstract

Increased global economic integration, global forms of governance, globally inter-linked social and environmental developments are often referred to as “globalization”. The target of this article is to show the connection between globalization and institutional quality. The first part provides the methodology of measuring overall globalization with emphasis on the KOF Index of Globalization 2007. The Index of Globalization includes economic, social and political contexts. The second part shortly introduces one of the parameters of institutional quality – HDI, its methodology and results for selected countries. The Human Development Index combines three dimensions: A long and healthy life, access to knowledge and a decent standard of living. The third part compares indices and scores together, analyzes them and confirms or refutes the relationships between the Index of Globalization and the Human Development Index. It is possible to conclude from the results achieved in the study that the globalization remains in the first place a very strong and powerful economic phenomenon. Spurring growth rates and reducing poverty in countries with poor institutions cannot be done simply by globalizing their economies.

Key Words

developed countries, developing countries, Human Development Index, institutional quality, KOF, Globalization Index

JEL Classification: E02, O11, O15

Introduction

Increased global economic integration, global forms of governance, globally interconnected and interdependent social and environmental developments are often referred to as “globalization”. Depending on each individual commentator or researcher, the term “globalization” can be extended with other meanings, such as the growing integration of markets, the threat to national sovereignty by transnational actors, the transformation of national economies, the spread of inequalities or disparities, the increased degree of integration of emerging markets into world finance etc. During the

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last two decades, the political relations, social networks, human movement, and institutional change have become more and more involved. Globalization measures or indices have been employed to intermediate an insight into the investment climate, the current developments of growth, and for understanding the international business environment as well as to provide a world perspective the policy initiatives will be operational within [15].

Various researchers have analyzed the effects of globalization on democracy [11], on increases in government spending and taxes [12], and government consumption [13] by using proxies such as trade and capital flows or openness to these flows to measure the globalization [14]. Recently, the impacts of globalization on economic growth have been quite frequently tested with these measures too. It is possible to divide these studies into two groups:

- The first one is also the more numerous one. It includes studies presenting only cross sectional estimates (e.g. [7], [21], [13]) or studies providing very detailed analysis of individual sub-dimensions of globalization (e.g. [8], [14], [5]), but none of them studies the consequences of globalization on economic growth in a more detailed way [9].
- The second group consists of studies trying to measure the overall globalization; the G-index introduced by World Markets Research Centre [26], the co-operation between A. T. Kearney Consulting group and Foreign Policy Magazine has brought ATK/FP globalization [1], Ernst & Young global index, KOF globalization index presented by Swiss Economic Institute, Maastricht globalization index (MGI) and others.

The task of this paper is not testing the effects of globalization on growth. Recently empirical studies have proved that globalization is good for growth. On average, countries that globalized more experienced higher growth rates [10], [1] and this paper is about to accept this conclusion.

The growth of GDP, as an indicator of the quality of life, has been questioned repeatedly in recent decades. Economic policy focusing only on growth can result in bad political decisions. The quality of life means citizens should have the possibility of a rational and informed choice in the area of public services. New, alternative approaches in economic theory are more and more interested in the quality of institutions. Although not empirically proved, it is obvious that the connection between the rate of globalization and the quality of institutions exists. Those countries with poor institutions which repress growth and promote poverty (like Rwanda or Zimbabwe, e.g.), countries with the lowest growth rates, are those which have not globalized themselves. The conclusion is that spurring growth rates and reducing poverty in countries with poor institutions cannot be done simply by globalizing their economies. This recalls the experience of the eighties and early nineties, when a series of international institutions recommended liberal measures for developing countries, in the context of package of liberal reforms (along the lines of western economies), which are known under the name the Washington Consensus. Unfortunately, it has been shown that starting conditions play a

fundamental role and so measures very desirable and transferable for mature nations, are rather harmful to developing countries [18:17].

The target of this article is to show the connection between globalization and institutional quality. The first part will provide the methodology of measuring overall globalization, whilst the second part will introduce one indicator of institutional quality and its methodology. The last part will compare these indices and scores together. The paper will show the results for selected countries, analyze them, and confirm or reject the relationship between these two variables.

1. KOF Globalization Index

The **KOF Globalization Index** produced by the KOF Swiss Economic Institute was first published in 2002 [10]. Globalization is conceptualized as the process of creating networks among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. KOF globalization index is based on the variables used in ATK/FP (A. T. Kearny / Foreign Policy Globalization Index), but it covers a far larger number of countries and has a longer time span. The overall index covers the economic, social, and political dimensions of globalization:

- **economic globalization** includes the long distance flows of goods, capital, and services and has two dimensions: 1) actual economic flows and 2) international trade and investment restrictions.
- **social globalization** has been classified by the KOF index into three categories: 1) personal contacts, 2) information flows, and 3) cultural proximity.
- **political globalization** is characterized by the diffusion of government policies.

In constructing the indices of globalization, each variable is transformed to an index ranging from zero to the value of ten. Higher values denote higher degree of globalization. The year 2000 is used as the base year. When higher values of the original variable indicate higher globalization, the following formula is used for transformation:

$$\frac{V_i - V_{\min}}{V_{\max} - V_{\min}} \cdot 10 \quad (1)$$

Conversely, when higher values indicate less globalization, the formula is:

$$\frac{V_{\max} - V_i}{V_{\max} - V_{\min}} \cdot 10 \quad (2)$$

An updated version of the original 2002 index was introduced in 2007 as so-called **2007 KOF Index of Globalization**. The 2007 KOF Index of Globalization features a number of methodological improvements against the original version. Each of the variables is transformed to an index on a scale from 1 to 100. Higher values again denote higher

levels of globalization. The data are transformed according to the percentiles of the original distribution. The table 1 indicates the weights of variables in the 2007 KOF Index of Globalization. It shows that economic and social integration obtained approximately equal weights (36 %, 38 %), while political globalization has substantially smaller weight in the overall index (26 %).

Tab. 1: Weights of variables in the 2007 KOF Index of Globalization

Indices and Variables	Weights (%)
Economic globalization	36
(I) Actual flows	50
Trade (% of GDP)	16
Foreign direct investment, flows (% of GDP)	21
Foreign direct investment, stocks (% of GDP)	23
Portfolio investment (% of GDP)	19
Income payments to foreign nationals (% of GDP)	22
(II) Restrictions	50
Hidden import barriers	24
Mean tariff barriers	28
Taxes on international trade (% of current revenue)	28
Capital account restrictions	20
Social globalization	38
(I) Data on personal contact	29
Outgoing telephone traffic	14
Transfers (% of GDP)	8
International tourism	27
Foreign population (% of total population)	25
International letters (per capita)	27
(II) Data of information flows	35
Internet hosts (per 1,000 people)	20
Internet users (per 1,000 people)	24
Cable television (per 1,000 people)	20
Trade in newspapers (% of GDP)	14
Radios (per 1,000 people)	23
(III) Data of cultural proximity	37
Number of McDonald's Restaurants (per capita)	40
Number of IKEA (per capita)	40
Trade in books (% of GDP)	20
Political globalization	26
Embassies in country	35
Membership in international organizations	36
Participation in U.N. Security Council missions	29

Source: [11] pp. 48

Among the first to use KOF Index for empirical analysis was [12], who finds a positive, non-linear correlation between the KOF Index and population health measured by life expectancy at birth. In later studies, Sameti [22] has found that globalization increased the size of governments, while [23] have shown that globalization increased human welfare. Bjørnskov [4] analyses the tree dimensions of the KOF Index and shows that economic and social globalization affect economic freedom, while political globalization does not. The most recent 2007 KOF Index was used to analyze the impact of globalization on government spending and taxation, expenditure composition, unionization, and inequality.

2. Human Development Index – An Indicator of Institutional Quality

The main role of institutions is the creation (and reproduction) of a predictable environment for repetitive activity, thereby reducing transaction costs and the risk associated with searching for new information [25]. Institutions consist of formal constraints (rules, laws, and constitutions), informal constraints (norms of behavior, habits, and rules of conduct applied by individuals themselves), and ways of ensuring their compliance. Altogether, they create a structure of incentives. It follows that political and economic institutions are a crucial factor in determining economic performance [20]. Currently, there are many approaches to measuring and evaluating the quality of institutions, i.e. the institutional environment to be used to characterize the influence of institutions on growth performance and competitiveness of an economy. A single aggregate index of institutional quality does not exist. For purposes of this article, the Human Development Index (HDI) was selected.

The HDI aims to extend the concept of economic levels in a single summary indicator. This effort reflects the belief that a standard of using the GDP per capita is too narrow and ignores the importance of others, especially the qualitative characteristics of economic development. The concept of HDI highlighted the importance of such factors, which are closer to the quality of life from the perspective of human resources (educational characteristics and life expectancy), and supplemented with them the indicator of Gross National Income (GNI) per capita.

Human Development Index was first published in 1975 and since 1990 has been published in periodical Human Development Reports (HDR) within the United Nations Development Program (UNDP). The last comparison in November 2010 included 194 countries and territories, but only 169 to calculate the HDI values (25 countries lacked at least one indicator required for the calculation). HDI values have a two-year delay.

Until 2009, the Human Development Index was computed from three sub-indices with equal weights: life expectancy, index of education (literacy in the population aged 15 years (2/3 of the indicator) and the number of applicants to the first, second, and third levels of schooling (1/3 of the value of the indicator)), and GNI per capita in purchasing power parity USD (PPP USD). However, the annual HDR in November 2010 brought a new methodology and a change in some of the index parameters:

- a partial factor approach to education was investigated using the **education index**, which is expressed using a new indicator of expected years of schooling (the expected number of years a five-year-old child is about to spend in school) and the average number of years of school attendance in the adult population (number of years spent in school by 25-year-old citizens);
- factor in life expectancy and level of health care was refined using the **life expectancy index**;
- new use of **income index** (calculated from Gross National Income per capita in PPP USD data) as an indicator of standard of living.

Individual sub-index values are calculated using both the maximum and minimum reported figure plus the actual reported figures for each country; longevity has an interval of 20 – 83.2 years; the education component intervals consist of: expected total years 0 – 20.6, average education period 0 – 13.2 years and a combined index ranging from 0 – 0.951. The interval for GNI is 163 – 108,211 USD per capita in purchasing power parity.

$$\text{Subindex} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \quad (3)$$

The resulting sub-index value ranges from 1 (best outcome) to 0 (worst outcome) and there is a geometric mean value of the HDI (the original HDI was constructed as an arithmetic mean, i.e. without weights).

According to the HDI values, the countries are divided into 4 groups with the following levels of human development: very high ($\text{HDI} \geq 0.75$), high ($0.75 \geq \text{HDI} \geq 0.51$), medium ($0.5 \geq \text{HDI} \geq 0.26$) and low ($\text{HDI} \leq 0.25$). The relationship between the income per capita (expressed by GNI) and levels of human development (expressed as averages of life expectancy index and education), i.e. between the two arms of the first and third HDI index constituents, generally shows a strong correlation between the two variables. However, some of the differences in the levels of human development remain unclear. In many countries the level of human development is significantly higher despite a relatively low income per capita and vice-versa. In the first case, achieving higher economic levels strongly reflects in the human development. In the second, the level of human development is lower than that corresponding to the level of income, which is generally the case of most low HDI countries.

An accompanying indicator of human development is the new multidimensional inequality-adjusted human development index (IHDI) which is based on the same principles as the HDI (i.e. life expectancy, education, and economic level), but also reflects the unequal distribution of each sub-factor in the population (the inequality of access to the available resources). It is calculated for 139 countries as a geometric mean of the whole population for each one of the sub-indices (inequalities in income, access to education, and health care). It can be concluded that IHDI is the real indicator of the level of human development, while HDI can be interpreted as an index of human development potential, or maximum level of IHDI, which could be achieved in the absence of inequalities in the distribution of wealth. The “loss” caused by the human development inequalities is responsible for the difference between IHDI and HDI, and can be expressed as a percentage. The average loss in human development through a multidimensional inequality is approximately 22 %.

Generally, countries with higher levels of income per capita show also higher levels of human development index, i.e. the level of economic development is reflected in the higher levels of human development. However, countries at a similar level of income may have rather different values of the HDI.

3. Relationships between Human Development Index and KOF Globalization Index

The amount of economic and econometric papers on the impacts of globalization is basically countless. Yet, not so many of them use the KOF Globalization Index to quantify the level of globalization on the national basis and only a few put this indicator into relationship with human development. Amavilah proves in his paper [1] on the sample of 88 countries significant positive effects of globalization on human development. Still, at the time of publishing his paper, only the standard HDI was available.

Today the original HDI has been updated to inequality-adjusted HDI and authors of the article are using for their analyses the latest available data for both IHDI as well as KOF Globalization Index (and of their components). For the following study, 124 economies of the world have been chosen (the main criterion was complete data matrix for both indicators and their components). Analyzing the correlation between the two indices brought a proof of a very strong and significant relationship (see Fig. 1). The authors of this paper calculated the correlation between both indicators and have found out that an increase in the KOF Globalization Index by 1.0 point is generally connected with an increase in IHDI by 0.0118 points. Both indicators are in a rather tight relation with the correlation coefficient reaching 0.893.

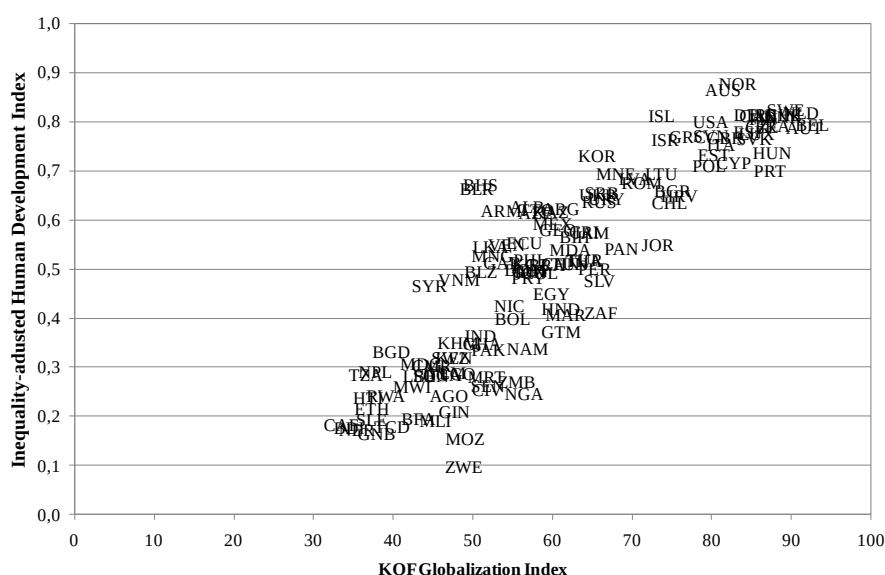


Fig. 1: Relationships between Inequality-adjusted Human Development Index and KOF Globalization Index

Source: [16], [17], depiction by authors

Since both analyzed indices are composite, one can obviously “dig” deeper under the surface of the aggregate numbers. It seems quite obvious the life expectancy component and the education component of IHDI should be more sensitive to the factors of the social and political globalization than to the economic globalization. For example Amavilah [1] found out, the social aspects of globalization have the most intensive

effects on the human development. Bergh and Nilsson [3] proved positive effects of globalization (measured with KOF Globalization Index) on the life expectancy.

Analyzing the relationships between inequality-adjusted life expectancy index and social globalization and between inequality-adjusted education index and social globalization results in two interesting findings: 1) Cross-country social globalization has generally higher variation than the values of aggregated KOF Globalization Index: the less globalized country, the lower its level of social globalization. On the other hand the values of inequality-adjusted life expectancy index are significantly higher than both the values of inequality-adjusted education index and IHD as a whole. In other words, the life expectancy component of IHD often raises the aggregated values of IHD in countries with low IHD values, while education component usually raises the aggregated values of IHD in countries with very high IHD values. 2) Both correlations sketched also in Fig. 2 are approximately of the same strength (correlation coefficients 0.861 and 0.873 respectively) and also the slopes of the linear trend functions are very similar (0.00930 and 0.00966 respectively). An increase in social component of the KOF Globalization Index links to equally intensive rises in values of life expectancy and education indices.

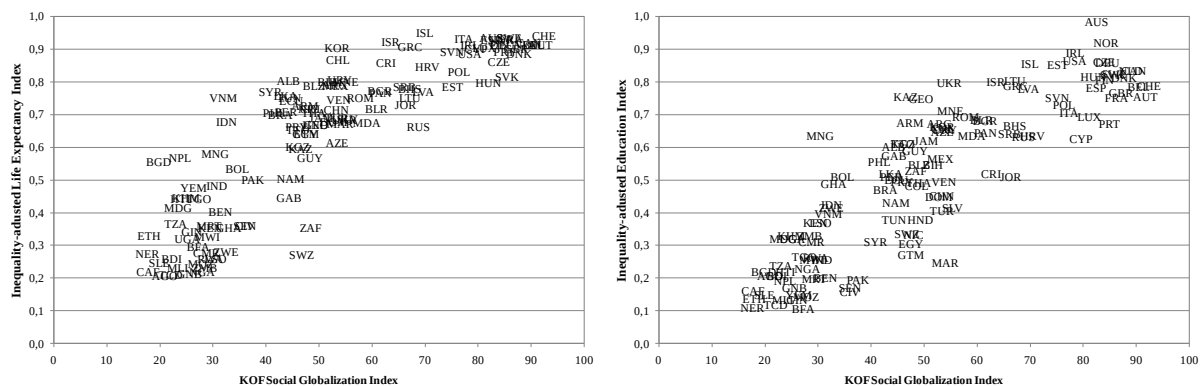


Fig. 2: Relationships between Two Components of Inequality-adjusted Human Development Index and KOF Social Globalization Index

Source: [16], [17], depiction by authors

The next step of the analysis of globalization impacts on the human development, especially on its non-economic components (life expectancy index and education index) has been focused on the role of political globalization of an economy. It is evident already from the Fig. 3 that in this case the relationship between the two variables is not so apparent and definitely not so robust and significant as it was in the previous case. The correlation coefficients do not reach 0.500 (they end up on the levels of 0.429 and 0.353 respectively), the significance of the linear trend model is in both cases doubtful. The political globalization has so far obviously the weakest links with the social development of individual states and nations.

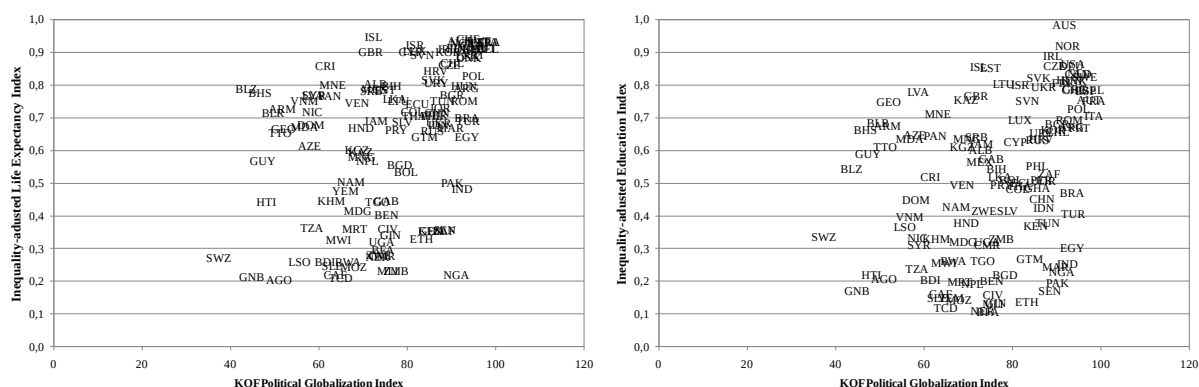


Fig. 3: Relationships between Two Components of Inequality-adjusted Human Development Index and KOF Political Globalization Index

Source: [16], [17], depiction by authors

Conclusions

It is possible to conclude from the results achieved in the study that the globalization remains in the first place a very strong and powerful economic phenomenon. Its positive effects on the social development, its force to promote better institutions of all kinds, and its assumed ability to raise people from poverty and misery have still remained weak. Especially the political side of globalization has shown only unconvincing power in supporting and encouraging institutional or social development. The reasons are probably manifold: from the lack of interest on the side of developed countries, deep, complex, and difficult problems in the developing countries, through dysfunctional economic or strategic integrations and alliances of states across the Third World to low or no operability of international organizations such as the United Nations and their agencies.

Quite the opposite can be concluded about the social component of globalization. This spontaneous and less politicized layer of globalization is remarkably efficiently helping people all around the world to improve their standards of living, their health conditions, and their access to education. It is globalization, expanding markets, accelerating information and capital flows, mass media, building new international relations on a personal basis, what brings new hope to the poorest economies of the world.

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Development of Regulation and Decision-Making in the European Union

Abstract

The aim of this article is to show a significant system distortion limiting the functioning of the European Union. They are resulted from the different forms of the integration process, especially in relation to the most recent stage – formation and the existence of the Economic and monetary union (EMU). EMU should be the highest level of integration process but in the fact it limits economic growth of the EU and also influences, as shown by significant current difficulties of some euro area member states, the development of all its members and all other EU countries. The Union decisions are made mostly at institutional levels and their common aim is to protect single currency. In this article, there are used a historic method and also an assessment of time series methods.

The chosen topic deepens authors their knowledge especially about the single insurance market and also represents the basis for further research. Although information about this topic are in the academic economics literature relatively well-known facts, they aren't paid enough attention. The reason may be a fear that through such treatises is undermined the prestige of integration processes and Institutions of EU. It is also necessary to initiate more open discussion on issues of EU development on academic ground.

Key Words

European integration, differences, single currency, regulation, treaty

JEL Classification: E01, E02, E26, E44

Introduction

One of the major issues of current development of global economy and the economies of individual countries is how to regulate financial markets whether it can be held in each financial markets designed by different states or even the larger multinational economic groups and which objectives and results has such regulation system.

Since 2008 most of developed countries face the extensive economic problems based on financial imbalances. The impact of the crisis development influence many other countries which are as a result of its financial and economic relations interconnected with countries where the crisis originated.

In accordance with the general opinion the crisis broke out in the U.S., gradually is reflected also in the Europe (mainly in the EU) with different strength and consequences

on each country. On the other hand there wasn't so significant influence on other important countries especially those members which in this time constitute a new group called **BRIC** (i.e Brazil, Russia, India and China – see Fig. 1).

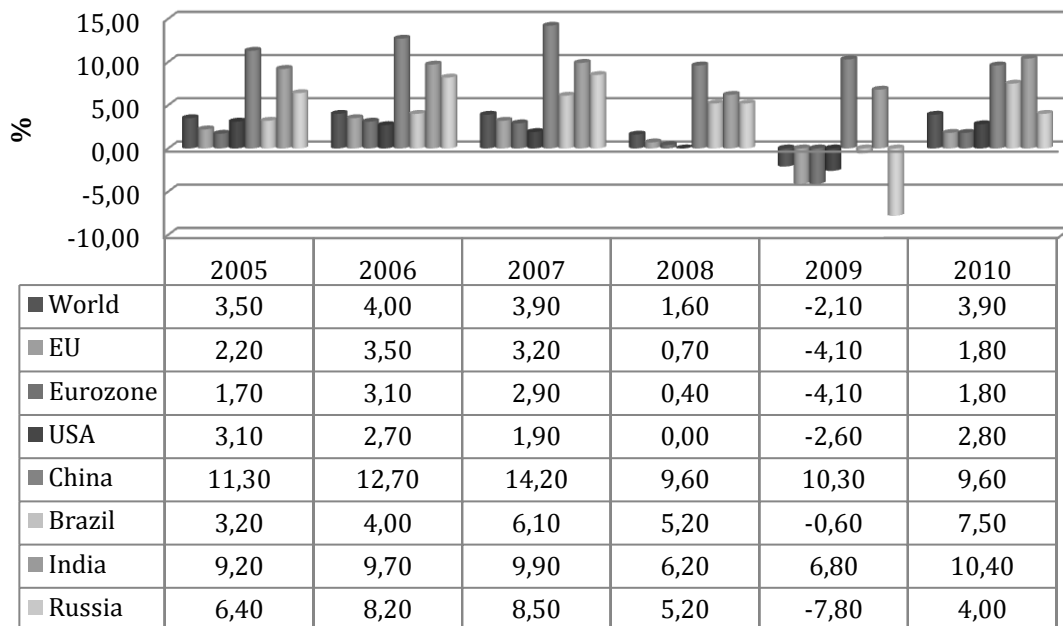


Fig. 1: GDP Growth Rate in Selected Countries and Economic Grouping (YoY)

Source: World economic outlook database, available from <www.imf.org>, [10] own processing

What is the reason that this global crisis is not really global and why are the development trends worst in the EU? A number of authors and institutions respond in different ways but always or almost always both economic and political talk turn to the question of the suitability or unsuitability of regulation and implemented forms.

Such discussions can focus on objectives and available alternatives used in recent past. The following text is from a political or purely political approach adjusted and we will pay attention on the economic attributes of the problem called the crisis and regulation by looking at the problem from being one of the most important components of the financial sector, namely insurance management.

1. The development of the contractual framework of European integration and the growth of regulatory trends

Although it probably is not needed so much, let's go back with a few remarks on the development of today's European Union in the period 1952-1989. The basis of today's economic integration in Europe has become the **Schuman Declaration of 9 May 1950**. Main economic goal of this Declaration was to submit all Franco-German coal and steel production under a common High Authority as an organization open to participation by

other European countries. The introduction of common coal and steel production should immediately provide the setting up of common foundations for economic development as a first stage of the European Federation. It will change the situation in areas where it has always been the manufacture of munitions of war whose victims were mostly those areas themselves [5].

Even here the first mention appears of cooperation in the coal and metallurgical industry which could become the basis for the European Federation. However, the formation of new institution called European Coal and Steel Union (ECSC) did not mean strengthening of some multinational elements.

The next major event in the development of economic integration was the creation of the European Economic Community (EEC) in 1958 (the Treaty of Rome was signed in 1957). According to the foundations of the EEC Treaty the mission of Community is "to create a common market and throughout gradually elimination of differences between the economic policies of Member States promote the harmonious development of economic activities, a continuous and balanced expansion, increased stability, faster standard of living and closer relations between all Member States" [8]

It is possible to find also here the tendency to create the common market but already there appears a precursor to the future regulatory trends. However, it is necessary to remind the structure of EEC whose members are Germany, France, Belgium, Netherlands, Luxembourg and Italy. All these countries are on relatively similar economic level and have very similar economic systems. From this point of view is more meaningful to speak about convergence by the already similar systems rather than to speak about gradual elimination of differences between the economic policies.

Other significant stage of strengthening tendency to coordinate and regulate economic systems in the European integration is associated with Maastricht Treaty, namely the Treaty on European Union (in force since 1 November 1993) which substantially revises the Treaty of the European Communities. And also it represents a uniform legal framework of the three European Communities (EEC, ECSC, Euratom) [7].

The existing concept of the integration was directed more on continuous removing of all types of trade barriers in Member States. With the Maastricht Treaty, a new kind of economic cooperation begins to dominate. This cooperation is based on coordination of their economic and budget policies so that in European Union will establish a stable economic environment and prosperity.

European Union set as a priority economic goal to promote balanced and sustainable economic and social progress. In particular it means to create an area without internal borders, strength economic and social cohesion and introduce Economic and Monetary union (EMU) which in accordance with the establishment of this agreement will ultimately include a single currency.

Two main instruments of coordination became the Stability and Growth Pact and the Broad Economic Policy Guidelines.

Stability and Growth Pact is the framework and also provides rules for the coordination of national budget policies. Its function should be to ensure healthy public finances which are necessary for good working of Economic and Monetary Union.

Following the convergence criteria for euro accepting requires the Growth Pact of member states to prevent the deficit higher than three percent of Gross Domestic Product (GDP) and keep its public debt below sixty percent.

Specifically, these convergence criteria require following:

- ratio of government deficit and gross domestic product shouldn't be higher than 3%
- the ratio of public debt to gross domestic product shouldn't be higher than 60%
- ensuring a sustainable degree of price stability and average rate of inflation for one year before the assessment does not exceed rate of inflation of the three member states with the greatest price stability by more than 1.5%
- long-term nominal interest rates did not exceed by more than 2% of interest rate of three Member States with the best price stability,
- respecting the fluctuation zone of the currency in the European Monetary System during last two years.

The concept of this contract based especially on the new economic conditions that originate in Europe in the late eighties of twentieth century. Causes for that were the unification of Germany and prepared widely anticipated and requested entry of new countries into the democratic community which has been followed after more than ten years.

However, targeting the whole concept of the convergence criteria react only to the question of acceptance or rejection of the euro in each country. And in addition the obligation for Member States to develop based on these designed criteria conditions for euro transition period (except countries which have negotiated in this direction in the preparation of the Maastricht Treaty opt-out) seems to be like confusion between the target and the instrument. The objective of the contract is clear, namely to establish in Europe a stable economic environment and prosperity.

On one side of this dilemma is accepting the euro as the completion of efforts to coordinate economic policy of the Economic and Monetary Union. But on the other hand, taking into account the variance of performance economics of Member States, those countries lost an important tool for the compensation of economic fluctuations independently if there is any crisis.

The degree of heterogeneity and diversity of economic development show the available and previously published data on economic performance in member states and their groups in the EU. There is information which is closely associated with compliance the convergence criteria mentioned above showing the differences between economics.

Especially in the current conditions of the European economy development, the possibility to use all instruments of monetary and exchange rate policies by solving

economic problems of individual countries should signify important benefits for the affected countries, as well as other countries. Such kind of various support help not only to such countries but also the by participation of their banks and other institutions doing business in developing countries with problematic development (i.e. return on investment of their subjects). Existing recovery packages for the three countries, namely Greece, Ireland and Portugal are now reaching 255-275 billion Euros, i.e. about 6.4 trillion CZK.

We can say that efforts to introduce the euro as soon as possible in all Member States mean a violation of the logical sequence. It increases the cost of integration of all participating countries. Since the beginning of this millennium in connection with the enlargement of the European Union have started to present and develop ideas about further centralization in the EU leading to transform the EU to "federal" state. In this period is therefore no longer about a further develop and strengthen the functionality of the Economic and Monetary Union but it is more about the new formation of "Superstate" with own constitution, symbols and other attributes of the state. These concepts were integrated into the suggestion of document, known as "**Treaty establishing a Constitution for Europe**". One of its main goals was to create and monitor a more precise division of competences between the European Union and Member States by respecting the principle of subsidiarity, i.e. policy principles under which decisions and responsibility in public issue should take place at the lowest level of public administration. In other words there exists an idea how to apply such a system of division of competences between EU institutions and Member States which would allow even more massive transfer of EU decisions through national legislation of individual countries in their economic and other practical activities. However, that agreement was in referendums in the Netherlands and France rejected, so it never entered into force [6].

Immediately after its refusal, new preparation started on another document with a similar focusing. This document entered into force as the **Lisbon Treaty amending the Treaty on European Union and the Treaty establishing the European Community**. The official interpretation of the changes included in the Lisbon Treaty point to the focusing on presentation of a new model of Decision-making processes. The Lisbon Treaty is from this perspective focused on:

- Strengthening the role of the European Parliament:
- European Parliament, directly elected by EU citizens, obtained significant new competences in relation to European legislation, budget and international agreements. In particular, the extension of decision procedure to new areas provides equivalent position of the European Parliament to the Council, which represents Member States by approval of the major of EU legislation;
- Greater involvement of National Parliaments:
- National Parliaments can better participate in the EU policy, particularly through a new mechanism of monitoring the Union. EU takes action only when is the activity more efficient at European level in terms of required results (the principle of subsidiarity). With extending competences of the European Parliament it will strengthen democracy and legitimacy in the EU decision-making processes;

- Effective decision making:
- Qualified majority voting in the Council will be extended to new areas, making decisions will be so faster and more efficient. Since 2014, the qualified majority will calculate by double majority of Member States and citizens, which reflects the dual legitimacy of the EU. Double majority will be achieved if the proposal will be accepted by a 55% of Member States representing at least 65% of EU citizens.
- More stable and effective institutional framework:
- European Council President is a new function according to the Treaty who is elected for two and a half years. The Treaty introduces a direct relation between the election of President of European Commission and European Parliament. It contains also new provisions of the composition of European Parliament and provides clearer rules for enhanced cooperation and financial competences.

Already from these principles the Lisbon Treaty represents a significant, and in its consequences still more significant change compared with the Maastricht Treaty, especially in the area of Community law and to strengthen the influence of EU institutions in decision-making processes. With its new design concepts and decision-making competences intervene in all areas of economics and politics. Therefore, we consider it as useful to mention also in relation to this agreement one important topic, namely the Community law. The change in the EU legislative proportion is also changing the implementation of EU policies, including decision-making competences [9].

2. Regulation and Distribution of Competences of Decision-making

Procedures through which the EU makes different decision and the acceptance of regulations, directives and laws are very complex. They try to take into account the interests and views of all EU members and reach a decision agreed with all member states. Methods of decision making used currently in the EU were proposed in early of European integration for 6 countries. But currently decide all 27 states on this basis. Logically, it involves higher requirements on the coordination of procedures, delays in specific decisions but sometimes it leads to stop of important decisions. Therefore it is possible to observe efforts how to recover these procedures.

There is a major problem resulted from the fact that the gradual enlargement of the EU new member states led to a significant (and perhaps disproportionate) level of economic differentiation of member states (see Fig. 2.).

These data, even without specific interpretation show the differences of achieved economic development. Such a performance structure of member states is continuously diversified by gradual enlargement of the EC (respectively EU). It is reflected in the increasing role of "solidarity" of powerful states with weaker states and the declining rate of growth of economic performance and welfare of the citizens in those responsible or even the more successful countries.

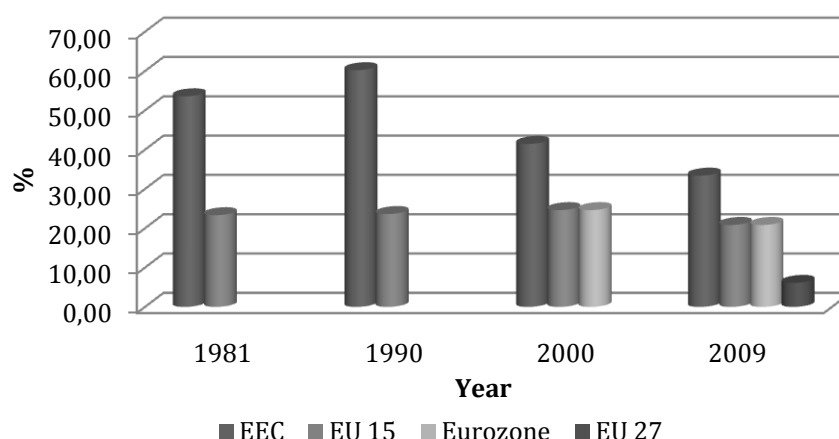


Fig. 2: The percentage differences in these groups between the weakest and most powerful EU states

Source: GDP per Capita in PPS about Eurostat, [2] own processing

We must necessarily think about how difficult it is to assume such an integration grouping without any failures. Member states have had very different political-economic history and the resulting economic performance. In case of any distortion of the economic growth (especially fall) arise the efforts of the common solution with the support of countries, especially those that did not cause this failure. A good example is the formation of various recovery packages to encourage less efficient or non-efficient economies or even the recovery of financial institutions that participate on loan or investment in problematic economies.

The results of many years of experience in various integration projects show the higher degree of integration the greater requirements are placed on decision-making, in particular on cohesion group. It is obvious that the first phase of integration (i.e. creating areas of preferential trade, free trade area and customs union) mean expressions of interest of involved and economic comparable countries. In short, the expansion of trading opportunities led to minimization of tariff and non-tariff barriers to trade.

From one point of view, efforts to the unanimous voting of the EU institutions (European Parliament and European Commission) give the impression of issued EU regulations which take into account the requirements of all, even the smallest Member States. On the other hand, their final version is often influenced by this effort. The introduction of a double majority cannot fully solve the problem about the Lisbon Treaty. The double majority should be achieved when there will be an agreement with the proposal by a 55% of Member States representing at least 65% of the population of the Union.

The problem is not only the objective differences of opinions and views of individual countries, in their power even in their representation possibilities in the European Parliament but also in the obligation to implement EU legislative regulation, namely Directives into national legislation. Such a model of implementation of European law is based on the dual view of European law-makers on the one hand and responsibilities for its implementation on the other hand. In the context of the preparations and the formation of new supervising institutions on the various segments of European financial

market's grows a problem of asymmetry between the accepting decision (at the level of the EU) and responsibility for the results of implementation (national level). Current EU plans take competences of national supervisory authorities but responsibility for the functioning of the market retain the same [4].

3. New Regulation Schedule and the Division of Competences

Underlying causes leading to the current crisis is seen mainly in:

- **lack of risk management** - consisting mainly in overestimation of the ability of financial companies as a whole to manage their risks and to hold adequate capital,
- **lack of credibility of the results of evaluations carried out by rating agencies** due to low subjective preparation but also in the context of objective lack of historical data and time series, especially on new financial instruments,
- **failure of corporate governance administration** arising mainly from the fact that members of higher management from a number of financial companies didn't understand the characteristics of new, very complex financial products and the risks associated with them,
- **failure of regulation, supervision and crisis management** while they were regulated financial institutions which have confirmed as the largest source of the problem [1] [3].

The response to this criticism of the system of regulation and supervision is therefore again change the regulatory structure of the EU institutions which can be schematically illustrated as follows (see Fig. 3).

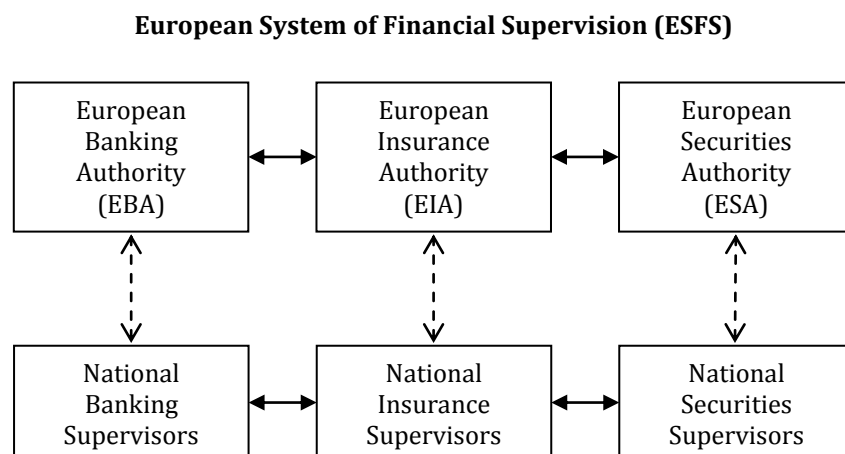


Fig. 3: The structure of supervisors in the EU

Source: [1]

The proclaimed aim of ESAs is to contribute to:

- improve the functioning of the internal market, including a high, effective and consistent level of regulation and supervision;

- protect depositors, investors, policyholders and other beneficiaries;
- ensure the integrity, efficiency and proper functioning of financial markets;
- maintain financial system stability;
- strengthen coordination of supervision at the international level [1].

The authors of the proposal argue that the task of Community is to provide a system which is in accordance with the objective of a stable financial market and single EU financial services - linking national supervisor authority into a strong network of Community. The centre of daily monitoring remains at the national level and national supervisory authorities will remain responsible for the supervision of individual entities.

Summary

Overall, our obtained findings is possible to summarize as follows:

- More than fifty years of European integration process is influenced by a constantly increasing number of the participating countries resulting in the growing diversity of their economic level but also other characteristics.
- The integration process continues, however some strategic decision of European institutions and Member States are based more on political intentions.
- In this case, it seems to be like nonrespecting of generally accepted succession of individual stages of integration without appropriate conditions in development countries.
- Transition from establishment of free trade zones as first legal and evidence of integration was too early replaced by projects based on the coordination of economic policies and the creation of the Economic and Monetary Union to apply a single currency known as Euro.
- In this situation, some of the economically weaker Member States has resign on its own monetary policy and also lost an important tool in stabilizing their economies.
- The difficulties associated with the current economic crisis are solved case by case on different recovery packages. Money for these packages is provided by taxpayer of those richer and more resistant countries to affected countries.
- At the same time in European politics there is increasingly promotion of the idea of closer political economy cooperation showing some signs of Europe federalization.
- In the economic area there is an increasingly number of implementation of different regulatory schemes which are binding on member states by taking responsibility for their impact to the Member States.
- Simultaneously and continuously are reorganized the Union's institutions.

For EU representing as an important competitor in future years in rapidly developing economics it should not continue to artificially accelerate the integration process but to create such economic incentives leading to increased competitiveness of Member States in the world. The way to do it is interconnection the decision-making competences of EU

institutions and member states with their responsibilities by respecting different specifics and degree of development of individual members.

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The Theoretical and Practical Aspects of Ecology Tax Reform in the Czech Republic¹

Abstract

The contemporary economic development of a society is always connected with smaller or bigger distortion of the environment. The range of damages to the environment shows that it is not possible to rely on free market mechanisms which would automatically adjust these impacts on the environment. Especially in the most advanced industrial areas within activities of economic subjects there occur from many reasons distortions of market equilibrium and that is why negative externalities are generated in the environment area. There is a discrepancy between company's interests – polluter and society's interests therefore it is necessary to regulate this problem with the aid of environmental tools, which are made within the scope of a state policy and its environmental protection. The main aim of environmental regulation is at least partial internalization of negative externality into private company's costs – polluter.

State has a vast variety of environmental tools for realization policy of environmental protection. There are widely represented normative tools but economic tools are growing as well. With the beginning of a new millennium the tax systems of each state are accepted as a potential tools for the environmental protection. The concept of ecological tax reform which was defined by developed European countries was shown up into EU policy and then also into politics of each member states. The Czech Republic as the rightful member of European Union accepted this concept and in 2008 implemented it in the framework of relevant legislation. The main idea of ecologically tax reform is tax neutrality which should be fulfilled in the area of the Czech Republic. The state decides which combination of potential tools is efficient and suitable for its environmental policy. It is necessary to evaluate specific criteria for a rational choice of environmental tools mix. However there is not examined economic efficiency or environmental effectiveness of particular tools only, the transaction costs or the policy acceptance of implemented arrangement are also very important.

Key Words

negative externalities, internalization of negative externalities, environmental tools, ecology tax reform, economic efficiency, environmental effectiveness, transaction costs

JEL Classification: D62, H23, H71, Q51

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Introduction

The idea of permanent sustainable growth became a strategic goal to governments of developed economies at the turn of the millennium, it was shown up into economic behaviour of entrepreneurial subjects and it was reflected into behaviour of individuals. In the environmental areas were searched ways how to stop the negative impact of industrial companies' activity on their surroundings. Environmental economy is from its beginning connected with negative externalities problems. The task of government is at least implement this externalities into subjects' economy, which pollute the environment by their behaviour. The state keeps at disposition wide scale of the environmental tools for the environmental policy. In the contemporary era is accentuated solution of these problems with help of state tax systems. The ecological tax reform constitute significant tools in the area of the environmental protection, which create one of the principal pillars of sustainability. [1]

The main goal of this paper is to define theoretical starting point for solving interaction of negative influence of subjects - polluter on the environment. In the article are examined state environmental tools, which at least make possible to eliminate negative impacts. The attention is especially focused on potential tax system to solve these issues. The area of the Czech Republic is also analysed in context of realization the ecology tax reform. During the process of the article composition there was used broad interdisciplinary approach. Piece of knowledge processed in a form of description and analytic comparison were evaluated and analysed.

1. Theoretical Aspects of Environmental Regulation

The beginnings of environmental economics are mainly related to the concept of externalities. The full formulation of this idea is primarily attributing to Pigou. The externalities appear when one side has effect on utilities or costs of somebody else and this first side do not involve these utilities, respectively additional costs to its deciding. In the case of the negative externalities producer thinks about form of output of his private marginal costs only when he makes the decision, no additional costs to other subjects which are consequently generated by his production. [2]

The theory of externalities has been solved by renowned economist since the first half of the last century. The primary cause of rising the externalities are, as [3] mentions, not accurately well defined ownership rights. Well defined ownership rights lead to the higher usage production factors and as far as the ownership rights are not only well defined but also effectively enforceable, then there will happened the right allocation of resources too. In the sixties of the last century there was given bigger attention to the theory of the environment. Damaging the environment is generally perceived as the negative externality. R. Coase in his article "Problem of Social Cost" [4] created comprehensive externalities concept and necessity of state regulation providing that interested subjects (polluter and harmed by pollution) have opportunity to negotiate together. Optimal level of pollution is then achieved on condition of small transaction costs. Transaction costs can be really high on environmental regulation because huge

amount of economic subjects are influenced. There consequently evoked a controversy about height of transaction costs in accordance with necessity of a state interference in externalities' area resp. their internalization. Buchanan [5] emphasizes that if transaction costs were higher than utilities from externalities correction then externalities internalization cannot be considered as effective.

The issue of internalization of negative externalities into the costs of private enterprise - the polluters - is under the protection of the environment given increasing attention. A state uses whole set of macroeconomic environmental tools and with their help the negative externalities are at least partly transported to the company costs. [6] Because of the implementation of environmental tools into the company costs then there will happen that price of particular product will increase connected with sinking interest of consumers and after all also reduction to environment burden. [7] Practically this process is not in progress globally, there exists whole set of hardly punishable and identifiable externalities. New and unwanted elements appearing with process searching of optimal environmental regulation can be also problematic – for example changing behaviour of particular subjects or partial market instability. [8] Lowering an environmental burden on a level of companies concerned depends not only on a state intervention but also on the willingness of interest groups to solve this issue. The company management, which is willing to accept also goals of other interest groups, can effectively decide not just in financial but in environmental area too. [9]

2. Environmental Tools

State creates tools mix of environment regulation in the context of a state policy environmental protection. When these tools are created there are applied a compulsive access (normative tools) and market oriented access (economic tools). In the last years there is happening a development in company initiatives in relation to environment which are realized with a set of voluntary activities. [10]

In the surrounding of European countries regulation systems of environment protection come out above all from legislative well-founded normative arrangements, which should influence the behaviour of a polluter, their control and eventual sanction (penalties) in case of non fulfilment under the given conditions. These tools are environmentally efficient but with many deficiencies. [11] Nowadays there is increasing the share of usage of the environmental tools. In principal these tools are based on indirect influence of behaviour economic subjects which destroy the environment. Thanks to the implementation these tools markets are compelled to use less environmental exacting inputs and to invest more to areas which are considerate to the environment. Each economic subject (companies, households) can make a decision, if it is financial preferable for them to invest certain costs to reduction or prevention from damaging environment or if to damage environment and with some form of payment or taxes pay for this harm. [12]

The state decides which combination of potential tools is efficient and suitable for its own environmental conception. The specific conditions must be respected for rational

choice. Potential tools for protecting environmental must fulfil delimited goals; it means that they must be environmentally effective. The implementation of tools must be in the context of economic efficiency connected with proportional social costs. Contemplative arrangements should be treated legislatively and politically accepted with single interest groups. [13] Environmental regulation should not disturb the competitiveness of certain sectors. [14] A multi-criteria state decision about the optimal mix of environmental tools is very complicated because particular criteria for implemented changes react really sensitively. Fulfilling environmental goals should be realized at the price of inadequate administrative costs or the distortion of competitive environment.

2.1 The Greening of Tax System

A relatively new economic approach, which is implemented by government policies to the economic area of the single states, is the greening of a tax system. The tax system not only performs a fiscal function but it becomes also an environmental tools of government policies. The implementation of environmental aspects into current tax system has its difficulties indeed. The tax allowance of the particular commodity may affect controversially because the tax system is usually closely connected with a policy and it is not excluded that modifying the law will be pursued by other goals than environmental protection. [15] The tax increase, in the case of a tax disadvantage of non ecologically commodity, is shown into the price and can get to burden especially low-income groups of population that has no alternative choice when they are buying products or services which cause some controversy. For the theoretical exploration of ecological taxes potential there is possible to find a whole spectrum of approaches in the literature. [16]

In the countries of European Union there has been discussed the concept of ecological tax reform as a possible way to fulfilling goals of sustainable development for many years. Basically this idea represents shifting from labour taxation to taxation of those products or services which production or consumption has a negative impact on the environment and human health. [17] In a larger sense it is social-ecological reform because the main goal is to enhance quality of the environment, to reduce energetic consumption and to recover labour market. In its own consequence the reform should be revenue neutral and it should not lead to increase of a tax burden. The principal of tax neutrality is derivated from the increased revenue collection on the one hand (revenue of so-called “ecological taxes”) and reducing tax burden on labour (income tax area and social insurance payments) on the other hand. For compliance this principal there should basically apply that increase of environmental taxes (ET) should be consistent with decreasing income tax (including the insurance) DT.

$$\Delta ET = \Delta DT \quad (1)$$

The requirement of tax neutrality is discussed as a hard keeping condition. Experiences in European Union indeed show that this principal has not been practically kept in any country. [18]

The transaction costs are an important efficiency indicator of implementing ecological taxes which are generated both on the state side and private sector. In the case of a state it represents mainly the administrative costs connected with implementing and administration of new tools. The private sector apperceives the transaction costs in the form of higher administrative costs and administrative duties. Measuring the transaction costs is problematic. It is possible to analyse the administrative costs which are identifiable for example with help of growing number of administrators of specific tax, wage costs of new administrators and so on. In the case of costs incurred or excessive tax burden [19] is this situation already much more complicated. The absolute volume of transaction costs of environmental taxes influence several factors. The decisive factor is the number of taxpayers, the algorithm of tax base calculation, the linkage of tax base to other taxes or reporting and also monitoring system and control. [20]

3. Ecological tax reform of the Czech Republic

Each Czech government has been occupied by the greening of tax system since the 90`s of the last century. Environmental aspects were gradually included into current tax system but for more conceptual solution there was lack of political will and there were not also solved possible effects of compensation. In the government's policy statement in August 2002 the government of the Czech Republic signed to start working on revenue neutral ecological reform. The directive 2003/96ES became binding also for the Czech Republic with the entry into the European Union. According to the directive the Czech Republic had to introduce at the latest date 1st January 2008 new consumption tax on electricity, gas and coal. [21]

The ecological tax reform is implemented in the Czech Republic in three gradual stages in the time frame 2007-2017. In the Czech Republic the reform should be based on tax neutrality like in other EU countries, which means that revenue should be used to reduce labour costs. Nowadays this reform has been in progress for three years and it entered its second phase. In accordance with the reform there have been implemented into the tax system of the Czech Republic since the year 2008 by the provisions of the law 261/2007 Coll., stabilization of public budgets articles 45-47 so called "ecological taxes"¹, respectively tax on gas, tax on solid fuel and electricity tax. In consequence of implemented measures the tax burden on labour has been reduced over the last three years in the Czech Republic (there was set the uniform 15% income tax of individuals taxation, reduced income tax of corporation body at 19 %, reduced social insurance tax to 31.5 %).[22]

For measuring environmental gain and ecological tax reform effect (with regard to relatively short time sequence) there are available only limited data and it is not

¹ This is only so-called "ecological taxes", the question can arise whether they have any ecological impact. According to rules of OECD or EU is considered as the environmental tax consumption tax on mineral oils or direct road tax.

possible on the beginning of the second stage to globally analyse and evaluate the implementation of the reform. The basic principal of the tax reform – tax neutrality – is not entirely clear from analysed information too.

3.1 Ecological tax of the Czech Republic surrounding

The taxes, which have been implemented into the tax system of the Czech Republic since the year 2008, are not nowadays fiscally significant. In the legislation are integrated temporary exemptions for tax on gas, tax on coal and electricity tax, in the future there can be expected an increase encashment of these taxes. Data used for analysis of current fiscal effect of the first stage the ecological tax reform were gathered in the period from 2008 to 2009 (data for 2010 are not completely known yet). The overview of encashment increases or decreases “ecological taxes” and income taxes, let us say social insurance is provided in the Tab. 1.

Tab. 1: Encashment of taxes in the context of ecological tax reform (in million CZK)

Type of tax	Encashment 2008	Encashment 2009	Δ 2008/2007	Δ 2009/2008
"ecological taxes"	2,454	3,181	2,454	727
income taxes	294,000	267,000	-40,000	-27,000
social insurance	599,000	559,000	23,000	-40,000

Source: own elaboration according to CSO (Czech Statistical Office) and Custom administrations of the Czech Republic

The fiscal effect of income taxes (including insurance) is much higher than in case of “ecological taxes” even if there was included among these taxes consumption tax on mineral oils which annually brings into the state budget about 80 billion CZK. Annual increase of taxes charged on environmentally problematic commodities was significantly lower than calculated annual reduction in income taxes (this fact is also reflected in the Czech Republic budget where there was recorded about 61 billion lower revenue in the year 2009 including insurance compared with the year 2008).

Environmental taxes have been implemented into the Czech Republic legislation as selective taxes. Transaction costs (especially administrative) of these taxes are not very significant because the methodology of selection, reporting, administration and control is based on current system of selecting consumption taxes (limited number of tax payers, the same methodology of calculation taxes, monthly period of taxation, identical administrator). The growth of employees that dealt with administration of these taxes from the begging of their existence is not dramatic too. [23]

4. Discussion

Ecological tax reform is being implemented into the Czech Republic tax area since 2008. Currently is the Czech Republic on the begging of the 2nd stage of this reform but in the context of global economic crisis, significant public finance deficit and unstable political

area there is not much accentuated the solution of environmental issues. In the government decisions there is obvious divergence from environmental solutions (for example in the 2011 there are no longer dispensed incomes in the law on income tax for individuals and corporation bodies related to the use of ecologic source of energy). Originally declared purpose of “ecological taxes” towards improving environmental conditions is not nowadays practically obvious. Low “environmental taxes” encashment and reduction of direct tax burden on labour deepened fiscal problems of the country. An analysis of available literature indicates that increase of the tax burden did not get to single subject in a short interval. However, the success of environmental reform and real fulfilment of principal of neutrality tax will be possible to examine up to time distance, after the realization of individual stages of this reform.

Conclusion

The theory of externalities has been solved by renowned economists since the first half of the last century. In the environment economics there is paid still bigger attention to the internalization of negative externalities into private company's costs – polluter. A possible solution is by the state set up complex of environmental tools, through them negative externalities are at least transported to the company costs. Companies should take responsibility for environmental pollution caused by their activities and should include the negative externalities in their costs. Internalization of externalities is possible especially by the form of tools which the state within the environmental policy and appropriate institutions implement into the economic area. The concept of ecological tax reform is of its main idea “from labour taxation to taxation of ecologically burdening products or services” very interesting and European countries are accepting it as a possible tool for achieving the goals of sustainable development. With the implementation of the reform steps, however, there are associated certain risks that are evident in the longer run. The example of the Czech Republic already shows that it is not easy to work out more accurate revenue estimation of this reform, there is not obvious linkage to internalization of negative externalities and controversial is also the fundamental attribute of the reform – tax neutrality.

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Quality of e-Logistics in e-Commerce: Consumer Perception

Abstract

Information and communication technologies (ICT) have the decisive influence on competitiveness of organization. Transformations of organizations nowadays mean that organization should be flexible and involve ICT as business tool or as additional tool for gaining competitive advantage. Increasing turnover of e-commerce in the world points out the significance of research of the e-commerce web sites evaluation, design solutions, quality assurance, consumers' behavior on the web, and the factors influencing behavior of consumers'. Different approaches and research trends concerning these topics exist, but not much research issues analyses e-logistics within e-commerce, its' efficiency, which can be evaluated by consumer satisfaction or e-logistic quality measurement. These circumstances frame the topicality of this subject. E-logistics as quite new scientific field will be analyzed in this article. The objective of the paper is to identify the criterions of e-logistic quality evaluation in e-commerce websites considering peculiarities of consumers' behavior. Survey results leads to the deeper study of the factors e-logistic quality assessment. As one of critical points for consumers the risk management in e-logistics question was identified. The other critical questions for e-logistics were analyzed in this article as well.

Key Words

e-logistics, e-logistics quality, customer behavior, e-commerce quality, web site quality, quality factors

JEL Classification: **M31, M39, O32, O33, P21, P23**

Introduction

Development of information and communication technologies (ICT) becoming more powerful in the economical sector. The web site of a company is one of the important tools in competitive environment. According to The Department of Statistics (Statistics Lithuania) the amount of companies using computers growth was 5.2% and internet usage growth was 11% during last five years [25]. For example, in year 2005 91.7% companies used computers and in year 2010 it was 96.9%. 65.2% enterprises had company's website in year 2010 while in year 2009 it was 61.7%. It was indicated that: 39.4% companies presented product catalogues and price lists, 17% of companies offered an opportunity to choose preferable shape or design of product, 17.1% possibility to order and purchase the products. In most cases enterprises use Internet for financial operations (92.9%). In year 2009 95% of enterprises used the Internet for communication with public authorities and agencies, in year 2008, 90.4%. 94.6% –

downloaded various forms, 91.4% – returned filled-in forms via the Internet. In year 2009, 31.4% of enterprises provided offers in an electronic tendering system (public procurement monitoring information system). At the beginning of 2010, digital authentication tools were used by 68.9% of enterprises having 10 and more employees (in year 2009, 23.9%). Analysis of statistical data leads to conclusions that ICT development has not only advantages, but also causes certain challenges for organizations and for consumers as well [12].

A lot of scientific researches in the field of e-commerce quality measurement [2, 7, 15, 19, 21, 33], quality assessment of website structure [1, 5, 23, 28], e-commerce behavior [4, 14, 20, 30], ICT or website security [31, 35] etc. are executed recent years. Still, not much research issues analyses e-logistics within e-commerce, the new evaluation methods are needed for complex evaluation of e-commerce solutions. The country peculiarities should be evaluated and involved in the e-commerce quality measurement model as well.

The objective of the paper is to identify the criteria of e-logistic quality evaluation in e-commerce websites considering peculiarities of consumers' behavior of the Lithuania.

Research methodology employed: systematic analysis and survey that allowed disclosing e-logistics quality evaluation criteria within e-commerce. The methods of comparison, structured questionnaire, and data analysis were employed.

1. E-logistics definition

The development of logistics falls into three stages: military logistics, business logistics and e-logistics [3, 37]. Presently the e-logistics has been mostly defined according to the definition of electronic logistics, in which the most typical one is that electronic logistics refers to the process which utilizes web technology as an important tool to manage the whole logistic process or some sectors of it [3, 37]. Sun (2002) defined e-logistics as the mechanism of automating logistics processes and providing an integrated, end-to-end fulfillment and supply chain management services to the players of logistics processes [36]. Those logistics processes that are automated by e-logistics provide supply chain visibility and can be part of existing e-commerce or workflow systems in an enterprise. Based on the above definitions, we can define that e-logistics, can be regarded as the integration of *information flow, fund flow and logistical service*. This definition extends the Aldin, Stahre and Ruther et al. in year 2003 e-logistics understanding, that it realizes the utility of electronic technology and integration of logistic organization, trade, management and service modes, it is entitled to share data, knowledge and other information with partners in the supply chain. E-logistics can be defined in various ways because of the vast process implications and interactions. It can simply mean processes, which is supposed to transfer the goods sold over the internet to the customers or in a more sophisticated view, e-logistics is a wide-ranging topic related to supply chain integration that has the effect of eliminating intermediaries (such as wholesaler or retailers) and fosters the emergence of new players like logisticians, whose role is to adapt traditional logistics chains and to take the requirements of e-business into

account. Impact that Internet has on the supply chain process, which plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point-of-origin to the point-of consumption in order to meet customers' requirements" is also another definition of e-logistics. More different points of view are presented in table 1.

Tab. 1: E-logistics definitions

Authors	E-logistics definition
Placzek, 2010	E-logistics service is an action that supports supply chains functioning, and they have nothing to do with the physical goods traffic, possession of transport fleet or storage facilities. Examples of this type of services are available cargo and vehicles databases, transport databases, managing relationship with the customer
Sarkis, Meade, Tallury 2004	it is the electronic, systemic and integrative nature of these information- and computer-based technologies over the last decades that has provided a radical change in the logistics function for organizations
Efimova, Tsenzharik, 2009	Electronic Logistics Service (electronic logistics services) is the kind of activity connected with accumulation, processing, an exchange and storage of electronic documents on international commercial transactions and transportations
Gunasekaran, Ngai, Cheng, 2007	E-logistics is an internet-enabled logistics value chain designed to offer competitive logistics services, including public warehousing, contract warehousing, transportation management, distribution management and freight consolidation

Source: own

The e-logistic definitions revealed that e-logistic within e-commerce should be analyzed as material product logistic and as service or non-material product. The management and support of logistic activities by ICT (as e-business tools) is not subject of this research and would not be analyzed further.

2. E-logistics quality evaluation in the e-commerce

Logistics capability has been widely studied and measurement scales have been developed to link capability with competitive advantage and superior firm performance [8, 9, 17, 22, 40]. These studies found that logistics activities affect performance with regards to revenue enhancement as well as cost reduction. These researchers found that logistics capability makes a major contribution to corporate strategy and performance and sometimes provides competitive advantage. However, the relationship between logistics capability and company's performance in the e-commerce has not been investigated widely.

In addition to the eight logistics capability measures used by Morash et al. (1996), several e-commerce specific logistics capability items were identified. Croom's (2005) research found that firms adopting e-commerce engage supply chain management via a five-stage evolutionary process beginning with customer acquisition using standard e-business services. These company's progress to a fully integrated supply chain management model incorporating such services as e-fulfillment, global positioning and

order tracking. Other e-commerce logistics literatures have identified logistics capability as a requirement for potential success [7, 8, 9, 11, 27, 40]. Capability relates to: the ability to handle small, frequent orders, to deliver correct orders on-time, to communicate shipping information, to handle and fill orders using a web-based system, to share logistics information with other channel members, to handle return products, and to handle global distribution. 11 logistics capability items were proposed by Cho et al. 2008. The details of these items presented in table 2.

Tab. 2: Logistics capability in e-commerce market and definitions

Capabilities	Definitions
Pre-sale customer service	The ability to service the customer during the purchase decision process (i.e. before the customer buys the product)
Post-sale customer service	The ability to service the customer after the sale of the product to ensure continuing customer satisfaction (i.e. return product handling)
Delivery speed	The ability to reduce the time between order taking and customer delivery
Delivery reliability	The ability to exactly meet quoted or anticipated delivery dates and quantities (i.e. deliver correct orders on time)
Responsiveness to target market(s)	The ability to respond the needs and wants of the firm's target market(s) (i.e. handle small, frequent orders)
Delivery information communication	The ability to communicate shipping and delivery information with customers
Web-based order handling	The ability to handle and fill orders using a web-based order handling system. This also includes logistics information sharing with other channel members
Widespread distribution coverage	The ability to effectively provide widespread and/or intensive distribution coverage
Global distribution coverage	The ability to effectively provide global distribution coverage
Selective distribution coverage	The ability to effectively target selective or exclusive distribution outlets
Low total cost distribution	The ability to minimize the total cost of distribution

Source: [8]

The logistics capabilities presented in the table are analyzed widely, but how they are involved in e-commerce quality research models are not analyzed yet.

3. E-commerce web site quality evaluation models

In order to identify key criteria for evaluation of e-logistics in e-commerce websites the existing methods and models, such as: VPTCS [19], based on TAM or SERVQUAL model [7], a model of virtual service quality dimensions [33], WebQual model [5], Web Quality Model (WQM) model [6], E-S-QUAL model [28], 2QCV3Q quality measurement meta-model [26], WebQual TM quality evaluation model [23], IRSQ criteria list [21], EtailQ model [38], PeSQ model [10] were investigated and evaluated. Scientists emphasize different elements of quality evaluation of website. Calero et al. (2005) analysis the website quality from three different points of view: consumer, designer and owner. Qin Su et al. (2008) used 6 dimensions for analysis of degree of consumer satisfaction using e. services: quality of service provided, customer service, management

of processes, ease of use, the quality of information and design of the website. Cao et al. (2005) analyzed the quality based on the principle of information systems and identified four essential elements: information, services, system quality and attractiveness. Alzola and Robaina (2010) only two major phases of the evaluation of e-services: phase before and phase after the sale, and pointed out importance of added value. Santos (2003) distinguishes passive and active categories of elements of the website quality. Parasuraman et al. (2007) and Zeithaml (2002) highlights the importance of reaction to the consumer named problems.

As a reason the different types of websites (informative, commercial, educational, entertainment) can be named. The evaluation methods and models of such researches depend on target group (consumer, designer, website owner) interests and perceived quality. The 5 most important criterion groups were identified (easy to use, navigation, security assurance, real time help, and content). The other kind of criterions should be evaluated also, but their significance depends on consumer behavior habits (design, easy search, image created, etc.), macro environment (reliability, loading time, innovativeness, etc.) which could be determined by country specifics. Deeper analysis of 7 models was proceeded (table3).

Tab. 3: E-commerce web site quality evaluation models analysis

Model of	Loiacono <i>et al.</i> , 2007	Parasuraman, <i>et al.</i> 2007	Cao <i>et al.</i> , 2005	Calero <i>et al.</i> , 2005	Santos, 2003	Barnes & Vidgen, 2003	Mich <i>et al.</i> , 2003
Dimension							
Easy to use	+	+	+	+	+	+	+
Navigation	+	+	+	+	+	+	+
Security assurance	+	+	+	+	+	+	+
Help (real time)	+	+	+	+	+	+	+
Content	+	+	+	+	+	+	+
Design	+	+	+		+	+	+
Easy search	+	+	+	+	+		
Reliability	+		+	+	+	+	
Loading time		+	+		+		+
Image created	+					+	+
Innovativeness	+		+				+
Contact details		+					+
Language/ currency alternatives					+		+
Update frequency						+	+
Availability					+		+
Domain (easy to remember)							+

Source: own

The analysis enabled to identify key elements for e-commerce websites quality evaluation. In most cases the authors emphasize the quality of such items as website navigation and clear layout of information, ease of use, content, real-time support, reliability, security, design and ease search [5, 6, 7, 13, 23, 26, 28, 33]. Just few scientists highlighted such criterions as website domain, availability, frequency of updates, contact details. It does not mean that these criterions are not important, but researches and

marketers should take to consideration, that in the research and practice more attention should be paid to first five dimensions marked in the table 3. The loading time, image created and innovativeness are dimensions with middle importance level. They should be included to the research methods and design models. So, evaluating the e-commerce website quality the following criteria should be included: simplicity of product search, ordering, payment process, security provisions, adequacy of delivery types for target audience, order status tracking capabilities, product return process, loyalty programs. Taking in mind the e-logistics the most important are: security assurance, real time help, content, easy search, reliability, loading time, contact details, availability.

4. Research of consumer perception

The survey enabled to identify specifics of navigation and quality perception of Lithuanian consumers. The sample size: people who buy online, 8.5% in year 2009 of Lithuanian population [24]. The survey involved 81 respondents (43 men and 38 women). Respondents' age average - 26.8 years. Their computer literacy respondents rated six points (in seven point scale). Indicating the causes of online shopping the respondents highlighted a lower price of the goods (29%), convenience and simplicity (22%), lack of time (19%), greater diversity of goods (16%), opportunities in the Internet (6%), will to try something new (4%), entertainment (2%), etc. The results confirm that the website functionality and attractiveness are important elements for the consumer and becoming a critical factor. The survey of e-commerce website quality evaluation factors of Lithuanian consumers confirm the results of other scientists [5, 6, 7, 23, 26, 28, 33].

The most important elements of assessment of e-commerce quality in Lithuania (blue) align with the Qin *et al.* (2008) carried out in China (red color) of a similar (Fig. 1). There are compared those elements, which were analyzed in both (Qin *et al.* 2008 and Lithuanian) surveys. In both surveys some e-logistics factors were researched as well: rapid response, speedy connection to the website, up to date information, several contact channels, safety, easy search, content, web site navigation, reliability.

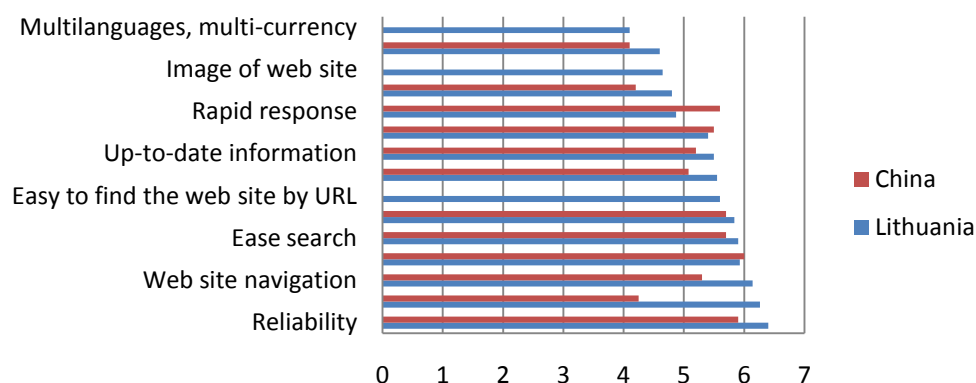


Fig. 1: Quality elements for e-commerce success

Source: own

The differences of results can be caused by cultural differences, user experience when browsing the Internet and technological changes. For Lithuanians the most important factors are: reliability (6.4), website traceability (6.26), navigation (6.14), content (5.93), ease search (5.9), and safety (5.84). The other elements (multilingual, multi-currency option, design, image of the website) are actual for the consumers, but wasn't mentioned among most important. The biggest differences of consumer approach were identified to such elements: website traceability, website navigation, response time factors.

Investigation showed (Fig. 2) that Lithuanian consumers find, as most complicated, such e-logistic processes steps: return of the product (3.12 out of 7 points), and communication with the seller (4.26 out of 7 points). The exchange a purchase (5.81) or confirming the order (5.7) was thought as quite clear processes. The assessment of e-commerce websites revealed the importance of the delivery on time (5.75), easy to find goods or services (5.66), easy comparison of products or services (5.45), the order status tracking possibilities (5.35), and rapid response (real time) (5.24). Empirical research results comparison with previous studies revealed minimal changes in consumer behavior. As reasons of identified differences should be name the consumers' online browsing habits and skills change, technological changes and geographical aspects.



Fig. 2: E-logistics in the e-shopping process

Source: own

The result of the literature analysis and survey shows that e-logistics became very important part of e-commerce. In most cases and models the criteria presented by researches are the part of e-logistics, even if the researches or consumers do not name them so.

5. Conclusions

Information and communication technologies (ICT) have the decisive influence on competitiveness of organization. With increasing popularity of e-commerce the e-logistics become one of important tools to gain competitive advantage in the information age. Literature analysis enabled to define e-logistics as the integration of information flow, fund flow and logistical service. Concerning peculiarities of e-commerce the e-logistics should be analyzed as material product logistic and as service or non-material product logistics in the e-environment. E-logistics capability relates to: the ability to handle small, frequent orders, to deliver correct orders on-time, to

communicate shipping information, to handle and fill orders using a web-based system, to share logistics information with other channel members, to handle return products, and to handle global distribution. Results of e-commerce website quality evaluation models analysis shows that most part of the criteria presented by researchers are related to e-logistics even if they are not perceived by scientists or consumers so. Main criteria of e-logistics quality evaluation are: easy to use, navigation, security assurance, real time help, and content. Other criteria for empirical researches should be picked up concerning the country macro environment and consumer behavior.

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The Use of the “IN” Index for Assessing the Financial Health of Companies Operating in Chemical Industry

Abstract

In connection with the economic cycle we have seen a lot of bankruptcies all over the world. Any company may be at risk. For each company internal relationships are complicated and specific.

A reason leading to the bankruptcy of a particular company may be of benefit to another firm. The key factor here is how well the management can predict possible oncoming problems. This situation may vary within the individual industries of national economies. We have decided to choose the chemical industry for the purpose of this research study. This industry is hugely affected by a number of external factors. A great number of information has been published within the field of the company crisis prediction and various models have been created. The Altman's Z-Score model may be one of the best known examples. This model has been exposed to a lot of criticism as it is not suitable for the Czech companies. That is why the so called IN index was created by the marital couple Inka and Ivan Neumaier and it was first published in the year 1995. The model has then come through some modifications. Its version labelled IN01, originating in the year 2001, has found its use in industry. The parameters of the indicators vary from industry to industry. According to the authors the index has been verified on a sample of thousands of Czech companies and therefore its informative value is relatively high.

The article aims at analysing chemical industry and testing the IN model on the accounting figures of some selected chemical companies in the Czech Republic and at assessing those results.

Key Words

bankruptcy, chemical industry, crisis prediction, financial health, index IN

JEL Classification: C52, G33, M21

Introduction

During their life cycles companies come through various stages. One of those stages is represented by a company crisis. We can never say that we can avoid a crisis or that we will never be hit by it. Therefore it is necessary to predict a crisis well ahead and then to deal with it in an appropriate way. In the field of the prediction of crises and company bankruptcies a number of models and indexes have been created, which try, on the basis of a given figure, to decide whether a company is doing well or whether it is potentially endangered by an oncoming crisis. As an example of the applied models let us name for example the Altman's Z-score, the credibility index, the Tamari's model, the Kralicek's Quicktest and others. As Altman [1] states, Z-score, in its later modification, was tested

on a sample of 33 companies and its success achieved the value of 82 to 94%. The model was also tested on companies being in bankruptcy and here the success achieved the value of 80 – 90%. In the Czech conditions these indicators do not have sufficient informative value as they were created on the basis of the data relating to foreign companies. In spite of that the above models have become frequently used tools for the assessment of the effectiveness of a company. Sedláček [11], for example, states that the transformation of the Altman's Z-score to the Czech conditions is questionable. We do not have long enough time series of the monitored financial indicators, there are issues with their validity or difficulties with the dynamically changing social economic environment. As Verlag Dashöfer [14] adds, this model is based on the American accounting standards, therefore its mechanical application for the conditions in the Czech Republic is not suitable. Last but not least Czech companies are also different as far as their ownership structure is concerned. A number of them are managed directly by their owners. Despite the above facts the Altman's Z-score for predicting bankruptcies is still popular in the Czech Republic. Therefore the Czech economists have created indexes on the basis of the figures from the Czech companies. The model rating or the widely used IN index of Mr. and Mrs. Neumaier [7] can be given as a good example. And it is the verification of its applicability in chemical plants that has become the object of examination for this article.

1. The developments in chemical industry

According to the information of the Association of Chemical Industry of the Czech Republic [13] chemical industry in the Czech Republic represents a significant branch of the national economy. It is the third biggest sphere of industry creating approximately 13 % GDP and employing approximately 150 thousand people. Before the financial crisis this industry developed positively, especially from the receipts point of view. After the crisis broke out the situation changed. The receipts decreased mainly because of the decrease in the price of oil and, in relation with this, raw products and final products. The development in this industry is specific. First of all, it depends on a number of factors, as for example the prices of oil and other raw materials, on the development of the market with chemicals and, of course, on the regulating directives. At the same time chemical industry depends on other branches of the economy. What can also be seen as a significant factor is the low elasticity of demand for chemical products. Chemical products are part of our everyday life as they serve the purpose of the current consumption of the population, and they also represent the intermediate products to be processed further within other industries. If we express the situation in numbers, only about 30 % of the total chemical production reaches end users. Furthermore, chemical industry in the Czech Republic has much stricter legislation than anywhere else in Europe. It is for this specific nature that the data concerning chemical plants were applied.

In recent years chemical plants have had to cope with a growing number of bankruptcies. As, for example, the Creditreform company [2] states, in the year 2009 chemical industry was number one in insolvencies per 1,000 registered companies, with the indicator value of 7.57. It was followed by telecommunications (7.47) and paper-

making industry (6.31). The year 2010 saw an unprecedented growth of petitions in bankruptcy, by 60 % more than in the crisis year 2008. In the year 2010 chemical industry fell to number two ranking when the number of insolvencies amounted to 6.95. Mining was then ranked first (8.6) and telecommunications came third (6.31). The situation in the first ten positions as far as the number of insolvencies is concerned can be illustrated by table No. 1.

Tab. 1: Insolvency as segmented by industries

2010		2009	
Industry	Insolvency per 1000 registered companies	Industry	Insolvency per 1000 registered companies
Mining	8.06	Chemical and plastic industry	7.57
Chemical and plastic industry	6.95	Telecommunication	7.47
Telecommunication	6.31	Paper industry	6.31
Paper industry	4.49	Food industry	5.13
Transport services	4.00	Leasing	3.77
Food industry	3.74	Travel agencies	3.27
Publishing	3.31	Transport services	3.17
Leasing	3.25	Wholesale trade	3.17
Printing	3.10	Glasswork and ceramics	2.94
Machinery	2.96	Machinery	2.67

Source: Creditform [2], own elaboration

The directives of the European Commission and the Council called REACH have become widely discussed issues as they are endangering the very existence of companies, mainly small businesses. Their purpose is to register all substances that are manufactured in the EU or are imported into the EU and whose volume exceeds 1 ton a year. A high financial burden for companies is connected with the introduction of this directive of REACH. The emissions permits are another broadly discussed topic as they limit emitting carbon dioxide into the atmosphere.

2. The IN index of Mr. and Mrs. Neumaier

This index, also called the index of credibility, was created by Mr. and Mrs. Neumaier [5] [7] in the year 1995. They labelled it index IN95. The construction of the model is based on an analysis of 24 mathematic-statistic models of a company assessment. Its advantage, as opposed to other frequently used bankruptcy or credibility models, is the fact that it is based on the data about the Czech companies and the individual indicators reflect the figures detectable from the financial statements from the Czech companies. The original values of the individual indicators included in the IN95 model were determined as a proportion of the indicator significance. Its form is subsequently:

$$IN95 = 0.22 \frac{A}{CZ} + 0.11 \frac{EBIT}{\dot{U}} + 8.33 \frac{EBIT}{A} + 0.52 \frac{VYN}{A} + 0.1 \frac{OA}{KZ + KB\dot{U}} - 16.8 \frac{ZPL}{VYN} \quad (1)$$

where: A total assets or, as the case may be, liabilities

CZ debt
EBIT earnings before tax and interest (HV before tax + interest)
Ú interest
VÝN total revenues
OA current assets
KZ short-term liabilities
KBÚ short-term bank debt
ZPL liabilities after maturity

For this reason it was possible to distinguish among the individual specific features. Different values were determined for each branch of industry (the original segmentation according to the classification OKEČ was used here) and for the individual indicators, with the exception of *EBIT/Ú* and *OA (KZ + KBÚ)*.

The interpretation of the results of the IN95 index:

- $IN > 2$: the company pays liabilities without any problems,
- $IN < 1$: the company has big problems paying liabilities,
- $1 < IN < 2$: the so called “grey” zone.

In the year 2001 the bankruptcy and credibility approach were united and the IN01 index came into being. On the basis of the results of testing the successfulness of indexes IN95, IN99 and IN01 and using the data from 1,526 companies operating in the field of processing industry an update of the index IN01 to index IN05 was carried out in the year 2004. The values of the individual indicators were determined by means of the discriminant analysis. The form of the IN05 index looks as follows:

$$IN05 = 0.13 \frac{A}{CZ} + 0.04 \frac{EBIT}{Ú} + 3.97 \frac{EBIT}{A} + 0.21 \frac{VÝN}{A} + 0.09 \frac{OA}{KZ + KBÚ} \quad (2)$$

As opposed to the IN95 index the indicator of the time of the turnover of liabilities after maturity disappeared and the values of indicators changed. [5]

The interpretation of the results of the IN05 index:

- $IN > 1.6$: the company creates value,
- $IN < 0.9$: the company does not create value,
- $0.9 < IN < 1.6$: the so called “grey” zone.

If the values of the IN05 index fall under the limit of 0.9, we can state that a company is heading for bankruptcy, the probability being 97 % and the probability that the company does not create value amounts to 76 %. The probability of bankruptcy with the companies in the “grey” zone is 50 % and the probability of these companies creating value is 70 %. As opposed to this, in case of the companies exceeding the upper limit it can be stated that the probability of them not going bankrupt is 92 % and the probability of them creating value is 95 %.

These indexes have become very popular in the Czech Republic; they have also become a tool for various consulting firms. The advantage of the latter index is the above mentioned bankruptcy-credibility approach. Two indicators characterize the ability of a company to create profit and two indicators show the way the profit before interest and tax is divided and one indicator shows the company liquidity. This index can be calculated relatively easily and quickly, it works with the public data and it can be used for those companies that are both traded and non-traded on the capital market. Its problem may consist in the fact that it was created and verified on medium sized and large businesses, therefore its informative value for small businesses may not be sufficient, and it also determines the effectiveness of a company in one year time horizon only. Another problem of this index, as stated by for example Sholleová [12], consists in the fact that if we express the situation in the company by means of one figure only, we may lose the information about the causes of the company problems and, consequently, the information about their removal.

Let us also mention, even though only randomly, the INFA model [6]. This model could be characterized as a basis for the individual IN indexes. It has a pyramid structure of indicators. It assesses a company according to the creation of the production strength, according to the division of earnings before tax and interest among the creditors, the state and the owners and according to the financial stability.

3. The data concerning some selected chemical plants

As mentioned above, some specific chemical plants have been chosen for the research. This industry is affected by the outside factors, such as the development of the prices of raw materials, legislation, and the political situation in a given country.

For the purposes of this article 35 companies from chemical industry have been selected because they belong, according to various research studies and charts published in the Czech Republic, to the most successful companies or leaders in the industry. The detailed data about the successful companies according to the individual industries were published in the years 2004 and 2005 by the companies ČEKIA, a.s. and CRA Rating Agency, a.s. under the name TOP 10 of the chemical industry [3] [4]. The assessment of the companies is based on the results of 16 financial ratio indicators including 4 key fields of effectiveness – liquidity, cost- effectiveness, indebtedness and activity.

Based on the results of these research studies relevant accounting figures were chosen about the companies that were among the TOP 10 in the given years. On purpose, companies are only numbered, concrete names are not mentioned. For example we can name BASF, Čepro, Gumotex, Immunotech, Kemifloc, Procter & Gamble – Rakona etc. as successful and Hekra, Spolana, Velvana etc. as bankrupt.

The problem in the data consists in the changed classification of the economic activities. Since 1st January 2008 the industries have been divided according to the new classification CZ-NACE and so the pharmaceutical industry was earmarked from the

wide-ranged OKEČ group. So that the data could be compared the old OKEČ classification was used.

As the given assessment of the successful companies is relatively old, it can be assumed that in the following years things developed and changed further. An originally successful company may have gone bankrupt during the above period of time or it may have to cope with financial problems now. Based on the data from the financial statements for the years 2006, 2007 and 2008, or possibly for the year 2009, calculations of the IN05 index were carried out for these companies.

Tab. 2: IN05 Index of Successful Companies

Company number	2009	2008	2007	2006	2005
	Index IN05				
1	N/A	N/A	1.244	0.327	1.614
2	1.783	1.738	1.407	1.454	1.755
3	N/A	N/A	2.411	2.136	1.161
4	N/A	1.614	1.902	1.504	1.624
5	1.634	1.645	2.232	2.366	2.388
6	N/A	2.298	2.204	3.132	2.715
7	N/A	1.472	1.528	1.528	1.075
8	1.063	1.070	1.063	1.005	1.069
9	1.757	1.298	1.298	1.485	1.754
10	1.398	1.502	1.602	1.273	50.550
11	N/A	1.068	0.290	0.812	1.204
12	N/A	1.878	0.929	0.634	0.813
13	1.505	1.168	1.507	1.351	1.122
14	N/A	3.266	2.963	3.200	2.784
15	3.741	3.418	3.656	3.705	3.447
16	3.314	3.044	2.009	2.067	1.667
17	-10.010	2.629	1.999	2.425	1.661
18	1.674	2.204	1.170	1.033	1.188
19	N/A	0.901	0.726	0.392	0.729
20	N/A	1.142	1.301	1.110	0.943
21	N/A	2.479	2.915	2.410	2.106
22	1.249	2.330	2.135	2.280	2.476
23	6.187	5.273	5.930	10.677	9.648
24	N/A	1.481	1.530	1.613	0.614
25	0.758	0.938	1.465	2.526	1.968
26	2.035	-0.433	1.728	1.710	1.716
27	1.391	1.634	1.737	1.698	1.663
28	N/A	0.737	1.666	N/A	N/A

Source: own calculation

For the analysis 28 successful companies and 8 companies that were bankrupt have been selected. The accounting data were gained from the Creditinfo database – The Company monitor. The above stated years have been chosen deliberately to reflect the situation before the outbreak of the global economic crisis and in the years following the crisis. The latest data available relate mostly to the year 2008. With the majority of companies the latest data are not available. The results gained from the given analysis

will attempt to answer the question whether, according to the IN05 index, it can be assumed that a given company is or is not going to head for bankruptcy.

As we can see in table 2 and 3, IN05 index differs. The low values of the IN05 are marked bold, the high values are marked italic and values situated in “grey” zone are marked grey. The values marked N/A mean that data are not available. Companies that were considered as the best may get in difficulties. Table 2 shows results of the IN05 index for successful companies. For example we can see wide variety results of the IN05. If a company has the low value of this index, it may mean future financial difficulties. For example company number 11 or 25. The value N/A may be indicative of the company has financial problems and instead of successful it can be considered as problematic company. For example company number 1, 11, 19, 20 or 24. But, of course, there are another factors influencing financial situation of the firm. Problems with calculation of these indexes may implicate the 2nd indicator (EBIT/Ú) – EBIT/interest – interest coverage. Companies without debt have no interest. Fortunately its weight is on low level. In this case the suggested limit value [5] of this indicator is 9. The highest weight level has the 3rd indicator (EBIT/A) – return on assets, the 2nd most important indicator is VÝN/A – assets turnover ratio (4th indicator) and the 3rd important indicator represents A/CZ – assets/debt (1st indicator in model).

Tab. 3: IN05 Index of Bankrupt Companies

Company number	2009	2008	2007	2006	2005
	Index IN05				
29	N/A	N/A	-2.257	4.348	3.202
30	N/A	N/A	0.350	1.142	1.341
31	N/A	N/A	5.047	0.845	0.635
32	2.891	-1.275	1.250	0.932	-12.446
33	N/A	-0.502	0.000	-0.269	0.541
34	N/A	N/A	1.216	0.882	1.427
35	N/A	-0.312	0.561	1.209	0.442
36	N/A	N/A	1.010	0.914	2.032

Source: own calculation

For instance index IN of bankrupt companies amount to high value of index IN05. As we can see in table 3, the results of indexes IN05 decreasing trend. And according to this results we can claim that these companies are potentially threatened by bankrupt.

Conclusion

Bankrupt may threaten any firm through its company life cycle. How to predicate company bankrupt is not simple task. Many economists had been tried to predicate companies' distress, but their models don't always offer good information. Except Altman we can mention Beaver, Ohlson or Zmijewski i. a. Some economists were dealt with testing existing bankruptcy models. In the recent times more studies concerning this theme were published. Pitrová [9] stated that Altman's Z-score in comparison to IN99 index shows “more positive” results. Pompe and Bilderbeek [10] dealt with testing a hypothesis on the predictive power of different ratio categories during the successive

phases before bankruptcy. They encounter a problem with data collection of bankrupt firms. They supported a hypothesis that the bankruptcy of young firms is more difficult to predict than the bankruptcy of established firms. Nwogugu [8] criticises existing bankruptcy models because they *“don’t incorporate the many psychological, legal, liquidity, knowledge and price-dynamic factors inherent in capital markets, financial distress asset prices”*. Some researchers discovered that artificial intelligence such as neural networks can be as useful for classification problems as conventional statistical method e. g. multiple discriminant analysis.

We cannot be enough only with accounting data. Many factors of environment affect financial efficiency of the company. IN05 index offers relatively exact results for the assessing the financial health of Czech companies. But sometimes the results may be distorted. It concern mostly companies without interest. For this case we need to adjust values of the 2nd indicator of model.

Discussion

As it turned out, even despite the disadvantages of the Altman’s Z-score (see the Introduction), this model is still widely used for predicting the oncoming crises all around the world. We can ask what the reason for that might be. Its big advantage consists in the fact that it is easy to calculate the index, all the information is easily accessible and it can be updated and adjusted to fit the changing market conditions (e.g. the Altman-Sabato model used by banks). The issue of its application in the conditions of the Czech economy has been also discussed.

The aspect of including the specific features of Czech companies in the models has been dealt with by Mr. and Mrs. Neumaier and the model IN has been drawn up by them. What does its advantage consist in [6]? Again, it is the ease of calculation. Another advantage can be seen in its differentiation according to the individual industries. Even this model was tested and piloted on a number of samples of companies and the test results proved its extraordinary information capability. As is obvious from the above tables it can provide good information and assessment of the financial health of a company. Where are the limits of this index? As has already been stated it is the EBIT/Interest indicator. In case of companies with low capitalization (the value of cost interest being close to 0) its correction is necessary.

Another question that can be raised is why the index IN has not spread as much as the Altman’s Z-score. One of the answers may consist in the fact that it has been created for Czech companies and it is based on the data related to Czech companies. These companies have a different ownership structure and they are characterised bad payment discipline. Liabilities have been paid after the term of expiration. Moreover, a model created in the conditions of a country as small as the Czech Republic can be hardly compared with models created in big economies. And that is a pity because as well as the Altman’s Z-score in our country, the IN index might provide at least basic results for companies elsewhere.

What is the common thread for these indexes? They are based on financial figures and they express the information about the financial health of a company by means of one figure only (an absolute indicator). This way the information capability of this indicator is limited. What is more, determining the importance of the individual indicators may be influenced by a subjective view of the author of the model. Both were created with using multiple discriminant analysis.

On the other hand, as fast and comprehensible indicators the indexes provide at least basic information of the company financial information. If we complete the information with other facts about the external factors threatening the company's performance, we will be able to obtain an overall view of the company's position and of its potential bankruptcy.

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Competitiveness of Czech ICT industry- Requirements on ICT HEIs Graduates¹

Abstract

ICT (Information and Communication Technology) industry is an important contributor to growth of European economy. Its contribution to the growth represents 5% of GDP and ICT also drive 20% of overall productivity growth [4]. In order to keep such contribution in the future, continuous supply of relevant skilled professionals into this industry is required. Some development scenarios of requirements for ICT professionals are presented in McCormack [9]. He also expects that ICT will generate almost 5.8 million new jobs till year 2015 in EU [9]. These new jobs will have to be saturated also by adequately qualified ICT specialists. Parts of these new jobs will be saturated through new employee entering into the ICT sector. Some possible impacts of these scenarios and new requirements on Czech ICT sector are also shown in the first part of this contribution. Next actual competitive position of the Czech Republic's ICT industry (ICT industry includes ICT manufacturing and ICT services) including partial analysis's for each ICT industry component, will be analyzed. Conclusions for new e-skills requirements based partially on Clark, D. [1] and partially on research work of research team members will be also provided. In the end of the contribution, the selected conclusions of ICT skills supply surveys performed by Faculty of Informatics and Statistics in the years 2006, 2009 and 2011 will also be presented. These surveys were performed among HEIs (Higher Education Institutions) in the Czech Republic and were oriented towards the structure of the ICT education and the level of ICT and non-ICT knowledge and skills in the ICT - oriented study programs. Methodology of these surveys also forms the part of this contribution. Contribution will be concluded by presenting the threats and opportunities for ICT graduates in Czech Republic in comparison to the industry demand and their comparison with selected European countries.

Key Words

information and communication technology (ICT), human factor in ICT, ICT workforce, effectiveness of ICT sector, competitiveness of Czech ICT graduates

JEL Classification: M15, O15, O32

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Introduction

Large boom of ICT technology and related economy sectors seems to be over. The just overwhelmed economic crisis and starting recovery period bring with them new aspects not only for economy, but for ICT sector worldwide as well [10], [11]. Recovery of ICT sector takes with it some new trends and aspects. The **first one** is that **investments into or expenses of ICT** on corporate level will be more carefully **evaluated** and each of them will be controlled in order to **bring clear benefits for investors** [7], the **second one** is **changing requirements on abilities, skills and knowledge on ICT professionals** in corporate sectors [5], [6], [12]. New knowledge - especially oriented on the use of social networks - and abilities in order to present information for community of their users - are required by corporations as a special part of business - oriented ICT skills. The **third trend** is **permanently increasing number of ICT professionals** required by corporations for ICT improvement in order to **support classical core business processes**. For example McCormack [9] expects that ICT will generate almost 5.8 million new jobs in EU economies till the year 2015. These new jobs will have to be saturated by adequately qualified ICT specialists. Parts of these new jobs will be saturated through new employee entering into the ICT sector. **Differences among future scenarios** of economic growth with impact on the **gap between supply and demand of ICT specialists** are shown on the Fig. 1. Each line represents the gap between supply and demand of ICT specialists.

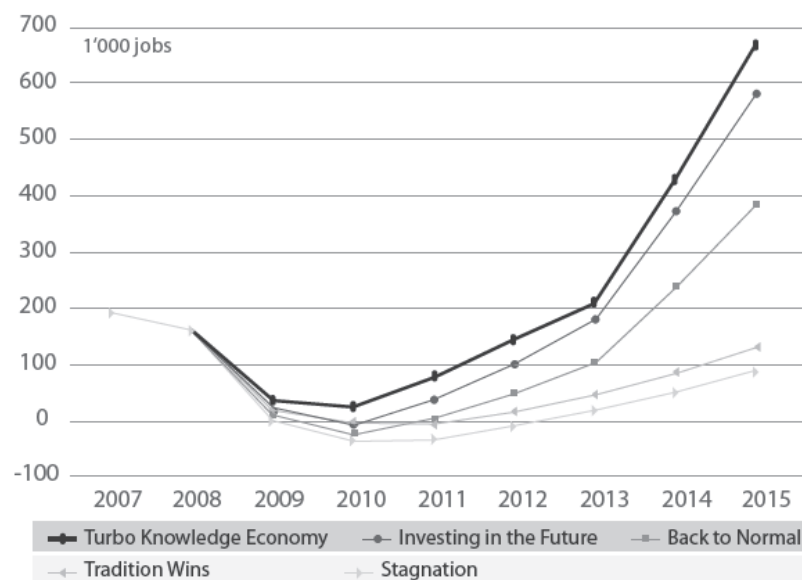


Fig. 1: E-Skills Demand and Supply Gaps in the EU27 from 2007 to 2015

Source: [9]

The legend to Fig. 1 is followed from [9]:

- **Turbo Knowledge Economy.** Take off in Europe, thanks to a virtuous circle of productivity and economic growth driven by widespread diffusion of ICT-based innovation.

- **Investing in the Future.** Return to moderate growth, accompanied by acceleration of ICT investments and innovation.
- **Back to Normal.** A return to the historical development trajectory experienced before the crisis, in terms of growth rates and IT innovation.
- **Tradition Wins.** After the crisis, export-driven recovery favors traditional industries, rather than high-tech and innovative industries, resulting in moderate economic growth with low ICT growth. Relocation of the ICT industry outside Europe accelerates.
- **Stagnation.** Very slow recovery, accompanied by domestic protectionism in most important countries, discouraging innovation investment. The European socio-economic system struggles to keep up with emerging economies and tends to close itself off. Low ICT investments and growth in IT off-shoring lead to reduction in demand for e-skills and potentially over-supply.

This “**Gap Chart**” warns against extremely increasing requirements on number of ICT experts in economies in the future without changing education systems. In his work, McCormack [9] also notes that countries have one of last opportunities to make arrangements to prevent the lack of ICT specialists in their economies. In the case that they do not find out solutions, difficulties in providing ICT services in the future would be expected and the efficiency of the whole economy will decrease.

As a reaction to the relatively low flexibility of the institutional education system in the ICT skills area, the research team on Faculty of Informatics and Statistics decided five years ago to initiate research activities in order to map:

- ICT education offered in the Czech Republic.
- Demand for ICT skills in the Czech Republic.

University education (tertiary education) forms an important component of the education system in each country in the world and this level should be one of the most effective and required in the area of ICT. Other aim of these research activities was to motivate universities and formulate recommendations for further development of the Czech university education in the area of ICT. To set up and formally pass the accreditation process of a new study program takes in minimum one year (only under conditions that relevant school or university has enough experts in required knowledge areas).

The last goal was to carry out a survey of the ICT graduates skills requirements in the Czech business. This survey was performed for three times (2006, 2009 and 2011). Further facts are presented as result of the last survey in year 2011.

1. Problem Formulation

Several new questions without answers appeared in our research team during our survey work. How many ICT professionals will be needed in the Czech economy in oncoming years? At what degree are the domestic HEIs able to cover this need? **Does**

the lack of ICT professionals endanger Czech economy in the period of recovery after economic crisis? The aim of this article is to present possible scenarios in requirements on ICT specialist up to 2015 in the Czech Republic and to evaluate impact of this fact on the Czech ICT job market.

Based on these facts, our team started to formulate the model of possible requirements on numbers of the ICT professionals [7]. Relations in this model are based on actual economic trends in ICT sector, partially taken from literature and partially based on our survey's results of Czech reality. The first part of this model is presented in this contribution.

2. Methodology

The first activities for this model formulation focused on number of required ICT professionals in the Czech economy in the future. We had two main sources. The first one - results of our surveys. For this model we used results from 2011 surveys, although actual data from 2011 were not completely evaluated by statistical (cluster analysis) methods yet (some other facts will be presented on conference event in September of this year). Methodology: There were indentified main ICT business roles, their key competences, in business informatics in the first phase of the project. After this role definition phase were defined knowledge domains and metrics for measurement level of knowledge in each knowledge domain. The level of knowledge was graduated in relation to ECTS credits on HEIs and in relation to number of necessary training days for appropriate position by business organizations – details in [7], [8]. The second main source is the future economic development scenarios prognosis [9] and data concerning ICT industry in the Czech Republic, collected by European Commission in Digital Competitiveness Report 2010 [4]. Data from UIV (Institute for Information in Education) are the last source of information in this contribution. These data deal with number of students and graduates in ICT - related study programs in the Czech Republic's HEIs. Prognostic model was formulated based on demographic projection applied on data from surveys - ICT related study programs enrolled students and required numbers of ICT specialist for ICT business roles now and in the future. Results of this model are combined with conclusions of McCormack's [9] prognosis in this contribution.

3. Results

3.1 Theoretical assessment

Based on Digital Competitiveness Report 2010 [4], is the share of Czech work force in ICT sector on the whole European ICT sector work force approximately 2.8 %. Because the number of ICT professionals in the Czech Republic is, from this "European" point of view, constant, we propose the same share for oncoming years also. Applying this

approach on data presented in Fig. 1, the following prognosis of the gap between supply and demand in ICT professionals till the year 2015 in our country could be expected.

Tab. 1: Gap Between Demand and Supply - Number of Expected New Jobs in ICT in the Czech Economy

Year	Turbo Economy	Investing in the Future	Back to Normal	Traditional Wins	Stagnation
2010	980	0	-1,260	-1,400	-1,680
2011	2,240	1,400	0	0	-1,680
2012	4,200	2,800	1,400	560	0
2013	5,600	5,040	2,800	1,400	840
2014	12,040	10,500	7,000	2,520	1,540
2015	19,040	16,520	10,920	3,640	2,660

Source: [9], authors

Table 1 presents only **newly expected jobs**, but we have to analyze also the existing ability of Czech education system to cover requirements on reproduction of present ICT jobs in economy (actually there is approximately 233,000 ICT professionals in the Czech Republic). Real requirements of the Czech economy **for reproduction of the given ICT jobs is 4,200 new ICT professionals** entering the work force market annually for the first time [3]. For the period 2010 – 2015 approximately the same number of ICT professionals for the reproduction of given ICT jobs in our economy would be expected.

Another aspect is the capability of the Czech education system. The Czech education system is very strong limited in ICT area. The first limit is real number of HEIs realizing ICT study programs. From other point of view this fact represents a lack of ICT teachers in ICT tertiary education. The number of students involved in the ICT study programs in 2004 – 2009 is presented. These data are adequate to our contribution, as we are not so much interested in students, but in the graduates and the students of 2009 will graduate (hopefully) on bachelor level in 2012. If they start their master studies, they will graduate as masters in ICT in 2014.

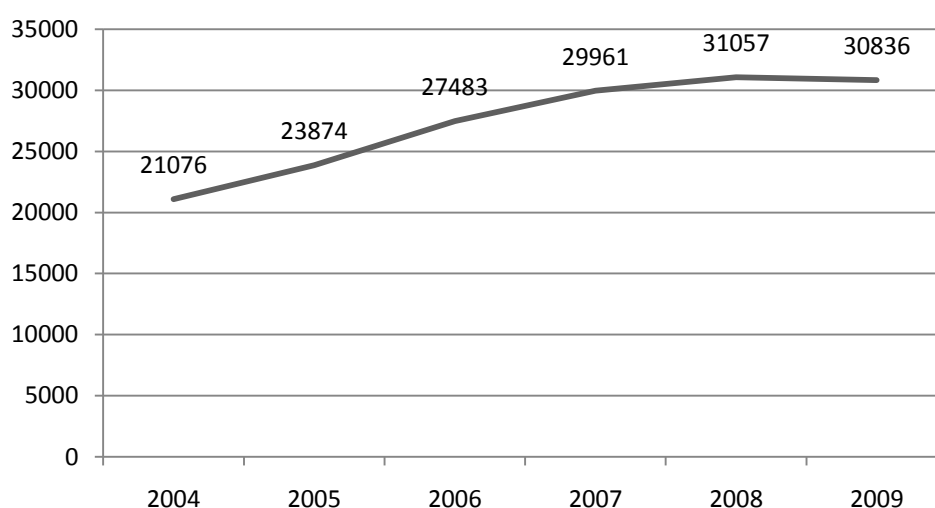


Fig. 2: Comparison of Number of Students in ICT Related Study Programs

Source: [2]

Information about persons studying ICT related programs has common character, as they included students in various programs - for example future teachers - in this number. These do not enter the business of informatics market in fact. Other aspect of numbers presented on Fig. 2 is that they represent students of all study years, repeating and “recycling” students included.

3.2 Results of Survey

In UIV database the number of graduates of ICT-related study programs since 2001 was identified. In Table 2, the numbers of graduates since 2007 – 2009 are presented.

Tab. 2: Number of Graduates of ICT Related Study Programs

Study program/Year	2007	2008	2009
Bachelors	3,636	4,137	4,194
Masters 5 years	1,165	894	510
Masters 2 years	982	1,672	2,123
Total	5,783	6,703	6,827
Reduced number of graduates	3,359	3,945	4,031

Source: [12], authors

Facts presented in Table 2 show that Czech education system does not offer enough capacity for pure reproduction of ICT professionals in Czech economy. This problem is all the more important, as not all the bachelor graduates do enter the labor market. Approximately 2/3 of them enter master study level in ICT - related study programs (see row “Reduced number of graduates” in Tab. 2) (conclusion from survey 2011). Also, the bachelor-level qualification of graduates is not commonly accepted by all corporations looking for ICT professionals. Especially in ICT corporations, the master level of graduation for higher managerial positions is strongly required. Approximately one third of graduates in all ICT-related master study programs are not sufficiently qualified for business informatics, but reports finished tertiary education formally.

Tab. 3: Missing Number of ICT Professionals in Czech Economy for Different Scenarios

Year	Turbo Economy	Investing in the Future	Back to Normal	Traditional Wins	Stagnation
2010	1,180	200	-1,060	-1,200	-1,480
2011	2,440	1,600	200	200	-1,480
2012	4,400	3,000	1,600	760	200
2013	5,800	5,240	3,000	1,600	1,040
2014	12,240	10,700	7,200	2,720	1,740
2015	19,240	16,720	11,120	3,840	2,860

Source: authors

“For what scenarios do our politicians prepare Czech economy?” The Czech Republic’s education system delivers approximately 4,000 ICT graduates annually according to the information from UIV (Tab. 2). Our demand for reproduction of existing level of ICT services and manufacturing is approximately 4,200 ICT professionals. Comparison of these two numbers gives us a warning that the actual gap between supply and demand

on ICT professionals is approximately 200 persons annually. Future scenarios in ICT professional's requirement development represent another aspect: increasing gap between supply and demand. Missing numbers of ICT professionals on the Czech labor market up to 2015 are presented in Tab. 3.

Data from Tab. 3 informs us (positive numbers in the table take with them negative information) that the Czech Republic is not prepared neither for real evolution of information society in our country (number of ICT professionals reproduction is 4,200 annually) nor for any of the above presented scenarios. Numbers in Tab. 3 represent real gap between demand and supply in ICT professionals on our labor market (negative bold number represents overhang of qualified ICT professionals entering Czech economy in certain year). We have enough ICT professionals up to the 2011 in case of the "Stagnation" scenario in our economy. There is no efficient number of qualified ICT professionals for other scenarios at all. These numbers of well qualified ICT professionals will be missing on Czech market annually and no matter what scenario will come true.

Conclusions

As the main conclusion of this contribution could be summarized, the Czech Republic does not manage the sufficient number of ICT experts actually and the progress in students of ICT-related study programs does not offer better prognosis for oncoming period. General trend in Czech education system is stagnant number of ICT students.

Facts presented in this contribution could have large impacts on the Czech economy in longer period. Lagging in number of ICT-related study programs graduates represents hard risk, because:

- the absence of well-educated and skilled professionals (not only in ICT, generally) devaluates the majority of employees in economy of the whole country only to the level of cheap work force without innovation potential and without ambitions and abilities to occupy managerial positions (especially in international corporations),
- the most ambitious ICT professionals will go abroad,
- that could damage existing ICT oriented institutions and universities as well as their key competencies could be moved to another institutions or even to abroad,
- quality of ICT education will drop down and the best students will want to go to study abroad.

This lack of ICT educated professionals will have an impact on decreasing competitiveness of the whole economy, decreasing global innovation potential and this could start degeneration of our population.

The Czech Republic has opportunity to change education system with accent on tertiary education in order to prepare the ICT professionals in ICT business and for the roles of key users in public administration and in business corporations as well.

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How Should Companies Communicate on Facebook?

Abstract

Social networks and the so called community webs have become buzzwords these days. The American Facebook is currently the most popular Internet page that can mediate interaction between the individual users. Along with the growing number of users of this service the community webs have gradually become a powerful tool for communication in the field of marketing. The presence of companies on the community webs poses considerable risks – as the reality has shown. The present contribution aims at a brief description of the current situation in the Czech Republic and at problems of using communication via Facebook for the needs of marketing. The contribution brings the outputs based on inquiries focusing on students of secondary schools and universities, i.e. the target group forming a substantial part from the total number of the user accounts on Facebook in the Czech Republic. In the conclusion the results are then compared with similar research studies in the USA. The results of the research show what attitude these users have towards the community webs, namely Facebook, what their online behaviour is and how they perceive the presence of companies and brands on the community webs. The stated information is very important for the communication of companies on social networks as this type of communication requires different and innovative approach and the Czech companies have so far only taken the first steps on their way to the mastery in this specific area.

Key Words

enterprises, communication, Facebook, young people, brand

JEL Classification: M31, M15

Introduction

In the Czech Republic the expression “social network” is often used in connection with such web pages as for example Facebook, My Space or LinkedIn etc. These are “webs” that can mediate connection between members of a social network (i.e. people).

Even broader concept is represented by the notion of “social media” [12, p. 210] that are perceived as online media where the content is created and shared by the users. Social networks and Facebook are then important parts of the above broader concept. Facebook is currently the largest global social network with a number of advantages and continually dynamic development [21].

The Internet pages of the social networks are defined in English as “Social Networking Sites”. These are “online web sites that allow individuals to create personal profiles visible to others using the site in an attempt to establish or increase an online social

network” [18, p. 337]. Users are not required to know any coding language—their personal sites are created in a user friendly mode. On these social networking web sites “individuals can quickly immerse their created ‘virtual presence’ among the created virtual presences of their entire social group and can immediately and conveniently get in contact with one or all. Regardless of the physical or temporal location of a person, then, users can intangibly surround themselves with the online representations of friends and acquaintances—allowing them to instantaneously feel close to any or all of them” [10, p. 127]. Vachtl [24, p. 329] then adds that “... the task of the authors or developers is to offer the users suitable and straightforward editing interface which enables them to deliver and develop the desired content in an easy and even automatic way, or rather pass it further (by means of their personal social graphs).”

In the field of social networks in the Czech Republic Facebook is currently the phenomenon No. 1 which has already defeated other webs such as Lidé.cz but even Facebook may have to face competition from Google +1 and so we may expect some development even in this field.

1. Facebook in the Czech Republic

The community web Facebook is currently a frequently discussed phenomenon. Since its origin Facebook has come through various changes and gradually gained a dominant position especially in the Czech Republic. In the middle of February 2011 there were 3,076,000 user accounts registered on this web within the Czech Republic, i.e. about 0.49% of the global volume. The global volume amounts to 624.5 m. [6] The demographic distribution of the Facebook users is relatively specific, see Fig. 1.

The proportion of the age group of the young people in the total amount of the accounts in the Czech Republic is illustrated by the below stated figure:

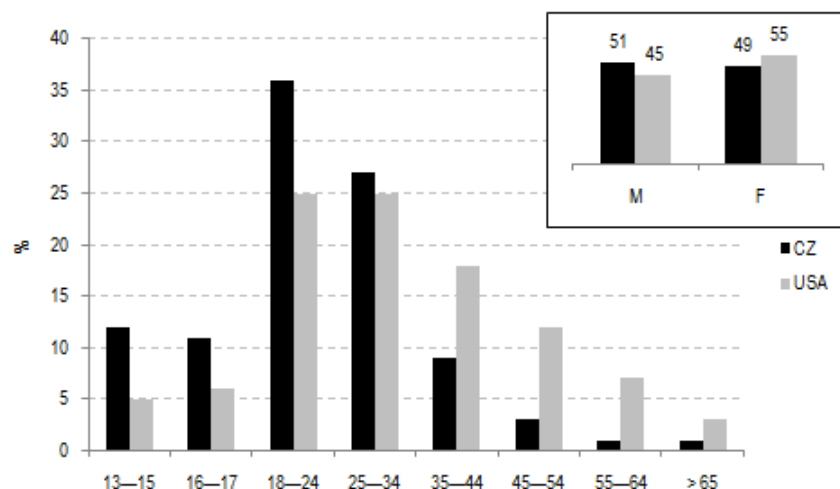


Fig. 1: Age and Sex distribution of Facebook Users in the Czech Republic

Source: Socialbakers.com [2011, abridged]

As is obvious from the given source, in comparison with the United States the proportion of younger users is currently higher in the Czech Republic. The age groups 16—17 and 18—24, i.e. the age groups dealt with in our research, account for 47% of all the users in the Czech Republic while in the US the proportion is 31%.

2. Facebook and businesses

It is logical that the phenomena such as Facebook cannot be left unnoticed for the purposes of marketing communication. Janouch [12] even states that Facebook poses a unique marketing opportunity for businesses (with regard to a specific target group). Shih [21] sees the benefits of Facebook for businesses namely in the following fields: social sales (transformation of the sales cycle, creating mutual confidence, CRM), marketing in social networks (hypertargeting, the influence of communities and social recommendations, advertising within applications, viral marketing etc.), social innovation /cf. Wikinomics [22]/ and social recruitment.

Cooperation with customers, their broader involvement in the relationship to a company, product, brand and suchlike requires new marketing approaches that are related to the core of social media and social networks. The research of Firefly Millward Brown [8] shows that from the point of businesses the decisive factors for effective inclusion of social media into marketing are as follows: not creating standard/classic company pages, listening to customers and then creating a dialogue, building confidence, being open and honest, associating an individual brand with a specific image, providing customers with value added or reward. Informal communication and provision of relevant and interesting information is also highlighted. Topicality is another important thing, but nowadays everybody takes such a thing for granted.

The research of how advertising on the Internet is accepted in the Czech Republic [15] confirmed that the success of advertising is manifested by the increased sales of the goods and services on offer but also by the fact that advertising campaigns will not be successful unless the requirements of the users are also taken in account. Considerable risks are inevitably connected with the presence of companies on the community webs, cf. [13].

Motivation of customers is the key to success of a project on a social network as these should be considered partners in communication. If a company wants to present its product or brand successfully, e.g. on Facebook, it has to have something on offer and communicate in an active way. Therefore it is also necessary to be able to specify the role of the presentation in a social network within the company overall marketing strategy and only then to start the necessary preparations of suitable activities.

In respect with the above let us underline that it is also necessary to consider what social media cannot do or what may be difficult for them to achieve, see [12, p. 215].

Although in connection with the Internet marketing it can be generally stated there are no big differences or delays in a number of fields, compare with [3, 20] as opposed to [5,

12], in connection with Facebook it turned out at the turn of 2010 and 2011 that Czech companies did not quite understand the diverse marketing approaches and techniques for social networks, see [19]. The present research [2] takes even a broader look at the barriers of the small and medium sized businesses in the Czech Republic in implementing ICT.

Let us focus on Facebook in more detail now. Zandl [25] refers to the differences in the use of Pages and Groups on Facebook. In the conclusion he states: "There is a generally accepted fact that as far as marketing on Facebook is concerned, the only pages that are perspective are those behaving as brand spots. These are more (but still not sufficiently) adaptable, they have SEO-friendly URL and they have more possibilities and Facebook tries to predestine them for marketing in social networks as they can develop permanently. From the point of view of the possible viral distribution Groups are more suitable, but they seem to have limited possibilities in adding Applications and their adaptation." Similar benefits of Pages are also highlighted in [11].

As is obvious from the above it is necessary for our companies to realize the specific features of the social media [12], the specific group of clients – customers with the potential of growth [4] and even new possibilities in business that arise from those specific features [21]. In relation with the above it is obvious that marketing in social networks has its specific characteristics and it is necessary to pay adequate attention to all of them.

In relation with the above we can refer you to the results of research of Anderson Analytics company [1, 9] which tries to clarify the behaviour – communication of social network users and their relationship to brands. Our wish was to continue in these efforts by our partial research which aimed at the currently strongest target groups on Facebook in the Czech Republic, i.e. secondary school students, 13+, and university students. A brief description of the research and a presentation of its outputs follow.

3. A survey of communication on Facebook in relation with brands in the Czech Republic

The presented survey was carried out at the Faculty of Economics of University of West Bohemia in the period from January to March 2011 (pilot research). After the preparatory stage it was decided that the inquiry should be carried out electronically by means of Google tools, dealing with two groups of respondents. The inquiry was drawn up with the intention of showing a certain degree of correlation of the answers with the Anderson Analytics research [1, 9] that was carried out in the US on a sample of 1,250 chosen people in a time period of 30 days. In our case we wanted to contact a set of secondary school and university students by means of an Internet query and to address as many as 300 respondents. The query was piloted in January 2011 and the survey itself was carried out in February and March 2011.

4. The results of the survey, students of secondary schools and universities

The data collection at secondary schools was done electronically by means of a questionnaire on a particular web page with the consent of the school, usually in a lesson of informatics for upper classes of secondary schools (grammar schools, secondary vocational schools and apprentice schools) with the intention of complying with the rules of contacting the respondents age group of 13 and above.

The collection was carried out in 13 schools anonymously and voluntarily from the end of January to the beginning of March 2011. The total number of respondents amounted to 217.

Students of two universities in the Czech Republic were asked to complete the same questionnaire voluntarily. The data collection was carried out in the same time period; the total number of respondents was 86. The total number of university and secondary schools respondents was 303. The completion of the questionnaire was easy as it was preceded by introductory instructions and the completion itself took approximately 5—7 minutes.

4.1 Partial outputs

Out of 303 respondents 21 do not have any profile on any community web (i.e. 7%) and 19 respondents state they do not even plan to do so. 10 other respondents (only from secondary schools) stated they had a profile on another web than Facebook and 4 out of these did not answer the following items of the questionnaire. The following items were then answered by 278 respondents.

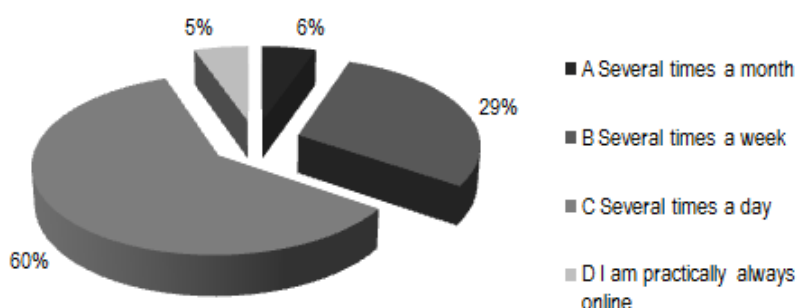


Fig. 2: I connect to Facebook

Source: Own

65% of the respondents from our set connect to Facebook several times a day (including 5% always online) and 29% of the respondents several times a week (Fig. 2). Even this confirms to what degree Facebook has become a phenomenon for the young at the turn of the years 2010 and 2011.

We then asked how many friends they had in their list on Facebook. The respondents identified a high number of friends on Facebook. 81% stated more than 100 friends, 30% of the respondents from our set stated they only made friends with people they knew well personally, 59% stated they only made friends with people they knew and only 11% stated they made friends even with people they did not know in person.

The following output is very important for company marketing:

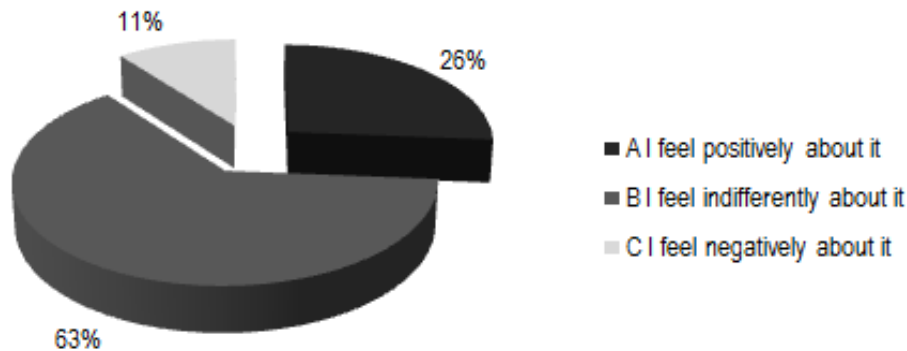


Fig. 3: How do you perceive the presence of companies on Facebook?

Source: Own

Only 11% of the respondents from our set answered they perceived the presence of companies on Facebook negatively but for other 63% respondents their presence was indifferent to them. We assume this fact illustrates how contradictory the assessments of the use of company communication on social networks are.

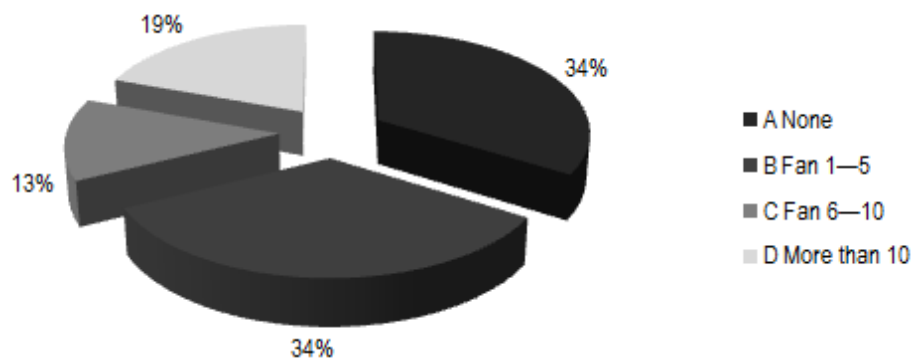


Fig. 4: When on Facebook, are you a member of a group supporting any product (brand)?

Source: Own

The outputs from Fig. 3 are related to those from Fig. 4. The outputs from Fig. 4, contrary to the outputs from Fig. 3, show that young people on Facebook become friends of brands or products. As many as 34% respondents stated more than 10 items and only 34% of them stated they had never become members of any group supporting a product or a brand.

Conclusion

To be able to compare our outputs we state some selected figures from the research study of Anderson Analytics according to Handl [9]. An average American user of social networks logs on 5 days a week; he/she checks updates four times a day and he/she spends about an hour a day on social networks. Nine percent of users are usually logged the whole day.

We have then chosen some figures from the field of marketing and compared them with our research from the Czech Republic. According to the research study from the US 52% of users are friends or fans of at least one brand, 17% users perceive the presentation of brands on networks positively, 19% perceive it negatively, 64% are neutral, 45% make friends only with their family members or real friends, 18% contact only the people they know in person. Only 10% users accept “friendship” with anybody.

Let us remind the dissimilarities in the age structure of the Facebook users in the Czech Republic and the US as this was the reason why we aimed at the students of both secondary schools and universities.

In our set 66% respondents were friends of at least one brand. 21% perceived the presentation of companies or brands positively and 63% perceived it neutrally. 65% log on several times daily (including 5% being online all the time) and similarly to the US 11% respondents accept friendship even with somebody they do not know in person.

Even other current research studies in the Czech Republic [14] show the tendency to the Internet marketing and these studies also state that a 20% proportion of the company total marketing cost is influenced by this latest trend. An example of research of the marketing trends from the US [16] states that the estimation of the trends in the cost proportion of the online marketing costs amount up to 45% and, at the same time, up to 70% companies plan to change communication strategies for social networks.

We can state here that a number of the marketing figures we found in relation to communication of users on Facebook in the Czech Republic and users of social networks in the US are similar. Therefore we think it might be similarly appropriate to take over the experience from the communication of companies on social networks but we must not forget about the specific features of such communication, see [8, 12, 13, 19, 21].

Even according to Todaro [23, p. 297] there is no doubt that in communication on social networks companies must be proactive and have to pay special attention to the quality they offer to visitors and to open communication. The success will follow if they are first to attract customers. [23]

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Socially Responsible Investment as a Trend in Investment Services in Europe¹

Abstract

In the terms of financial services, there is a growing trend of offering new kinds of products to the customers. One of the new products, which were developed regarding to the investors' demand changes, is socially responsible investment (SRI). According to the market development, the needs of investors have been extended with the new extra-financial investment criteria, so called environmental, social and governance (ESG) criteria. By these criteria is SRI closely related to Corporate Social Responsibility (CSR) and these two concepts are encouraging each other. Both, institutional and individual investors are considering ESG criteria within their investment decisions more and more often. This is the clear sign that SRI is rising from the niche investment service and it is becoming fast growing, dynamic and highly demanded service. The main goal of our study is to provide comprehensive overview of SRI in the selected European countries. There is a development of this new approach in investment services investigated. The growth of SRI in the developing Central European (CE) countries is compared with the developed ones. As far as the level of financial integration is growing among the European countries, there is an expectation of similar conditions for European investors even in the field of SRI. Among the selected countries, there is a difference in the maturity of the SRI approach. Our paper provides great contribution to the literature on SRI among the European countries, especially on the comprehensive overview, when there is an obvious lack of literature on this topic. Our paper shows up those countries like UK, The Netherlands, Sweden and Belgium have more developed SRI financial services than the countries like Spain and some of the CE countries.

Key Words

corporate social responsibility, socially responsible investment, SEE criteria, ESG criteria, triple responsibility, SRI funds, SRI indices

JEL Classification: G15, G23, G28

Introduction

Socially responsible investment is a specific kind of investment, closely related to the Corporate Social Responsibility (CSR). These two approaches were developed regarding to the increasing awareness about the social, ecological and ethical issues (SEE criteria)

¹ Research behind this paper was supported by the Student Grant Competition of Silesian University within the project SGS 25/2010 "Financial integration in the EU and its effect on corporate sector."

among the people. Even the CSR is quite old in terms of practice and it was used in the past, as a terminology or as a component of corporate or investment strategy is quite new. The recent economic recession was one of the aspects which contributed the development of these field and not only practitioners but more and more scientists have become interested in these issues. Paul Krugman, the Nobel prize winning economist, declared: *"The people who assured us that markets work; that the private pursuit of profit always leads to a good result have been rather massively wrong,"* [8]. Despite of the growing interest in CSR and SRI, there has not been one united definition for these two approaches established yet. However, CSR activities have few common features: collective identity, share of individual resources for a common purpose and voluntary character. Then SRI aims at bringing social responsibility within the asset management sector. There are several definitions of SRI available. Regarding to Eurosif [6], sustainable and responsible investing (SRI) is a generic term covering any type of investment process that combines investors' financial objectives with their concerns about Environmental, Social and Governance (ESG) issues. Ethical Investment Research Services¹ defines SRI as a tool, which describes any area of the financial sector where the social, environmental and ethical principles of the investor (whether an individual or institution) influence which organization or venture they choose to place their money with. It also encompasses how investors might use their power as a shareholder to encourage better environmental and social behavior from the companies they invest in. Shapiro [13] considers SRI as practice of making investment decisions based on both financial and social performance. It is in the concept of investing in concert with investors principles. The SRI strategy asserts that investing is not value neutral and that there are significant ethical and social, as well as economic, consequences in how we invest our money. It is a commitment, if investors will, to achieving social good through investment.

SRI principles have become more visible after the launch of Principles for Responsible Investment, which were presented by the former United Nations Secretary-General Kofi Annan in 2005. *"By acting collectively on the basis of these principles for responsible investment, we can help protect all the world's precious assets,"* [15].

Few years ago SRI was considered as a small but fast growing niche market among the both individual and institutional investors. Nowadays it is no longer uncommon sort of investment designed for the specialized investors, especially in the countries with developed financial markets. Thanks to the growing market with the investment and mutual funds with the SRI investing strategy (SRI funds) SRI is becoming more popular among the individual investors. So called green, social or ethical funds are managed by the investment strategy considering triple-bottom-line selection of assets and they should offer the opportunity to connect the social and financial goals of investors. Basically, the difference in the investment decisions of the managers of the socially responsible funds and the managers of funds, which are not classified as socially responsible is, that they take into account both; financial and social criterions. There are recognized so called ESG (environmental or ecological, social and corporate governance)

¹ www.eurisis.org

criteria or SEE (social, ethical and environmental) criteria among the investors. The main goal of our study is to provide comprehensive overview of SRI financial services within the selected European countries by analysis and comparison of individual SRI markets.

1. Literature overview

The majority of the studies on SRI investigate the performance of SRI investment funds. They try to find out if these kinds of funds are comparable to non-SRI funds in the terms of financial performance. Researchers try to provide comprehensive information to the investors, to support their social-oriented investment criteria. From the point of view of portfolio management theory, extra criteria, which are included in the decision making of the SRI fund manager, could lead to the less choice within the investment instruments. This could cause the worse level of diversification, lower returns and higher risk; lower risk-adjusted return.

Hamilton et al. [7] investigate the performance of the SRI mutual funds from 1981 till 1990 using Jensen's alpha. The results do not show that the SRI funds earn no statistically significant excess returns and there are no statistically significant differences between the performance of such funds and conventional ones. A recent study of Renneboog et al. [10] show, that the risk-adjusted returns of SRI funds in US and UK are not significantly different from those of conventional funds, whereas SRI funds in Continental Europe and Asia-Pacific strongly underperform benchmark portfolios. On the other hand, there was lower volatility recorded for the SRI funds than the volatility of conventional funds.

The literature, which tries to provide the comprehensive overview of the SRI market, is rather sparse. The main reason is that despite the global spread of the SRI movement worldwide, research has indicated different practices and principles in different countries and continents [4]. Contrary to the financial markets, the SRI movement does not exist as a global phenomenon but as a sum of separate national movements. Consequently, the potential impacts of the SRI movement on the asset management sector can be studied only through a national lens [1]. However, our paper tries to provide comprehensive overview on the SRI as an investment service within the selected European countries by analysis and comparison of individual SRI markets.

2. Data and Methodology

Method of analysis is used to provide comprehensive overview of SRI investment services among the Europe. There were information from several reports oriented on SRI and CSR collected and analyzed. There are a number of reports on this topic available on the market, but the information are rather inconsistent and incomparable. Public reports are provided mostly by European or international institutions, such as European Commission, The United Nations or OECD. There are several private research

institutions, providing their researches on SRI market as EIRIS, Eurosif, SiRi Group, Avanzi SRI and Vigeo. Switzerland, Sweden, Spain, UK, The Netherlands, Italy, Germany, France, Belgium and Austria were investigated as a countries representing developed European countries and as representatives of Central European countries, there were countries of Visegrad group selected. The alliance called Visegrad group is represented by the four countries of Central Europe; Czech Republic, Hungary, Poland and Slovakia. It is an initiative of four countries, also called Visegrad Four (V4), to cooperate in several various fields, from cooperation on the cultural to political level. We tried to collect as much information on relevant issues as possible and finally we chose four main indicators for our comparison, both qualitative and quantitative. There were only the countries which have listed funds in Bloomberg databases compared (UK, The Netherlands, Sweden, Germany, Belgium, France, Luxembourg, Hungary and Italy). The different conditions among the different markets were analyzed through the different instruments of government initiative. Governance initiative represents the qualitative indicator and it is divided into the three parts: Legal, Financial/Economical/Fiscal instruments and Informational instruments provided by governance within the countries. As a quantitative indicator is used number of SRI mutual and investment funds in selected countries in 2011 according to Bloomberg funds list¹. Bloomberg agency is one of the worldwide recognized sources of financial information and according to their recognized. Within the funds list Bloomberg provides databases of funds according to the location and according to their objectives as well. This list is available to wild public and it includes the environmental friendly (green) and socially responsible funds as well, which are selected according to the Bloomberg's ESG criteria. Concurrently with this list could be used the tool Mutual fund screener, which makes the searching for the specific types of funds listed in specific countries easier. This tool was used to figure out the share of SRI funds on the total number of funds listed in selected countries. Next quantitative indicator is represented by the share of SRI funds on the total number of funds listed within the individual countries. To each of the qualitative criterions was assigned the same weigh and quantitative criterions were considered regarding to the rule; higher better. The estimation of the final ranking of maturity of SRI market within individual countries is done by the collaboration and decision-making support software Expert Choice. It provides easy tool for multicriteria evaluation and decision making and it allows to prioritize the objectives and to evaluate alternatives. In our study we use Expert Choice to provide rating of individual SRI markets regarding to the criterions and the higher number represents better rating and more mature SRI market. There is one disadvantage of the used version software, that it is able to compare only 9 objects at once.

3. Socially responsible investment approach

To summarize all of the mentioned definitions of SRI, it is the special approach of investment, where not only financial criteria are taking into account but the special extra-investment or non-financial criteria are considered in the investment process as

¹ <http://www.bloomberg.com/markets/funds>

well. Through these non-financial criteria the CSR and SRI are encouraging each other. The sector's various applications range from a passive respect of one or many of those criteria to an active approach where investors directly promote social responsibility with the companies in which they invest. This may support development of these practices by setting up a competitive system among companies, whereby good CSR practice will place the company high on the investors' list. Extra investment criteria, or non-financial criteria, which are considered by investors, are well known as SEE (social, environmental and ethical) criteria. However, many investors are now including corporate governance (CG) matters along with SEE issues as part of the broader group of extra investment issues. As evidence of this, the term ESG criteria, is used more and more often. It includes Governance matters together with Environmental and Social ones, and has become frequent in the field of SRI.

It is possible to find out in literature these extra investment criteria called as a triple bottom line selection of asset. Triple bottom line selection is well known as a "triple responsibility", which covers these corporate activities [14]: Economic scope; Environmental scope; and Social scope. SRI implicates the CSR principles in their investment decisions via screening. There are several SRI approaches with several types of screening used within investing strategies. The most common is negative and positive screening. Negative screening is running through the simple screening, where are only one or two criteria used for exclusion or norms- and values/ethical-based exclusions, which uses two or more criteria. Positive screening methodology is used for picking up the investment instruments regarding to the ESG/SEE criteria. The next often used screening is engagement, which is a long-term process of dialogue with companies which seeks to influence company behavior in relation to their SEE practices [6].

The most important target group in the case of SRI is group of institutional investors, namely pension funds, either privately or publicly run, because they have large amount of money at their disposal and they can have a great influence on SRI in each country. The next important actors in the field of SRI are international organizations as United Nations or OECD, because they can raise awareness at a global level and they provide loans. Foundations, charities and religious groups represents important target group as well. On one hand they are the receivers in the case of CSR activities of corporations but on the other hand, they could provide great moral leadership and influence individual investors in their decisions. Therefore, individual or small investors do have growing impact on the development of SRI, mostly through mutual or investment funds, which are quite available to this group of investors. Government plays a great role in this case, because of the initiatives on SRI from its side could help individual investors to better understand and apply SRI. There is significant difference among the different groups of European countries in maturity of CSR or SRI approaches. According to the Steurer et al [12], the countries with the Scandinavian socio-economic model features as Denmark, Finland, the Netherlands and Sweden together with UK and Ireland from the Anglo-Saxon socio-economic model lead in CSR policies, whereas Mediterranean and Transitional countries are not developed in this area yet. However, the countries according to the level of CSR policies could be divided into the North-South and West-East countries sections. Key drivers of SRI should be divided into the drivers of demand and supply of SRI.

According to the Steurer et al. [12], the main drivers are actors coming out of investment community. These actors can drive the SRI agenda because they believe that SRI portfolios can have above-average returns beating non-SRI benchmarks. The media is believed to play an important role in increasing environmental, social and ethical pressures, leading to an increased awareness regarding SRI. The next key driver identified is government and its regulations and guidelines. The more detailed overview of the government initiatives within the selected European countries is provided in the Tab. 1.

Tab. 1: Government initiatives within selected European countries.

Type of instrument	Country	Comments
Legal	Belgium	The law against the financing of weapons, applicable to any Belgian investor.
	UK	"SRI pension Disclosure Regulation" requires trustees of occupational pension schemes to disclose the level of Social, environmental and ethical considerations in investing strategies.
	France	2001/"the New Economic Regulation", requirements for companies listed on French stock exchange to disclose information on social and environmental issues in their annual reports
	Sweden	2000 "Public Pension Funds Act", disclosure guideline for governmentally controlled pension funds
	Denmark	2009/"Act amending the Danish Financial statements Act (Accounting for CSR in large businesses)"
Financial / economic / fiscal instruments	UK	The Community Investment Tax relief was introduced, its aim is to foster private investment in enterprises operating in the less developed communities.
	Netherlands	The Green Funds Scheme was introduced; its aim is to foster green investments in Netherlands (such a investments in wind farms or organic agricultural businesses) by tax relief for investors.
	Poland	Working group on Responsible Investment sponsored by the Ministry for the Economy was developed
Inform. instruments	Netherlands	A Sustainable Money Guide for private investors has been published.
	Austria	An online SRI platform has been established (www.guenesgeld.at).
	Poland	An online SRI educational portal was established (www.odpowiedzialne-inwestowanie.pl)

Source: Steurer et al. [12], www.odpowiedzialne-inwestowanie.pl [cit. 2011-02-20]
www.dansif.dkl [cit. 2011-03-13]

However, there are different key drivers running SRI initiatives in the individual countries, which are dependent mostly on the cultural factors. The key drivers of SRI in UK for example is its ethical background, in the Netherlands it is consensus, in Germany there are mostly ecological or environmental issues as well as in Czech Republic, in France there are social issues and for both Italy and Poland there are significant religious or ethical issues as key drivers of SRI.

4. Integration SRI within the financial services in Europe

SRI could be considered as a special market segment of asset management industry or the special segment in the investment services. SRI, or investments based on the ESG criteria have risen significantly in the last decades. SRI within the financial or investment services is considered mainly through the SRI investment or mutual funds, which are provided to the investors by the financial institutions. Bauer et al. [3] found out that the share of SRI funds on the total mutual funds' assets is in Germany only 0.04 % and in France 0.01 %. Worldwide there was 12.2 % of total assets under management involved in some strategy of SRI in 2010, where in 2007 it was 10 %, according to the Social Investment Forum [11] . Evidence, which confirms, that SRI is no longer small niche market, but it can be defined as dynamic and fast growing one, is provided in the Figure 1. There is development of numbers of investments funds and their Total Net Assets from 1984 till 2011 shown. The lines represent exponential growing trend of the both indicators with the prediction for the year 2012.

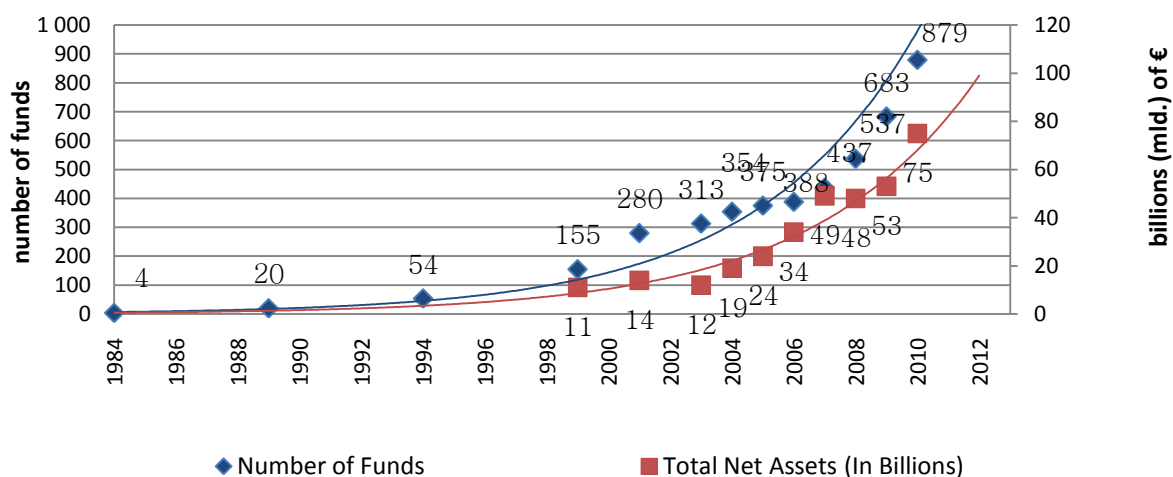


Fig. 1: Development of the investment funds with SRI investing strategy in Europe since 1984

Source: Vigeo [16]) and Christensen et al. [9]

There is an evident increasing trend of both; the value and the number of the SRI visible. According to the Vigeo [16], there is the highest increase of total net assets and the number of SRI funds after the recent financial crisis recorded. The amount of money increased more than 100 % from €437 bil. in 2007 to €879 bil. in 2010. The current market share of SRI is estimated to be around 10-15% of total investments in European funds under management in the terms of total net assets.

Christensen et al. [9] suggest that the SRI retail market is not anti-cyclical and at the moment of his research operates like other markets. According to the Fig. 1, there is no significant decrease of numbers or of total net assets of SRI in Europe regarding to the current economic recession, so this indicates, that SRI retail market should not be considered as cyclical one any longer. To present the situation in individual European markets, the development of number of investment funds among the selected European countries is presented in the Fig. 2. There is a significant increasing trend in amount of

funds from 1999 until 2011 in several countries. The results for Luxembourg are not provided in the Fig. 2, regarding to the missing data from the years 1999 and 2001. However, in 2011 there were 204 SRI funds listed. There is the same reason of excluding V4 countries.

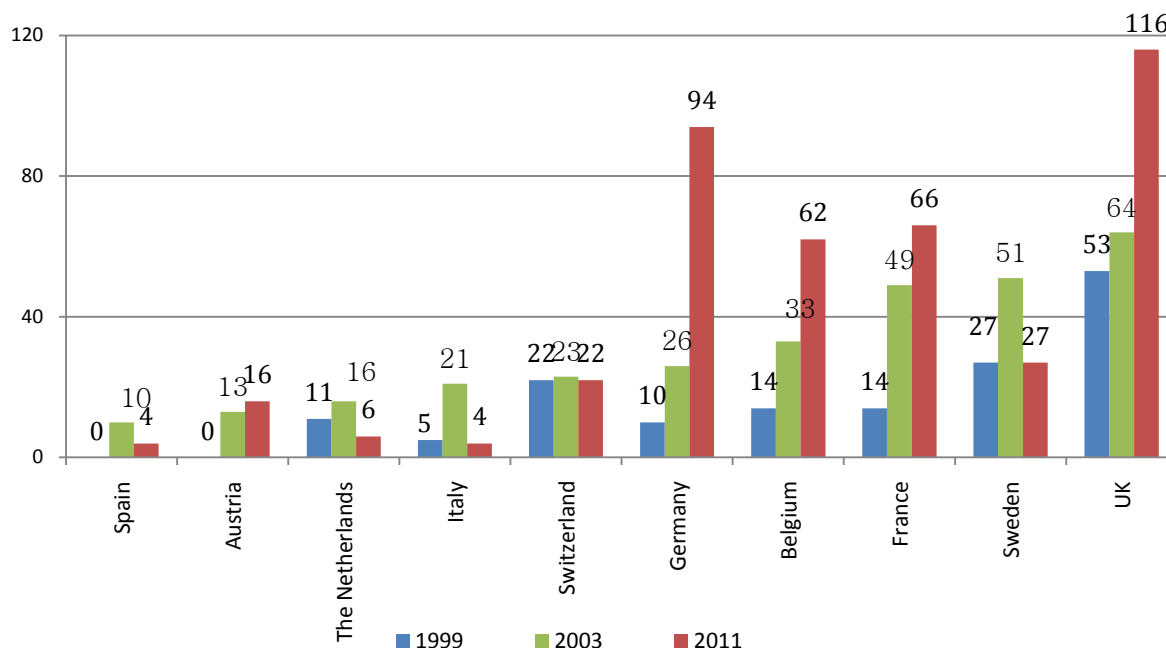


Fig. 2: Number of SRI funds in selected European countries

Source: Avanzi SRI Research [2], [www. http://www.bloomberg.com/markets/funds](http://www.bloomberg.com/markets/funds) [cit. 2011-02-20]

Number of SRI funds with domicile in V4 countries is rather smaller. There are several reasons why the SRI funds market is under construction in these countries. The most important issue is ability of cross selling in this case. The financial markets are rather smaller here and almost all of the financial institutions in these countries belong to the international holdings. According to Christensen et al. [9] strong players have started to offer SRI funds more actively in less developed markets across the Europe. That's why most of the SRI funds distributed in V4 countries have different country of domicile and so they are not listed in the distributed countries. For example, there are 12 SRI (green) funds of Belgium asset manager KBC AM available in Czech Republic through the CSOB and CSOB private banking and 4 funds (2 green) from Luxembourg group of funds of Pioneer Investment. However there is only one SRI fund listed in Czech Republic (fund Fond živé planety of investment company ČP Invest). Share of SRI funds on the total amount of investment funds per country is another indicator for comparison of SRI market's maturity.

The figures for individual countries could be seen in the Fig. 3, where the highest rate has Sweden and Belgium. In UK there is the highest number of SRI funds, but the share on the total funds number is rather smaller. For Spain and Italy it is visible, that not only the numbers of SRI funds are lower, but even the share on total number of funds is small and that indicates underdeveloped SRI financial services in these countries.

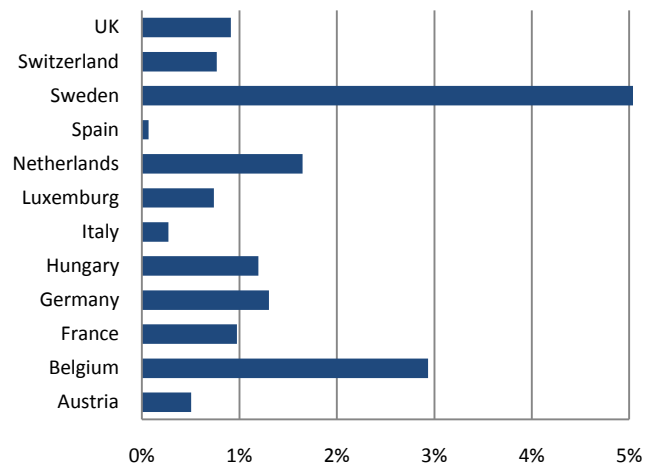


Fig. 3: Share of SRI funds on the total amount of funds in selected countries

Source: Author's calculation, [www. http://www.bloomberg.com/markets/funds](http://www.bloomberg.com/markets/funds) [cit. 2011-02-20]

In the countries of V4 these kinds of financial products are in their beginnings. Their financial markets are still very young, what is the main reason of the underdeveloped SRI within the financial services. According to the Bloomberg funds list, in Hungary there are 3 SRI funds listed and the share of SRI funds on total number of funds is quite high in this case. Among the investigated V4 countries, the most developed SRI market is in Poland from the comprehensive point of view. It includes the indicators as government initiatives and public awareness as well. Poland provides the most comprehensive information about the development of SRI as whole among the V4. It is connected with the fact, that Polish capital market is the most developed among V4 countries. Poland's capital market is characterized by the growing strength of institutional investors (pension funds, investment funds) as well as by the high disclosure requirements Since 2009, In 2009 there was a first Polish educational portal on Responsible Investment (www.odpowiedzialne-inwestowanie.pl) established and the CSR Index (RESPECT) by the Warsaw Stock Exchange was created, listing 16 companies with the highest rating. On the other hand, SRI is driven by the ethical or religious factor, which is based on the culture of this country.

In Czech Republic, there are several SRI funds available to investors, mostly concentrated on the ecological aspects, but only one is listed in Czech Republic. Czech capital market is the second most developed in the V4 countries after the Poland, when the rate of the stock exchange capitalization/HDP is considered. The lowest level of the capital market maturity from the selected countries has Slovak one. The capital market is still not fully fulfilling its basic economic functions. The first mutual fund with the SRI strategy in Slovakia was established in September 2010. However, there were some foreign funds available for the Slovak investors, according to the developed financial integration of the European countries. The more comprehensive overview of the SRI maturity among investigated countries is provided by in Fig. 4. It shows the output from the software Expert Choice's comparison, which estimates the ranking of the individual SRI markets.

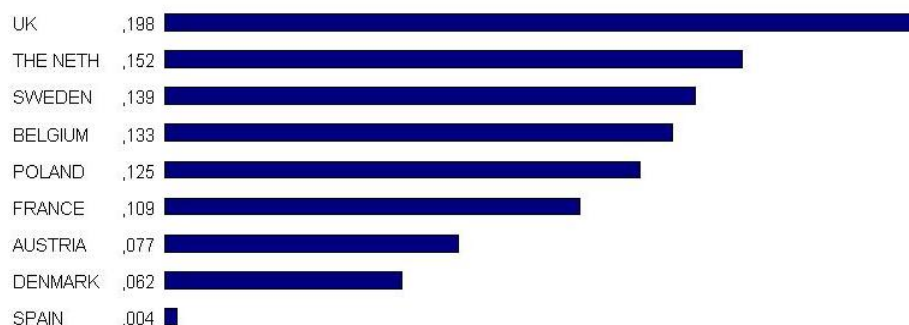


Fig. 4: Rating of the SRI markets within the selected countries

Source: output from Expert Choice

According to the comparison on the bases of selected criterions, the country with the most developed SRI market is in UK, and with the least developed SRI market has Spain. However, this comparison is provided only for the countries, which funds are listed in the Bloomberg database. For the majority of V4 countries this is not the case.

Conclusion

The paper provides comprehensive analysis of SRI within the financial services in selected European countries. The SRI markets of individual countries are compared according to quantitative and qualitative criterions. There are significant differences seen between the developed European countries and the countries of Central Europe, represented by the V4 countries in this study. SRI in the terms of financial or investment services has a growing importance in the European countries. In our study we found out the differences between the maturities of individual SRI markets. According to the comparison of selected countries, the most developed SRI market is identified in UK and the least developed one is in Spain. From the countries of V4 there is only Hungary involved in provided comparison. The other V4 countries do not have SRI funds listed in Bloomberg funds list, therefore their SRI markets are rather underdeveloped. However, thanks to the high level of financial integration of financial markets within Europe, there are SRI investment products distributed across these countries as well. In the sector of financial services, there are several government initiatives welcomed. In the European countries the high level actor in the SRI field is government. The main role of government for the financial sector is seen in raising the awareness of SRI and in adopting of legal requirements, which will disclose SRI relevant practices, not only regarding to pension funds but also for companies in general. Government within the European countries should cooperate and be involved in the process of European or worldwide guidelines preparation to establish common understanding of what SRI is about and to provide the key indicators according which SRI would be evaluated to decrease inconsistency not only in research. This paper provides not only the contribution to the literature about the SRI topic, but it shows the next possible stages of research in this area. There could be different criterions of comparison chosen as well as different SRI markets could be compared.

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Advantages of Two-Stage Cluster Sampling when Carrying Out the Random Sampling from the Population of the Czech Republic¹

Abstract

The aim of this paper is a creation of the list of arguments why to use or not to use two-stage cluster sampling when carrying out the random sampling from the population of the Czech Republic. This contribution follows the previous work [3] and [4]. In those papers there were presented various types of random sampling – simple random sampling, stratified sampling, and also cluster sampling. Although, the estimates precision from the cluster sampling is not as good as in case of other types of random sampling, we always found the cluster sampling to be the best way how to take a random sample from the population of the Czech Republic with respect to all aspects of the random sampling. So, in this paper we focus on the problem how to carry out the cluster sampling to obtain as precise estimates as possible. The random samples are taken from the data files provided by the Czech Statistical Office again. We chose the indicator of the unemployment rate in all the municipalities of the Czech Republic on 31st December 2006. Subsequently, we took 520 units from all the municipalities of the Czech Republic by two-stage cluster sampling. We investigated how big is the influence of number of selected primary sampling units on the estimates precision and what is the difference between cluster sampling with equal and unequal probabilities. The estimates precision is also significantly influenced by the size of primary sampling units and the fact whether its size is respected when taking a random sample. The estimates precision was evaluated by both the standard error of estimation and the mean deviation of point estimations from their value in the population.

Key Words

primary sampling units, probability, random sample, secondary sampling units, two-stage cluster sampling

JEL Classification: **C13, C83**

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Introduction

Our previous works were focused on determination of the best way how to take random samples from the population for needs of an economic indicators analysis. The basis of our work on the project is sampling a certain number of municipalities of the Czech Republic and treating with them, not with households. So, the subject of our research is a description of ways how to obtain random samples from the population of all the municipalities in the Czech Republic. Some data used in this research comes from the Czech Statistical Office – there are mostly data from Population and Housing Census in 2001. Other important data were collected by the research team from the Faculty of Economics. The truth is that organizing and financial possibilities of the research team do not allow examine all the population of the Czech municipalities. It is the reason why we had to sample a certain number of municipalities in which the survey was conducted. The previous surveys conducted in the framework of the project No. WD 30-07-1 are also described by Jách in [5] and Prskavcová, Řehořová in [8].

In the first chapter there is given a summary of previous research results which were a base for research results presented in this paper. The second part brings short notes about two-stage cluster sampling theory and methodology of the research. The third chapter contains information about practical concept of two-stage cluster sampling, its results and evaluation. In the end of this chapter we can also find comparison of other types of random sampling carried out during previous research with two-stage cluster sampling. In conclusion there are summarized the most important findings resulting from this research and there are also presented proposals for future work that could lead to receiving more knowledge about carrying out of random sampling from the population of Czech municipalities.

1. Summary of Previous Research Results

This paper is a follow-up to the research activities published in [3] and [4]. The first publication mentioned contains results of three kinds of random samplings comparison. We carried out the simple random sampling, stratified sampling and two-stage cluster sampling. The stratified samples were in three kinds of allocation – uniform, proportional and optimal. In case of stratified sampling we considered the regions of the Czech Republic to be strata. When we took two-stage cluster samples from the population, we also determined the regions of the Czech Republic to be the primary sampling units (PSUs) and the secondary sampling units (SSUs) were municipalities of the Czech Republic. In the work [3] there was carried out two-stage cluster sampling without replacement in the first stage as well as in the second stage. And we selected such amount of SSUs to be proportional to the size of PSUs. Let's add the information that in the first stage there was selected seven regions from the population of fourteen ones. In this work we made a conclusion that the most suitable sampling method is a simple random sampling. We compare various kinds of random sampling with the help of the standard error of mean, mean deviation of each sample mean from the actual mean of the population and relative gain from stratification. But we have to realize that such a conclusion is possible just in case when the main evaluative criterion is a

precision of estimates obtained on the base of the sample. We do not take into account other factors as an organization of a survey, survey costs etc. When we took stratified samples, we had to admit that the regions of the Czech Republic are not suitable as strata because the values variability within strata is very large, and individual strata do not differ significantly each other. Therefore, it was desirable to think about more suitable way how to determine a stratum.

The publication [4] brings first of all new findings about stratified sampling. We determined strata in the different way – the new criterion was the municipality size category according to the number of inhabitants. We carried out proportional and optimal allocation of stratified sampling. In the end we found out that the municipality size category is not the ideal criterion either and does not bring a significant improvement of estimates precision.

The important finding resulting from our research is the fact that simple random sampling which brings the most precise estimates is heavily acceptable in real. The reason is a need of much time, energy and costs spending for organization of such a survey. Then, two-stage cluster sampling appears to be a reasonable solving of that problem. Two-stage cluster sampling makes the time needed for a survey shorter, reduces costs spending for a survey and is easier from an organizational point of view. Therefore, we focus on two-stage cluster sampling in this paper.

2. Theoretical Base and Methodology of Two-Stage Cluster Sampling

Two-stage cluster sampling represents one of the basic kinds of random samplings whose allow obtain a representative sample. The main idea of it is a choice of sampling units in two stages. We choose a certain number of primary sampling units (PSUs) from the population of all the PSUs in the first stage, and in the second stage we choose a certain number of secondary sampling units (SSUs) from PSUs chosen in the first stage. The population size of PSUs should be always less than the population size of SUSs. Recommended number of PSUs is about ten, as writes e.g. Čermák in [1]. The choice of PSUs can be carried out with equal or unequal probabilities. When taking a sample with equal probabilities, we do not respect potentially different size of PSUs and therefore, each PSU which is a part of the population in the draw has the same probability of being drawn – essentially, it is a principle of simple random sampling.

PSUs often do not have the same size and it means that they do not have the same importance in the population. That is why we try to give different probabilities of being drawn to PSUs with different size. The question also is how to determine the PSU size. This term is connected with a certain feature which we follow, i. e. statistical variable. If we determine the PSU size, then the probability of drawing the l -th PSU is, as e. g. Čermák writes in [1, p. 65],

$$P_i = \frac{N_i}{N} \quad (1)$$

where: N_i is the number of SSUs in PSU_i ,
 N is the number of PSUs in the population.

The selection of PSUs is mostly carried out with replacement. It cause that individual draws can be considered to be independent trials.

The selection on the second stage can be also carried out by several ways. The first possibility is to choose a certain number of SSUs without respect of previous selection of that PSU from each selected PSU. It means that some SSUs can be involved into a sample more times. Another possibility is to select just the SSUs which have not been drawn in previous trials from PSU which has been drawn. But there is a danger that the PSU will not contain sufficient number of SSUs to be able to carry out such a way of choice. In another case when some PSU is selected twice or more times, no SSUs are chosen any more and we use statistics calculated from a sample of SSUs chosen in the first draw of the PSU. We usually carry out sampling without replacement in the second stage.

3. Two-Stage Cluster Sampling in Practice

The data used in our research were obtained from the Czech Statistical Office (CSO). We worked with the unemployment rate in % in all the municipalities of the Czech Republic on 31st December 2006. We determined the regions of the Czech Republic as PSUs and municipalities as SSUs. We took thirty samples in total. There were fifteen samples with equal probabilities and fifteen samples with unequal probabilities. Each group of samples contains five samples with the number of PSUs subsequently 5, 6 and 7. The number of selected PSUs has an impact on estimations efficiency. It is proved generally that the larger number of PSUs is selected, the more efficient the estimation is. However, the estimations efficiency rises up with increasing number of selected PSUs just negligibly from the certain number of selected PSUs. When carrying out sampling with unequal probabilities, we suppose that the number of municipalities in the regions is different. So, the size of PSU is determined by the number of municipalities which are administratively included in the regions. The size of each sample is 520 municipalities. This sample size is taken from previous researches to be possible to compare all the results. Selected characteristics of the population (average unemployment rate, the standard deviation and the standard error of mean) are written in Table 1.

Tab. 1: Selected characteristics of the population

Population	μ	σ	$\sqrt{D(\bar{y})}$
	9.20197	5.574498	0.244458

Source: own calculations based on data from CSO

Firstly, we carried out sampling with equal probabilities. So, we did not respect the different size of PSUs. But, we selected the number of SSUs proportionally to the chosen

PSU size in the second stage. Then, we calculated selected statistics from obtained samples – sample mean, sample standard deviation and estimation of the standard error of mean. Tables 2 and 3 bring these calculations.

Tab. 2: Selected characteristics of two-stage cluster sampling with equal probabilities

Sample	PSU = 5			PSU = 6		
	$\bar{y}_i$	s_i	$est\sqrt{D(\bar{y})}$	$\bar{y}_i$	s_i	$est\sqrt{D(\bar{y})}$
Sample 1	9.08481	5.07793	0.871220	8.40096	4.75126	1.024353
Sample 2	11.2085	6.79974	1.214003	8.86500	5.17819	0.985551
Sample 3	9.04596	5.02350	0.546848	9.01019	5.42066	0.308495
Sample 4	9.20269	5.02494	0.759149	8.74442	5.21823	1.388013
Sample 5	9.19519	6.44923	1.214402	11.7110	6.44147	1.240638

Source: own calculations

Tab. 3: Selected characteristics of two-stage cluster sampling with equal probabilities – continuation

Sample	PSU = 7		
	$\bar{y}_i$	s_i	$est\sqrt{D(\bar{y})}$
Sample 1	8.60712	4.50827	0.720327
Sample 2	10.8792	5.61203	0.759415
Sample 3	8.01365	4.66081	1.461647
Sample 4	9.12346	5.97291	1.047238
Sample 5	8.47346	5.03768	1.317337

Source: own calculations

Most calculations were done by help of the statistical programme STATGRAPHICS Centurion XVI, some of them in MS Excel. Formulas for calculation of the selected characteristics can be found in detail e. g. in [1] or [6].

Tab. 4: Probability of l-th PSU draw in case of sampling with unequal probabilities

Probability of l-th PSU draw	
P (CZ010) = 0.00	P (CZ052) = 0.07
P (CZ020) = 0.18	P (CZ053) = 0.07
P (CZ031) = 0.10	P (CZ061) = 0.11
P (CZ032) = 0.08	P (CZ062) = 0.11
P (CZ041) = 0.02	P (CZ071) = 0.06
P (CZ042) = 0.06	P (CZ072) = 0.05
P (CZ051) = 0.04	P (CZ080) = 0.05

Source: own calculations

Before commenting the results in Tables 2 and 3, let's look at the calculations based on samples with unequal probabilities. We suppose, as we mentioned previously, that the size of individual PSUs causes their different importance in the population. PSUs size (regions size) is determined by the number of municipalities which belong to a given region. Prague (with the CZ010 code) includes the capitol of the Czech Republic itself; the Středočeský Region (CZ020) includes 1146 municipalities, the Jihočeský Region (CZ031) 623 municipalities, the Plzeňský Region (CZ032) 501, the Karlovarský Region (CZ041) 132, the Ústecký Region (CZ042) 354, the Liberecký Region (CZ051) 215, the

Královéhradecký Region (CZ052) 448, the Pardubický Region (CZ053) 452, the Vysočina Region (CZ061) 704, the Jihomoravský Region (CZ062) 672, the Olomoucký Region (CZ071) 397, the Zlínský Region (CZ072) 304 and the Moravskoslezský Region (CZ080) 299 municipalities. Probability of the individual PSU draw is calculated according to (1). Table 4 contains calculated probabilities.

Tab. 5: Selected characteristics of two-stage cluster sampling with unequal probabilities

Sample	PSU = 5			PSU = 6		
	$\bar{y}_i$	s_i	$est\sqrt{D(\bar{y})}$	$\bar{y}_i$	s_i	$est\sqrt{D(\bar{y})}$
Sample 1	7.23346	4.22103	1.865245	7.59577	4.57890	1.629549
Sample 2	9.03442	5.11110	1.250764	7.97365	5.05279	1.088969
Sample 3	7.2225	4.81988	1.380317	8.73538	5.18433	0.450006
Sample 4	7.54269	4.24632	1.381656	7.39462	4.70723	1.323299
Sample 5	9.30923	5.21858	1.181767	7.51904	5.14625	1.519357

Source: own calculations

These 15 samples with unequal probabilities served for calculation of selected sample characteristics mentioned in Tables 5 and 6.

Tab. 6: Selected characteristics of two-stage cluster sampling with unequal probabilities – continuation

Sample	PSU = 7		
	$\bar{y}_i$	s_i	$est\sqrt{D(\bar{y})}$
Sample 1	7.91327	4.87007	0.783216
Sample 2	7.90231	4.89947	1.111351
Sample 3	8.20000	4.80932	1.363960
Sample 4	9.24769	5.05646	1.220385
Sample 5	7.02558	4.18848	1.036666

Source: own calculations

The first characteristic used for comparison of estimations precision is an estimation of the standard error of mean $est\sqrt{D(\bar{y})}$. As we can see in Tables 2, 3, 5 and 6, the smallest values of this characteristic are obtained for samples with equal probabilities in average. Samples with unequal probabilities bring greater values of the standard error but the difference is not so significant. Surprising result is given in a sample with equal probability for 5 PSUs. This sample has the least value of the standard error. Generally, it is possible to prove that the estimations precision rises up with rising number of selected PSUs. So, it is the reason why this result is surprising. The truth is that we carried out each kind of random sampling five times and the question is what results we would obtain for 30 and more trials. The second characteristic which we used for the comparison of various kinds of two-stage cluster sampling is the mean deviation of each sample mean from the actual mean of the population. It is calculated as follows:

$$\text{Mean deviation} = \sqrt{\frac{\sum_{i=1}^k (\bar{y}_i - \mu)^2}{k}} \quad (2)$$

where $\bar{y}_i$ are individual sample means,
 k is a number of samples.

Values of the mean deviation are in Table 7.

Tab. 7: Comparison of different kinds of two-stage cluster sampling with help of the mean deviation

Characteristics	Sampling with equal probabilities			Sampling with unequal probabilities		
	PSU = 5	PSU = 6	PSU = 7	PSU = 5	PSU = 6	PSU = 7
Mean deviation	0.9016	1.2080	1.0115	1.4551	1.4426	1.3485

Source: own calculations

As we can see in Table 7, better results are registered when sampling with equal probabilities. The least value of the mean deviation is recorded in case with 5 PSUs. Sampling with unequal probabilities approved the general rule that the greatest estimations precision is in case with the largest number of selected PSUs.

Conclusion

The fact which results from previous researches is that sampling of a certain number of municipalities from the population of municipalities in the Czech Republic is possible to carry out by various ways. We already know the best results are given by simple random sampling. We have mentioned this way of sampling would be very heavily feasible in practice. The reason of this problem is not in organization of such a survey, treating with data and analysis of them but the time view as well as a costs spending for such a survey view. That is why two-stage cluster sampling seems to be a suitable way how to obtain the random sample. In this paper we bring a summary of results of two-stage cluster sampling with equal and unequal probabilities. We determined the regions of the Czech Republic as PSUs and the municipalities as SSUs. In the process of calculations comments we found out some interesting and surprising findings, other ones approved general rules. In the first place, we found out that the best results of both characteristics of comparison are recorded for sampling with equal probabilities. It can be caused with the incorrect determination of PSUs importance in the population. We supposed here that their importance is given by the number of municipalities which are administratively involved in individual regions. It brings another impulse for a future research and determination of PSUs importance in a different way.

The results of sampling with equal probabilities are the second question for discussion. We concluded here that our calculations did not approve the fact that the estimations precision rises up with rising number of selected PSUs. Nevertheless, this conclusion also gives us another impulse for a future research because five samples for each kind of

two-stage cluster sampling can be considered to be insufficient for making significant conclusions.

In the end we can recommend two-stage cluster sampling with equal probabilities when we need obtain random samples from the population of municipalities of the Czech Republic if the importance of PSUs is respected in the second stage of sampling. So, we choose as many municipalities as proportional of the PSU size determined by the number of municipalities in it.

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Creation and Development of the Knowledge Management System as a Tool of Growth of the Fundamental Value of a High-Technology Enterprise

Abstract

The authors have researched into features of forming and developing a system of managing knowledge of a high-technology enterprise. It has been ascertained that if an enterprise creates and uses a knowledge management system, it increases investment attractiveness of the enterprise and favors growth of goodwill of the company. This system gives the enterprise an opportunity to minimize consumption of resources for creating and adopting product and process innovations, reduce time of transition to production of new product types. Thereby, the knowledge management system enables the enterprise to avoid a "gap" of financial and economic performance indicators in turbulent environment of market activity. Moreover, the knowledge management system is an effective tool of adaptation of personnel to changes in a competitive strategy of the enterprise, e.g., related to transition to production of new generations of products, changes in a structure of its lifecycle by means of new business processes related to executing engineering work within after-sale service.

The knowledge management system is demonstrated in the paper as the whole set of interconnected subsystems, of which the main are subsystems of formation, spread and employment of knowledge. The authors have analyzed functions of these subsystems and ascertained influence of the subsystems on a process of forming the fundamental value of a high-technology enterprise. The authors regard the process of creating the knowledge management system as a dynamic process characterized by continuous update and development of knowledge. This requires transformation of knowledge from implicit (individual) into explicit, which would be accessible to those members of personnel that need this knowledge. Thus, the knowledge management system of a high-technology enterprise should be created as an open-ended system. Only in such system a process of integrating knowledge that has already been accumulated at the enterprise with knowledge that is being acquired or updated could be realized in the best possible way. Such integration is a key precondition for increasing effectiveness of utilization of the whole range of knowledge by an enterprise.

Key Words

innovations, knowledge management system, high-technology enterprise, technological platforms

JEL Classification: D83, L10, L23, O32

Introduction

At the moment the vector of technological development of Russia is directed towards modernization and transition to innovative factors of development. Efficient energy use and energy conservation, nuclear, space, medical, and information technologies are priorities in modernization of the Russian economy. These priorities form the core of the new technological direction, transition to which will enable Russia to take the deserved place in high-technology spheres, including creation and production of science-intensive products. However, modernization and, a fortiori, transition to the innovative economy are impossible without improving the quality of intellectual assets, broadening knowledge, abilities and skills of personnel of an enterprise. The above-mentioned points are required for creating sophisticated technological systems and for managing these systems efficiently.

1. Influence of the knowledge management system on efficiency of performance of a high-technology enterprise.

In these conditions endeavor to increase efficiency of performance of different socio-economic systems and their fundamental values requires managing knowledge [1-4, 7, 9]. This concerns not only individual enterprises, but also more complex management structures (holdings, technology towns, various strategic alliances of enterprises, etc.). In the modern society, where information flows are an important resource and an efficiency factor, opportunities to access information significantly exceed human capabilities to comprehend and analyze it. Therefore in this situation structures that provide their personnel prompt access to different information, including previously gained experience, have competitive advantages [1, 4, 7]. Thereby, personnel of the high-technology enterprise acquires those tools that it needs in the first place to forecast accurately trends of technology and equipment development, production organization, determining opportunities for various strategies of managing material, financial, and intellectual resources. Using these tools personnel, in fact, influences processes of increasing the fundamental value of the high-technology enterprise.

If an enterprise creates and uses a knowledge management system, it increases investment attractiveness of the enterprise, contributes to growth of goodwill of the company [4, 9] which in the end has a positive effect on growth of the fundamental value of the enterprise. This system gives the enterprise an opportunity to minimize consumption of resources for creating and adopting product and process innovations, reduce time of transition to production of new product types. Thereby, the knowledge management system enables the enterprise to avoid a “gap” of financial and economic performance indicators in turbulent environment of market activity. Moreover, the knowledge management system is an effective tool of personnel adaptation to changes in the competitive strategy of the enterprise, e.g., related to transition to production of new generations of products, changes in a structure of its lifecycle by means of new business processes related to executing engineering work within after-sale service.

2. Structure of the knowledge management system of a high-technology enterprise.

Knowledge management covers a set of strategies and certain processes of revealing, acquiring, spreading, using, controlling and exchanging knowledge that is necessary for securing competitiveness of the business of the high-technology enterprise. From the systems approach point of view managing knowledge must be a goal-, task- and resource-balanced system, integrated into the corporate management system. The knowledge management system consists of interconnected subsystems, of which the main are subsystems of formation, spread and employment of knowledge.

Within the knowledge formation subsystem identification, acquirement, development and reproduction of knowledge are carried out. The main functions of the knowledge spread subsystem are managing qualification (skills and abilities) of personnel, managing communication flows emerging both within the enterprise and as a result of its interaction with external environment. Functioning of this subsystem also secures realization of measures aimed at hindering processes of knowledge degradation. In the knowledge employment subsystem the knowledge culture is formed, business processes directed towards increasing efficiency of using various types of resources (material, intellectual, financial, etc.) are realized.

When these subsystems interact, processes of managing knowledge exchange are realized [2, 3]. However, functioning of the knowledge management system must provide for knowledge protection that prevents violation of enterprise's rights for various intellectual assets, including objects of intellectual property, right for which the enterprise possesses. The knowledge management process is a dynamic process characterized by continuous update and development of knowledge. This requires transformation of knowledge from implicit (individual) into explicit, which would be accessible to those members of personnel that need this knowledge. The knowledge management system of a high-technology enterprise should be created as an open-ended system. Only in such system a process of integrating knowledge that has already been accumulated at the enterprise with knowledge that is being acquired or updated could be realized in the best possible way. Such integration is a key precondition for increasing effectiveness of utilization of the whole range of knowledge by an enterprise.

Feedback between input and output streams, separate subsystems and elements of the system is an important tool for securing stability of the knowledge management system. From the macroeconomic point of view, this feedback reflects not only demand of high-technology enterprises for specialists whom enterprises need in the long run, but also deviation between required and actual competences, skills and abilities of personnel. Using data acquired via feedback channels of the knowledge management system the high-technology enterprise forms sort of an order to an education establishment to train and retrain its personnel. Key competences, skills and abilities that graduates of the educational establishment must possess and criteria of training quality assessment are defined in this order. Thus, such feedback in the knowledge management system enables the educational establishment to monitor promptly changing demands of stakeholders, including different enterprises and organizations, state and municipal

branches of power. Practical application of this concept, i.e., the concept of formation of the knowledge management system as an open-ended dynamic system with feedback enables elements of the system (educational establishments, enterprises, state and municipal controlling structures) to exchange information and cutting-edge experience promptly. In modern conditions it is necessary for diagnostics of emerging problems – both in the sphere of education and production – in order to eliminate these problems at early stages of their emergence.

Tab. 1: Assessment of factors, determining intellectual activity of personnel at an enterprise

Nº	Factors	grading, %
<i>Constant factors</i>		
1.1.	<i>A psychological type of a personality</i>	
1.2.	<i>Predisposition to intellectual, physical or managerial labor</i>	
1.3.	<i>Intellectual potential</i>	
<i>Variable factors</i>		
2.1.	<i>Physio-psychological factors, including:</i>	
2.1.1.	Physical wellbeing	
2.1.2.	Family status	
2.1.3.	Mood	
2.2.	<i>Interest factors, including:</i>	
2.2.1.	Degree of correspondence with personal cognitive interests (self-development, development of professional skills)	
2.2.2.	Prospect for climbing the career ladder in the company	
2.2.3.	Prospect for expanding the sphere of influence	
2.2.4.	Prospect for developing communicative links	
2.2.5.	Newness of the task	
2.2.6.	Significance of fulfilling the task for the others	
2.2.7.	Degree of intuitive improvement of self-esteem	
2.3.	<i>Environmental factors, including:</i>	
2.3.1.	Weather	
2.3.2.	Season	
2.3.3.	Time	
2.3.4.	The number of people present in the same room	
2.3.5.	Noise level	
2.3.6.	Movement of objects in the room	
2.3.7.	Illumination	
2.3.8.	Degree of workplace ergonomics	
2.3.9.	Access to prompt information retrieval and exchange	
2.3.10.	Workplace arrangement	

Source: Author's development.

During the process of forming the knowledge management systems it is necessary to transform implicit (individual) knowledge into collective (corporate) knowledge. This is carried out by means of formalizing information bearers of which are particular employees at an enterprise and the external environment. Such formalization is done via preparing various manuals and methods, creating databases on supplies and consumers. Thereby, not only implicit (individual) knowledge is formalized, but also intellectual assets are formed at an enterprise. The created intellectual assets increase both the fundamental value of enterprise's goodwill and the market value of an enterprise in

general. An enterprise takes stock of the part of intellectual assets after proper legal assistance as objects of exclusive and non-exclusive rights on intellectual property.

During formation of the knowledge management system at particular Russian enterprises, we researched correlations between the intellectual potential of employees and their intellectual activity. The intelligence quotient was used for this purpose [6]. Main factors determining intellectual activity of the personnel were grouped into two areas. The first area covers permanent factors, the second – variable factors. Table 1 demonstrates factors that had been used for assessing intellectual activity of personnel at Russian enterprises.

After sorting out elements of intellectual activity of the personnel assessment charts were developed. They were created for each element of intellectual activity. Expert methods, including verbal and numeric Harrington's scale, were used for this task (see table 2) [3, 6, 9].

Tab. 2: Assessment of activity of personnel at an enterprise

Scale	Description of gradation
Attentiveness assessment chart	
0.8 – 1.0	Very high degree of attentiveness
0.64 – 0.8	High degree of attentiveness
0.37 – 0.64	Medium degree of attentiveness
0.2 – 0.37	Low degree of attentiveness
0 – 0.2	Very low degree of attentiveness
Assessment chart on information perception	
0.8 – 1.0	Very high degree of information perception
0.64 – 0.8	High degree of information perception
0.37 – 0.64	Medium degree of information perception
Scale	Description of gradation
0.2 – 0.37	Low degree of information perception
0 – 0.2	Very low degree of information perception

Source: Author's development.

3. The role of educational establishments in formation of the knowledge management system of a high-technology enterprise.

Both in industrially developed countries (the USA, the EU, Japan) and new industrial countries (China, India, South Korea, etc.) education plays an important role in forming system of managing knowledge of corporations oriented towards creation off “breakthrough” innovations. For instance, in 2007 China and India claimed 31% of all R&D personnel in the world [8]. In the USA 15 leading business societies formed an informal association with a promising name “Tapping American Potential” (“TAP”). The aim of this association is to search for measures and mechanisms which would enable the USA to maintain and increase its world technological leadership. Seeking to achieve this goal, educational establishments of the USA have concentrated their efforts on

preparing specialists of so-called STEM-specializations (Science, Technology, Engineering and Mathematics).

In the recent years due to changes in the paradigm of economic development of the country, conditioned by transition to the knowledge economy, the necessity of modernization and activization of innovative factors of development of enterprises, industries and complexes, the Russian educational system has gone through drastic changes. In the industrial economy the main criterion of quality of education is the volume of acquired knowledge, while in the innovative economy it is more important that students acquire necessary knowledge on their own. Transition of the Russian education to a two-tier educational system (bachelor and master) and also creation and continuous improvement of MBA (Master of Business Administration) and DBA (Doctor of Business Administration) programs contributes to achieving the above-mentioned goal.

In order to integrate the educational system of Russia into the world educational area further improvement of the domestic sphere of education is required. Particularly the knowledge management system, existing in the industry, must be supplement with documentation that provides methodology and concrete methods of conversing statistics of the Russian educational system into indicators of world comparative researches, standards of disclosed information about educational establishments, systems of indicators of performance assessment of the educational sector. The existing methods of ranking of Russian regions concerning statistics on education and other issues also require improvement. Fulfilling these tasks would lead to creation of new knowledge and would significantly improve the existing knowledge management system within the educational system of the country.

Nowadays socio-economic assessment of universities and other educational establishments of Russia, their significance and place in forming educational system of the country depend mainly on the ability to adopt promptly new educational methods, react to new concepts and technologies of teaching. Recently speed of computer aids development has sharply increased, the range of data medium has broadened (video and audio recordings, CD, DVD, etc.). This has opened new perspectives for remote teaching which enables to get access to various information resources. Thus, implemented remote teaching and self-teaching systems in educational establishments are becoming a significant factor of forming key competences of different listeners.

The role of feedback in the macroeconomic knowledge management system is significantly increasing while forming technological platforms which are communication tools aimed at activization of efforts of parties that create technological innovations with a high potential for commercialization. Being tools of economy modernization, technological platforms are oriented towards increasing competitiveness of industries by means of developing and spreading “breakthrough” innovations.

In conditions of the knowledge economy it is these innovations that form the most perspective markets of high-technology products. Thus, creation of technological platforms presupposes that all stakeholders (businesses, universities and scientific

organizations, state controlling structures, etc.) take part in innovative development of a region. In this scheme all participants are important, however, presence of one or several universities is a mandatory condition for forming a fully-fledged technological platform; otherwise, the platform would be defective.

Within the platform formation and spread of new knowledge between participants that created the platform is carried out. Universities where knowledge on the newly-created “breakthrough” is created serve as a basis for the forming knowledge management system in the technological platform. Then this knowledge is transferred to the enterprise in the form of finished innovative products where this knowledge is constantly supplemented and improved. Thereby, during the process of spread knowledge is both not amortized and also becomes more valuable, constantly increasing its internal (fundamental) value.

Therefore, functions of educational establishments in the knowledge economy, universities in the first place, are significantly broadening while forming systems of managing knowledge of enterprises. Universities not only prepare specialists who possess knowledge, skills and competences that an enterprise needs, but also teach listeners and students how to search for necessary knowledge on their own [5]. Modern universities supply personnel of enterprises with a variety of programs on improving and deepening previously acquired knowledge. Besides, universities by improving the educational process, developing researches in priority fields of modernization of the Russian national economy become sources of innovations and innovative businesses for the production sphere. University scientific and educational environment through constantly generating new knowledge carries out spread of this knowledge within different socio-economic systems, including both enterprises and more complex economic formations – industrial parks and technology towns, special technology and implementation economic zones, technological platforms, etc.

4. Main approaches to assessment of efficiency of the knowledge management system at an enterprise.

As knowledge is an important resource of the high-technology enterprise, it is necessary to assess efficiency of using this resource. At the moment there is no single system of assessing efficiency of knowledge management processes. For instance, specialists at School of Management and Social Sciences (Edge Hill University, the UK) suggest using the number of patents, registered intellectual property rights and trademarks as an indicator of knowledge efficiency. Specialists at the Institute for Statistical Studies and Economics of Knowledge of the Higher School of Economics (Russia) recommend to assess knowledge efficiency via the level of satisfying client’s needs, financial indicators, effectiveness of business processes. It is often thought that knowledge management is efficient if following goals are reached:

- exchange of knowledge that is used to optimize internal business processes is organized between personnel of the company;

- constant search for information on previously unstudied subjects is carried out, at the same time acquired knowledge is adapted and integrated into the existing knowledge management system;
- unstudied topics and areas are constantly revealed;
- the company actively implements information technologies.

Often while assessing efficiency the company prefers an approach according to which knowledge management is considered to be effective if in the company, firstly, a favorable culture of knowledge is formed, secondly, knowledge management processes (i.e., processes of forming, spreading, using and transferring knowledge) are implemented, thirdly, information technologies are implemented, and fourthly, interaction of all the above-mentioned elements secures qualitatively new level of business organization.

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The Development of Foreign Direct Investment in the Czech Republic

Abstract

Foundation or acquisition of businesses by means of foreign direct investment reflects the intention of a resident of one economy to gain permanent ownership in a subject that is a resident in another economy. The permanent ownership means a long-term relation between the direct investor and investment has a significant influence on managing the company, its investment strategy, production and trade policy, as well as the diversification of risk connected with the currency exchange rate, with the operational and financial result of the company's economy [1].

The development of foreign direct investment gives evidence about the soundness of the host economy and sustainability of its fundamentals. It indicates external economic trust in the domestic business environment. It is considered to be a decisive factor of the globalization of the world economy [7].

The reasons for localization vary and often change in the course of time. The most frequent motives why FDI enter the Czech Republic are: relatively cheap and qualified workforce, stable economic and political environment, good geographic position, possibility to penetrate simultaneously into the domestic and European market, investment incentives, etc [9].

The article summarizes selected analyses and trends in development of FDI (2000-2010) in Czech economy with the objective to assess the effect of FDI on balance of payment and the position of local and foreign businesses in the domestic economy. The issues under the research are part of a wider context – a project titled 'Economic Aspects of Businesses' Integration' that is being prepared. The aim of the project is to characterize and analyze motives and economic consequences of company businesses' integration. We also aim at systematization of respective forms of mergers together with pros and cons related to them. The acquired information will be subjected to the analysis and criticism in relation to the current development.

Key Words

balance of payments, business, business environment, business integration, foreign direct investment (FDI), globalization

JEL Classification: F23, G34, O11

Introduction

Foreign direct investment is a frequently discussed subject in the theory and practice of international financing. While some experts express the opinion 'the more the better', other economists call for more caution. They are worried especially about the future transfer of profit to a foreign country and possibly about the loss of economic and political independence [1].

The Czech Republic is a country with the economy where foreign direct investment has been successfully developing for the second decade. Czech investment abroad sees a significant positive trend, however the trend of foreign investment in the Czech Republic is much more significant.

1. Objective and methodology

The main objective of the contribution is to assess the development of foreign direct investment in the Czech Republic in the years 2000-2010. On the basis of this assessment we are able to define and evaluate the effect of FDI on balance of payment and the position of local and foreign businesses in the domestic economy. The analysis of the period before 2000 is not significant for the purposes of this article and it does not change its outcomes. The methodology used to tackle the subject has the nature of basic theoretical research which is focused on the analysis of the structure, linkages and relations of the studied subject. From the methodology point of view, trend, system and qualitative analysis is used to achieve the objective.

2. Position of the Czech Republic in the international comparison

In the international comparison the Czech Republic belonged to the leading European countries concerning FDI supply. This indicator is the ratio between the inward Foreign Direct Investment (FDI) and Gross Domestic Product (GDP). It covers investment from the rest of the World. Since the year 2000 the percentage share of FDI in GDP has been growing. In the course of 10 years the FDI share of GDP has increased more than 1.7 times (see Tab. 1), from initial 38.6 % to present 66.5 %, which in the absolute terms accounts for the FDI supply of 2,440.71 billion CZK¹ equalling 96.5 billion EUR.

As it results from the listing in tab.1 in the year 2009 the Czech Republic with this relative volume of FDI in GDP held the 11th position among 27 countries of European Union. For the reason of intelligibility, apart from the Czech Republic there are only those EU countries stated in the table that achieved a similar relative supply of foreign direct investment on GDP in 2009.

The first six countries have entirely different foreign direct investment supply on GDP. Drawing on an official source [5] of 2009 the top six positions are occupied by Luxembourg (182 %), Malta (113.6 %), Ireland (106.1 %), Bulgaria (101.3 %), Cyprus (99.4 %) and Belgium (95.4 %).

¹ FDI supply for the year 2010 is calculated by the recommended methodical procedure of the Czech National Bank. The total of final data representing the status of the previous year and up-to-date flow preliminary data of the current year were used for the need of approximate calculation of preliminary status data.

**Tab. 1: Inward Foreign Direct Investment from the rest of the world
(stocks in % of GDP); 8 selected EU countries; 2010 was estimated [3]**

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Rank	2010
Estonia	46.2	51.3	51.9	63.7	76.1	85.5	72	72.1	73.7	81.4	7.	x
Sweden	37.8	41.4	42.6	45.1	49.7	48.8	54.3	59	60.1	79.2	8.	x
Netherlands	62.7	71.7	71.7	70.8	71.3	74.5	72.5	91.1	77.6	79.1	9.	x
Hungary	x	52.3	48.7	44.7	55.4	59.1	69.6	64.5	58.6	73.5	10.	x
Czech Rep.	38.6	47.4	45	43.5	47.6	51.3	53.3	59.9	55.1	61.8	11.	66.5
Slovakia	22	27.6	31.9	42.8	47.3	51.8	57.4	53	56.1	58	12.	x
Denmark	41.3	42.5	38.1	37.3	43.4	47.6	46.4	48.6	46.7	47.8	13.	x
UK	29.4	34.9	29.2	29.3	29.1	38.8	44.4	41.2	38.2	47	14.	x

Source: [5]; own processing

The assessment of the development of FDI influx from the year 2000 till 2010 shows that the Czech Republic reaches (see Tab. 2) the average annual FDI growth of 5.75% of GDP. The other half of the monitored period shows a lower growth rate and the year 2009 is the weakest in the whole monitored period (flow 1.4 % in GDP). From the estimated FDI influx for the year 2010 and the GDP amount it is possible to infer that the situation in the Czech economy is improving. It is necessary to remark that it is not new FDI to equity capital but reinvested earnings. This FDI structure will be analysed in the following chapter. Concerning the dynamics of FDI influx on GDP of all 27 EU countries, the Czech Republic is in the first half in the year 2009 (AIG 5.75 %). The dynamics of FDI influx on GDP of the chosen countries is documented in tab.2. Here again, because of intelligibility apart from the Czech Republic the table mentions the detailed figures of only those EU countries that achieved a similar relative supply of foreign direct investment on GDP in 2009. For example Estonia with the average AIG index of 9.67% of GDP is on the fifth position after Luxemburg, Bulgaria, Malta and Cyprus. Although these countries have very high dynamics of FDI influx on GDP as well as high relative share of FDI supply on GDP, tax considerations is the predominant motive for placing FDI into these countries.

**Tab. 2: Inward Foreign Direct Investment from the rest of the world
(flows in % of GDP); 8 selected EU countries; 2010 was estimated [3];
average index of growth index (AIG)**

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	AIG
Estonia	6.9	8.6	3.9	9.4	8	20.6	10.7	12.6	7.3	8.7	x	9.67
Sweden	8.1	5.2	x	1.6	3.3	3.2	7.2	5.9	7.9	2.9	x	5.03
Netherlands	16.6	13	5.7	3.9	0.8	7.5	1.2	15.3	0	4.1	x	6.81
Hungary	3.5	7.4	4.5	2.5	4.4	7	6.5	2.9	4.8	1.6	x	4.51
Czech Rep.	8.9	9.1	11.3	2.3	4.5	9.4	3.8	6	3	1.4	3.5	5.75
Slovakia	10.5	7	15.5	6.5	7.2	5.1	8.4	4.8	5	-0.1	x	6.99
Denmark	22.3	6	2.8	-1.2	x	5	1	3.8	0.7	1	x	4.60
UK	8	3.6	1.5	0.9	2.5	7.7	6.4	6.6	3.4	3.3	x	4.39

Source: [5]; own processing

Not even in one of the monitored years (see Table 2) we register negative figures of inter-annual growth index of FDI, i.e. there is no FDI reflux from the Czech Republic and investors are interested in investing new or reinvested capital.

From the international perspective [5] only Ireland shows the average inter-annual FDI growth index of 18.63 % in GDP in the years 2000-2003 and - 1.58 % in GDP in 2004-2009. Very low figures of the average FDI annual index of growth for the years 2000-2009 can be seen in Greece (1% in GDP), Italy (1.11 % in GDP), Germany (2.32 % in GDP) and Slovenia (2.33 % in GDP).

3. Effects of FDI influx on balance of payment

The impact of foreign direct investment on the economy and balance of payment (primarily balance of trade and balance of income) is determined by the FDI life-cycle [9]. In the first phase FDI manifests itself as the increased state on the financial account of balance of payments. It expresses itself as a positive aspect within the balance of income, reinvested profits are relatively high because the existing capacities are being expanded and there is no repatriation of profits (dividends). In this phase FDI starts to 'suck in' imports because the initial investment possessions are mostly imported. If the host economy is focused on technically less demanding production, the value added of FDI is lower and imports intensity does not have to be lowered in further phases of FDI life-cycle [6]. In the next phase the export performance of the economy increases rapidly. It is supported by the higher production of businesses under the foreign control. Moreover, they can establish supplier-customer chains with local businesses. The long-term positive effects of FDI are connected with the cooperation between local and foreign firms [1]. Modern technologies and management procedures spread and the access to foreign markets is enabled [9]. If the production is developed sufficiently, the amount of reinvested earnings declines and the outflow of repatriated profits in the form of dividends increases.

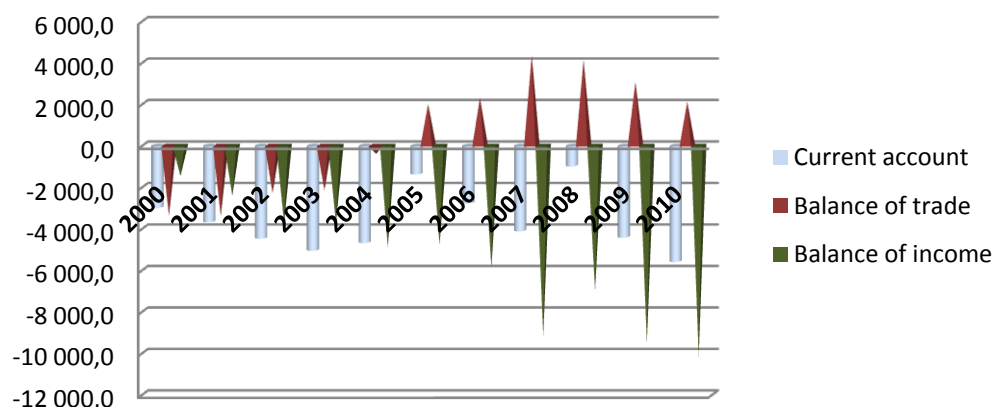


Fig. 1: The current account and its selected folder (mil. EUR)

Source: [2]; own processing

Paying out dividends abroad lessens the credit balance, possibly deepens the deficit in the current account balance of payment. This trend is visible in the Fig. 1 in the period of years 2005-2010. The biggest debit items were FDI costs, repatriated profits in the form of dividends. Their share of FDI costs accounted for 78% in 2008, 69% in 2009 a 64% in 2010. It is evident that the proportion between the growth of surplus of goods and

services balance and the growth of balance of income deficit will be important for sustainable development of the current account. The total impact of FDI inflow on balance of payment is illustrated by Fig. 2.

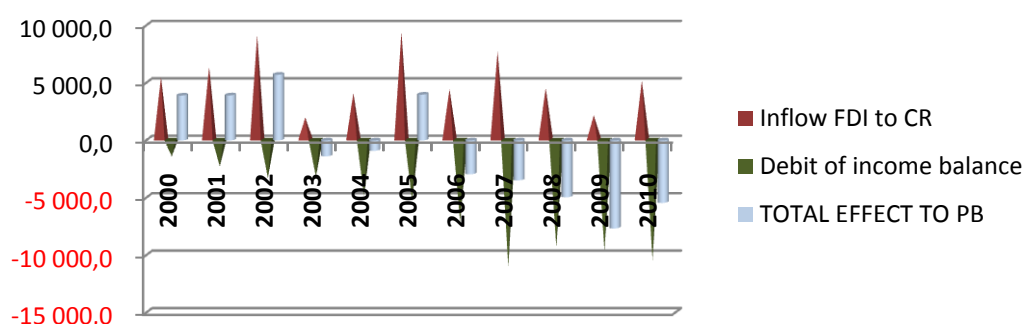


Fig. 2: The analysis of total effects of FDI to Czech Republic on balance of payments in relation to the financial account and the current account (mil. EUR)

Source: [2]; own processing

In the period of years 2000-2005 FDI generated the credit balance of the balance of payment. The credit balance of financial account from FDI in the Czech Republic was higher than the debit balance of the current account balance of income from repatriation of profits. The years 2003-2004 are exceptional in this period. Since 2006 the effect of FDI in the Czech Republic has been diminishing for the benefit of repatriation of profits, which has a negative impact connected with the total effect of FDI in the Czech Republic and on its balance of payment. In the Czech Republic the transfer of profits made by the businesses with foreign participation (FDI) has increased considerably since 2006. The profits flowing out of the country have been much higher than the creation of resources from new FDI or reinvested profit. This negative effect grew from 2006 and culminated in 2009 (-7.66 mil.EUR). Although the year 2010 interrupts this sinking trend it is still the second highest debit balance in the period between years 2000 and 2010 (-5.43 mil.EUR).

Conclusion

The development trend of FDI in the period 2000-2010 shows how the Czech Republic as a host country positively affects foreign investors. It stabilizes their economic position in the Czech Republic, which is demonstrated by increasing share of FDI influx in GDP. For the whole monitored period the accretions of FDI are positive in the basic capital but their size and significance for the overall positive effect of FDI evaluation has gradually been declining. The basic capital and its increase represent new investors thus extensive non-debt financing.

In the years 2000-2005 the influx of basic capital was the main financial source of FDI, the profits created in the businesses under the foreign control were either reinvested or paid out in the form of dividends and repatriated from the Czech Republic. The total

impact on balance of payment of the Czech Republic was positive and raised its overall positive credit balance.

In the period of 2006-2010 the influx of basic capital of FDI loses its significant share in financing FDI. The reinvested profit starts to gain dominant position but this profit is repatriated from the Czech Republic in the form of dividends. The total impact on balance of payment of the Czech Republic in this period is negative and lessens its total balance. For further development the proportion among the particular components of balance of payment is important. The firms under the foreign control, which significantly contribute to the growth of Czech economy, employment and the increase of its export performance, must have enough investment opportunities in domestic economy in the future to reinvest the created profit and not to transfer it back abroad.

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Panel Modelling of Globalization on Government Expenditures for the Selected New EU Countries¹

Abstract

This paper deals with the impact of modelling of globalization on the composition of government expenditure using panel data for the selected new European Union countries. Previous studies investigated the impact of globalization on a range of individual expenditure shares in gross domestic product (GDP) and they did not take into account indirect effects. Our empirical strategy is to estimate system of equations in order to uncover to what extent the relative importance of specific expenditure categories is influenced by globalization. We use different measures of globalization (foreign direct investment (FDI) and trade (TRADE) as sum of exports and imports of goods and services measured as a share of gross domestic product). We investigate this panel model for the seven selected new EU member states – Bulgaria, Estonia, Czech Republic, Cyprus, Latvia, Hungary and Slovakia) during period 1995-2008. We use four control variables – covariates – the real economic growth, the age dependency ratio, the inflation and the lending rate charged by banks on loans to prime customers. We estimate our panel regression model using seemingly unrelated regression (SUR) including cross-section country effects. Our results show that globalization influenced the total and composition of government expenditure in a notable way. From the point of view of the government expenditure structure the strongest impact of globalization has been demonstrated by foreign direct investments on government expenditures for goods and services (positively) and capital expenditures (negatively). The second indicator of globalization TRADE determined mainly government expenditures for goods and services (negatively) and capital expenditures (positively).

Key Words

globalization, government expenditures, EU countries, panel modelling, seemingly unrelated regression

JEL Classification: C23, H72

Introduction

We would like to investigate the nexus between the globalization and welfare state. Since globalization has far reaching effects on so many important aspects of every life, it is very important topic for businessmen, wide interested public and mainly political

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agents. By focusing on the efficiency of globalization, the demand side can be derived from the governments' political support maximization motives that direct the political process towards a redistribution of the globalization induced economic gains, i.e. losers from globalization are to some extent compensated via an increase of social programs.

A robust impact of a globalization process on government expenditures does not appear to exist (see [3], [5]). It is possible, however, that the impact of this effect depends on the type of expenditure. We also don't measure the impact of globalization on individual policy dimensions but we acknowledge that all policy measures are to some extent substitutes or complements vis-a-vis each other, implying that indirect globalization effects, working through changes in related welfare-state activities, may play an important role. Our empirical strategy is thus to estimate whole systems of equations in order to uncover to what extent the relative importance of specific expenditure categories is influenced by globalization. According to the *compensation hypothesis* some categories may become more important even if the overall level of government expenditures remains unchanged.

In this paper we analyze whether and what extent globalization influences the composition of government expenditures. In an attempt to obtain robust results, we employ two different measures of globalization. The aim of this paper is to investigate an impact of globalization (particularly of economic integration) on the composition of government expenditures for the seven selected new EU member states in 1995–2008.

The paper is divided into three basic sections. In the first section we deal with the theoretical background and empirical studies of the globalization process and national welfare policies. The second part is devoted to the analysis and data description, panel model formulation and definition of the seemingly unrelated regression (SUR). The following section focuses on estimates of the proposed panel models, result analysis and its mutual comparison. The final part summarises the empirical results.

1. Globalization and growth

In scientific literature there is great attention devoted to the globalization and national welfare policies from theoretical, methodological and empirical point of view. The earlier literature on the globalization-welfare state nexus mainly dealt with three issues (see [9]):

- the structural tax-competition effect,
- the question whether globalization has a positive or negative effect on welfare state activities as measured by the relative size of the government sector,
- a more differentiated approach to measuring welfare state activities by focusing on the level of government spending but on the structure.

Schulze and Ursprung conclude in [10] that the few econometric studies available them does not lend any support for finding negative relationship between globalization and the nation states' ability conducting independent fiscal policies. It cannot be rejected out

of this paper that the tax structure may have been influenced by the globalization process.

Many other contributions have indeed taken up this implicit challenge and have used disaggregated data for specific welfare-state programs or have focused on specific groups of countries or refined the empirical methods. Garrett and Mitchell in [5] conclude that contradict the received wisdom as summarized above: their panel data analysis appears to show that increases in trade are associated with less total government spending. This study documents that government spending is primarily driven by the state of the domestic economy and thus independent of international economic openness, implying not only the absence of significant disciplining effects but also the absence of compensatory measures. Doucek [2] presented several aspects of nowadays European integration process with especial accent to finance sector and education.

Studies focusing on specific groups of countries usually examine the impact of global economic integration on developing countries. Rudra [9] observes that defending welfare benefits under the pressures of globalization is much easier in OECD countries than in developing countries. This result points crucial role of the political regime in accommodating the demand side of the political market. Political regimes may also be linked to globalization in a causal relationship. There is systematic evidence that both foreign direct investment (FDI) and portfolio investment are reliably with increased government respect for human rights in the publication Richards et al.[8]. Ali et al. argue in their article [1] that the impact of FDI contributes to economic development by improving institutional quality in the host country and FDI inflows have a positive and highly significant impact on property rights. This study was tested within large panel data set of 70 developing countries for the period 1981-2005. Next paper [7] written by Lee investigates the impact of globalization on the inequality of 11 Asian countries using panel data from 1960 to 2003. He found the significant turning point of globalization at which inequality starts decreasing as further globalization proceeds.

Hessami analyze in the paper [6] the impact of the size and composition of government expenditures on life satisfaction. The empirical analysis relies on a dataset covering 153,268 respondents from twelve EU countries over the time period 1990 – 2000. The first finding is an inversely U-shaped relationship between government size and well-being. In all twelve EU countries (AT, BE, DK, DE, FI, IE, IT, FR, LU, NL, SE and UK) higher levels of well-being could have been achieved by allocating a higher share of public resources to education, while Finland and Germany could have given an additional boost to well-being by cutting expenditure on social protection.

2. Data, methodological and specification issues

In order to investigate the nexus between globalization and the welfare state we analyze estimate combined cross-section and time-series i.e. panel regressions with annual data during period 1995-2008. To check for robustness over time, across countries and specially with respect to the number of expenditure categories, we use the dataset that is taken from the World Bank's web [11]. We download data for the twelve new EU

member states and on the basis of the indicator analysis we consider seven states only for our empirical study: Bulgaria (BG), Estonia (EE), Czech Republic (CZ), Cyprus (CY), Latvia (LV), Hungary (HU), Slovakia (SK). Data are classified according to four broad expenditure categories - expenditures for goods and services (GS), interest payments (IP), subsidies and other transfers (SOT) and capital expenditures (CE). Data is available as a share of total government expenditures. The following Fig. 1 shows the development of total government expenditure in percentage of GDP (RGE) over time for the largest sample possible (1995-2008). Our sample of the seven selected new EU member states shows the average government expenditures between 26–53% of GDP during period 1996-2008. The highest level between 41–53% of GDP occurs in Hungary with a decline mainly during 1995-2000. On contrary the increasing development tendency is evident in Cyprus and Slovakia mainly at the beginning of the investigated period.

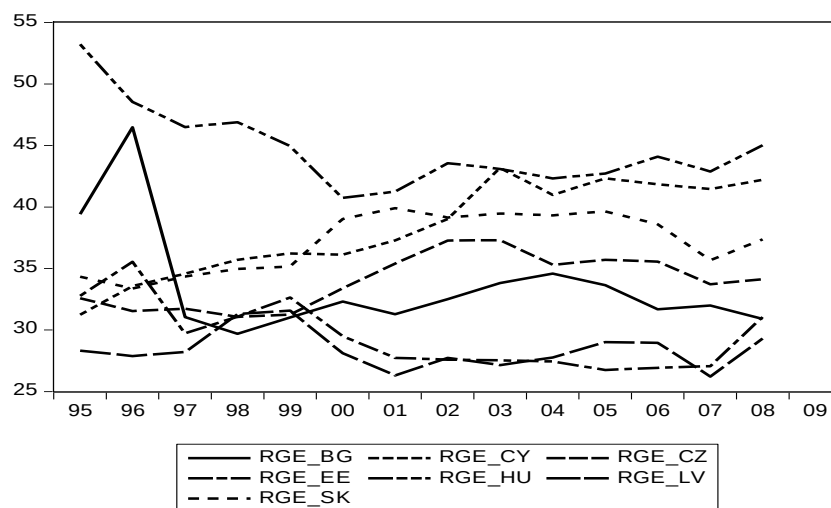


Fig. 1: Development of total government expenditure (% of GDP)

Source: own

To measure globalization we use two proxies that have been suggested in the literature (see [3]). The first is openness to trade (TRADE) as measured by the sum of imports and exports as a share of GDP. The second indicator of globalization (FDI) is the sum of the absolute values of inflows and outflows of foreign direct investment as a share of GDP. We recommend two indicators for measurement of globalization particularly from macroeconomic point of view and also because of data availability for our next empirical investigation. There is also an additional economic measurement of globalization using restrictions on capital account transactions. However, there is a broader view on globalization measuring using not only an economic dimension but also including the political and social integration. This paper follows particularly the economic integration.

For the impact analysis of globalization on the composition of government expenditures we estimate modified panel model that was also used in the paper [3] for a sample of 60 countries during the period 1971-2001 and also for a sample of the ten OECD countries over the period 1991-2000. The proposed panel model is specified by the following equation system (1):

$$y_{it}^g = \alpha_i^g + \beta_i^g \cdot y_{it-1} + \gamma_i^g \cdot G_{it} + \delta_i^g \cdot A_{it-1} + \sum_{j=1}^5 (\eta_{ij}^g \cdot X_{it}^j) + \varepsilon_{it}^g \quad (1)$$

where y_{it}^g being the respective expenditure category (*GS, IP, SOT, CE* and total *RGE*)

G_{it} represents our measure of globalization (*FDI, TRADE*)

$A_{it} = \sum_{k \neq i} \omega_{ik} \cdot y_{kt}$ the weighted average of y_{kt} with ω_{ik} = trade share as weight

X_{it}^j includes 5 control variables for $j=1, \dots, 5$ (the real economic growth (*RGDP*), the age dependency ratio (*ADR*), government expenditures (*RGE*), the lending rate charged by banks on loans to prime customers (*LR*) and the inflation rate (*INF*)); $\alpha_i^g, \beta_i^g, \gamma_i^g, \delta_i^g, \eta_{ij}^g$ are regression coefficients of a country fixed effect (α_i^g) and a speed of adjustment parameter (β_i^g)

ε_{it}^g are the error terms.

index g ($=1, 2$) expresses an coefficient estimation for the globalization indicator *FDI* and *TRADE*

index i ($=1, 2, \dots, 7$) follows 7 cross-section countries; index t ($=1996, 1997, \dots, 2008$) represents the time period and j ($=1, 2, \dots, 5$) presents the appropriate choice of control variables.

Specification of the model follows the expenditure composition in a particular country which depends directly on composition of other countries (A), measurement of economic integration (*FDI, TRADE*) as well as on other control variables like the business cycle (*RDGP*), demographical factors (*ADR*), public expenditures (*RGE*) and the government's expenditure behaviour.

Following part of this section is devoted to the specification of a panel model and generalised least square method used for the estimation of empirical panel models. We estimate our panel regression model by the seemingly unrelated regression (*SUR*) in *EViews 7* software [4]. *SUR* method is also as the multivariate regression, or Zellner's method, estimates the parameters of the system, accounting for heteroscedasticity and contemporaneous correlation in the errors cross equations. The estimates of the cross equation covariance matrix are based upon parameter estimates of the unweighted system.

Denote a system of m equations in stacked form as:

$$\begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_M \end{bmatrix} = \begin{bmatrix} X_1 & 0 & \cdots & 0 \\ 0 & X_2 & & \vdots \\ \vdots & & \ddots & 0 \\ 0 & \cdots & 0 & X_M \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_M \end{bmatrix} + \begin{bmatrix} u_1 \\ u_2 \\ \vdots \\ u_M \end{bmatrix} \quad (2)$$

where: y_m is T vector

X_m is a $T \times k_m$ matrix

β_m is a k_m vector of coefficients.

The error terms u have an $MT \times MT$ covariance matrix V . The system may be written in compact form as:

$$y = X \cdot \beta + u \quad (3)$$

Under the standard assumptions, the residual variance matrix from this stacked system is given by:

$$V = E(uu') = \sigma^2 (I_M \otimes I_T) \quad (4)$$

First, the errors may be heteroskedastic across the m equations. Second, they may be heteroskedastic and contemporaneously correlated. We can use both of these cases by defining the $M \times M$ matrix of contemporaneous correlations Σ and

$$V = \Sigma \otimes I_T \quad (5)$$

Zellner's SUR estimator takes the form:

$$\hat{\beta}_{SUR} = \left(X' (\hat{\Sigma} \otimes I_T)^{-1} X \right)^{-1} X' (\hat{\Sigma} \otimes I_T)^{-1} y \quad (6)$$

If we include autoregression (AR) terms in equation, we can estimate the following equation:

$$y_{jt} = X_{jt} \beta_j + \left(\sum \rho_{jr} (y_{j(t-r)} - X_{j(t-r)}) \right) + \varepsilon_{jt} \quad (7)$$

where: ε_j is assumed to be serially independent, but possibly correlated contemporaneously across equations.

At the beginning of the first iteration, we estimate the equation by nonlinear LS and use the estimates to compute the residuals $\hat{\varepsilon}$. We then construct an estimate of Σ and perform nonlinear Generalised Least Squares (GLS) to complete one iteration of estimation procedure. These iterations may be repeated until coefficients and weights converge.

3. Empirical results

We estimate our model by a use of GLS method accounting various patterns of correlation between the residuals. We include four basic variance structures – cross-section specific heteroscedasticity, period specific heteroscedasticity, contemporaneous covariances, and between period covariances. The GLS specifications will be estimated in one-step form where we estimate coefficients, compute a GLS weighting transformation and then reestimate on the weighted data, or in iterative form, where to repeat this process until the coefficients and weights converge. We do not include fixed period effects, since they are already present in the weighted average variables A_{it-1}

and also y_{it-1} . Based on restriction tests for the investigation of cross-section effect further we have considered just the monitoring of the differences of the regression coefficients for the level constant only and not for declination coefficients of regressors. The final form of the estimated model is as follows:

$$y_{it}^g = \alpha_i^g + \beta^g \cdot y_{it-1} + \gamma^g \cdot G_{it} + \delta^g \cdot A_{it-1} + \sum_{j=1}^5 (\eta_j^g \cdot X_{it}^j) + \varepsilon_{it}^g \quad (8)$$

Table 1 sums up the results of the estimated models for group $g=1$ (i.e. $G_{it}=TRADE_{it}$). The estimation of each model is noted down in two columns and regressors are written down in a column title where indication (?) replaces time and cross-section indexes of the development changes of the individual quantities. The first column of each model presents an estimated value of the regression coefficient and second one defines the relevant statistical significance of this parameter estimation. The estimated models were implemented according to the expenditure category (expenditures for goods and services (GS), interest payments (IP), subsidies and other transfers (SOT) and capital expenditures (CE)). The final two models were estimated for the explanation of the total government expenditure (model RGE?) and also for the modified version (model RGE_A?), where the regressor A? was excluded.

Tab. 1: Development of globalization indicators – FDI (% of GDP)

regressor	GS?	sig.	IP?	sign.	SOT?	sign.	CE?	sign.	RGE?	sign.	RGE_A?	sign.
FDI?	0.02	0.01	0.00	0.49	<i>-0.03</i>	0.09	-0.01	0.02	-0.02	0.03	-0.02	0.05
A?(-1)	<i>0.12</i>	0.08	0.10	0.05	-0.07	0.77	0.09	0.33	-0.19	0.17	x	x
RGDP?	0.08	0.02	-0.03	0.04	-0.17	0.04	-0.06	0.16	-0.20	0.00	-0.16	0.00
ADR?	0.76	0.00	<i>0.26</i>	0.07	3.14	0.01	-0.37	0.11	-0.33	0.02	-0.33	0.02
RGE?	0.22	0.00	-0.16	0.00	-0.58	0.00	<i>-0.10</i>	0.09	x	x	x	x
LR?	-0.09	0.01	0.09	0.00	0.01	0.51	-0.01	0.76	0.06	0.00	0.04	0.00
INF?	0.02	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.84	-0.01	0.00	-0.01	0.00
AR(1)	0.52	0.00	0.77	0.00	0.89	0.00	0.72	0.00	0.52	0.00	0.58	0.00
R ² _{adj} /DW	0.95	2.1	0.99	2.2	0.99	2.3	0.99	2.0	0.97	1.8	0.97	2.0
F	99.96	0.00	444.6	0.00	842.9	0.00	1037.6	0.00	159.2	0.00	207.3	0.00

Note: The estimations in bold / in bold and italics / in italics are statistically significant at 1% / 5% / 10% level of significance.

Source: Own calculation in EViews 7

The results in the Table 1 prove by evidence that adjusted coefficients of determination are very high and they vary in the interval between 0.95 – 0.99. The estimated models were statistically significant at the 1% level of the statistical significance and there was not a problem with an autocorrelation of the residual composition. From the point of the statistical significance for the explanation according to the expenditure category it seems that the best model estimation is relevant for the expenditures and services and worst results occur for the capital expenditures. Impact of globalization (as FDI indicator) was proved positively on expenditures for goods and negative impact was significant for capital expenditures (CE) and at the same time for total government

expenditures. These partial results document that the impact of globalization processes on development and structure of government expenditures is evident as it is also described in other studies.

The evaluation of the results of regression functions according to the individual expenditure categories follows. The GDP growth and government expenditures, age dependency ratio as a demographic factor and finally the inflation rate have a powerful and important positive impact on expenditures for goods and services. On contrary the indicator lending rate negatively influences GS but it is in accordance with the economic theory presumptions. Development of interest payments is presented as a dynamic process that is not influenced by globalization process very much but which is positively influenced by the quantity lending rate and negatively by the GDP growth, government expenditures and inflation. Expenditures on subsidies and other transfers (SOT) are not influenced by the globalization variable FDI as well but on the other side the negative impact of the GDP growth and government expenditures and inflation is evident as it is for IP. SOT expenditures are strongly positively influenced by the indicator age dependency ratio. The function of total government expenditures accepts the globalization process and apart from the negative impact of the lending rate indicator other control variables have a positive impact.

The lagged dependent variables clarify a speed of adjustment parameter and it varies between 0.52-0.89. Differences in cross-section coefficients seem to be less different for the function of total government expenditures in comparison with the functions of expenditure category.

Following Table 2 sums up the results of globalization process analysis by TRADE indicator and by the impact of other economic control variables. The estimated regression models are all statistically significant at 1% level of significance again and explanation rate of expenditure categories by regressors is very high for all models between 0.95–0.99. With an exception of SOT regression where is a very strong dynamic effect evident process of the model estimation converged after 12-15 iterations. Comparing the results of estimations for each expenditure category we can conclude that globalization process is influenced negatively by expenditures for goods and services and also by total government expenditures and on contrary positively by capital expenditures. Autoregression terms of expenditure category is a very strong factor again varying between 0.50-0.90, the highest one for SOT traditionally.

When we evaluate the impact of economic control variables it is apparent that expenditures for goods and services are determined positively (mainly by the GDP growth and total government expenditures, age dependency ratio and inflation) and on contrary lending rate seems to be a negative factor. Expenditures on interest payments (IP) are influenced positively by lending rate and negatively by the GDP growth and total government expenditures. Expenditures on subsidies and other transfers (SOT) are strongly and positively influenced by the demographical factor ADR and negative factors seem to be inflation and total government expenditure growth. Regression of capital expenditures (CE) is negatively influenced mainly by lending rate. Total government

expenditures are determined by all mentioned control variables and the impact of government expenditures of other countries shows to be statistically non-significant.

Tab. 2: Development of globalization indicators – TRADE (% of GDP)

regressor	GS?	sig.	IP?	sign.	SOT?	sign.	CE?	sign.	RGE?	sign.	RGE_A?	sign.
TRADE?	-0.03	0.00	-0.01	0.41	-0.03	0.23	0.04	0.01	-0.02	0.04	-0.03	0.01
A?(-1)	0.06	0.47	<i>0.09</i>	0.07	-0.07	0.78	0.09	0.37	-0.14	0.36	x	x
RGDP?	0.12	0.00	-0.03	0.10	-0.14	0.17	-0.06	0.19	-0.15	0.00	-0.12	0.02
ADR?	0.78	0.00	<i>0.27</i>	0.09	3.36	0.02	-0.27	0.34	-0.37	0.01	-0.38	0.00
RGE?	0.17	0.01	-0.16	0.00	-0.62	0.00	-0.04	0.56	x	x	x	x
LR?	-0.05	0.01	0.09	0.00	0.01	0.42	-0.01	0.49	0.06	0.00	0.04	0.00
INF?	0.01	0.00	-0.01	0.00	-0.01	0.00	0.01	0.72	-0.01	0.00	-0.01	0.00
AR(1)	0.59	0.00	0.78	0.00	0.90	0.00	0.73	0.00	0.50	0.00	0.55	0.00
R ² _{adj} /DW	0.95	2.2	0.99	2.1	0.99	2.3	0.99	1.9	0.97	1.8	0.97	2.0
F	111.4	0.00	455.2	0.00	493.8	0.00	762.2	0.00	228.0	0.00	264.0	0.00

Note: The estimations in bold / in bold and italics / in italics are statistically significant at 1% / 5% / 10% level of significance.

Source: Own calculation in EViews 7.

Summary and conclusions

The aim of this paper was to investigate the impact of globalization processes on development and structure of government expenditures in the seven selected countries – the EU new members in period 1995–2008. At the same time the impact of other economic control variables has been analysed and a dynamic process in government expenditure development has been investigated.

Globalization process impact has been investigated by the FDI a TRADE indicators. The results present that these indicators influence negatively and statistically significantly the development of total government expenditures. Considering the government expenditure structure the most important impact of globalization process expressed by FDI on expenditures for goods and services (negative) and capital expenditures (positive) has been proved that means just opposite than in a FDI case. The second variable TRADE has determined mainly expenditures for goods and services.

We can conclude that considering the composition of government expenditures changes over time the parameters of a speed of adjustment are estimated between 0.5–0.9 with the most important impact for regression of subsidies and other transfers. The impact of other economic control variables has been proved by evidence in all government expenditure regressions. The GDP growth and total government expenditure influence the functions of goods and services (positively) and interest payments and subsidies and other transfers negatively. Factors lending rate and inflation had the opposite impact in accordance with the economic theory presumptions, e.g. inflation increases goods and services and decreases interest payments, subsidies and other transfers and total government expenditures. Demographical indicator - age dependency ratio vary positively with goods and services and subsidies and other transfers but negatively with

total government expenditures. The average impact of government expenditure categories of other countries was significant for goods and services only and also for interest payments when including globalization variable FDI but for regressions of total government expenditures no impact has been proved.

The estimated regression models have proved explicitly the increasing influence of globalization processes on total government expenditure and also have proved an important impact on some component parts of these expenditures mainly goods and services and capital expenditures. Globalization restrains governments by inducing increased budgetary pressure. As a consequence, governments shift their expenditures away from transfers and subsidies towards capital expenditures. The empirical results provide a better understanding of globalization processes and possibilities how to use the economic policy tools.

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Low-Cost Bank Retail Core Banking Services Client Clusters¹

Abstract

The Czech Republic retail banking market is characterized by significant information asymmetry regarding the bank products and services. Banks provide complex and non-transparent tariffs. Existing inefficiency, caused mainly by non-transparency of the core banking services (thereinafter only as CBS abbreviation) bank offer, is one of the market imperfections that European Commission is focused on. CBS Calculator project is one of the way how to solve the non-transparency problem much more effectively than government regulations. Government intervention can be easily outflanked by the banks. The data from the CBS Calculator will be published to bank clients to provide more clear information about bank fees. The main part of the paper describes data analysis outcome from CBS Calculator's respondents. By the non-hierarchic cluster analysis there were determined four main client clusters by month usage pattern. The analysis was based on approximately 20,000 filled question form from bank clients in Czech Republic. But the main focus of this paper is on the low cost e-banking clients in the Czech Republic.

Key Words

client, cluster analysis, low-cost bank, retail core banking services

JEL Classification: G21, C38

Introduction

Existing inefficiency is caused mainly by nontransparency of the retail core bank services (thereinafter only as RCBS abbreviation) bank offer and by the lack of tool for easy and fast comparison. This is one of the RCBS market imperfections the European commission is focused on for last years, see the studies [1, p. 3-5], [2]. RCBS Calculator project is one of the way how to solve the nontransparency problem much more effectively than government regulations. Government intervention can be easily outflanked by the banks and in Czech Republic (thereinafter only as CZ abbreviation) it has been so [3, p. 107]. The RCBS Calculator advices the best product of the customer based on RCBS usage (what services are demanded and in what quantity). That is the primary goal of the Calculator. The collateral benefit is that all usage is saved. This

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database holds more than 17,000 of respondent's answers of RCBS usage. Those data can be used to better describe and to analyze the demand side. This paper is focused on respondents using the low-cost accounts. The first part of the paper describes the data source a shortly the methodology of the demand analysis by the usage criterion. The second part of the paper presents the results of adult low-cost demand cluster analysis.

1. Description of the data source

The source of the data is a long-term cooperation of the research team from the Faculty of Informatics and Management of the University Hradec Králové and owner of the company running the banking focused web pages bankovnipoplatky.com. These web pages also include a web-based comparison application RCBS Calculator (accessible from URL: <http://www.bankovnipoplatky.com/kalkulator.html>). The application is focused on the calculation of monthly costs of RCBS and other banking services of the client on the basis of the client's use of banking services. Frequencies of monthly use of the services, or amounts utilized, are entered by the client into an electronic form, which is then saved on the server. The form is divided into logical chapters. It includes 52 questions in total (25 questions with attached sub questions and three additional questions) in chapters: I. account, II. statements, III. card services, IV. electronic banking, V. payments – direct payments, VI. payments – standing orders, VII. payments – authorization for encashment (including SIPO), VIII. cash utilization, IX. other services.

Calculator also monitors “if – then” conditions, when for example clients are exempt from some charges, if the balance on their account is higher than the set limit, or if the turnover on the accounts exceeds the set limit. These conditions are for example in the offers of Raiffeisenbank, GE Money bank, Citibank and others. The Calculator includes data about imposition of charges for the offers of 12 banks, or rather 44 various types of current accounts or the so-called package accounts offered in the Czech Republic.

When all necessary data are entered, the Calculator will computed the costs and arrange bank offers in a transparent manner from the most cost advantageous to the least cost advantageous with regard to the type of use of services entered by the client. Data about frequencies, amounts related to the account turnover and balance and the particular calculated amount of costs are saved on the server. All fills are saved so the database holds more than 12,000 respondent's answers. From the marketing research point of view there are gathered data:

- Multivariate – there has been monitored 53 variable concerning RCBS usage, 2 system variables for respondent identification and 45 variables containing the calculated costs for each of monitored RCBS product,
- Primary – data were gathered directly from the client,
- Subjective – data came from respondent himself, respectively it is his or hers subjective seem.

Due to specific data gathering process the data analysis outcome cannot be applied on the whole CZ population. Main limits that characterize the population of RCBS Calculator

are connection to the Internet, own interest of bank charges and have to know about RCBS Calculator. The last limit seems to be very strict but Calculator's web owner is regularly in statewide media such as TV glossing the bank fee policy and the fact that the service is wide-known confirms the count of usage per year. Still there can be expected that passive client with desk service preference are presented in the Calculator's database much less than e.g. internet banking preferred clients. For the adult low-cost banking where there is presumption of high internet banking preference, mentioned limitations are not that strict, still they must be respected when discussing the field of data relevance.

2. Methodology of low-cost determination and clustering

This study was focused on low-cost products only so there was qualified the low-cost criterion. It has two objectives that had to be met. The first one comes from the offer. Those products have to have the fixed month costs less than 1, 5 € before the frequency of usage is set. This figure has been derived as the 25 % from the average costs of the whole fills during the year 2010. The second comes from the real usage of clients. The bank offer might be under certain circumstances low-cost but as late as the client start using the product we can't determine if the result of the trade is low-cost. Of course there can be an objection of a misuse. Still the presumption of certain rationality prevents the global misuse and certain role is assigned the data verification and validation process where 5 % of the variance is being cut. So the client's average costs are computed (see formula 1 lower) from the database of the RCBS Calculator.

Formula is:

$$AC_h = \sum_{h=1}^k \sum_{i=1}^{n_h} c_{hi} \quad (1)$$

where: AC average costs

c_{hi} costs of the i_{th} client using h_{th} account per month.

h ordinal number of account,

i ordinal number of client,

k sum of the monitored accounts

n_h sum of the clients using h_{th} account

The second way is to use an average client cluster, respectively to use the centroid vector values and use it for each of products as a model consumer. Methodology of computation and average cluster centroid see [4, p. 1206-1207]. The cost criterion for the second objective is set at 3 € average costs. This figure has been derived as the 50 % from the average costs of the whole fills during the year 2010. Both objectives have to be achievable without the requirement of certain turnover or certain level of account balance. This last specifying condition is very important because most of the large banks offer premium products that are free of charges when the conditions of high turnover or account balance are met. Without complying with a turnover/balance condition those products are far from being low-cost. Similar restriction is connected with term adult low-cost. Most of the banks offer low-cost or even funded account for children and

students. Those accounts possess certain service restrictions and when the age condition is not met the client is transferred on the standard product. Regarding the criteria mentioned above (cost criteria, adult, non-student, non-premium) there were identified low-cost products of 5 banks.

Tab. 1: Selected adult low-cost products

Bank	Product in Czech	Product in English
Banco popolare	On-line konto	On-line account
Fio bank	Běžný účet	Current account
Landesbank Baden-Württemberg	IQ konto ZDARMA	IQ account for free
mBank	mKonto	mAccount
Poštovní spořitelna bank	Era osobní účet zadarmo	Era personal account for free

Source: own research

From banks mentioned in Tab. 1 was gathered 2582 respondent's fills for the time period 1st January 2010 to 22nd December 2010. Then there was made verification and validation. That phase started by variable definition and computation of descriptive statistics. Then there were identified variables with almost no usage and excluded from further research. Main reason is of cluster analysis vulnerability to the insignificant observation and variables [6. p. 53, 122]. There was chosen 19 variables concerning usage of services and 1 ordinal system variable for further analysis. Because of naturally higher usage frequency of certain services (variables) there was done z-score normalization. Also the dimension reduction has been taken into account. Cluster analysis algorithm and optimal cluster determination were chosen according to the recommendations of [5, p. 16-18, 268], [6, p. 144]. There was used the K-means algorithm and what fills was to be included into the computation was determined listwise method. Using listwise approach there was clustered 1746 members. After the cluster analysis there were the cluster centroids denormalized (de-z-scored) to gain their former scale.

3. Results of cluster analysis

The graph (see Fig. 1) shows members count of the individual clusters.

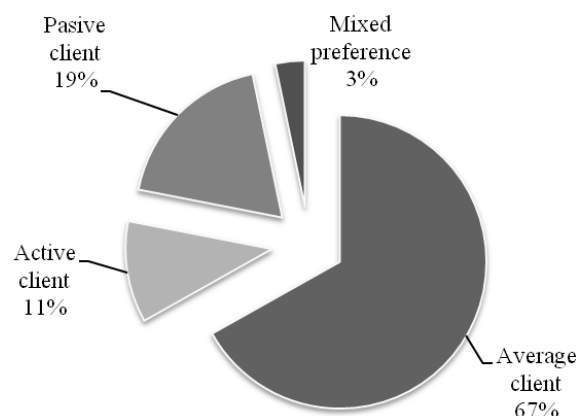


Fig. 1: Shares of computed clusters

Source: own research

In the Tab. 2 there are shown values of cluster centroid for each of a typical adult low-cost client behavior pattern.

Tab. 2: Centroid values for each cluster

Variable/cluster	Preferences of e-banking			Mixed services preference
	1 Passive client	2 Average client	3 Active client	4 Average client
ATM withdrawal, client own bank in CZ	1.2	2.3	2.3	3.2
ATM withdrawal, other bank in CZ	1.0	1.3	1.2	1.1
Incoming payment from other bank	2.2	3.0	5.0	2.4
Incoming payment from client own bank	0.8	1.8	3.6	1.0
Direct payments to client own bank Internet	1.3	2.4	5.3	1.9
Direct payments to client own bank at the desk*	0.0	0.0	0.0	1.1
Direct payments to other bank Internet	3.0	4.4	6.6	3.2
Direct payments to other bank at the desk*	0.0	0.0	0.0	1.2
Standing orders to client own bank Internet	0.4	1.3	1.9	1.4
Standing orders to client own bank at the desk*	0.0	0.0	0.0	1.6
Standing orders to other bank Internet	2.8	3.3	3.7	1.1
Standing orders to other bank at the desk*	0.1	0.1	0.0	2.4
Encashment to client own bank Internet	0.1	0.6	0.6	0.4
Encashment to client own bank at the desk*	0.0	0.0	0.0	0.8
Encashment to other bank Internet	1.0	1.4	1.7	0.4
Encashment to other bank at the desk*	0.0	0.0	0.0	1.2
Cash deposit at desk**	0.1	0.2	0.3	2.0
Cash withdrawal at desk***	0.0	0.0	0.1	2.1
Cash back	0.1	0.4	0.3	0.0

Note: *mBank do not offer those services, ** mBank has no cash branches, service is realized using a post remittance of Czech post, *** mBank has no cash branches, service is realized using cash advance service on banks mBank has contract with (most of the large banks in CZ).

Source: own research.

Now the profiles will be described by the usage criterion:

- The average client, – cluster 1 is major group of the e-banking client population. It shares common frequency of ATM withdrawals with the others clusters (approximately 2 times from client own bank and once from other bank). Typical for this client is preference of electronic banking usage with these frequencies: almost 6 direct payments, almost 5 standing orders and 2 encashment. Usage of desk services such cash deposit, cash withdrawal is very sparse only once per year (this interpretation can be reversed as in the previous analysis, that is one from ten clients from this group uses an at desk cash withdrawal once per month).
- The active client – cluster 2 is a group of the more active clients, where, compared to the average client, the frequency of incoming payments is almost 2 times higher. Usage of services direct payments to own bank, cash ATM withdrawal from other bank, cash deposit or withdrawal and standing orders to own bank is higher by almost 60 %. Concerning other services, this profile is similar to the average client and this client also shares the preference of the communication channel of e-banking.

- The passive client – cluster 3 includes clients with lower frequencies of monthly usage of all the monitored services. It can be noticed e.g. on services of money transfers and incoming payments, where this client profile receives only 2 payments per month and carries out only 3 direct payments and one standing order. All transfer services are done via internet. Compared to the average client profile, this cluster also has two times lower month frequency of ATM withdrawals. This client also shares electronic banking preference.
- The client with mixed preference – cluster 4 is almost 20 times smaller than the major cluster. RCBS usage frequency of money transfers and incoming payments are similar to the average client profile, the difference is that realization mostly occurs using the services at the branch. Still this client uses internet banking (or some of the client in this cluster). This low populated cluster is the only one that deposits or withdraws money at the desk and its cash preference is demonstrated by highest usage of ATMs.

The cluster analysis has shown that the majority of the adult low-cost RCBS products population shows strong internet preference. This fact correlates with the presumption of rationality. All RCBS low-cost products are based strongly on electronic banking and desk services are charged or not available. Still one products, to be specific Era personal account for free, offers desk services in wider range. Still if the paper form for payment ordering is not used, it is close to the ATM usage because transactions are made using the bank electronic card (a MaxCard). Also there has to be mentioned that bank offering Era has much more (about than hundred times) physical branches where cash operation can be made. It can be presumed that clients with mixed or desk preference are mostly Era clients. Also there can presumed that mixed or desk preference cluster is larger in real low-cost population. This disparity in RCBS Calculator database and reality is the consequence of chosen mean of respondent data acquisition. It is unfortunate that study (accessible on Web of knowledge) [7, p.124] was focused more one fee determination. One of the data presumptions was that the usage pattern is almost the same in the Czech, Slovakia and Poland. For further research it would be very interesting to create central Europe low-cost clusters.

Conclusion

The RCBS offer respectively the bank tariffs and their structure are complex and even nontransparent [1, p. 33], [2]. As the reaction to this situation there has been introduced the RCBS Calculator for charge computation and easy product comparison. Using the Calculator database there can be described the demand side by the criterion of usage effectively. Still there are certain limitations of data interpretation due to specific data gathering process. But those limitations are not that bundling when analyzing primary electronic banking focused market of the low-cost RCBS.

As the adult low-cost products in the Czech Republic can be identified 5 accounts. The analysis was based on almost 1,800 respondents using those products and on 19 selected variables. After the data preparation there has been identified 3 main clusters and 1 low populated one using the nonhierarchic k-means cluster analysis. The main

clusters share the preference of communication channel – electronic banking. The average client is characterized by month usage: almost 6 direct payments, almost 5 standing orders and 2 encashment and 3 withdraws from ATM (preferred is ATM of client's own bank). The greatest variability has been observed at the services of direct payments and the lowest at the services of encashment. Passive client is about 40 % less active than average one at payments usage and almost 2 times less active at ATM usage. Active client is more active mainly in direct payments. ATM and standing order usage is not far from the average one. Computed clusters are not just interesting from the academic point of view. They can be considered by the bank because they have very good data about their clients but not about the clients of the competition unless they pay costly analysis or marketing research.

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The Credit Market Bonity in the Czech Republic¹

Abstract

The aim of this paper is to explain the Czech credit market bonity, and define factors that may affect on that. The bonity is described in this paper as a set of financial ratios selected by the authors by using inputs and outputs that may affect the creditworthiness of the Czech credit market. Numerical data used from international financial database BANKSCOPE are combined with the official data from the Czech Ministry of Industry and Trade, and also the other economic indicators from the database of the Czech Statistical Office in period 2005 – 2009. Due to short period, the bonity problem is solved using a panel regression, namely Generalized Methods of Moments, which explore the volume of bad loans, resulting mainly from transformation period. To illustrate the impact of the financial crisis on the Czech credit market bonity, the time series are divided into two time periods, pre-crisis and crisis period. Authors use selected proportion variables as Reserves for Impaired Loans/Gross Loans, Interest income on loans/Average Gross Loans, Other Operating Income/Gross Income of Banks, EBIT of Non-Financial Companies/Return of Non-Financial Companies, Sum of the Profit Before Taxes/Return of Non-Financial Companies, EBIT of Energy Providers/Return of Energy Providers, Non-Financial Companies' Wages/GDP, and the Rate of Unemployment as 8 regressors. Authors discuss also the weaknesses and drawbacks of this research, mainly due to very short time series of the annual frequency data. They offer another way to research this problem in the future, too.

Key Words

credit market bonity, generalized methods of moments' panel regression analysis

JEL Classification: C58, G01, G21

Introduction

According to Rose and Hudgins (2008), borrower is creditworthy when he is able and willing to pay out the credit when due, with a comfortable margin for error. This usually involves a detailed study of six aspects of a loan application: character (the borrower has to have a well-defined purpose for requesting credit and a serious intention to repay), capacity (the borrower has to have the authority to request a loan and the legal standing to sign a binding loan agreement), cash (the borrower has to have the ability to generate enough cash flows to repay the loan), collateral (the borrower has to have

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adequate net worth or own enough quality assets to provide adequate support for the loan), conditions (the bank has to be aware of recent trends in the borrower's line of work or industry and how changing economic conditions might affect the loan), and control (this factor centers on such questions as whether the changes in law and regulation could adversely affect the borrower and whether the loan request meets the lender's and the regulatory authorities' standards for loan quality). In the Czech Republic there is the bank based financial system. It means that the whole Czech market (companies and households) uses the credit market for financing their needs. Bank loans are definitely the most typical financial service in our country. For commercial banks it means earnings in form of interest income, fees and margins paid by their customers. Banks also run the risk of their clients' insolvency and due to this fact they should generate reserves for impaired loans in some cases.

The aim of this paper is to explain the bonity of the credit market as the whole market creditworthiness. We are using panel data and regression analysis to explain the Czech credit market bonity. It is impossible to create a model, which explore the whole market due to many facts (differences between credit clients' categories, also between creditworthiness of each client, credit maturity etc.). But it is definitely possible to make some regressors that may explore causalities between loans demanders' quality and some our selected variables.

Paper structure is as follows. Section 1 is empirical analysis of selected literature, more or less connected with our research topic. Section 2 describes our data and methods applied, while section 3 discusses principal empirical findings. The last part concludes but after References there is also Appendix part with two tables.

1. Literature review

Shehzad et al. (2010) used for their work balance sheet information from around 500 commercial banks from more than 50 countries averaged over period from 2005 to 2007. They estimated the impact of bank ownership concentration on two indicators of bank riskiness, namely banks' non-performing loans and capital adequacy. They used panel numerical data from Bankscope database as impaired loans/gross loans ratio for example. We use that ratio definitely, too. Their results proved that concentrated ownership of banking sectors significantly reduces a bank's non-performing loans ratio.

Řepková (2009) proved that the Czech banking sector is concentrated into more than 50 % of the market by three banking institutions. We estimate also concentration of the Czech credit market to make our data panels in this paper. Haas and Lelyveld (2010) find evidence for the existence of internal capital markets through which multinational banks manage the credit growth of their subsidiaries. It is necessary to say that the Czech concentrated banking sector is owned by foreign multinational financial groups.

Alessandri and Drehmann (2010) use net interest income from banking book, we will also explore interest rate on loans through that. Calmès and Théoret (2010) analyze the influence of the growing share of noninterest income on bank performance by resorting

to an empirical ARCH-M model. Even if they estimated their model from off-balance sheet data, we can use this kind of riskiness model also in research our topic, but unfortunately not with estimation on panel data.

Another problem is the repricing. According Drehmann et al. (2010) repricing characteristic of some bank asset or liability does not need to be the same as its maturity. For example, a flexible loan can have a maturity of 20 years even though it can be repriced every three months. In our paper we use data of credits in all maturities. Berentsen et al. (2007) proved the gains in welfare come from the payment of interest on deposits and not from relaxing borrowers' liquidity constraints. They also demonstrate that when credit rationing occurs, increase in the rate of inflation can be welfare improving. The problem of interest rate on loans should be also discussed in our paper.

Gryglewicz (2011) find that liquidity of companies concerns lead to a decrease of dispersion of credit spreads. But his work is situated to Market based financial system, where he shows liquidity through EBIT volatility and dividends paid by companies. In B-financial system as we have in our country, it is more difficult to explore liquidity of the market, especially of the Czech credit market and bank clients on loans. This is connected with the fact that each client has his own bonity calculated by banks, using their specialized software. The problematic of liquidity is connected with the Czech credit market bonity, definitely. Demiroglu and James (2010) shows that these are the bank lines of credit which mean source of corporate liquidity. But they situated their work also to M-system and they use e. g. Debt/EBIT ratio to explore liquidity of the market. We will try to explore the bonity of the whole credit market using our constructed ratios.

Using OLS regression Heryán (2010) proved that the growth rate of employment is statistically significant variable and explore the growth rate of the Czech credit market. In our paper we use the rate of unemployment and also wages of the Czech citizens to estimate Phillips curve economy theory and its impact to the credit market.

2. Data & Methodology

For primary research we use both balance sheet data of the Czech commercial banks and also data from the Czech National Bank. In next research by regression analysis we use panel data from international financial database BANKSCOPE combined with the other public official data.

2.1 Data

We use numerical secondary character data from the international statistical financial Bureau Van Dijk's BANKSCOPE database (Update 241.2 - August 2010). We will divide our model into two sub-periods, before and during financial crises and its impacts on the Czech credit market. First we have to explore the Czech banks whose Balance sheet and

Income statement data we will use. In the Table 1 we can see that the Czech credit market is concentrated into 97.43 % of credits granted by 9 banks in the Czech Republic. But there are some specifics of them due to we cannot use some of them for our estimation.

Tab. 1: Market shares of banks in the Czech credit market

Česká spořitelna		ČSOB		Komerční banka		UniCredit Bank	
24.02 %		20.27 %		19.06 %		8.59 %	
Raiffeisenbank		Hypoteční banka		GE Money Bank		Volksbank CZ	
7.31 %		7.00 %		5.43 %		1.95 %	
						Česká exportní	
						1.92 %	

Source: Authors' calculation from the Czech National Bank database and balance sheets of the Czech Banks from 31. 12. 2009.

Raiffeisenbank for example do not publish their impaired loans data in BANKSCOPE database. Hypoteční banka provides only the mortgage loans to the Czech citizens and we cannot use their data due to the fact that mortgages are definitely different in behaviour of banks on the Czech market (see e. g. some regressors in our theoretical model). Volksbank CZ has too short time series and Česká exportní bank provide almost just specific services in form of guarantees for the business of the Czech export companies. So we use data of 5 Czech banks (84.69 % of the market): Česká spořitelna, ČSOB, Komerční banka, UniCredit Bank, GE Money Bank.

Tab. 2: Regressors in the our theoretical model estimation

R_n	Exogenous:	Profits and Costs' Explanation of the banks' clients:
R_1	Less: Reserves for Impaired Loans/NPLs / Gross Loans	Corrections of impaired loans that explore the future lost cash flows due to value of collaterals (brutto value of bank loans minus its netto) per Gross loans mean more banks risk from lending for banks' customers.
R_2	Interest income on loans / Average Gross Loans	Costs explore the price of loans for customers (extract from loans maturity, clients, etc.).
R_3	Other Operating Income / Gross Income of Banks	Costs for the whole market in form of banks Net Fees and Commissions per Gross income of banks. It is paid by banks' customers.
R_4	EBIT of Non-Financial Companies / Return of Non-Financial Companies	Profit using Earnings before Interest and Taxes of Non-Financial companies per their Return means Sales of their goods and services rentability. It means potential income of banks' customers.
R_5	Sum of the Profit Before Taxes / Return of Non-Financial Companies	We have to differ between EBIT and all profits of companies and their summarization before taxes (EBT). Therefore we explore return rentability of Non-Financial companies in our model again.
R_6	Rate of Unemployment	Unemployment is definitely connected with low level of solvency of the banks' customers.
R_7	Non-Financial Companies Wages / GDP	Profit of the Czech citizens and also rentability of their jobs we explore through using costs in form of Non-financial companies wages per GDP.
R_8	EBIT of Energy Providers / Return of Energy Providers	Costs for the whole market in form of increasing prices and profits of energy providers, we explore that through using returns on business of energy providers. All banks' customers have to pay that costs.

Source: Authors' explanation

Another numerical data that we use come from the Czech official financial analysis document made by the Trade and Industry Ministry in our country and also from the Czech Statistical Office. We try to estimate the Czech credit market bonity through using selected exogenous. Our selected regressors that may affect on the level of impaired loans are described in Tab. 2.

2.2 Theoretical model

Lechner and Breitung (1996) described selected GMM estimation methods. We are using that kind of regression analysis due to the fact that we have short time series. We use annual data of 5 banks (i) from 2005 to 2009 (t). Due to this fact we are also working with orthogonal deviations, not with differences in rate of growth. We try to explain the Czech credit market bonity as volume of impaired loans, which is dependent variable in our model. Our theoretical model is described with next equation:

$$IL = \beta_1 \cdot IL \cdot i \cdot (t - 1) + \sum \beta_2 \cdot R_n \cdot I \cdot t + \varepsilon; n \in \{1, 2, \dots, 8\} \quad (1)$$

where: IL impaired loans' volume
 R_n regressors explained in the Table 2.

3. Discussion on our empirical results

In Appendix chart we can see that there is strong statistical significance correlation value between the corrections of impaired loans *per* GDP (R_1), and interest rate (R_2). In Appendix 1 we should also see that EBIT (R_4), and EBT (R_5) values are correlated (the value of correlation coefficient is close to one). Due to statistical significance correlation value, higher than value 0.80, we have to create more panel regression models definitely, where we will change some regressors. Another problem is that we have too short time series to show differences between non-crisis and crisis period. In Appendix 2 we divided our models to two sub-periods, but it is definitely impossible show differences which exist due to recent financial crisis with annual data. Due to this fact we even also cannot use all regressors to one model. We divide that to interbank data with unemployment rate models and the Czech market data models. But even if we create models in that way, we found some statistical differences.

In the first interbank data model (from left hand side) we can see that statistical significant value in the whole period of our estimation is value of Impaired Loans from last year $IL_{(-1)}$, and due to crisis it changed significance of the interest rate (R_2). But we examined that only on the 10 % statistical significance level. Stronger output gives the second interbank data model, where we use bank credit risk value. We can see that in financial crisis period this variable (R_1), is statistical significance on 1 % level also together with the last year Impaired Loans' value $IL_{(-1)}$. In the market data models we can see that coefficients are higher than in interbank data models. It means that the market data have stronger impact on the volume of impaired loans definitely. Statistical significant values there are the last year Impaired Loans' value $IL_{(-1)}$ on 1 % level, costs

paid for energy on 5 % level (R_8), and wages *per* GDP on 10 % level of statistical significance (R_7).

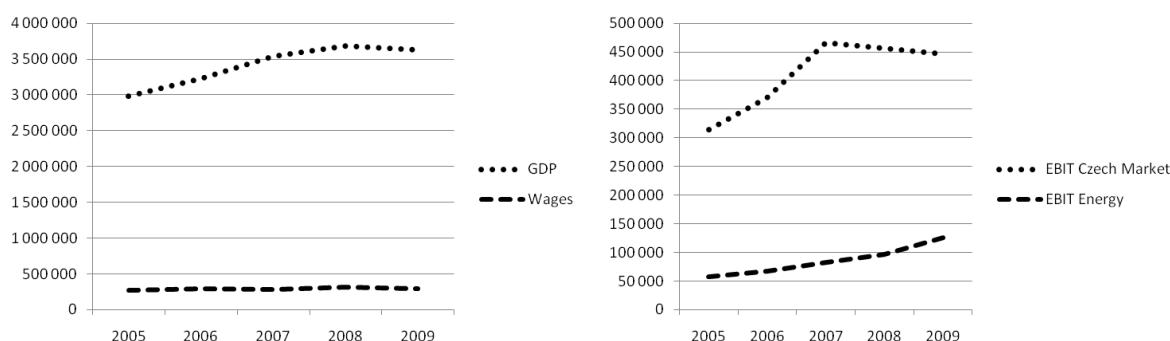


Fig. 1: Wages & GDP, EBIT & Energy Costs

Source: Authors' illustration (in bill. CZK).

Statistical significance coefficients of $IL_{(-1)}$ are positive, which means that the impaired loans last years' value explore positive value of impaired loans in recent years. Positive corrections of impaired loans *per* GDP coefficient (R_1) means that higher rate of that coefficient means higher value of impaired loans definitely. Negative interest rate coefficient (R_2) explores the inverse causalities with the impaired loans value. It could be explained by opinion that only well creditworthy and good condition clients are able to pay higher price of loans. Very interesting result is positive statistical significance coefficient of wages *per* GDP (R_7) in crisis period. It is also the highest value of coefficient so it is important even if its statistical significance is only on 10 % level. Wages *per* GDP coefficient (R_7) have positive statistical significant value but on the other hand, energy costs' coefficient has negative value. It definitely does not mean that a higher value of wages *per* GDP depend higher value of the impaired loans. The Fig. 1 show that it is due to growth of GDP in our country. On the second part of the Fig. 1 we can see that problem of energy costs could very difficult for many companies. It is due to EBIT of energy companies still increase while EBIT of the Czech non-financial companies still decrease nowadays.

Conclusion

The aim of this paper was to explain the bonity of the Czech credit market as the whole market creditworthiness. We estimate GMM panel regression model where the impaired loans were dependent variable. As regressors we create 8 financial ratios. Some of them were really statistical significant, even if our estimation have some weaknesses.

The empirical part of our paper suffers from unavailability of data. Due to annual frequency we cannot definitely estimate higher quality models and use another regression method. Unfortunately we cannot also explore differences between period before recent financial crisis and in the crisis period. Our opinion is that our research has its own contribution for science, but in case that we could work with monthly data (the Czech National Bank has that data from monthly commercial banks' reports), we

could make more valuable models. We could estimate the models in similar way, but we could use for example the Least Squares Regression method after exploring the time series stationarity. We could describe differences in long-term and short-term causalities using Johansen cointegration tests and Granger causality tests, too. This is our idea for our future research.

Another problem touches the reserves for impaired loans. If some credit demander pledged some valuable assets to secure his bank loans, the bank does not create reserves for impaired loans in this case. Our future attention should be given to the problematic of credit collaterals.

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Appendices

Appendix 1: Regressors' Correlation Matrix

Probability	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8
R_1	1.0000							

R_2	0.8540	1.0000						
	7.8753	-----						
	0.0000	-----						
R_3	0.7282	0.4674	1.0000					
	5.0968	2.5357	-----					
	0.0000	0.0185	-----					
R_4	-0.0912	-0.0156	0.2106	1.0000				
	-0.4392	-0.0748	1.0335	-----				
	0.6645	0.9410	0.3121	-----				
R_5	-0.0948	-0.0110	0.1875	0.9966	1.0000			
	-0.4567	-0.0531	0.9154	58.5557	-----			
	0.6521	0.9581	0.3694	0.0000	-----			
R_6	0.1364	-0.1445	0.3959	-0.1119	-0.1317	1.0000		
	0.6603	-0.7005	2.0676	-0.5400	-0.6374	-----		
	0.5156	0.4906	0.0501	0.5944	0.5301	-----		
R_7	0.0728	-0.1243	0.3985	0.0569	0.0199	0.6364	1.0000	
	0.3504	-0.6011	2.0843	0.2737	0.0958	3.9569	-----	
	0.7292	0.5536	0.0484	0.7867	0.9244	0.0006	-----	
R_8	0.1135	-0.0770	0.2375	-0.1971	-0.2392	0.6555	0.0648	1.0000
	0.5480	-0.3704	1.1730	-0.9643	-1.1817	4.1636	0.3115	-----
	0.5890	0.7144	0.2528	0.3449	0.2494	0.0004	0.7582	-----

Source: Authors' calculation

Appendix 2: Panel GMM Regression Model Output

IMPAIRED LOANS (dependent variable)								
Regressors	All Period	Crisis	All Period	Crisis	All Period	Crisis	All Period	Crisis
$IL_{(-1)}$	1.44*	0.84	0.77	0.90***	1.24***	-0.51	0.72**	-0.51
R_1			0.39	0.36***				
R_2	-0.32	-0.55*						
R_3	0.02	0.00	0.00	0.00				
R_4							1.56	-4.68
R_5							-1.53	3.67
R_6	-0.16	-0.14	-0.15***	-0.16**				
R_7					-0.11	3.13*		
R_8					-0.14**	1.37		

Note: Symbols *, ** and *** mean statistical significance at 10 %, 5 % and 1 % level.

Source: authors' calculation

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The Polarisation Tendencies in Localization of Foreign Direct Investments in the Czech Republic

Abstract

This paper is focused on analyse of localization trends of foreign direct investments in the Czech Republic. A regional competition is a dynamic process, where the inflow of FDI could be considered as the key indicator of the transformation process of the Czech regions and their regional competitiveness. The second goal of the paper is an analyse of the regional development processes, which are partly under influence of foreign direct investments, transnational companies and trends of global economic development.

From a geographical view, we can specify two different processes in the inflow of foreign direct investments into Czech regions. In the first half of the nineties was more important the horizontal position of regions (except Prague), more investors came to border regions, especially on the Czech-German border. Secondly, in the period after the Year 2000, importance of hierarchical position of cities and regional socioeconomic factors for the investments location is growing. Especially qualitative oriented foreign direct investments more prefer regions with greater cities, where high innovative potential is going up. We can say, that regional differentiations in inflow of foreign direct investments are able to increase polarisation tendencies within the Czech Republic.

Globalization tendencies have made the new economic space where foreign investors are seeking new markets or specific localization factors. Theory of learning regions or industrial districts emphasise the importance of regional intercompany networks and spatial proximity of innovative and flexible firms. It is obvious that strategic development of the Czech regions should be based on firm networks that will integrate regional economy into a complex interregional and global production chains.

Key Words

region, foreign direct investment, Czech Republic, globalization

JEL Classification: **R11, R12, L10**

Introduction

Early in the nineties, the approach to the foreign direct investment changed radically because they became an important tool for privatization of Czech businesses. At the same time, the inflow of foreign direct investments in the Czech economy started a structural change to transformation processes and contributed to integration of domestic economy into macro-regional and global economic mechanisms. From the point of analysis of development changes and mechanisms e.g. Hampl, Blažek, Žížalová

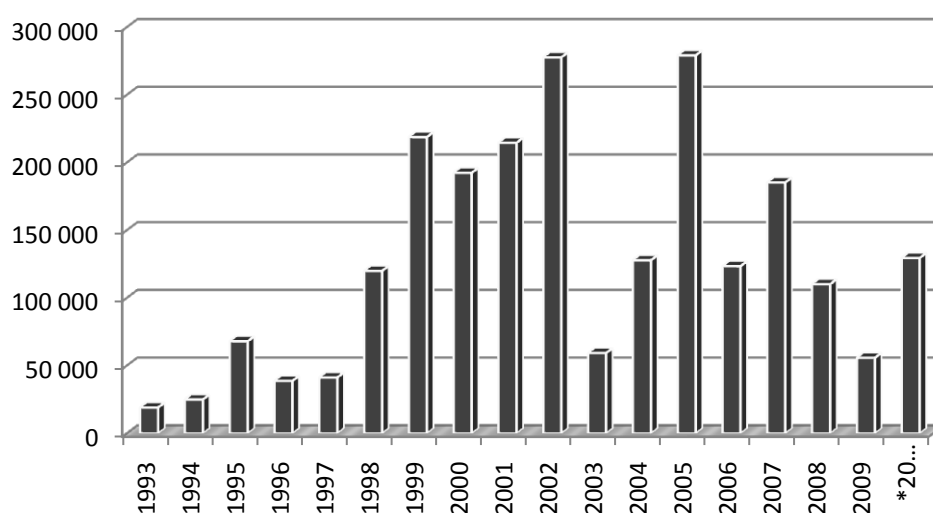
[6] in economy at the level of the Czech Republic and regions, it is therefore desirable to monitor the inflow of foreign direct investments, as they are necessary for successful progress of transformation and post-transformation processes as well as for further reinforcement of the national and regional competitiveness. At the same time, themes focused on analysis of interweaving of regional economies via supranational production chains in the global economy are getting into the spotlight, which is a new factor for regional competitiveness.

Bibliography deals with the foreign direct investments rather frequently with assessment from various points of view. From the point of view of the Czech economy, these are beneficial scientific results as they contain new insights to the issues of post-transformation period at the macro-economic as well as micro-economic level. Analysis of the bibliography based on spatial economy reveals studies and publications focused at levels – macro-regional, national, regional, and micro-regional. The macro-regional level of the Czech Republic is associated e.g. with analyses by Young [19], Bevan, Estrin [2], Carstensen, Troubal [3], Pavlínek [10], or Mutinelli, Piscitello [9], interested in the effects of the foreign direct investments on transient economies in the Eastern and Central Europe. Regarding the research of the FDI at lower regional levels there are studies interested in penetrating of foreign direct investments into domestic economy by Kippenberg [8], Carter [4], Srholec [13]. Often, their impact on macro-regional indicators is evaluated, which demonstrates growing importance (from early nineties) in development of individual sectors and branches, e.g. Pavlínek [10]. Specific focus of the research of the foreign direct investments is represented by the studies that highlight spatial aspects and regional differences in the inflow of foreign direct investment in the Czech Republic, e.g. Toušek, Tonev [14] or their interweaving with some other social and economic indicators, e.g. Hlaváček [7], Turnock [15]. Those studies, which evaluate specific impacts of the foreign direct investments at the micro-regional level e.g. by Bašťová, Dokoupil [1], can be regarded as supportive. Often, these analyses are case studies of specific locations.

At the same time, according to new concepts being developed in theoretical research of the regional development such as regional innovation systems Cooke [5] or innovative milieu Rutten, Boekema [12], the successfulness of companies in a region is strongly determined by the sphere where a stakeholder operates and where new interactions are developed from the quantity point of view by location of new stakeholders (e.g. foreign investors), which all results in improved competitiveness of the region. From the spatial point of view according to Viturka [17], the occurrence of regional disparities is associated with development and hierarchical differentiation of social system and therefore, one may expect further strengthening of the differences as well as different volumes of foreign investments. The goal of the article is analysing of inflow of the foreign direct investments in the Czech Republic and finding whether the polarization processes in many of the social and economical parameters (e.g. regional labour market) are reflected in the region-differentiated inflow of the foreign investments. Assumptions indicate that the new development tendencies, especially the activities with innovative potential (where the foreign direct investments belong in general), will deepen the asymmetry in the development processes at the regional level and therefore, highlight polarization risks of divergences in the fields of economy (e.g. in the field of innovations) with strategic importance for reinforcement of the regional competitiveness.

1. Inflow of the foreign direct investments in the Czech Republic in 1993 - 2010

Figure 1 shows the inflow of FDI in the Czech Republic as well as the volume of reinvestments and the volume of other capital (so-called investments funded from loan products). The inflow of the foreign direct investments in the Czech Republic had been showing long-term increase since early of the nineties over the decade. After short-term decline in 1997 – 1998, associated with completion of the key privatization processes, the foreign direct investments flow strongly in the Czech Republic, particularly due to establishment of the investment incentives for foreign investors.



Note: * preliminary data from the Czech National Bank in 2010

Fig. 1: Inflow of the foreign direct investments in the Czech Republic in 1993 – 2010 (in millions CZK)

Source: own processing based on data from the Czech National Bank

In the next years, neither long-term increasing nor decreasing trend is reflected; the volume of foreign direct investments in the Czech Republic attacks the highest peaks in 2005, which is strongly influenced by boom phase of economic cycle culminating between 2005 and 2007.

In the next years, the development of the foreign direct investments was influenced by coming global economic recession, which reflected in the worldwide drop of foreign investments, as well as in the Czech Republic. Therefore in 2009, the foreign direct investments drop significantly up to the levels from the mid of the nineties; foreign investors also transfer their profits from branches to headquarters of the supra-national corporation to a high extent and the volume of reinvested profit goes red. According to 2010 preliminary data from the Czech National Bank, slight turnover is taking place and the volume of the foreign direct investments grows significantly in the Czech Republic.

Not only a phase of economic cycle but also the level of development of an economy in hand influences the drop of volume of the foreign direct investments. There are many well-developed countries of which companies are rather investors abroad than investment receivers. It can be said that also the Czech Republic underwent some development where there is certain saturation of the Czech environment after the wave of privatizations and market-seeking investments focused on the Czech market and there are assumptions that high investment volumes of 1999 – 2002 will no longer repeat.

2. Polarization tendencies in the inflow of the foreign direct investments

If you monitor the inflow of the foreign direct investments in the Czech Republic from the regional point of view (at the districts level) various groups of districts can be defined with huge differences. From the time point of view, two different trends can be determined in evaluation of the regional differences in the inflow of the foreign direct investments. Toušek and Tonev [14] say that vertical position in hierarchical system of settlement has an important role in placement of the foreign direct investments, where towns and cities of higher importance win higher volume of foreign direct investments in average. Horizontal position of the settlement within the Czech Republic has certain role as well with higher level of foreign investors in the Czech Republic – Germany border area seen in the first half of the nineties. To fully evaluate the regional differences, see Figure 1 for total volume of foreign investments in the regions in 1999 – 2009.

At the districts level, Praha dominates over all other districts in long term where the volume of foreign investments exceeds other districts several times. Furthermore, strong position from the long-term point of view has district of Mladá Boleslav, of which higher-than-average attraction is associated with investments of Volkswagen concern in Škoda. Among the other districts with higher level of the inflow of the foreign direct investments are so-called city districts (Plzeň, Brno, Ostrava) that achieve even the highest concentrations of investments among districts of relevant region.

The polarity is seen among the districts of higher urbanisation level and rather rural being less attractive for investors in Bohemia and Moravia. Polarity among the districts of north-south axis is obvious as well with northern parts of the country of districts with higher volume of foreign investments. Whereas in the southern part of the country the districts with regional city (České Budějovice, Brno, Ostrava) have higher level of foreign investments, in the northern part of the country (Ostrava, Pardubice, Praha and Plzeň line) there are more districts with equally above-average values. At the same time, important development axis in the area between Plzeň, Praha and Mladá Boleslav is obvious and e.g. Viturka [16] considers it as the main development axis of the country (including Liberec). More polarity among districts is partially obvious in eastern-northern axis with stronger position of western districts compared to eastern ones and northern and northwestern part within the area of the Czech Republic. This fact is also related to important location of investors taking into account potential financial

subsidies from the incentives system from the locations, whereas the system focuses on the districts with higher-than-average unemployment level, i.e. the territory of Ústí Region.

The polarity among the districts is also related to their geographical position within the country because higher-than-average inflow of the foreign direct investments is related to the districts of Central Bohemia Region, whereas for rather big group of border districts, except for Ústí Region and Liberec Region, they are less attractive for investors because there are some other important investors influencing development of the inlands in addition to Praha. It can also be expected that foreign investors with quality-focused investments will prefer districts of higher education level and the districts of higher urbanization level and sufficient potential of qualified workforce, being the districts with regional cities.

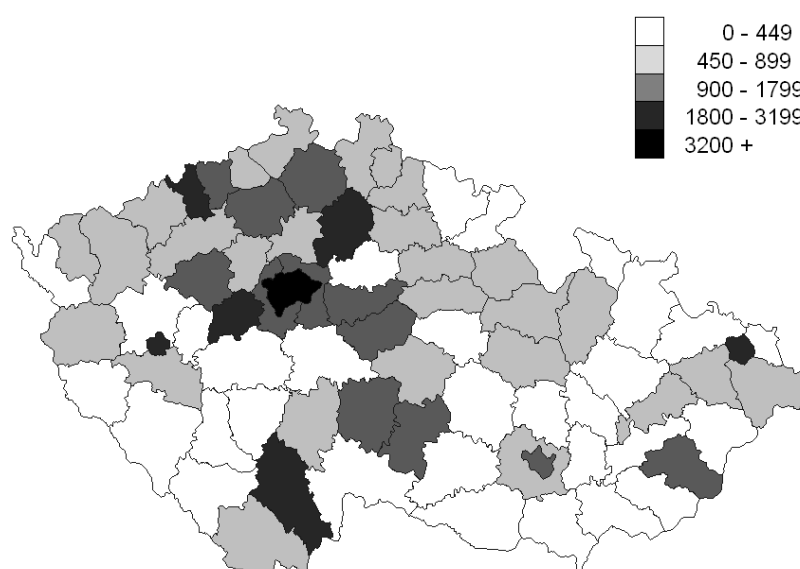


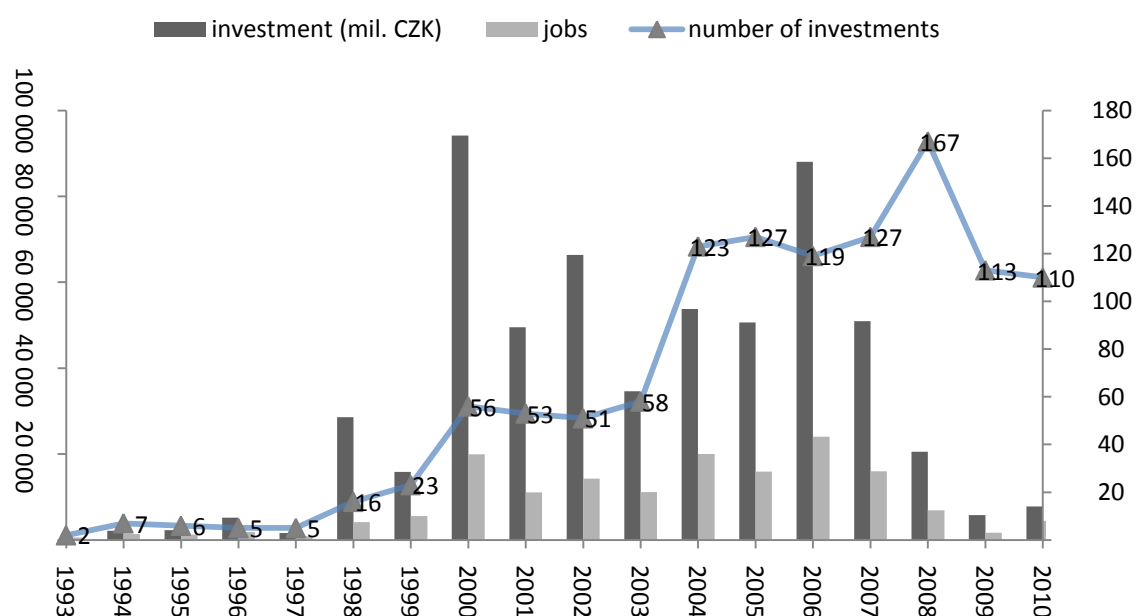
Fig. 2: Regional differences in the inflow of the foreign direct investments in the Czech Republic between 1999 and 2009 per capita (in thousand CZK)

Source: own processing based on data of the Czech National Bank

Distribution of the foreign direct investments in the Czech Republic can be regarded as fragmented because there are rather high regional disproportions (see Fig. 2). The regional factors, which influenced location of the foreign direct investments, include quality and availability of human resources, economic structure, traffic infrastructure and especially the effects of agglomeration savings that go hand in hand with especially the metropolitan areas of the Czech Republic.

3. Development and polarization tendencies within the foreign direct investments implemented via CzechInvest agency

When monitoring the polarization tendencies of the foreign direct investments, it is also interesting to monitor development within the investment projects implemented in the Czech Republic via CzechInvest agency after 1993. Despite that they form a part of total volume of the foreign direct investments, they represent an interesting segment for regional research both from time, region, and branch available and relatively representative data. CzechInvest managed the projects that required public support from the Czech Republic as an incentive for their investments. The basic legislation framework for implementation of the support programmes has been the Investment Incentives Act (72/2000 Coll., as amended in 2007) since the second half of the nineties [18].



Note: Chart includes only projects with known amount of the investment and number of newly created jobs.

Fig. 3: Investment projects implemented via CzechInvest agency (1993 – 2010)

Source: CzechInvest database, own processing

The most often form of incentives for the investment projects are the exemptions from income tax, direct support of jobs, contributions to requalification and financial benefits or granting of lands as well as provision of infrastructure. From the nature of each project point of view, the point of attention shifts from original support of investments to processing industry to current focus on technological centres and strategic service centres (call centres, accounting centres etc.). Despite that, we can see obvious dominance of projects focused in processing industry between 1993 and 2010 with 94% of total volume of investments, 82% newly created jobs and 59% of total number of investment projects. See Fig. 3 for more details about total development of projects and distribution of investments over time and new jobs created. High increase in the number

of projects is related to legislation adopted after 1998 and significant financial provision of the supporting programmes. In recent years (after 2008), the growing trend of investment projects continues (note: chart includes only projects with known amount of the investment and number of newly created jobs); however, these projects are rather focused on technological activities and services and the volume of the investments and number of newly created jobs drops by each project.

Different position of each region of the Czech Republic is obvious from evaluation of territorial polarization of implemented projects. However, these differences are conditioned upon general economic situation as well as beneficial treatment of selected regions or districts within selected financial tools (e.g. lower amount for an investment to get an investment incentive or different amount for districts with higher-than-average unemployment level). We can divide the regions into the following categories:

- Regions highly preferred by projects (Southern Moravia Region, Central Bohemia Region)
- Regions preferred or beneficially treated by projects (Moravia-Silesia Region, Ústí Region)
- Regions normally preferred by projects (Plzeň Region, Pardubice Region, Hradec Králové Region, Liberec Region, Olomouc Region, Zlín Region, Prague)
- Regions with weak preference by the projects (Karlovy Vary Region, Vysočina, South Bohemia Region)

Evaluation of a sub group of projects focused on implementation of technological centres and strategic service centres is an interesting aspect. These projects represent “higher society club” where higher creation of added value can be expected, use of codified as well as tacit knowledge. This corresponds to different perception of localization factors where importance of human resource costs and availability of investment incentives (processing industry) is replaced by demand for qualified workforce and general level of business and innovation environment Rumpel, Slach, Koutský [11]. Giving the example of regions of the Czech Republic, we can document this type of polarization on a different position of Prague and Ústí Region for these projects or within total number of projects (i.e. especially with dominance of the processing industry).

Conclusion

Now, the Czech Republic is experiencing the post-transformation development because the development processes and reinforcement of economy’s competitiveness is still associated with deteriorated level of productivity and technological gaps between Czech companies and foreign investors. Albeit the differences are diminishing, the necessity of the foreign direct investments is obvious for the Czech economy as they contribute to growth of their performance and efficiency. Current crisis was reflected in the drop of the foreign direct investments. From the point of differences in regions and the inflow of the foreign direct investments, attraction of districts in the Czech Republic is substantially associated with hierarchical position of the cities in the settlement system.

Geographical position of the district has an importance as well; the distribution of the foreign investments shows obvious differences in west-east and north-south polarity of the territory. However, it can be said that the foreign direct investments are concentrated highly unevenly in the Czech Republic with more focus on more developed regions with higher economic level. These differences are reflected in long term and they support growth of the regional differences between investment-attractive territories and the rest of the country.

For further development of the regional economies, the drop of quantitative parameters will be significant because the comparative advantages of the country (e.g. lower wages and production costs) are decreasing and, on the contrary, importance of qualitative parameters will increase (e.g. research and development, innovative potential) with attraction of new foreign investors. At the same time, globalization processes will expose the economy to the competition of the global markets rather than macro-regional and therefore, ability to join deeply with global production chains will be important, because development of inter-company networks (within regional and supranational level) is an important measure for strengthening of the regional competitiveness according to the theory of learning regions or the industrial district theory.

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The Communications – Way to Achieve Goals

Abstract

According to various research papers of managers' views, 60 % of problems in an organization are caused by incorrect communication. All studies of internal communication confirm that communication is a strong motivational factor and strong tools of leadership and also an important factor that helps to create the basic working conditions. On the other hand, ineffective communication can be a very strong disincentive and may cause undesirable working attitudes. Therefore, the top management of a company should be responsibly concerned with internal communications. The article brings the results of recent researches that emphasise the importance and influence of internal communication. Next part clarifies the main content of internal communication. There is an explanation of the premises of effective communication in the article. These premises show the extensiveness of internal communication and cohesion of the organizational culture, internal marketing, human resources policies, managerial competence and communication technologies - all important components of internal communication. The article summarizes the importance of internal communications for a company's success and presents the latest findings from a survey of internal communication in Czech companies. The survey was carried at the end 2010 by LMC company in cooperation with the Institute of Internal Communication. Results of this survey show the status of internal communication in Czech corporations.

Key Words

management, internal communication, survey overview, usage of communication channels

JEL Classification: M31, M12

Introduction

Every company needs sufficient information from its surroundings to survive in a highly competitive market. Information from micro and macro surroundings helps to fulfil the company's targets. According to the market information the company analyses the market opportunities and threats and considers all the possibilities to determinate the company's strategy. On the other hand, the information from the company to the market ensures the success of the company's products or services on the market. The external information stream between the company and its broad surroundings, where this company offers its own products or services, is a basic condition of effective working. The internal information and its implementation is necessary for the company and market success as well. The communication process inside the company is as important as external information and sometimes, in special situations, could be even more

important. It is necessary to realise that the main task of the internal communication is satisfying the information needs of all people in the company. First they need basic information for managing their job duties. Information regarding the company's targets and strategies helps to foster the employees' trust and loyalty. The company's communication is involved in all management activities, and it is the main element that connects and coordinates all activities in the company through managing people. In this context we can understand the communication process as a process of giving, exchanging and receiving information, which must be based on understanding and feedback, e.g. Jackson [1], Miller [2].

All recent authors agree that the comprehensive content of internal communication is realised within leadership, e.g. Wright et al. [3]. The main challenge of leadership is to achieve mutual benefit for the company and its employees. The fulfilling of mutual expectation (company's results requirements and, on the other side, the employees' requirements) is a very important premise which leads to overall company prosperity. The main objectives of the internal communication can be summarized by the following:

- information and motivation connection;
- mutual understanding and cooperation;
- forming desired working positions (of performance and behaviour);
- effective feedback for continuous evaluation.

After defining the main objectives the content (tasks) of internal communication can be determined:

- providing information for employees' needs (information necessary for job duties);
- internal marketing, e.g. public relations (communication necessary for employees' work behaviour and attitudes);
- consolidation of employees' stability and loyalty (communication necessary for company activities coordination, processing, standards, building of company culture);
- set up of feedback.

Communication penetrates the whole organization. The process of internal communication involves personal management, internal marketing, managerial communication abilities and skills and finally company information and communication infrastructure. Only the synergy of all of the above-mentioned activities can guarantee effective internal communication as the base of company management. [4]

1. Internal communication builds the confidence and influences employees retention and their productivity

According to various research papers of managers' views, the 60 % of problems in the organization are caused by incorrect communication. Watson Wyatt's latest research has found convincing evidence that the companies with highly effective internal

communication practices produce superior financial results and enjoy greater organizational stability. This study provided proof of the strong correlation between communication effectiveness, organizational turnover, and financial performance on base of survey and analysis of responses from 335 participants (260 U.S and 75 Canadian companies). The Fig. 1 reflected the relationships between internal communication and financial performance and organizational stability.

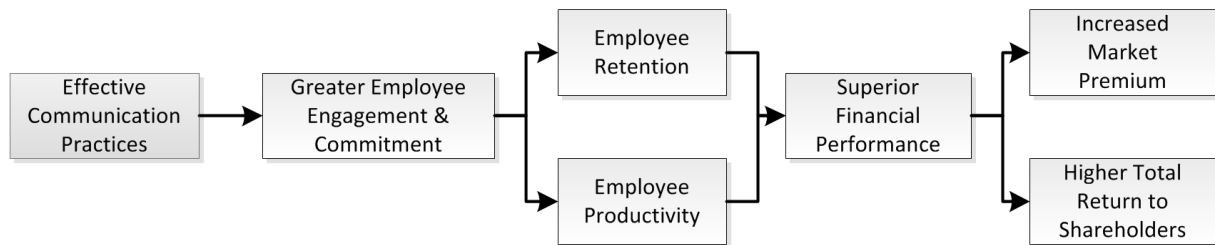


Fig. 1: Communication Effectiveness Drives Superior Financial Performance

Source: [5]

Watson Wyatt calls the effective communication practices the “Hierarchy of Effective Communication” the Fig. 2 shows. There is also shown the effect of each communication practice on market premium. Research brings important results that the companies can reach 19.4 percent higher market premium. These companies are able to drive behavioural change in their employees – change that produces positive business and financial results.

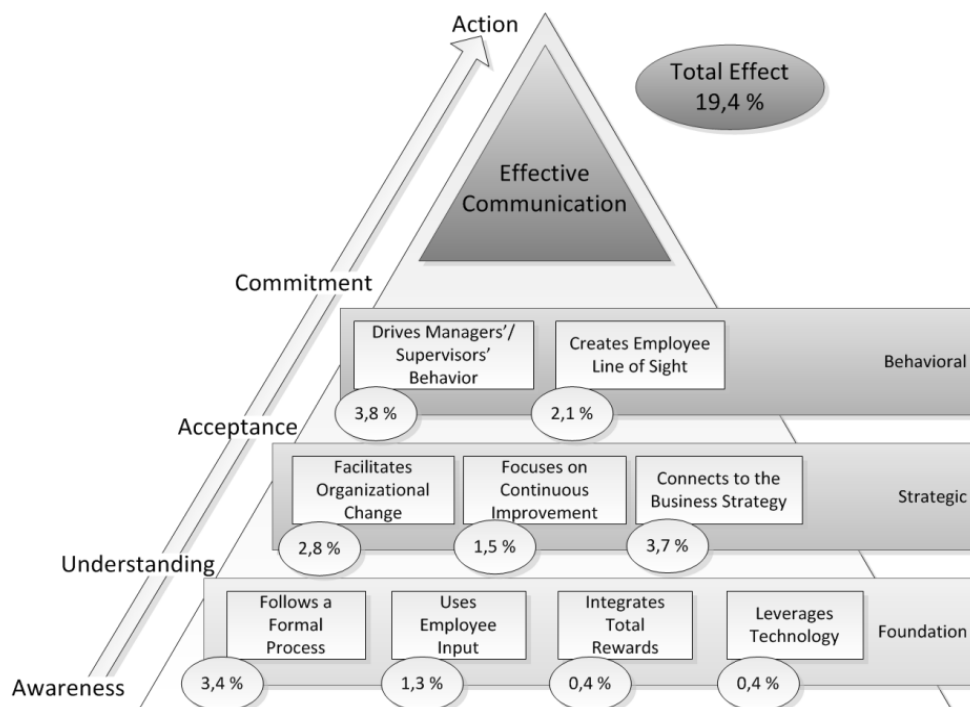


Fig. 2: Hierarchy of Effective Communication and Impact of communication Practices on Market Premium

Source: [5]

Watson Wyatt defines a base of the effective communication organization in the eight areas:

- organizational culture and values;
- understanding the business;
- customer needs;
- financial information and objectives;
- information of total rewards programs;
- promoting of new programs and policies;
- integrating new employee;
- strong leadership. [5]

Another interesting study, European Survey of Enterprises on New and Emerging Risks of European Agency for Safety and Health at Work, showed that ineffective communication is a factor that contributes to emerging psychosocial risks. Psychosocial risks are such risks, which are linked to the way work is designed, organised and managed, as well as to the economic and social context of work, results in an increased level of stress and can lead to serious deterioration of mental and physical health. Poor communication between management and staff, and poor cooperation between colleagues, was identified as a problem by more than a 1/4 respondents. (<http://osha.europa.eu/en>)

The above-mentioned two studies confirm that communication is a strong motivational factor and strong tools of leadership and also an important factor that helps to create the basic working conditions.

Effective internal communication proceeds in company's environment that is designed by concrete conditions. These conditions are the premise of effective communication is explained by Holá [4]:

- The corporate strategy and the resulting communications strategy.
- The corporate culture based on ethics and morale values.
- Full management responsibility. Unified management team must be engaged in a new set up.
- Defined work organization and organizational structure.
- Personnel policy based on mutual respect between company and employee.
- Effective internal marketing, mainly internal Public Relations.
- Setting communication standards, that integrates new employees into the organization, explaining the company's business, providing information on key targets and financial performance of the company, staff evaluation and career management and more.
- The communication abilities and skills (competencies) of the managers.
- Open communication, including feedback.
- Technology - to set the organization information and communications infrastructure meets the needs of communication.

2. Survey overview

A pilot survey carried out by LMC company (LMC Ltd. is the leading operator on the Czech market of electronic work and one of the leading European e-recruitment companies) in cooperation with the Institute of Internal Communication at the end of 2010 brought the first few interesting bases for the planned extensive survey of the status of internal communication in Czech companies. It addressed more than 100 companies collaborating with LMC, with more than 80 employees. Only 45 respondents, personnel managers, completed the online questionnaire. The author of this article is a member of the Institute of Internal Communications and can handle the data of the survey. The Institute of Internal Communications (IIC) is an independent non-profit organization made up of members who are professionally involved or have an interest in internal communications.

Human resources management is responsible of internal communication in 51% of firms. Survey included the question of the inclusion of internal communication as a field of management. Only 16% of the surveyed companies have an internal communication content integrated into the corporate communications department, most of these are large multinational companies, 51% of the companies incorporate internal communication into the department of human resources, 11% of the companies include internal communication in the marketing department and some companies are not included at all. Fig. 3 shows the integration of the internal communication within the departments.

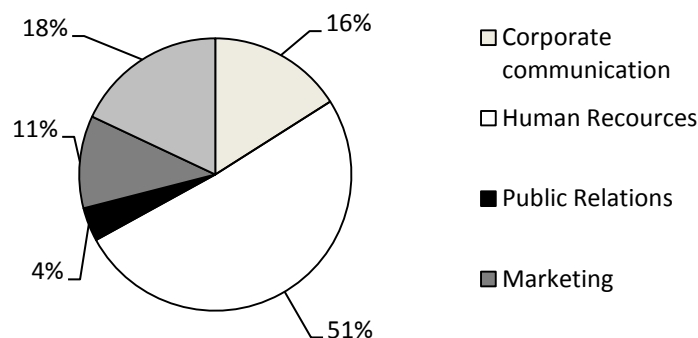


Fig. 3: Integration of internal communication within the departments

Source: [6]

Only 42% of firms declare the internal communication strategy. Missing strategy causes non-systemic solutions of the internal communication without predetermined set of principles and processes. *The most frequented channels of the internal communication are still informal meetings.* The companies in the reference file use the traditional printed media – a noticeboard (76%), posters (49%) and a business journal (38%). The Fig. 4 shows the use of printed media.

Another direction of changes manifested itself by more intense marketing activities, mainly related to distribution and advertisement, or the introduction of more effective ones, i.e.:

- bigger number of middlemen (declared by 30% of respondents),
- smaller number of middlemen involved in travel offices sales and replaced by undertaking cooperation with booking portals (in 20% hotels),
- advertisement intensification, mainly at social portals (60% of respondents),
- within the framework of the Internet distribution – applying pay per click campaign at a greater scale.

In times of information society hotel managers have noticed an immense role played by the Internet and currently the role of social portals which resulted in the introduction of social marketing in establishing market position and competitive advantage.

The presented above review of opinions illustrates that economic crisis resulted in better quality of services rendered for hotel clients and therefore their satisfaction, mainly due to the occurred changes in products and prices. The improvement of satisfaction level from the quality-price relation in hotel services is also confirmed by changes in the level of HPLI¹ indicator in mid 2009, as compared to the ranking made at the end of 2008. The level of this indicator grew, on average, from 6.69 points at the end of 2008 up to 7.33 points in mid 2009. Hotels in big Polish cities (including Wroclaw) with reference to “price-quality” relation turn out to be competitive, also in international scale. While comparing to average HPLI value of hotels located in metropolises of all countries analyzed by hotel.info portal, Polish result at the level of 7.44 in mid 2009 shows a favourable, above average position (7.33).

Conclusions

Research (authors' questionnaire surveys and the analysis of corporate materials from the largest companies operating at Polish hospitality market) illustrated reducing prices and at the same time avoiding price wars was the most popular tactics applied by hotels in view of decreasing demand for their services. However, these activities did not result in maintaining profits at a satisfactory level. Relatively better situation was observed in these hotels which searched for new sales opportunities and new market segments, as well as introduced favourable changes for clients in product policy (their main strategy focused on creating promotional packages and their distribution via the Internet to selected, frequently new market segments).

Presented in the article research results on economic recession effects in hospitality business may be compared to these carried out earlier (not many of such studies have been performed so far). At this point it is worth mentioning the conclusions based on

¹ The HPLI indicator elaborated by hotel.info portal measures the relation between quality and price in the scale from 1 to 10, where 1 means poor grade.

DLA Piper¹ survey conducted among hoteliers working in North America and Europe, carried out the beginning of 2009. In this survey the respondents [3]:

- forecasted that in the year of conducting research a significant drop in profitability of hospitality business sector should be expected (70% of respondents in Europe),
- claimed that in 2009 and the following years high threat of bankruptcy will occur, especially in case of smaller hotel chains (62% of American respondents and 36% of European respondents),
- noticed that the drop of basic indicator for RevPAR operational performance has never been so big in hospitality industry for the last 30 years (42% respondents in Europe and USA),
- did not expect that in 2010 the situation in hospitality business will improve (92% of American and 90% of European respondents).

Many of the forecasts referring to economic results turned out to be true for Poland. However, no spectacular bankruptcies were registered in hospitality sector, as opposed to tour operators and passenger aircraft carriers. Polish hospitality market was experiencing growth phase which was confirmed by beds number indicator per 10,000 inhabitants in Poland (55 in 2008) as compared to other European countries. Comparing to Austria – which showed the highest level of this measure – Poland had over 10 times smaller number of hotel beds and comparing to The Czech Republic – 6 times smaller. On the other hand, however, in the period of 1999-2008 Poland registered the highest dynamics indicator in Europe (number of hotels per 10,000 inhabitants grew by 2.5 times).

Natural disasters which occurred in Japan may influence worldwide tourism in 2011, since the Japanese represent a wealthy nation which travels a lot all over Europe and the world. An average American tourist spends 146 \$ per day during holidays, while a Japanese visitor – 274 \$. During the first week after the earthquake only the inhabitants of the Blooming Cherry Tree Country cancelled 86% of their reservations in Hawaii. Similar situation may occur in case of their European visits, including Poland. It is even more important since in 2010 Polish accommodation base registered over 105,000 visitors from Japan. It is not difficult to estimate that the absence of Japanese tourists will exert a severely negative influence on Polish tourism.

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¹ DLA Piper – one of the biggest research agencies in the world, which employs 3500 lawyers with 71 offices functioning on almost every continent (Europe, North America, Asia, Africa, Australia) and in 29 countries, including Poland, The Czech Republic, Slovakia, Ukraine and Hungary, which deals, among others, with hotel market research [7].

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Comparative Analytic Study on Applicability of Jones-Romer New Stylized Facts on Growth¹

Abstract

The aim of the article is to present the new theoretical findings in the field of economic growth. The study has been inspired by Jones and Romer's article titled "The New Kaldor Facts: Ideas, Institutions, Population, and Human Capital" published in 2009. In that paper, there have been formulated six new stylized facts. Out of these, the two focused on the relationship among economic growth, population growth, and the distance of an economy from technological frontier have been chosen. The authors of this study conduct a research of validity of the original conclusions in the reality of the Czech Republic and some other selected economies and try to verify the relevance and robustness of Jones-Romer's findings for the reality of the Czech Republic and several other East-European countries. The authors attempted to prove the validity of two chosen new stylized facts using alternative data sources and slightly different time periods. The analyzed facts proved valid over very long periods of time and at the global scale. During decomposition at the regional or even national level, the conclusions seem to be affected by particular important historical milestones and other local specifics. Still, the core trends have been confirmed: 1) The increasing volume and more intensive dispersion of nonrival ideas can be linked with the growth of population and with the acceleration of per Capita GDP growth over the last two centuries. 2) The cross-country variance in the real growth rates is increasing with the distance from the technological frontier, while the crucial determinant for catching-up the developed countries by the developing ones is the institutional quality and by means of them the ability of the developing countries to absorb and utilize new ideas.

Key Words

economic growth, stylized facts, total factor productivity, population, technological frontier

JEL Classification: E19, O11, O14, O15

Introduction

The issue of economic growth and its determining factors has always stood for one of the most important topics of modern economy. Already A. Smith's "*Inquiry into the Nature and Cause of the Wealth of Nations*" published in 1776 dealt with this question [12]. Smith explained the quantity of output was dependent on the quantity of inputs (labor, capital, land) and the growth of this output was stimulated by the growth of population, investment, and land, and by the growth of labor productivity. Smith

¹ This article has been prepared with financial support from the research project GA ČR 402/09/0592.

considered the division of labor, producing output, resulting in technological development, and stimulating capital accumulation, to be the main driving factor of economic growth.

The Keynesian theory of growth is connected mainly with the names of R. F. Harrod and E. Domar. These Neo-Keynesian economists tried (independently on each other) to dynamize the Keynesian theory based on an active role of money, on the principle of effective demand, on the critical function of savings (and their transformation into investments) and on the multiplier effects. This model has been widely criticized ever since especially for its incapability to describe the mechanism of introducing equilibrium in an economy.

The development of neoclassical theories of growth began in the 1950's and 1960's. These models are based on neoclassical assumptions and they built on the neoclassical production function. "The neoclassical production function is a fundamental building component of the neoclassical branch of thought of macroeconomic theory." [4: 492] The neoclassical production function recognizes the mutual substitution of labor for capital, which – in contrast to Harrod-Domar model – enables the economy to reach its equilibrium and avoid the problem of economic instability.

In the course of historical development of the neoclassical production function and "in the context of its macroeconomic application, one cannot ignore such names as A. Marshall, K. Wicksell, C. Cobb, P. Douglas, P. Samuelson, R. Solow, P. Romer, and a whole range of others" [4: 492 – 493].

One of the best-known neoclassical models ever is the Solow model [13]. This model attempts to explain the determination of economy's output through an interaction of capital, labor, and technology. The technological progress is considered exogenous in this model, but it can be concluded the output per capita growth will be equal to the technological progress growth. The total output of the economy will therefore grow by the sum of paces of population growth and technological progress growth. If two countries recorded the same rates of population growth, the same production functions, and the same rate of savings, then they both would reach the same levels of income at the end. The reason why developing countries remain poor is in their low levels of capital stock.

Nevertheless, the Solow's conclusion about convergence of developing and developed countries has been never approved by a long term economic development. Nicholas Kaldor [3] in his well-known article published in 1961 under the title: "*Capital Accumulation and Economic Growth*" formulated six so-called stylized facts on economic growth. Using them, Kaldor summed up at that time important findings of analyses on economic growth and at the same time he sketched with them theoretical framework of economic research for the upcoming years. With his stylized facts he drew the research attention on the gap between the conclusions of neoclassical growth theory and the temporary economic reality quantified by statistical data.

The economic slowdown in the developed countries in the late 1960's and in the 1970's reactivated the interest of various groups of economists in examining the long term economic growth – with one common feature: endogenizing the technological change in the growth models. The first endogenous theories of growth appeared in the papers by P. Romer [10], R. Lucas [5], and S. Rebelo [9]. They focused on the fundamental concept of capital and its measuring. Their definition of capital is broad, they included to it not only the physical capital, but also the human capital and they proved the returns to capital under such circumstances are not necessarily decreasing. The driving forces of economic growth are the positive externalities of human capital and the transfer of knowledge among producers; both of these “hold back” the decreasing returns on capital.

The theory of endogenous economic growth is also bound with an explicit inclusion of research and development (R&D) and imperfect competition into the models. This concept has been represented by the papers by P. Romer [11], Grossman, Helpman, Aghion, and Howitt. In these models, the technological change is a result of targeted research and development. In these models, governments and their economic policies play an important role (esp. in the field of taxation, protection of intellectual rights, providing incentives for research and development of new technologies, promoting investment to human capital, building infrastructure, regulating foreign trade etc.). Such approach can be found in the work of R. Barro and X. Sala-i-Martin [1], M. Obstfeld and K. Rogoff [8] and others [14].

Approximately fifty years after Kaldor, American economists, Charles I. Jones and Paul M. Romer [2] used in their article “*The New Kaldor Facts: Ideas, Institutions, Population, and Human Capital*” published in 2010 similar methodological and methodical basis. They pointed out the first five Kaldor's facts are nowadays a standard part of university textbooks, because they had become one of the corner-stones of neoclassical theory of growth in the meantime.¹ Jones and Romer have therefore brought a set of new stylized facts, which have been considered a challenge for further development of theories of economic growth. The aim is to create gradually a formalized model of growth that would embody the endogenous accumulation and interactions among three state variables: ideas, population, and human capital. Institutions represent the fourth parameter, one that is recognized as an important economic force, but that will onwards be regarded as exogenous.

This article sets a target in verification of the relevance of the Jones-Romer conclusions in the reality of the Czech Republic and a selection of other economies. For this purpose only two out of those six new stylized facts have been chosen, those two, which are focused on the relationship among economic growth, rates of population growth, and the distance of an economy from the technological frontier. Specifically the article will deal with the second and third Jones-Romer new stylized fact.

¹ The sixth Kaldor stylized fact has not been implemented into the neoclassical theory yet. The neoclassical theoretical approach cannot explain it satisfactorily up to these days.

1. New Stylized Facts on Economic Growth by Charles I. Jones and Paula M. Romer

Charles I. Jones and Paul M. Romer put together following sixth of stylized facts. Their aim was to illustrate the progress that has been done in the field of economic theory, respectively in the field of economic research. One could assume: *“the first round of growth theory clarified the deep foundational issues and that subsequent rounds filled in the details. This is not what we observe. The striking feature of the new stylized facts driving the research agenda today is how much more ambitious they are. Economists now expect that economic theory should inform our thinking about issues that we once ruled out of bounds as important but too difficult to capture in a formal model.”* [2: 225]. Today, the purpose of new growth models should be – according to Jones and Romer – effort to explain and endogenize the following new stylized facts:

1. Growing extent of market. The boost in international as well as inland trade, liberalization of flows of capital, advances in information technologies, and increasing mobility of work force have resulted in expansion of all the markets. These changes in economic environment have been stimulated by the process of globalization of the international space and urbanization of economies.
2. Accelerating growth of population and GDP per Capita. The rates of population growth and the pace of economic growth have been increasing over centuries from values near to zero to intensive long term growth rates recorded in a couple of last decades.
3. Variance of modern growth rates. The wider the distance of an economy from technological frontier gets, the larger the cross-country variation in the rates of growth of GDP per Capita becomes.
4. High incomes and deep differences in the total factor productivity (TFP). The differences in the measured inputs are capable to explain only less than 50 % of immense inequality in GDP per Capita in a cross-country comparison.
5. Accumulation of human capital per worker. The human capital has been rapidly growing in the countries all around the world.
6. The long run stability of relative wages. The increasing stock of human capital of highly qualified employees in comparison to low-skilled workers is not in compliance with ongoing decrease of relative price of low-skilled labor (respectively it is not in compliance with ongoing increase of relative price of highly qualified employees) [2: 225].

As we have already mentioned, the vision of Jones and Romer is to endogenize ideas, population, and human capital in a new formal model, while the fourth variable – institutions – would be dealt with in a similar way in which the neoclassical model treated the technological progress. Still, Jones and Romer express a hope that also institutions will be in a near future endogenized into a system of simple formal presentation of endogenous institutional dynamics. This time is, however, still to come.

2. Accelerating Growth of Population and GDP per Capita

The second Jones-Romer new stylized fact – accelerating growth of population and GDP per Capita in very long periods of time – is understood as a reflection of the key characteristics of ideas, it is their nonrivalry. More people are a source of more ideas. Higher stock of ideas helps to higher number of people worldwide. This simple feedback cycle generates such rates of growth that are increasing over the time. In fact, this is a pure dynamization of the model used to explain the first new stylized fact [2: 234]. Especially in the last century or two, one can trace not only a rapid increase in the rates of growth of population, but also of GDP per Capita. This fact is documented in the Fig. 1 below rendering the development of the world's population and GDP per Capita.

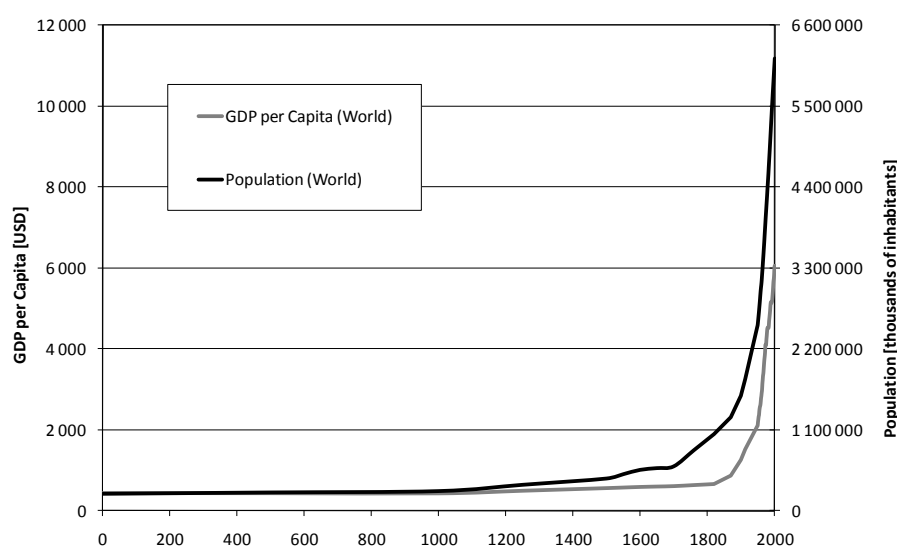


Fig. 1: World Population and GDP per Capita over Last Two Millennia

Source: Maddison 2011, graphical depiction by authors

While Jones and Romer [2: 233] showed this long run trend for twelve West-European economies and the United States of America and based their findings on the data from Maddison [6], Fig. 1 plots the very same conclusion also for the global economy as a whole: The result shapes itself into a “hockey-stick”, where population as well as GDP per Capita record a very slow and flat progress in the first eighteen centuries and then they both rocket up in the last two hundred years.

A very similar relationship between the rates of growth of GDP per Capita and the increasing population can be observed also on the level of global regions. Fig. 2 indicates that in the East-European countries (in this case Albania, Bulgaria, Czech Republic, Hungary, Poland, Slovak Republic, Romania, Yugoslavia), the population grew at a very slow pace till the end of the seventeenth century, but in the last three hundred years its rate of growth is constantly rising. Only the periods of between 1914 – 1920 and 1939 – 1947, in other words the periods of the First and the Second World War, constitute exclusions in this long term rapid growth. The First World War decreased the population of Eastern Europe by approximately 4 million of people, the Second World

War by more than 10 million of people. At the break of the millennium, the population of the East-European countries has stabilized at the level of almost 121 million inhabitants.

The development of GDP per Capita recorded a period of mild flat growth lasting till the first half of the nineteenth century. The following decades affected by the industrial revolution brought a steep growth in GDP per Capita persisting till the 90's of the twentieth century. Only the transformation of the central planned East-European economies into market economies was responsible for the reduction of this indicator, but it was recovered by the end of the millennium. While in the run of the World Wars, the population decreased in the absolute numbers, the GDP per Capita continued in fast growth. The Great Economic Depression of the 20's and 30's afflicted it only relatively (with lower rates of growth).

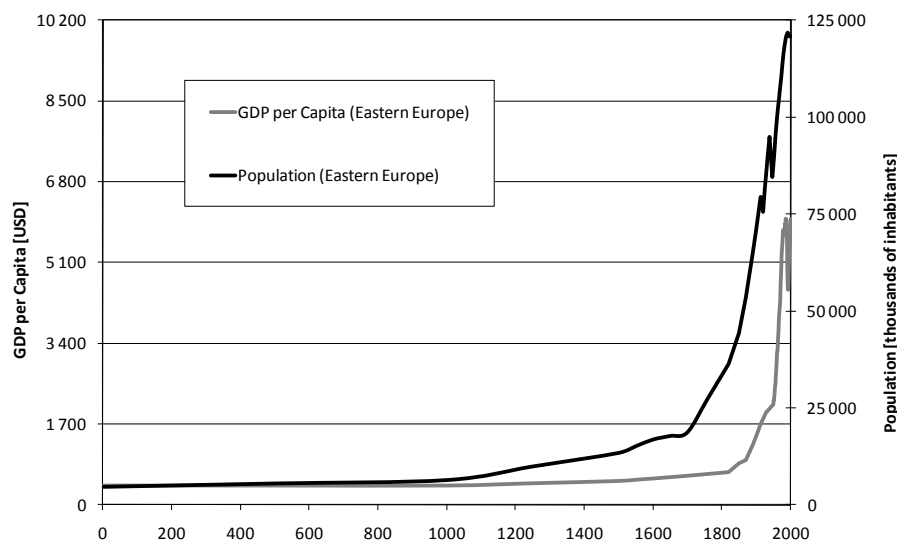


Fig. 2: East-European Population and GDP per Capita over Last Two Millennia

Source: [6], graphical depiction by authors

And yet again, very similar development of both analyzed indicators shows also the Fig. 3 only for the two economies of the Czech and Slovak Republic. In comparison with the previous figures, one can point out two crucial momentums:

The first remarkable fact is the absolute drop in the population of these two countries in the seventeenth century. It was – most probably – a result of the Thirty Years' War and the following historical consequences. On the other hand the nineteenth century came with the industrial revolution and National Revival. GDP per Capita starts to grow faster, which can be with no doubt attributed to intensive dissemination of the nonrival ideas, development of new technologies and civil society. This trend accelerated in the last quarter of the century and persisted till the First World War. Next break point in the trajectory of Czech and Slovak growth was caused by the Great Depression. Since 1935 the Czech and Slovak economies grow at a rapid pace.

The second interesting point is the finding, that in the last quarter of the twentieth century, the rates of population growth in the Czech and Slovak Republic gradually

decrease (at the break of the millennium the population in these countries even shrank in absolute numbers), while the GDP per Capita is rising intensively till the 1990's and a drop in this indicator is a mere product of already mentioned economic transformation, when the Czech and Slovak Republic "changed from the planned economy with full official employment to the western-type economy based on the free-market principles." [7: 29] One may simply claim, in the second half of the twentieth century the per Capita GDP growth rates exceeded the population growth rates (with the only exception in the transformation period).

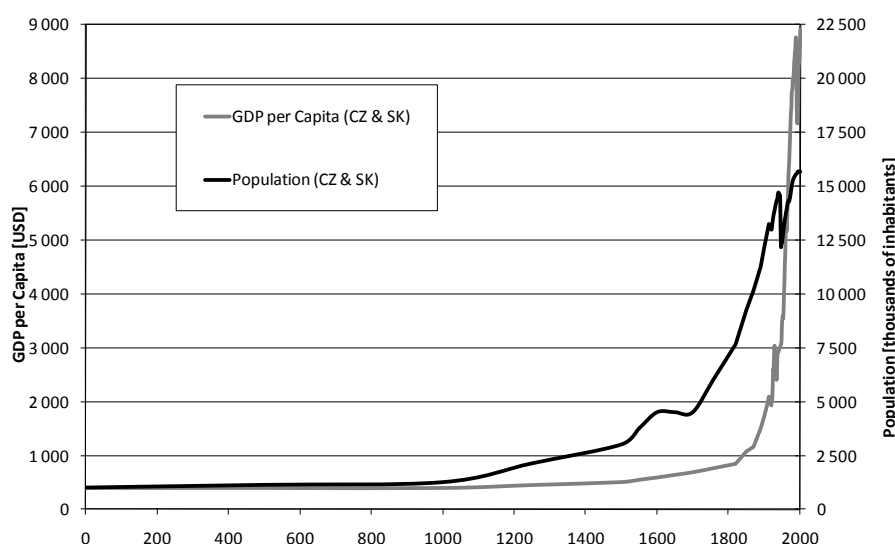


Fig. 3: Czech and Slovak Population and GDP per Capita over Last Two Millennia

Source: [6], graphical depiction by authors

3. Variance of Modern Rates of GDP Growth

The third Jones-Romer new stylized fact – variance of modern GDP growth rates increasing with the technological gap – is based on the Jones-Romer assumption, that the United States of America represents the global technological and production etalon (or a technological frontier for cross-country comparison). The Fig. 4 documents the variance among different countries in the indicator of long term economic growth rate increasing with the widening distance from the technological frontier. The poor developing countries record much larger cross-country variance in long run rates of economic growth than the developed countries do. It is possible to identify very fast growing as well as very slow growing economies among the developing countries. The high rates of economic growth are symptomatic for catching-up countries, while the low rates of growth are characteristic for economies that are still lagging behind.

Jones and Romer [2: 236] based their conclusions on the analysis of Penn World Tables 6.1 data for the period of 1960 – 2000, where the base level of GDP per Capita indicator was set in the year 1960. The Fig. 4 modifies this research procedure: The authors of this paper used data from the World Development Indicators 2011, analyzed them for the period of 1961 – 2009 and used the year 2009 for the base of GDP per Capita indicator.

However, their conclusions are practically identical with those of Jones and Romer, which proves the robustness and validity of these findings.

One of the main reasons, why the cross-country differences in the distance from the technological frontier are so large, is undoubtedly the fact the rate of growth necessary for the developing countries to catch up the developed ones is higher than ever before in the world's history. In comparison with Fig. 3 in the original article of Jones and Romer [2: 236] one can clearly see only those developing countries with globally highest rates of growth have got closer to the technological frontier in the last five decades. Those economies, whose economic growth is steadily lower, are moving even further from the technological frontier widening the technological gap.

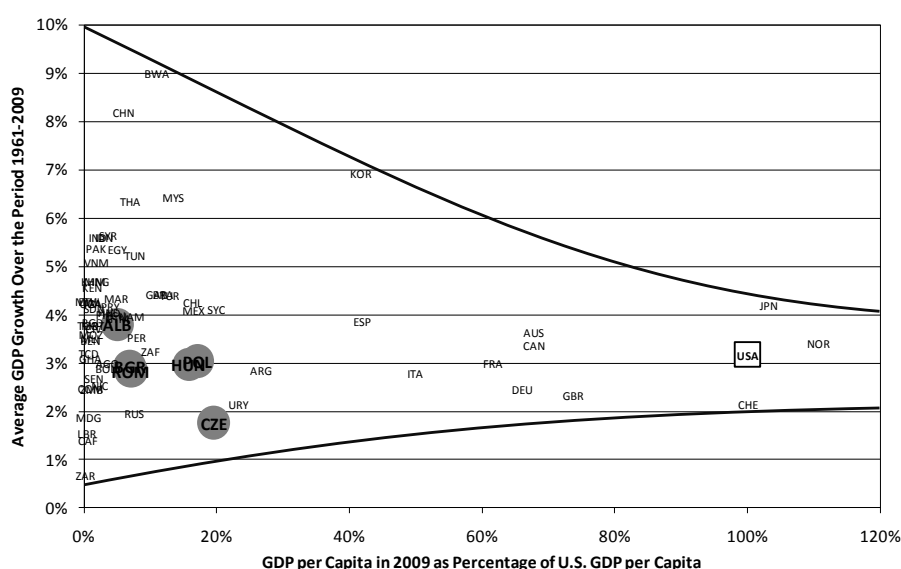


Fig. 4: Variation in GDP Growth with the Distance from the Technological Frontier

Source: [15], calculation and depiction by authors

The explanation can possibly rest in the problem of accepting the new technologies. The delay in assimilation of the new technologies by other countries in the world is getting shorter, as indicated by the fourth new stylized fact (see above). Economies that are not able to absorb new technologies and utilize new ideas coming from abroad are generating low rates of GDP growth and are moving away from the technological frontier. A significant variance in the rates of growth of countries distant from the technological frontier bears an evidence of importance of institutions and institutional change. Institutions (e.g. public education, system of tertiary education, political institution and political culture, legal system and enforcing of law, etc.) have apparently the most important effects in absorbing, assimilating, and utilizing of new ideas coming from all around the world. Institutions themselves represent ideas; they constitute inventions forming the allocation of resources.

The finding that countries with higher institutional level will be able to make use of new ideas and technologies more efficiently is verified also in the case of Romania and Bulgaria – with larger distance from the technological frontier than Hungary and Poland, but with very similar long run growth rates at around three per cent (one can assume a higher institutional quality of Hungarian and Poland economies on the grounds of

earlier membership in the EU). On the other hand, the Czech Republic – which is nearest the technological border from all the East-European countries – recorded the lowest growth rates of all the countries in the region, while Albania – the economy with the largest technological gap in the region - displayed the long run growth rate close to four per cent.

Conclusion

This article's aim was to verify the relevance and robustness of Jones-Romer's findings for the reality of the Czech Republic and several other East-European countries. The authors attempted to prove the validity of two chosen new stylized facts using alternative data sources and slightly different time periods. The analyzed facts proved valid over very long periods of time and at the global scale. During decomposition at the regional or even national level, the conclusions seem to be affected by particular important historical milestones and other local specifics. Still, the core trends have been confirmed:

1. The increasing volume and more intensive dispersion of nonrival ideas can be linked with the growth of population and with the acceleration of per Capita GDP growth over the last two centuries.
2. The cross-country variance in the real growth rates is increasing with the distance from the technological frontier, while the crucial determinant for catching-up the developed countries by the developing ones is the institutional quality and by means of them the ability of the developing countries to absorb and utilize new ideas.

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Regional Competitiveness Evaluation of Visegrad Four Countries through Econometric Panel Data Model¹

Abstract

Competitiveness and its evaluation have a significant position in the European Union, but also in the world. Effective analysis and evaluation of competitiveness must be based on pre-defined concept of competitiveness. In the case of regional competitiveness evaluation, we find, due to a lack of uniform approach, the problem with the basic concept and definition of regional competitiveness. Because of the absence of mainstream approach to regional competitiveness evaluation, there is a space for individual approach application. Example of such an approach can be portrait by macro-econometric modelling using regional panel data model that presents some link between micro and macro-econometric modelling and allows the elimination of imbalances caused by the data sets aggregation. This aim of the paper is formulation of an econometric panel data model with techniques using dummy variables for assessing regional competitiveness of the Visegrad Four countries. Theoretical background of the paper is based on the knowledge of theoretical concept and issues of regional competitiveness and productivity in the context of growth theories. The empirical part of the paper is focused on the application of panel nonlinear regression model for 35 regions at NUTS level 2 of the Visegrad Four. The level of regional competitiveness is analyzed by selected indicators evaluated performance of the EU growth strategies objectives until 2010. Selection of explanatory variables in the panel model appropriately reflects the level of competitive potential in the NUTS 2 regions of the Visegrad Four in the reference period 2000 - 2008. Use of econometric panel data model seems to be appropriate, since it marks better capture of the dynamics of changes and fixed or stochastic effects that have occurred in the proposed explanatory variables. Based on the estimation of the panel model, econometric and economic verification, final part of the paper includes a comparison of results for all explanatory variables in NUTS 2 regions, which are cross-sectional and time used to determine the order of influence of each NUTS 2 region of Visegrad Four to the overall competitiveness of the European Union. For purposes of the model, the overall EU competitiveness is approximated with the average volume of GDP for 271 NUTS 2 regions in EU27, according to the NUTS 2006 classification methodology.

Key Words

competitiveness, Visegrad Four, NUTS 2, econometric modelling, panel nonlinear regression model

JEL Classification: C23, C52, R11, Y10

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Introduction

Competitiveness and its evaluation have a significant position in the European Union (EU) and all over the world. Effectively analyze competitiveness means to be based on a defined concept of competitiveness. For evaluation of regional competitiveness, we face the problem of the basic concept and definition of competitiveness due to absence of a consistent approach of its definition. Competitiveness has become quite a common term used in many professional and non-specialized publications. The ambiguity in the definition and understanding of competitiveness is associated with numerous problems. Evaluation of the competitiveness issue is not less complicated. In the absence of mainstream views on the assessment of competitiveness, there is sample room for the presentation of individual approaches to its evaluation. In our paper we will examine the possibility of assessing the competitiveness of the regions of the Visegrad Four (V4) countries at NUTS 2 level in terms of macro econometric modelling [1], [2] which as one of the techniques offers panel data regression models [3], [4]. Macroeconometric modelling as a scientific discipline allowing the estimation of the regression model, which would have sufficient economic importance to the appropriate regional indicators, which would be based on economic theories and approaches directly, reflect developments in the regions and their competitive potential.

1. Theoretical Basis of Competitiveness in Regional Context

1.1 Definition of Competitiveness

The *definition of competitiveness* is a problematic issue because of the lack of mainstream view for understanding this term. Competitiveness remains a concept that is not well understood and that can be understood in different ways and levels despite widespread acceptance of its importance. Competitiveness is one of the fundamental criteria for evaluating economic performance, and also reflects the success in the broader comparison. The concept competitiveness is understood at different levels especially at the microeconomic or at the macroeconomic level, among which is the difference. In original meaning the concept of competitiveness was applied only to companies and corporate strategies. Competitiveness of companies is understood as *the ability to provide products and services as well as or more effective than their main competitors*.

Nowadays competitiveness is one of the most monitored characteristic of national economies and is increasingly appearing in the evaluation of their prosperity, welfare and living standards. The need for a theoretical definition of competitiveness at the macroeconomic level, emerged with the development of globalization process in world economy, so because of increased competition between countries. Despite of that growth competitiveness of the territory (country, region) belongs to the main priorities of the economic policies of the countries, there does not exist (compared with the competitiveness at the microeconomic level) a uniform definition and understanding of

national competitiveness. While the concept of competitiveness of companies is not much discussed, the concept of national or regional competitiveness is an object of numerous discussions. One of the most common interpretations of this term understood national competitiveness as the ability to produce goods and services that are able to successfully face international competition, and people can enjoy growing and sustainable living standards [5]. The Organization for Economic Cooperation and Development defines the national competitiveness as *the degree or extent to which the country, in terms of open and fair trade, produce goods and services which meet the test of international markets while maintaining and increasing the real incomes of its citizens in the long run* [6]. Michael Porter suggests that the best way to understanding competitiveness is through the sources of a nation's prosperity. *"A nation's standard of living is determined by the productivity of its economy, which is measured by the value of its goods and services produced per unit of the nation's human, capital and natural resources. True competitiveness, then, is measured by productivity. Productivity allows a nation to support high wages, a strong currency and attractive returns to capital and with them a high standard of living."* [7]. The European Commission offers similar definition of this term in The Sixth Periodic Report on the Social and Economic Situation of Regions in the EU: *"...the ability to produce goods and services which meet the test of international markets, while at the same time maintaining high and sustainable levels of income or more generally, the ability of (regions) to generate, while being exposed to external competition, relatively high income and employment levels"* [8]. European Commission presented in the European Competitiveness Report that *the economy* is competitive if its population enjoy a high and constantly rising living standards and permanently high employment.

1.2 Concept of Regional Competitiveness

In last few years the topic about *regional competitiveness* stands in the front of economic interest. The concept of competitiveness has quickly spread into the regional level, but the notion of regional competitiveness is also contentious. Macroeconomic concept of national competitiveness cannot be fully applied at the regional level because the regional competitiveness is much worse and less clear defined; between these two concepts is a big difference [9]. In the global economy regions are increasingly becoming the drivers of the economy and generally one of the most striking features of regional economies is the presence of clusters, or geographic concentrations of linked industries [7]. Current economic fundamentals are threatened by the shifting of production activities to places with better conditions. The regional competitiveness is also affected by the regionalization of public policy because of the shifting of decision-making and coordination of activities at the regional level. Within governmental circles, interest has grown in the *regional foundations* of national competitiveness, and with developing new forms of regionally based policy interventions to help improve the competitiveness of every region and major city, and hence the national economy as a whole. Regions play an increasingly important role in the economic development of states. Regional competitiveness can be understood as the result of joint efforts on the most productive use of internal resources development in the interaction with the use of external resources and development opportunities focused on sustainable increases in production potential [18].

1.3 Approaches to Competitiveness Evaluation

Evaluation of competitiveness is no less complex as the definition and understanding of the concept itself. Creation of competitiveness evaluation system in terms of the EU is greatly complicated by heterogeneity of countries and regions and also by own approach to the original concept of competitiveness. Because of the lack of mainstream view of competitiveness evaluation, there is a space for alternative approaches. Evaluation of competitiveness in terms of differences between countries and regions should be measured through complex of economic, social and environmental criteria that can identify imbalance areas that cause main disparities. Currently not only quantitative but also qualitative development at the national level, and especially at the regional level, increase socio-economic attraction and create new opportunities that are fundamentals for subsequent overcoming disparities and increasing the competitiveness of the territory.

Competitiveness is most commonly evaluated by *decomposition of aggregate macroeconomic indicators* of international organizations. Competitiveness of countries is monitored in many institutions, however, two well known international institutes publish most reputable competitiveness reports. To compare a level of competitiveness of countries we can use the databases performed by *Institute for Management Development (IMD)* and *World Economic Forum (WEF)*. The World Economic Forum publishes the *Global Competitiveness Report (GCR)* that produces annual competitiveness indices that rank national economies. Global Competitiveness Reports use two main aggregate indexes for measuring the level of competitiveness – the *Global Competitiveness Index (GCI)* and the *Business Competitiveness Index (BCI)*. The Institute for Management Development ranking on competitiveness is realized in the *World Competitiveness Yearbook (WCY)* which provides a comprehensive report on the competitiveness of countries assesses and analyzes the national conditions for business competitiveness.

Regional competitiveness and its evaluation are issues constantly in the forefront of economic sciences, which lacks a mainstream method of regional competitiveness monitoring and evaluation. Decomposition of aggregate macroeconomic indicators is most common used approach at the regional level, as well as *comprehensive* (mostly descriptive) analysis aimed at identifying the key factors of regional development, productivity and economic growth, for example [10], [11], [16]. Another approach is an evaluation by *structural indicators of the EU*, which is used for the assessment and the attainment of the objectives of the Lisbon strategy or by macro econometric model creation of an econometric regression model [12]. *Evaluation of regional competitiveness* is determined by the chosen territorial region level, especially in terms of the European Union through the *Nomenclature of Territorial Units Statistics (NUTS)*. No less importance is the reference period, availability and periodicity of data, and selection of convenient specific factors. For evaluation of regional competitiveness is necessary to note that the data availability decreases in direct proportion to the lower territorial unit (NUTS).

2. Empirical Analysis of Competitiveness of NUTS 2 Visegrad Four Regions

2.1 Methodological Background of the Analysis

If we want to evaluate the degree of competitiveness or search for sources of competitiveness, it is appropriate to use the formulation of regional models. Regional panel data models, they form a link between micro and macro components and are constructed mostly ad hoc. The explanatory and interpretive ability is mainly dependent on the fulfilment of the appropriate model and especially the available data and specification of the applied model.

Before the panel data model will be defined, let us have the benefits of this model compared to conventional linear regression models. In the panel model, we can concentrate more than a simple classical regression model. We are better able to affect the dynamics of change, to which the individual variables occurred. The main advantage is the detection of fixed, respectively stochastic effects, which we were able to diagnose only cross-application data or time series. Another advantage is to design and test of complex models with an appropriate number of degrees of freedom. Other advantages and disadvantages of macro-econometric modelling states for example Šmídková [2]. When using panel data model, there are also greatly eliminated variations caused by aggregation of data sets used. Panel model is used not only for a mezzo-business applications, but also in areas such as microeconomics and macroeconomics, it is suitable for the analysis of competitiveness.

2.2 Data Base for Econometric Analysis

Data base econometric model for measuring regional competitiveness in the NUTS 2 regions of the V4 countries is made up of regional data, which was taken from the database of the European Statistical Office - module 'Regional Statistics' [19]. Under regional data have been used time series of five indicators, annual basis, including: Gross domestic product (*GDP*), Gross fixed capital formation (*GFCF*), Gross expenditure on research and development (*GERD*), Net disposable income of households (*NDI*) and the Employment rate (*ER*). Comparability of data over time was ensured by using time series of the available indicators in purchasing power parity (*PPS*). Within each of the indicators were always counted the average for the EU-27, which was presented by 271 NUTS 2 regions under NUTS 2006 approach [15]. The data analysis cover reference period 2000 - 2008.

2.3 The Specification of the Econometric Model of Panel Data for V4 Regions

The estimate for each of the regions is the output of generally formulated model of the panel data. Due to it, we obtain the look at the level of competitiveness of each region. The access can be applied also on low number of observing in time, in our case for each NUTS 2 region during period 2000 – 2008 it were 9 observations. The negative of low number of observations in time is eliminated by using panel data and due to technique of dummy variables it is possible to observe regional disparities. Non – linear form of the model type LOG – LOG is applied especially because some of the input variables are assigned in absolute monetary units and some of them in percentage. The input variables are numerically stationary by using non-linear form and also explanation ability of the model is increased. Non – linear model type LOG – LOG measures PARTIAL ELASTICITY of dependent variable regarding explaining variable under ceteris paribus condition.

The logging for the estimate of panel non-linear regression model with using technique of dummy variables for NUTS 2 regions of V4 countries is with using above specified data area following:

$$\ln GDP_{r,t} = \hat{\alpha} + \hat{\beta}_1 \ln GFCF_{r,t} + \hat{\beta}_2 \ln GERD_{r,t} + \hat{\beta}_3 \ln NDI_{r,t} + \hat{\beta}_4 \ln ER_{r,t} + \hat{\beta}_5 \ln NST_{r,t} + \sum_{r=1}^{35} \hat{\gamma}_r D_{r,t} + \hat{\varepsilon}_{r,t} \quad (1)$$

where: $GDP_{r,t}$ Gross domestic product

$GFCF_{r,t}$ Gross fixed capital formation

$GERD_{r,t}$ Gross domestic expenditures on research and development

$NDI_{r,t}$ Net disposable income

$ER_{r,t}$ Employment rate by age

$NST_{r,t}$ Number of students in tertiary education

α Constant

$\beta_{1,...,5}$ Slope parameter of regression model (e.g. J. Fan - Q. Yao 2005)

γ_r Differences parameter of fixed effects

$\varepsilon_{r,t}$ Random error

$D_{r,t}$ Binary variable for region specification

$D_{r,t} = 1$ if it takes data of the region “ r ” in time “ t ”, ($D_{r,t} = 0$ otherwise)

R indexes sectional characteristics (in our case NUTS2 regions of V4 – basic “region” is average of EU-27 regions)

$r = 1, 2, ..., 35$ (in our case 35 Visegrad Group regions)

t indexes time; $t = 2000, 2001, ..., 2008$.

Let's introduce single input variables, which are included in the model. GDP is in the position of *explained variable*. GDP was chosen as it is one of the most important macroeconomic aggregate which is simultaneously suitable basic for competitiveness

assessment of the country, but also for the regional level, where also NUTS 2 regions belong.

We come from the OECD competitiveness definition, according to which is competitiveness specified by ability to produce products and services, which compete in the international competition test. At the same time they are able to keep or increase real GDP. Simultaneously, by keeping assigned hypothesis, it is valid, that *GDP* is the symptom of region competitiveness, as regions with increasing *GDP* have ideal presumption for long-term increasing of their competitiveness. It is obviously not always valid that with increasing level of *GDP* (i.e. increasing efficiency of regions) also the rate of obtained competitiveness/competition advantage grows. However, this presumption is initial for lots of grow theories and theories of regional competitiveness, for example [7], [13], [14], [17].

Explanatory variables of estimated model fulfil the role of the source base for following growth of *GDP*. Gross fixed capital formation (*GFCF*) due to international accounting is a basic part of gross capital (capital investments), in which is also the change of inventories and net acquisition of valuables included. According to ESA 95 methodology *GFCF* consists of the net assets acquisition minus decrease of fixed assets at residential producers during the time period plus certain increasing towards the value of non-produced assets originated as a consequence of production activity of producers or institutional units. Net fixed capital formation is the difference between gross fixed capital formation and fixed capital consumption. It is estimated in purchase price including costs connected with instalment and other costs on transfer of the ownership. Fixed assets are tangible or intangible/invisible assets produced as the output from production process and are used in production process repeatedly or continuously during the one-year period. However, *GFCF* sense is much broader. It is an index of *innovating competitiveness* which enables to increase production on modern technical base. Gross domestic expenditures on research and development (*GERD*) are sources for further economic growth increasing as stimulation of basic and applied research creates big multiplication effects with long-term efficiency and presumptions for long-term economic growth in economics. R&D is defined as creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications. Net disposable income (*NDI*) is the result of current receipts and expenditures, primary and secondary disposal of incomes. It explicitly excludes capital transfers, real profits and loss from possession and consequences of the events as disasters. In contrast to gross disposable income it does not cover fixed capital consumption. Disposable income (gross or net) is the source of expenditures on final consumption cover and savings in the sectors: governmental institutions, households and non-profit institutions for households. In sectors of non-financial enterprises and financial institutions is disposable income equal to savings. Next represented explaining variable is rate of employment in age group 20 – 63 years (*ER*). From the economic relevance rate of employment is important in accordance to number of economic active people in above mentioned age group. The last variable is *NST*. We will assume that increasing of number of university educated people will contribute to the growth of country competitiveness and finally to increasing productivity of work in fields generating higher added value.

From the explanation of regress non-linear model of panel data theorem is clear that it is necessary to assign dummy variable $D_{r,t}$ for each NUTS 2 region of Visegrad Four before estimate of the model is provided. Overall, the model will content 35 of the dummy variables, which assigning is obvious from the following Table 1.

Tab. 1: Assigning of the dummy variables for each NUTS 2 region of V4

Dummy variable	Code	Name of the region	Dummy variable	Code	Name of the region
D_{1t}	CZ01	Praha	D_{19t}	PL22	Slaskie
D_{2t}	CZ02	Střední Čechy	D_{20t}	PL31	Lubelskie
D_{3t}	CZ03	Jihozápad	D_{21t}	PL32	Podkarpackie
D_{4t}	CZ04	Severozápad	D_{22t}	PL33	Swietokrzyskie
D_{5t}	CZ05	Severovýchod	D_{23t}	PL34	Podlaskie
D_{6t}	CZ06	Jihovýchod	D_{24t}	PL41	Wielkopolskie
D_{7t}	CZ07	Střední Morava	D_{25t}	PL42	Zachodniopomorskie
D_{8t}	CZ08	Moravskoslezsko	D_{26t}	PL43	Lubuskie
D_{9t}	HU10	Közép-Magyarország	D_{27t}	PL51	Dolnoslaskie
D_{10t}	HU21	Közép-Dunántúl	D_{28t}	PL52	Opolskie
D_{11t}	HU22	Nyugat-Dunántúl	D_{29t}	PL61	Kujawsko-Pomorskie
D_{12t}	HU23	Dél-Dunántúl	D_{30t}	PL62	Warminsko-Mazurskie
D_{13t}	HU31	Észak-Magyarország	D_{31t}	PL63	Pomorskie
D_{14t}	HU32	Észak-Alföld	D_{32t}	SK01	Bratislavský kraj
D_{15t}	HU33	Dél-Alföld	D_{33t}	SK02	Západné Slovensko
D_{16t}	PL11	Lódzkie	D_{34t}	SK03	Stredné Slovensko
D_{17t}	PL12	Mazowieckie	D_{35t}	SK04	Východné Slovensko
D_{18t}	PL21	Malopolskie			

Source: [15]; Own elaboration, 2011

The model conception unambiguously determines, which regions contribute by its economic level to total average output EU-27, which is approximated in endogenous variable by GDP aggregate. Average value then presents arithmetic average calculated from 271 NUTS 2 regions of EU-27 according to NUTS 2006 classification, valid in years 2008 – 2011 [15]. According to the *hypothesis*, that average of EU-27 stands for ideal region – the most competitive region, it will be valid: the higher value of γ_r , the higher contribution of each NUTS 2 region to average level of economic output of whole EU 27. The regions with the highest contribution will be currently considered as the most competitive. This aspect is crucial for the model.

3. The Results and Discussion

3.1 The Estimate of Econometric Model and Results Interpretation

The panel non-linear regression model will be estimated on method of least squares (OLS). The statistical verification will be evaluated on 5 % level of statistic significance. For calculation SPSS software for Windows (15.0 version) will be used. The detailed analysis of statistic and econometric verification is not the object of the paper. In fact,

the paper is oriented on factual economic results from the introduced model. At the same time, we can not omit statistic and econometric verification.

Economic verification deals with the explanation of the meaning and formulating of the conclusions on economic behaviour. The following formula is the result of (the first) estimate of panel non-linear model by dummy variables technique:

$$\ln \hat{GDP}_{r,t} = -3.392 + 0.04 \ln GFCF_{r,t} + 0.18 \ln GERD_{r,t} + 0.34 \ln NDI_{r,t} + 0.26 \ln ER_{r,t} + 0.034 \ln NST_{r,t} + 0.44 D_{1,t} + \dots + 0.14 D_{35,t} \quad (2)$$

When we look at the formula, it is evident that all 5 explanatory variables have a *different partial influence* on the development of average *GDP* for EU-27. It is valid, at the same time, that relations in the formula above are inter-dependent, i.e. their significance, respectively their economic influence can mutually overlap. Indicator of net disposable income (*NDI*) has the highest partial influence. The second partial influence on economic growth has increasing of rate of employment (*ER*), next gross domestic expenditures on research and development (*GERD*). Next calculated parameters show also low effect of *GFCF* and *NST*.

After providing brief economic verification, statistic and econometric verification follow. The F-test for evaluation of model significance as whole was used. At testing of model significance the model is statistically significant (level of significance 5 %). T-test for testing of partial regression coefficients was used. All the regression coefficients (parameters) are statistically significant (lower than 5 % level of significance).

After model evaluation from statistical verification view phase of *econometric verification* follows. Econometric verification consists of testing of presence/absence of autocorrelation, heteroscedasticity and multicollinearity in the model. The *autocorrelation* was tested mathematically by Durbin-Watson (D-W) test and graphically by using autocorrelation (ACF) and partial autocorrelation function (PACF). The value at D-W test at estimated model is 1.652. The value acts for evaluation of autocorrelation presence (serial dependency of residual components connected with sectional and time influences of panel model). According to critical values of D-W test the presence of autocorrelation was proved. It was acknowledged by orientation graphical test which verifies D-W test validity (D-W test identifies autocorrelation of residues of the first order). The test identified presence of autocorrelation, especially of the first order and confirmed also autocorrelation of higher orders. However, this is not systematic. The fact led us to removing of autocorrelation of residues or to reduction of their influence. The correct estimate of the model was realised by Cochrane-Orcutt (CO) Method. CO method is de facto algorithm for estimation of regression model by GLS method in case autocorrelation of residues of first order. It subsists in transformation of the original model when using Rho $\hat{\rho}$ parameter and its estimation by OLS method. In fact, correct estimation negated all above presented results of verifications. However, by CO method application we removed autocorrelation of first and higher orders from the model. The following formula shows the form of corrected estimation:

$$\ln \hat{GDP}_{r,t} = -3.113 + 0.0034 \ln GFCF_{r,t} + 0.029 \ln GERD_{r,t} + 1.067 \ln NDI_{r,t} + 0.614 \ln ER_{r,t} + 0.017 \ln NST_{r,t} + 0.63D_{1,t} + \dots + 0.18D_{35,t} \quad (3)$$

All the parameters of regression model are statistically significant, except for β_1 and β_5 i.e. GFCF and NST. Next, it was necessary to use second correction of the model and exclude GFCF and NST. The form of final corrected estimation is in the following formula:

$$\ln \hat{GDP}_{r,t} = -3.028 + 0.931 \ln GERD_{r,t} + 1.064 \ln NDI_{r,t} + 0.633 \ln ER_{r,t} + 0.614D_{1,t} + \dots + 0.184D_{35,t} \quad (4)$$

The estimate of formula signalizes that change of statistical significance of the model has not occurred as whole and simultaneously all parameters of the corrected model are statistically significant. So we can continue in economic verification tests. Autocorrelation in corrected model was not proved. The value of D-W test is 1.947. It means that also according to critical values of D-W statistics as well as according to orientation graphical test autocorrelation of first order was removed.

The next part of economic verification covers testing on heteroscedasticity and multicollinearity presence. The final corrected model can be considered as homoscedastic on selected level of significance, which was verified by graphical test. The graph could be constructed which could evaluate development in each region. However, for purpose of the paper, the graph which evaluates development of standardised value of residua of corrected model against predicted value (*GDP* for all regions) was constructed. By evaluating the presence of multicollinearity in the model we have to consider eventuality of inner-cohesion of explanatory variables. For the purpose of the work multicollinearity was orientation tested only by pair correlation coefficient. The test proved that multicollinearity is not present in the model. The mean value of random error is zero.

After brief econometric verification we can objectively economically verified the model. When interpreting corrected estimate we have to emphasize that all 3 explanatory variables have different partial influence on development of average *GDP* for EU-27. Simultaneously it is valid that relations in the formula above are inter-dependent, i.e. their significance, respectively economic influence can overlap and depends on explanatory variables selection. *NDI* has higher partial influence, which was proved again (when increasing *NDI* by 1 %, ceteris paribus condition, the change of average level of expected *GDP* EU-27 can be expected by about 1.064 %). *GERD* has the second higher partial influence on next economic growth, which was proved by various research studies and analyses emphasizing necessity of expenditures on R&D - here by increasing by 1 % the change of average level of expected *GDP* EU-27 can be expected at approximately 0.931 %, ceteris paribus. On future economic growth increasing of *ER* of productive inhabitants has positive influence. It was found out, that increasing of *ER* by 1 % can generate in average level of expected *GDP* EU-27 of 0.633 % ceteris paribus.

It is necessary to emphasize that above interpreted results depends on sectional influence of 35 NUTS 2 regions and time interval of years 2000 – 2008. The dummy variables in the panel model shows, which regions have the highest contribution to GDP production in EU 27 in time and section of each region. The complex results of model estimation in SPSS 15.0 are introduced in Appendix 1. The final order of the region from their contribution view, respectively their influence on global competitiveness EU 27 measured by average level of GDP is in Appendix 2.

Among regions, which have significant acquisitions to *GDP production*, *Praha* (CZ01), *Bratislavský kraj* (SK01) and the third most significant *Nyugat-Dunántúl* (HU22) followed by *Közép-Magyarország* (HU10) belong. On the other hand, the less contribution three Polish regions – *Lubelskie* (PL31), *Malopolskie* (PL21) and *Lódzkie* (PL11) showed off. The final order of top and last three regions is highlighted in the table. We can consider the region as most/less competitive in relation to EU-27 average. Let's simultaneously remind that above mentioned model is not economic growth model, but by contrast to model of competitiveness, it has explicitly defined form of input variables. Meanwhile, in this case we partially look for suitable factors which contribute to competitiveness growth by means of GDP production.

Conclusions

The presented non-linear regression model of panel data by using technique of dummy variables was based on own and original concept of econometric model specification. Average value of *GDP* for EU-27 in years 2000 – 2008 is dependent variable at considering 5 independent variables (*GFCF*, *GERD*, *NDI*, *ER* and *NST*) which were chosen arbitrary. In addition, gradual model correction needed *GFCF* and *NST* exclusion as they showed very low impact on *GDP* production. The basic hypothesis was that average EU-27 is considered as ideal region, it means the most competitive region. We observed contributions of NUTS 2 regions to the average level of whole EU-27 economic growth. The regions with highest contribution to average growth of EU- 27 are considered as the most competitive regions. On the other hand, the regions with the lowest influence are considered as less competitive. This statement is documented in Appendix 2. The paper outlined a possible way for competitiveness analysis also at local administrative units (regions) level.

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Appendices

Appendix 1: Output for the final estimate of the corrected model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	B	Std. Error
ln_GERD	.931	.026	.064	35.807	.001
ln_CDD	1.064	.032	.979	33.506	.000
ln_MZ	.633	.093	.116	6.813	.000
D1	.614	.037	.178	16.672	.000
D2	.126	.039	.036	3.244	.001
D3	.207	.041	.060	5.084	.000
D4	.272	.047	.079	5.805	.000
D5	.167	.035	.048	4.732	.000
D6	.210	.032	.061	6.498	.000
D7	.168	.038	.049	4.380	.000
D8	.261	.037	.076	7.129	.000
D9	.314	.026	.091	12.297	.000
D10	.278	.043	.081	6.544	.000
D11	.372	.047	.108	7.991	.000
D12	.277	.047	.080	5.940	.000
D13	.244	.045	.071	5.382	.000
D14	.270	.038	.078	7.047	.000
D15	.207	.039	.060	5.313	.000
D16	.063	.022	.018	2.868	.030
D17	.189	.031	.055	6.097	.000
D18	.052	.018	.025	2.859	.034
D19	.120	.042	.035	2.836	.005
D20	.014	.007	.004	2.002	.016
D21	.104	.040	.030	2.626	.009
D22	.180	.057	.052	3.143	.002
D23	.115	.051	.033	2.273	.024
D24	.131	.033	.038	4.006	.000
D25	.208	.045	.060	4.670	.000
D26	.303	.055	.088	5.488	.000
D27	.207	.035	.060	5.890	.000
D28	.301	.054	.087	5.609	.000
D29	.177	.040	.051	4.404	.000
D30	.202	.046	.058	4.357	.000
D31	.221	.034	.064	6.538	.000
D32	.598	.049	.173	12.320	.000
D33	.218	.035	.063	6.142	.000
D34	.190	.042	.055	4.475	.000
D35	.184	.042	.053	4.356	.000
(Constant)	-3.028	.394		-7.680	.000

Note: calculated by using equation (4) – see page 357

Source: SPSS 15.0; Own calculations and elaboration, 2011

Appendix 2: Position-effect of NUTS 2 regions of V4 on the overall competitiveness of EU-27

Code	Name of region	Rank
CZ01	Praha	1.
CZ02	Střední Čechy	29.
CZ03	Jihozápad	18.
CZ04	Severozápad	9.
CZ05	Severovýchod	27.
CZ06	Jihovýchod	15.
CZ07	Střední Morava	26.
CZ08	Moravskoslezsko	11.
HU10	Közép-Magyarország	4.
HU21	Közép-Dunántúl	7.
HU22	Nyugat-Dunántúl	3.
HU23	Dél-Dunántúl	8.
HU31	Észak-Magyarország	12.
HU32	Észak-Alföld	10.
HU33	Dél-Alföld	19.
PL11	Lódzkie	33.
PL12	Mazowieckie	22.
PL21	Malopolskie	34.
PL22	Slaskie	30.
PL31	Lubelskie	35.
PL32	Podkarpackie	32.
PL33	Swietokrzyskie	24.
PL34	Podlaskie	31.
PL41	Wielkopolskie	28.
PL42	Zachodniopomorskie	16.
PL43	Lubuskie	5.
PL51	Dolnoslaskie	17.
PL52	Opolskie	6.
PL61	Kujawsko-Pomorskie	25.
PL62	Warminsko-Mazurskie	20.
PL63	Pomorskie	13.
SK01	Bratislavský kraj	2.
SK02	Západné Slovensko	14.
SK03	Stredné Slovensko	21.
SK04	Východné Slovensko	23.

Note: 1 - the highest impact, 35 – the lowest impact

Source: Own calculations and elaboration, 2011

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Sectors Contribution to Development Productivity in Context of Business Cycle

Abstract

The analysis of economy performance is primarily deal with the size and intensity of total output but, for better understanding is necessary to consider the size and intensity (productivity) of inputs. Productivity is one of the main factors which influences and determinates economic growth. The main aim of this paper is to compare development of sectoral productivity in context of development business cycle. The paper analyses and compares productivity development with development of economic output in each particular sector (CZ – NACE) of national economy. The article is searching different reaction in particular sectors of national economy on development of business cycle. The next aim is to make analysis of indicators productivity and to find out some difference in development of particular sectors. The theoretic basis is theory real business cycle and neo-classical growth models of Solow. The main the source of data was Czech Statistical Office (National accounts). Used dates were behind years 1995 – 2009 (15 years). The main used indicators were labour productivity, capital productivity and capital - labour ratio. The sense of productivity analysis is to separate total productivity on the part which appertain to each particular sectors with context of development business cycle and changes in employment structure.

Key Words

labour productivity, capital productivity, gross value added, business cycle

JEL Classification: D24, E01, E23

Introduction

The analysis of economy performance is primarily deal with the size and intensity of total output but, for better understanding is necessary to consider the size and intensity (productivity) of inputs. Output of economy and others macroeconomics indicators are not fixed, but they are developing in time. Productivity is one of the main factors which influences and determinates economic growth. Productivity is developing in time too. The question is, if productivity development is similar as business cycle development in each particular sector of national economy.

1. Literary Survey

Lucas (1977) defined business cycle as fluctuations of output about trend. Economic fluctuation is consider theory of rational expectations (Lucas 1987) or theory real business cycle (Edward Prescott, Robert Barro)

Productivity is define as the ratio of output to input (Coelli 2005) from microeconomic and macroeconomics point of view. The growth rate of productivity is difference between output growth rate and input growth rate (Fried 2008). The economic theory of productivity measurement goes from the work of Robert Solow (1957). They formulated productivity measures in a production function context and linked them to the analysis of economic growth. The aim for productivity measuring is to evaluate efficiency of using factors of production. Productivity increasing is one of the main factors for raising competitiveness firms or all economy. There are many different productivity measures. The choice between them depends on the purpose of productivity measurement and, in many instances, on the availability of data. The simplest and the most frequently-encountered measure is labour productivity. Labour productivity is defined as gross value added or gross output per worker and per worker-hour (O'Mahony at al. 2008). This indicator is related to the efficiency of production or the contribution to GDP per worker (Praag, Versloot 2008).

The capital input measures the service flows from the level of the physical capital stock (Yasser, Joutz 2005). The capital productivity index shows the time profile of how productively capital is used to generate value added. Capital productivity reflects the joint influence of labour, intermediate inputs, technical change, efficiency change, economies of scale, capacity utilization and measurement errors

Main factors which can influence productivity are:

- government's policies
- macroeconomics state of economy (business cycle, investment, interest rates)
- international competition in market
- kind of economy sectors and decision making of management

Mentioned factors shows, that productivity is influenced by internal and external factors (Novotná,Volek, 2008)

2. Material and methodology

The main aim of this paper is to compare development of sectoral productivity in context of development business cycle. The paper analyses and compares productivity development with development of economic output in each particular sector (CZ – NACE) of national economy. The theoretic basis is theory real business cycle and neo-classical growth models of Solow. The analysis is concentrate on the Czech Republic. The main the source of data was Czech Statistical Office (National accounts). Used dates were

behind years 1995 - 2009 (15 years). To carry out temporal and spatial comparison it is convenient to part from indicators purified from inflation. Therefore macroaggregates in prices of 2000 were given priority. The main used indicators were labour productivity (output Y / worked hours L), capital productivity (Gross fixed capital formation K / worked hours L) and capital - labour ratio (Gross fixed capital formation K / worked hours L). The sense of productivity analysis is to separate total productivity on the part which appertain to each particular sectors with context of development business cycle and changes in employment structure. When we find out size of contribution or decrease particular sectors, it is useful go out from index variable structure like comparison two arithmetical averages, i.e.:

$$\frac{\bar{\gamma}}{\gamma} = \frac{\sum_i \gamma_1^i L_1^i}{\sum_i L_1^i} : \frac{\sum_i \gamma_0^i L_0^i}{\sum_i L_0^i} \quad (1)$$

first arithmetical average is only analyzed particular sector in prices of current period, others sector is in the second arithmetical average in prices basic period (Jílek, Vojta 2001).

Labour productivity is extended about calculation of labour productivity indicator. This indicator is cleanup from influence of structure output (added value). Index of labour productivity we can understand as index of variable structure.

$$\frac{\sum_i Y_1^i}{\sum_i Y_0^i} : \frac{\sum_i L_1^i}{\sum_i L_0^i} = \frac{\sum_i Y_1^i}{\sum_i L_1^i} : \frac{\sum_i Y_0^i}{\sum_i L_0^i} = \frac{\sum_i \gamma_1^i L_1^i}{\sum_i L_1^i} : \frac{\sum_i \gamma_0^i L_0^i}{\sum_i L_0^i} = \frac{\sum_i Y_1^i}{\sum_i \frac{Y_1^i}{\gamma_1^i}} : \frac{\sum_i Y_0^i}{\sum_i \frac{Y_0^i}{\gamma_0^i}} \quad (2)$$

where: Y is product (GDP),
 L^i is labour (working hours),
 γ^i labour productivity of i sector.

This index we can write as harmonic average or arithmetical average. Difference between harmonic and arithmetical average we can find when we make analysis of the of constant structure index (Jílek 2004).

If we want to stabilize structure of product (current period) and analyze structural influence in labour productivity, it is suitable for comparability go out from two harmonic averages in form:

$$\frac{\sum_i Y_1^i}{\sum_i \frac{Y_1^i}{\gamma_1^i}} : \frac{\sum_i Y_1^i}{\sum_i \frac{Y_1^i}{\gamma_0^i}} = \frac{\sum_i \frac{Y_1^i}{\gamma_0^i}}{\sum_i L_1^i} = \frac{\sum_i \frac{\gamma_1^i}{\gamma_0^i} \cdot L_1^i}{\sum_i L_1^i} \quad (3)$$

This arithmetical average goes out from sector indexes of labour productivity. Weight of particular sector goes from numbers of employed in current period.

Annual average indexes (average growth rates) of productivity were calculated using the geometrical average:

$$\bar{k} = \sqrt[n]{k_1 \cdot k_2 \cdot \dots \cdot k_n} = \sqrt[n]{\frac{u_1}{u_0} \cdot \frac{u_2}{u_1} \cdot \dots \cdot \frac{u_n}{u_{n-1}}} = \sqrt[n]{\frac{u_n}{u_0}} \quad (4)$$

where: $\bar{k}$ average growth rate

$k_1 \dots k_n$... chain indexes of productivity

$u_0 \dots u_n$ values of each productivity indicators

3. Results and discussion

The fluctuation of output means raising or lowering rate of GDP (domestic product) growth which can be alternatively expressed by growth rate of gross value added. Toward the purposes in methodises of described analysis, indicator gross value added and its development was chosen, because at determination value added for individual aggregation of branch within NACE- CZ would arise problem with allocation net taxes from production.

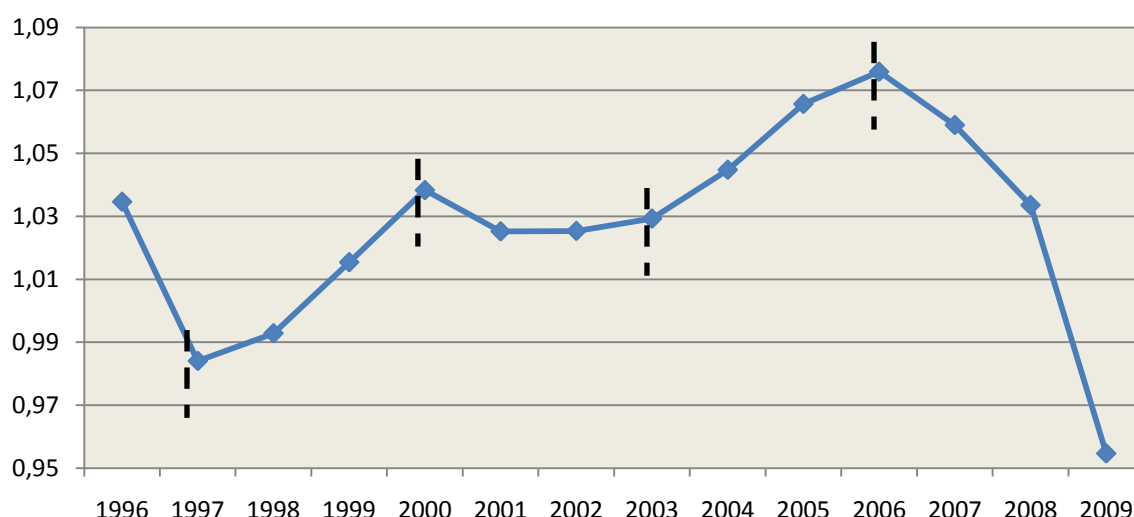


Fig. 1: Index of gross value added in Czech Republic

Source: Czech Statistical Office (CSO); own calculation

Whether fluctuations in business cycle are in harmony with fluctuation in productivity of labour respectively in capital productivity respectively technological equipment of labour by capital can be theoretically found out by comparison average growth rates of gross value added for monitored partial period with development of average annual

growth rate appropriate indicators of productivity respectively technical equipment of labour (Tab. 1 and Fig. 2).

Tab. 1: Development of indexes productivity in Czech Republic

	1995 -1997	1997-2000	2000 -2003	2003 -2006	2006 -2009
Average annual growth rate of GVA	1.0025	1.0133	1.0267	1.0664	1.0147
Average annual growth rate of labour productivity	0.9967	1.0248	1.0470	1.0521	1.0179
Average annual growth rate of capital productivity	0.9869	1.0105	0.9873	1.0271	1.0146
Average annual growth rate of capital -labour ratio	1.0100	1.0142	1.0604	1.0244	1.0033

Source: Czech Statistical Office; own calculation

In years 1995 – 1999 plus further in years 2003 – 2006 was average growth rate productivity of labour inferior to average growth rate coarse added funds. In years 1995 – 1999 and further in years 1995 – 1999 and further in years 2003 – 2006 was average growth rate of labour productivity lower than average growth rate of gross value added.

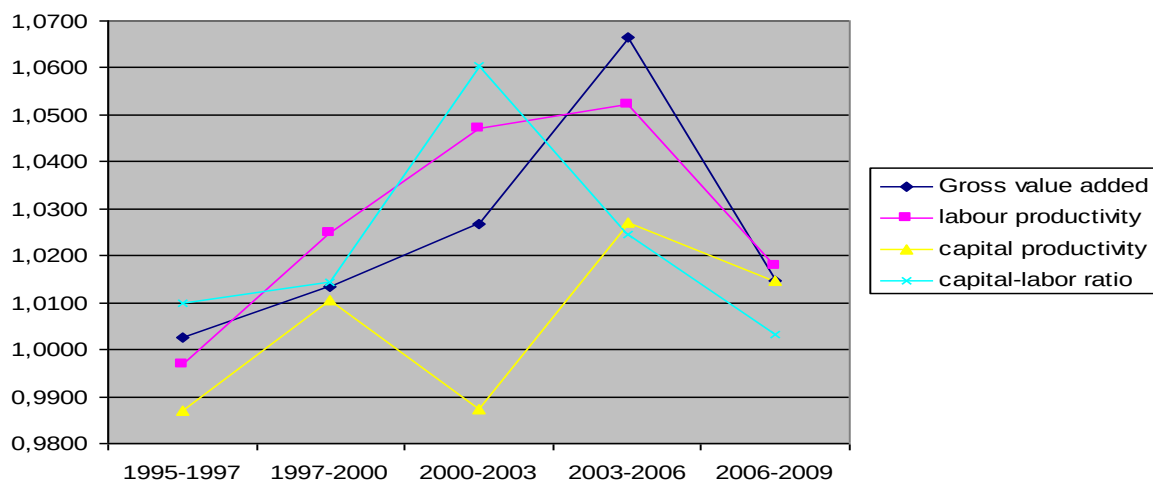


Fig. 2: Average annual growth rate of indicators

Source: Czech Statistical Office; own calculation

At average rate of capital-labour ratio is obvious time lag i. e. at first rapidly equipment of labour by capital grown and after it growth gross value added followed. Average growth rate of capital productivity is in contrast with indicator technical equipment of labour by capital. Relation of indicator of capital-labour ratio with productivity indicators can be written:

$$\frac{Y}{K} = \frac{\frac{Y}{L}}{\frac{K}{L}} \quad (5)$$

where: Y represents output of economy i. e. GDP, respectively gross value added

$\frac{Y}{K}$, resp. $\frac{Y}{L}$ is indicator of capital, resp. labour productivity

Same link between those indicators are valid also for indexes i. e. growth rate (it is the case of multiplicative model) whereof is resulted relation of capital productivity and technical equipment of labour. If technical equipment of labour is increased i. e. long - term possession on unit of labour is increased and labour productivity will not change (capital grows faster than output of economy (Y)), capital productivity will get decreased. This situation can come in case, when size of capital growth but is production capacity is small (infrastructure investment). The growth rate of capital is higher than growth rate of economy output. On the contrary, capital productivity is growing, when the growth rate of economy output (Y) is higher than growth rate of capital (K), i. e. higher capital - labour ratio leads to higher labour productivity.

Tab. 2: Contribution of sectors to annual changes in labour productivity (%)

NACE	1995 -1997	1997-2000	2000 -2003	2003 -2006	2006 -2009
TOTAL	-0.33	2.48	4.70	5.21	1.79
A Agriculture, hunting and forestry	-0.35	0.23	0.13	-0.02	0.05
B Fishing	0.00	0.00	0.00	0.00	0.00
C Mining and quarrying	-0.18	-0.06	-0.04	-0.01	-0.10
D Manufacturing	1.42	1.36	0.86	3.23	0.50
E Electricity, gas and water supply	-0.41	-0.01	-0.05	0.16	0.01
F Construction	-0.17	-0.40	0.03	0.13	0.15
G Wholesale and retail trade; repairs	1.33	0.88	1.27	1.26	0.44
H Hotels and restaurants	-0.23	-0.32	0.01	-0.20	0.00
I Transport, storage and communication	0.27	-0.15	1.10	0.23	0.21
J Financial intermediation	0.22	0.14	0.14	0.03	0.27
K Real estate, renting and business activities	-1.64	0.72	0.45	0.48	0.29
L Public administration and defence; compulsory social security	-0.02	0.17	0.13	-0.03	0.04
M Education	-0.07	0.10	0.27	0.10	0.04
N Health and social work	-0.55	-0.20	0.25	-0.21	-0.06
O Other community, social and personal service activities	0.03	0.00	0.14	0.05	-0.07
P Private households with employed persons	0.00	0.00	0.00	0.00	0.00

Source: Czech Statistical Office; own calculation

Results of sectors contribution have been gain by analysis of index average labour productivity (table 2), average capital productivity (table 3) in two next period with helping average growth rates. Sectors contribution is express by percents. Gross value added (GVA) had higher increments in periods 1997 - 2000 and 2003 – 2006. The impact was in the average annual growth rate of labour productivity. The main influence to increasing growth rate productivity had sectors (table 2) **D** - Manufacturing (more than 60 %), **G** - Wholesale and retail trade; repairs (about third from all change in labour

productivity in all periods). On the contrary the biggest negative influence was recognised in periods 1997 - 2000 at sector **F** - Construction. In next period was not recognised negative influence. In years 2000 - 2003 gross value added had stable annual addition (graph 1). In this period grew labour productivity (1.047) faster than gross value added. Positive influence to growth labour productivity had sector **G** - Wholesale and retail trade; repairs and **I** - Transport, storage and communication. In two intervals declined average annual growth rate of gross value added (graph 1). In period (1995 - 1999) labour productivity declined by negative impact of sector **K** - Real estate, renting and business activities (-1.64%). In next period (2006-2009) average growth rate of labour productivity was higher, than average growth rate of gross value added. The positive influence had sector **D** - Manufacturing and **G** - Wholesale and retail trade; repairs. In all intervals (business cycle phases) had weak or no influence sectors: **N** - Health and social work, **M** - Education, **L** - Public administration and defence; compulsory social security, **O** - Other community, social and personal service activities.

Tab. 3: Contribution of sectors to annual changes in capital productivity (%)

NACE	1995 -1997	1997-2000	2000 -2003	2003 -2006	2006 -2009
TOTAL	-1.31	1.05	-1.27	2.71	1.46
A Agriculture, hunting and forestry	-0.40	0.18	-0.09	-0.11	0.05
B Fishing	0.00	0.00	0.00	0.00	0.00
C Mining and quarrying	-0.20	-0.08	-0.12	-0.04	-0.10
D Manufacturing	1.26	0.98	-0.70	2.50	0.42
E Electricity, gas and water supply	-0.48	-0.05	-0.23	0.09	0.01
F Construction	-0.29	-0.50	-0.32	0.00	0.14
G Wholesale and retail trade; repairs	1.30	0.68	0.38	0.86	0.39
H Hotels and restaurants	-0.26	-0.35	-0.11	-0.23	0.00
I Transport, storage and communication	0.19	-0.28	0.45	-0.04	0.18
J Financial intermediation	0.20	0.11	-0.03	-0.03	0.27
K Real estate, renting and business activities	-1.77	0.53	-0.33	0.17	0.25
L Public administration and defence; compulsory social security	-0.06	0.09	-0.19	-0.14	0.03
M Education	-0.11	0.04	0.04	0.00	0.03
N Health and social work	-0.61	-0.25	0.03	-0.29	-0.07
O Other community, social and personal service activities	0.00	-0.04	-0.04	-0.02	-0.08
P Private households with employed persons	-	-	-	-	-

Source: Czech Statistical Office; own calculation

Table 3 shows contributions of each sector to change of average capital productivity. It is clear, that development of capital productivity has no similar development as gross value added. In periods ((1997 - 2000 and 2003 - 2006) increased increments of GVA and capital productivity. The main and positive influence to growth capital productivity

had sector **D** - Manufacturing. In period 2000 - 2003 was stable growth GVA, but the capital productivity declined. This effect is caused by growing capital-labour ratio. Detailed analysis found, that the highest growth rate of capital - labour ratio (gross fixed capital per working hour) was in **F** - Construction, **H** - Hotels and restaurants and **D** - Manufacturing. These sectors had negative influence on capital productivity. In period 1995 -1997 has been in sector **I** - Transport, storage and communication significant change, (growth) in growth rate of capital - labour ratio. The effect of this change had time lag in period 2000 - 2003 with positive effect to capital and labour productivity. In time periods of declining increments GVA (2006 - 2009) was average growth rate of GVA and capital productivity similar with positive affect of sector **D** - Manufacturing and **G** - Wholesale and retail trade; repairs. Sectors **N** - Health and social work, **M** - Education, **L** - Public administration and defence; compulsory social security, **O** - Other community, social and personal service activities had weak or negative influence to development capital productivity like to development labour productivity.

The next part of analysis is deal with elimination of structural influences in followed indicators. If we measure changes of average labour or capital productivity, we have to consider fact, that growth rate of labour or capital productivity is influenced by changes in structure of employment or investment. The growth rate of labour productivity is accelerate if employee from sector with low labour productivity (agriculture) pass to sectors with high labour productivity (industry or some king of services). Index of labour or capital productivity is index of variable structure, which we can analyse by helping of stable structure index and structure index. This method eliminate influence which is caused by changes in structure GVA. The result - development of capital productivity was no influence by structural changes.

Tab. 4: Structural influence in productivity indexes

Index in %	1995-1997	1997-2000	2000-2003	2003-2006	2006-2009
Change of average labour productivity	0.997	1.025	1.047	1.052	1.018
Influence of change average labour productivity in each sectors	1.015	1.026	1.046	1.046	1.017
Influence of structure change in gross value added on change labour productivity	0.982	0.999	1.001	1.006	1.001
Change of average capital productivity	0.987	1.010	0.987	1.027	1.015
Influence of change average capital productivity in each sectors	0.987	1.016	0.990	1.026	1.014
Influence of structure change in gross value added on change capital productivity	1.000	0.995	0.998	1.001	1.001

Source: Czech Statistical Office; own calculation

More detailed analysis of labour productivity has showed, that in period with high growth rate of GVA (1995 -1997 and 2003 - 2006) was development of labour productivity affect by structural changes. In time period 1997 - 2000 average sectors labour productivity is annual grows (1.015) but in consequence of change structure GVA

is labour productivity declining (0.997). Opposite effect we can follow in period 2003-2006, when average growth rate of sectors labour productivity was the same as at previous period (1.046) – see Table 4 – but effect of changes in structure of GVA caused higher growth rate (1.052). Structural changes aren't significant in the other intervals.

Conclusion

Cycle development of gross value added (GVA) in last 15 years was divided in to 5 different periods. Two intervals (1997 - 2000 and 2003 - 2006) had increasing growth rate of GVA, two intervals had (1995 - 1997 and 2006 - 2009) declining growth rate of GVA and one (2000 - 2003) had stable growth rate of GVA.

When we compared growth rate of GVA and growth rate of productivity in each interval, we found out similar trend between average growth rate of GVA and average growth rate of labour productivity. Development of capital - labour ratio is influenced by time lag. At first increase capital - labour ratio and then gross value added. Average annual growth rate of capital productivity has opposite development than capital - labour ratio.

Next analysis is deal with sectors reaction to changes in business cycle. The sectors which have main contribution to growth rate of GVA (1997-2000 a 2003-2006), capital and labour productivity were found out. In period of faster growth rate of GVA, following sectors had contribution: **D** - Manufacturing (change of labour productivity in **D** caused more than half of change in labour productivity in Czech economy) a **G** - Wholesale and retail trade; repairs. In period of stable growth rate of GVA (2000-2003), main contribution had to growth rate of labour productivity sectors: **G** - Wholesale and retail trade; repairs and **I** -Transport, storage and communication. Capital productivity is decline as a result of considerable increase of growth rate capital-labour ratio in sector **F** - construction. In period of declining growth rate of GVA (1995-1997 a 2006-2009), main influence had **K** - Real estate, renting and business activities, **G** - Wholesale and retail trade and **D** – Manufacturing. Sectors like **N** - Health and social work; **M** - Education, **L** - Public administration and defence; compulsory social security, **O**- Other community, social and personal service activities had small influence on labour or capital productivity.

Analysis of structural effect in productivity indicators shows that change of structure of GVA is influenced mainly by indicator of labour productivity in periods of rising growth rate of GVA.

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The Preparedness of Certain Companies to Implement the ISO 26000 Standard

Abstract

During 2009 and 2010, a specific academic primary survey was realized at the Faculty of Economics of the Technical University in Liberec. It surveyed a hundred companies in six European countries. These organizations are representatives of the leaders in a variety of economic sectors. The aim of the basic questions and statements of this investigation is to answer one key question; whether the leading companies of European economies are prepared to install the new ISO 26000 or not. This new standard was released by the International Organization for Standardization recently. It relates to corporate social responsibility, or social responsibility, respectively. The CSR concept involves the ecological and social aspects of the economic aims of a company. The results of the entire Europe-wide study will be published as an integrated description of the partial surveys by the Faculty of Economics. The description and results of the survey performed in Spain are compiled in this paper. It will be shown that the attitude of large Spanish companies is positive but, to a certain extent, they would need some additional time to be fully interested in implementing the new ISO 26000.

Key Words

corporate social responsibility, primary survey, ISO 26000

JEL Classification: M14, D22

Introduction

Many definitions of corporate social responsibility (CSR) have been formulated up until now. One of them briefly describes CSR as “transparent business practices that are based on ethical values, compliance with legal requirements, and respect for people, communities, and the environment.”[18] The International Organization for Standardization has recently released a new standard called ISO 26000. It represents the first publication completely devoted to the complex theme of CSR and will serve to guide companies in their socially responsible behaviour. Will companies accept it? This was the basic question of a specific academic primary survey directed by Faculty of Economics of the Technical University in Liberec during 2009 and 2010. One hundred of the most important companies in six European countries were investigated to find out the answer to the above question. The countries were Norway and Sweden in the north, Poland and Germany in Central Europe and France and Spain in the west. The results will be published as an integrated description of the partial surveys by the Faculty of Economics of the Technical University of Liberec (TUL). First of all the survey was tested

in Czech Republic. [11] This article is going to describe the concrete results of the investigation in Spain. We can state initially that the attitude of important Spanish organizations towards the issue of CSR is positive, but, on the other hand, only a certain part of these companies practice CSR principles. According to the results of the survey in Spain, companies would rather not prefer to implement the new ISO 26000. From now on the article will explain the fundamental terminology. The second chapter is dedicated to Spain's economy and the situation of corporate social responsibility in Spain. It has been already surveyed; for example, by Forética (see chapter 3) in 2008. The key conclusions of this investigation are summarized in the third chapter. As usual, these represent an introduction into the main segment of this paper; the investigation by the Technical University in Liberec itself. The methodology is described as well as the respondents and results. We will discover that the Spanish economy is interested in CSR activities but they haven't yet reached the state of good preparation necessary to implement the new ISO 26000 and practise CSR activities totally.

1. Corporate Social Responsibility and the ISO 26000 Standard

The preparations for ISO 26000 started in 2005. In September 2010, the final proposal for a new standard was accepted as a result of a period of discussions and conferences. The goal of the new ISO 26000 is to serve to all kinds of companies as a guide in functional social responsibility and its applicability on an international level, to identify and include relevant subjects, and to enforce the credibility of a company and its competitiveness. Further goals are to define unique terminology in the field of CSR and to be compliant with other existing documents like the Universal Declaration of Human Rights, etc. The basic issues analyzed in the ISO are company management, human rights, labour conditions, the environment, consumers and clients, and local community development and inclusion.

Nowadays, there are also other standards apart from ISO 26000 referring to CSR which can be employed by business units. They include, for example: SA8000 (improving labour conditions), AA1000 AccountAbility (CSR structure), ISO 14001 or EMAS (Eco-Management and Audit Scheme), Investors in People (human resource development), EFQM Framework or GRI (Global Reporting Initiative), etc.[10] The basic difference between ISO 26000 and the others is that the new ISO is not certifiable. ISO 26000 brings an important update in terminology – the term “Corporate Social Responsibility” has been replaced by “Social Responsibility”. The reason is clear: it won't only be specific to businesses any more. It can also be found applicable in non-profit organizations or the public sector. [11] Corporate social responsibility needs to be implemented throughout the company; the head management has to accept a certain strategy focused not only on economic profit, but which moves further than that. This is called the three P's (People, Planet, Profit), or the Triple Bottom Line strategy, when the company besides economic profit respects the needs of society and the environment. [12] The most repeated definition of CSR is that by the European Commission: “A concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.” [14]

CSR is a high-revenue investment. [9] The next part will describe briefly the Spanish economy and will move the theme towards corporate social responsibility there.

2. The Spanish Economy and Corporate Social Responsibility in Spain

The Kingdom of Spain consists of 17 autonomous communities. Some significant features of the Spanish economy include: The public budget suffers from a deep deficit. The rate of unemployment almost doubled (from 8.3% to 14%) during 2008. In 2010 it even crossed the 20% border for a while. This rate corresponds to 4 million unemployed people. The rate of unemployment in the Eurozone has been around 9% in the same period of time. After a recent economic recession (which began in approximately 2005) Standard & Poor's changed the evaluation of the country from the maximum AAA to AA+. The most significant sectors in Spanish industry are the foodstuffs industry, and the tobacco and automobile industries. The building industry together with the tourism industry represented two other such driving forces for the Spanish economy until 2007 when a kind of recession came. Spain is a member of the United Nations, the European Community, NATO, OECD and ADB. [4] Spain is very involved in issues like sex or gender discrimination, violence towards women, human rights generally and also water consumption. [17] [16] [2]

The actual situation with CSR in Spain can be described as follows: The employment policy can be designated as responsible; the law orders companies of more than fifty thousand employees to hire 2% handicapped people. Other significant features of CSR in the area of employment are equal opportunities for men and women or tender policy. There are five key CSR priorities in Spain: social aspects and company management cohesion, economic productivity, transparency and communication, socially responsible investment policy and the inclusion of CSR in the education system. As in some other European countries, in Spain there also exists a National Action Plan for the Environment. A strategy for climate change and pure energy has been prepared by the Spanish representatives. The Ministry for Labour and Immigration and Forética [5] are the main regulators of organizations' socially responsible behaviour. [1] Next, some data from the Forética study is mentioned after an explanation of what and who Forética is:

3. A Short Review of Some Results of the Forética Survey on CSR in Spain

In 2008 a study called "Evolution of the Social Responsibility of Organizations in Spain" (Evolución de la responsabilidad social de las empresas en España) was published by Forética, the "Forum for the Evaluation of Ethical Management" (Foro para la Evaluación de la Gestión Ética). This study's sample included consumers of 18 to 70 years of age (1004 telephone interviews in total) and Spanish companies from all industries (1449 telephone interviews in total). Geographic frame was the Spanish Kingdom. According to the Forética study, 90% of large companies do know the concept of CSR while only half

of small and medium enterprises have ever heard about it. At the same time, almost half the questioned consumers (48.3%) were able to define CSR. Only a small part (12%) of companies in Spain are interested, or even supervise, their current or potential partners' attitude towards CSR. Although initiatives on non-discrimination and equal rights in the employment in Spain are not negligible, the country is situated among the countries with the most significant differences in salaries and employment integration. Activities in CSR have already been fixed in the policies of Spanish organizations during the last couple of years and there are even certain prospects for future positive development. Nevertheless, the SMEs stay rather outside the sphere of CSR activities. 60% of large companies (with more than 500 employees) publish CSR reports regularly.

More than half of large companies believe that consumers do consider CSR factors (the attitude towards sustainability) of the producers while making their purchases. 63% of Spanish organizations have developed a plan on environment protection. [8] Some companies (e.g. Agbar, BBVA, Repsol and Telefónica) have set up a forum for companies' reputations; Foro de Reputación Corporativa (fRC). The reputation of a company, according to the fRC, includes: management, products, workplace environment, innovation, ethics, economic results and CSR as well. [5] The next parts of the paper will describe the empirical survey completed in Spain by TUL. At the end there are four basic statements amplified according to the survey results.

4. Empirical Survey in Europe – Methodology and Questions

ISO 26000 is a novelty. In 2009, the Technical University of Liberec Faculty of Economics initiated a project searching to typify European organizations' responses to the new ISO 26000. It was called "Corporate Social Responsibility and the Application of the ISO 26000 Standard in Europe". The hundred most important organizations in six European countries were investigated, because multinational firms play an important role in the process of formalizing CSR practices. [7] One of the aims of this project was to understand the firms' opinions about the new standard and their attitude towards CSR. The basic question was whether the European firms are potentially prepared to accept the new ISO 26000. This is the statement which can be accepted or denied after answering the four partial questions below. This specific primary survey's results will be integrated into a unique publication soon. Although the attitude of Spanish organizations towards CSR has already been surveyed¹, no studies were yet oriented towards ISO 26000. Therefore, the need to search for answers to certain questions still exists. The four partial questions are:

1. "Have businesses actually introduced corporate social responsibility tools, or are they merely claiming to have done so?"

¹ In 2008 a study called "Evolution of the social responsibility of organizations in Spain" (Evolución de la responsabilidad social de las empresas en España) was published by Forética, the "Forum for the Evaluation of Ethical Management" (Foro para la Evaluación de la Gestión Ética), available from: <<http://www.foretica.es/es/index.asp?MP=33&MS=85&MN=1&TR=A&IDR=1&iddocumento=480>> and mentioned above.

2. "Is there currently sufficient interest in the issue of corporate social responsibility to create a demand for the introduction of ISO 26000?"
3. "Are there real differences between the theoretical definition of the term 'corporate social responsibility' and how it is perceived in practice?"
4. "Do firms want to introduce ISO 26000 for other motives than just the concept of 'profit only'?" [13]

5. Empirical Survey in Spain – Respondents and Questionnaire

In Spain the project was in run from May to September 2010. The rate of return was 16% and 9% of firms directly rejected participation. One hundred of the most important corporations in Spain represented the group of respondents. The list was gained from the database "Systema de Análisis de Balances Ibéricos" available at <<http://sabi.bodep.com>>. [15] The participating subjects are described below in table 1. One of the authors of this paper spent the academic year 2009/2010 studying and working at the University of Murcia (UM). Thus, there was a possibility to prepare and organize the survey in collaboration with the recently founded department of CSR at the UM Faculty of Economics and Business. The questionnaire was placed on the UM website and the link was sent to all the organizations listed (in the top 100 leaders) by e-mail. A certain number of the firms in the list were sent the questionnaire by post, too. Their physical addresses were found on their websites but most of them were gained by personal telephone call. All the communication was carried out in Spanish. The on-line questionnaire in Spanish is available at <<http://soporte.inf.um.es/mk/iso/pag1.pho>>.

Tab. 1: Participating organizations

	Organization Name; Survey Participant	Area of Business
1	Cemex España, S. A.	Building industry
2	Berge Infraestructuras y Servicios Logísticos, S. L.	Port logistics
3	Ferrovial, S. A.	Infrastructures
4	Compania de Distribucion Integral Logista S. A.	Logistics and distributions
5	Psa Peugeot Citroen Automóviles España, S. A.	Automobile industry
6	Leroy Merlin, S. L. U.	Home improvement
7	Celsa Group	Steel industry
8	Grupo Antolin-Irausa, S. A.	Automobile industry
9	Agbar	Communal services
10	Renault España S.A.	Automobile industry
11	Grupo Eroski	Distribution (alimentary)
12	Grupo Sogecable	Audio and television technology
13	Consum S. Coop V.	Distribution (alimentary)
14	Abertis Infraestructuras, S.A.	Communication infrastructure
15	Sociedad Estatal Correos Y Telegrafos, S.A.	Postal delivery services
16	Acciona S.A.	Infrastructure, energy and water supply

Source: own source

At the moment all the questions are filled in by a respondent, the data is automatically stored on another page, from which it can be downloaded in Microsoft Excel format. The total rate of return was 25%, where 9 firms out of 100 directly rejected answering and 16 out of 100 answered the questionnaire on-line. We cannot guess the rate of response via post because the link to the on-line questionnaire was included in it. The final participating subjects are listed in the table above.

As is obvious in table 1, the group of the 16 respondents is able to represent the Spanish economy in certain way because there are a variety of economic sectors. It is not a statistically gained list of representatives but these firms definitely have a significant influence on the economy of the country. The average number of employees is higher than 14,500. The next parts of paper are devoted to the questionnaire itself; the questionnaire is introduced by general questions which sort the organizations by number of employees or industry sector, etc. Next come questions related to the respondents' attitude towards CSR. The third part is oriented towards ISO 26000. Reflecting these questions and the data collected, there are some statements in the final part of this article. The data – the answers summarized in the three main parts of the questionnaire – is described directly below in the tables, where the title of each table refers to the content of the given question. The results refer to the total number of companies participating in the survey (see table 2).

Tab. 2: General questions in part one of the questionnaire

Partial Questions	No. of Companies	No. of Companies in %
Foreign ownership	11	69
CSR concept knowledge	16	100
Special workplace for CSR	13	81
CSR concept implementation	14	86
Responder's workplace connected with CSR	9	56

Source: own source

Apart from the name of the organization, its field of business and number of employees, which are mentioned in the text above, the first, general part of the questionnaire asks about foreign ownership and knowledge of the CSR concept; the majority of the 16 respondents are owned by a foreign subject and 100% of these 16 respondents do know the concept of CSR. Naturally, only 3 out of 16 do not keep a special workplace for corporate responsibility and only 2 out of 16 have not implemented this concept in their activities. In total, 9 respondents lie within a department specializing in CSR, where 6 of them are managers of this department. Others were responsible for the environment aspects, communication and public affairs, or personnel management.

Tab. 3: Questions oriented towards CSR in part two of the questionnaire

Partial Questions	No. of Companies in %
A) Agreement with the statement:	
"Definitely yes"	68.75
"Rather yes"	31.25
B) Keystones of CSR:	
Economic	34.95
Social	34.55
Environmental	30.50

Source: own source

Questions in this second part of the questionnaire (table 3) collected data about the attitude of large Spanish organizations towards partial CSR themes: As table 3 part A) indicates, all of the 16 respondents agree with the statement that *“an organization should follow not only the economic benefits but also the social and environmental ones”*; 11 (68.75%) opted for ‘definitely yes’ and 5 (31.25%) for ‘rather yes’. When the respondents were asked to define CSR, they reacted with phrases like: “a different way of doing business”, “a commitment towards the wider surroundings of the firm”, “a set of politics and tools which the organizations implement to benefit society and their own employees”. As we see in the B) part of table 3 above, the next task in this second part was to balance the three given keystones of corporate social responsibility; two of them, economic and social, gained nearly equal results, while the third, the environmental one, was rather lower. This means that although they agree with the above-cited statement, they focus their concern on social and economic aims slightly more intensively than on the environment. The main motivators for Spanish managers to behave socially responsibly, according to the survey, are a healthy environment and sustainability, the moral conviction of the senior management or owners or, as another example, the need to develop employees. 78% of the respondents believe that the concept of CSR is clearly implemented and practised in their firm and so they achieve concrete successes in this area. The most often applied ISO standards were ISO 9001 and 14001. A third of our respondents have implemented EMAS.

Tab. 4: How the implementing the standard benefits our company’s CSR

Benefits of ISO 26 000 Implementation	Average Evaluation*
i. Confirmation of our leading position in CSR in the field we’re doing business in.	3.31
b. Strengthening of the positive image among business partners (suppliers, buyers, investors).	3.30
j. Increasing demand of our customers for ecological and social approach of our company.	3.20
c. Strengthening of the positive image among employees of our company.	3.06
d. Strengthening of the positive image among potential applicants for work in our company.	3.06
a. Strengthening of the positive image of our company in the region we are active in.	3.00
e. Strengthening of the positive image of our company, this will lead to increase of revenue.	2.94
f. Gaining new customers, enhancement of market share.	2.82
h. More effective access of our company to CSR issues.	2.79
g. Confirmation of moral and ethical approach of owners and headquarters of the company.	2.75
k. Other (please specify)	0

Note: * Respondents were asked to evaluate each of given options from 1 to 5, where 5 is most crucial contribution

Source: Empirical university survey data collected in Spain

The third part of the questionnaire was oriented towards ISO: Almost all of the respondents (13 of 16) had already encountered ISO 26000, especially on the Internet or at conferences. The benefit the majority of the respondents can see in the application of this new norm is the diffusion of further use of CSR policies and tools. The firms rather hesitate to implement ISO 26000 or they would have to get to know it much more

deeply. However, 10 out of 16 firms would be quite interested in the standard if it was possible to certify it.

The next task was to give 1-5 points to the benefits of this ISO implementation for the company itself; see table 4 for benefits considered by the respondents (see Tab. 4). The benefits of ISO 26000 implementation the organizations suppose for the whole business society consist particularly in the unification of the theoretical and practical attitudes of firms towards CSR and also in the diffusion of the CSR concept among SMEs (Small and Medium-sized Enterprises), too. The next chapter summarizes the survey's basic statements put as questions and answers.

6. Statements

The 1st question: *"Is there currently sufficient interest in the issue of corporate social responsibility to create a demand for the introduction of ISO 26000?"* The interest can be supposed to a certain extent in the case of large companies. According to the specific university study, 100% of these 16 respondents do know the concept of CSR. According to the wider study performed by Forética, it is 90%. Nevertheless, the university study's results predicate the interest in CSR itself rather than in implementation of the new ISO; here even the large companies are rather reserved. Most of the surveyed companies, however, have implemented the CSR concept in their activities. Consequently, a rise in demand for the new ISO 26000 especially can be expected.

The 2nd question: *"Have businesses actually introduced corporate social responsibility tools, or are they merely claiming to have done so?"* Most of the large Spanish companies claim that they have implemented certain tools and already note the results. One of the most implemented standards is ISO 14001. The organizations are aware of the positive effects of being responsible; the support for their PR above all. But, obviously, without any confirmation we are not able to answer this concrete question properly.

The 3rd Question: *"Are there real differences between the theoretical definition of the term 'corporate social responsibility' and how it is perceived in practice?"* According to the results of the university specific survey we can definitely anticipate that the managers of Spanish companies understand CSR in line with the theoretical concept.

The 4th question: *"Do firms want to introduce ISO 26000 for other motives than just the concept of 'profit only'?"* The main motives to behave socially responsibly for Spanish organizations are an improvement and consolidation of their front position among competitors, among business partners and in front of their clients. Other motivators are a healthy and sustainable environment, as they declare. Thus, there are indeed other motives apart from economic profit to introduce ISO 26000.

7. Discussion

There is room for speculation about the credibility of the answers and the statistical sample credibility of the collected data. As to the first doubt, in this kind of survey the researchers always have to take into account a certain rate of subjectivity in the answers, especially in the sections describing opinions, visions, aims and other uncountable facts. The statistical sample credibility, as to the second speculative point, is rather low. The main reasons are: it is voluntary to answer the questionnaire and, above all, a statistically acceptable rate of return would be around 99%. For these reasons, the data collected in the university specific survey wouldn't be accepted as a satisfactory statistic sample and it is possible that there are some so-called "boasters" or "claimers" among the respondents. But, there is no doubt, this descriptive analysis of the data collected by the survey is definitely highly useful for creating a quite concrete and objective image of important Spanish companies' attitudes towards CSR and ISO 26000. And this was the purpose of this specific university research project.

Conclusion

It is possible to assume next implementations of CSR concepts among medium-sized and small enterprises: "To create economic values as well as social ones is not merely a matter for consolidated companies. Recently founded businesses also hold in their hands the potential to support the welfare of future generations and not only within their surroundings but on a global level too." [3] The experiences gained by the surveys in Spain showed a certain level of sensitivity of managements towards CSR and awareness of its significant influence on the public image of a company; nine out of one hundred investigated Spanish organizations reacted by apologizing for themselves or giving a reason why they had not wanted to respond to the survey. On the other hand, nine per cent is quite low. We investigated the attitude of leading Spanish companies to CSR and their will to implement the recently issued ISO 26000, and we realized that the interest in CSR of the economic leaders in Spain is significant – not so the preparedness and will to implement the mentioned ISO. Nevertheless, we can definitely, according to the survey's results, expect a positive advancement in the matter. This article has been compiled as one of the results of the project entitled "Corporate Social Responsibility – Socially Responsible Investing", which was set up with the financial support of the Technical University of Liberec as part of a tender for the support of specific university research projects.

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E-Marketing for Higher Education Institution

Abstract

Higher education has become the same place for competition as one exists in industry, trade, etc. That means to be constantly prepared to adequately respond to changes and able to solve difficult financing, quality, management problems. Because of a constant competition in this particular market, institutions are obliged to look for new means of user satisfaction. The expanded delivery of products, increased efficiency of customer services and general results of activity are available with employment of modern internet marketing tools the most effective of them being an internet web site. An internet web site is an important mean for an educational institution to spread the information about itself, study programmes, help prospective students during enrolment and serve them later during the study process. However many web sites nowadays are being used only as online brochures, or are institution orientated without customer approach. Many companies and institutions create corporate web sites that basically say what these companies want to say, instead of executing them in such a way – that every target visitor could find what he/she wants to know. The purpose of the article is to propose an internet marketing model for higher education institution that would help to increase the efficiency of communication between current and prospective students and the institution. To find out the prospective and current students' opinion about higher education institutions' web sites and the effectiveness of internet marketing tools the research was carried out.

Key Words

e-marketing, education institution, web site

JEL Classification: M15, M31, I21

Introduction

Lithuania is a share of a global higher education market and the survival in this market can only be based on being competitive in the world and the European higher education area. The most actual problems of high educational institutions nowadays are education quality, approachability, content, openness and efficiency. Institutions compete not only for scientific achievements, but also for attracting new students, higher financing, greater choice of study programs, higher education quality, employees' loyalty. The optimization of high education institution activity is impossible without employment of marketing solutions [9]. A communication between an educational institution and its customers – students - is long-term; this is the reason a web site has to do the most to help both students and institution to make that communication the most efficient. It is important to find out how such web sites of educational institution are perceived by prospective and current students, analyse their importance and find out the most

suitable solutions to increase the satisfaction of their users. The purpose of the article is to propose an internet marketing model for higher education institution that would help to increase the efficiency of communication between current and prospective students and the institution.

1. Internet Marketing Communication

Modern technologies, that have changed the delivery, allocation, demonstration and retaining of information, help an organization to deliver more telling information (illustrations, sounds, effects) more effectively (allocating it quickly and purposively). The effective transfer of information to audiences makes it easier to sell goods or services, shape the company's image and reputation, to solve problems. Modern technologies with new forms of marketing communication, not only provide advantages for customers, but save a lot of time, let them to participate in information exchange more effectively, give opportunities to personalize information – to opt out what is a relevant and meet personal goals better. They also provide new instruments and create invisible methods how to know the society better, and this knowledge allows to achieve efficiency in overall business [1, 3].

Marketing communication is understood as a process, when a target audience of customers is being reached providing purposeful information through correct communication channels in appropriate time [4]. It is defined as a sum of all marketing support elements that helps the company to communicate with its target customers. The marketing communication process involves nine elements: sender, receiver, message, media, encoding, decoding, response, feedback and noise, the major parties being the sender and the receiver. The major communication elements are the message and the media. According to [1] marketing communication is also a heart of management of relations between an organization and stakeholders, for it is by communication with these stakeholders that the organization shapes and forms the relationships with them. Marketing communication is comprised of all promotion elements: advertising, sales promotion, personal selling and public relations [2, 5, 10]. The use of communication technologies could be: personal, without intermediary parties (most often eye-to-eye); personal communication with intermediary parties (telephone, e-mail, internet chat); mass communication (internet, books, magazines, newspapers, etc). Willing to reach a bigger audience and transfer the information effectively, an institution needs to use all of these communication means, combine them accordingly the characteristics of consumers.

Fast development of information technologies has a direct positive influence on any organization, open up new spheres of communication, improvement of products and services. Latter decades are characterized by the intensive use of Internet in strategic and tactical marketing decisions. Fast technological development determines a constant change of internet marketing communication are the reasons why any company should observe it closely in order to keep on track. For several years, a revolution in marketing communication has been developing and dramatically altering the traditional view of advertising and communication media [8]. More and more companies and institutions

nowadays start to use Internet as a major mean of communication that is able to keep active and significant relationships with target audiences and that requires a new approach to communication.

A very big advantage of internet marketing is an ability to create an interactive relationship with a customer [2, 5, 6, 10]. This means, that it is possible not only to provide information about itself, but also to find out the opinion, preferences and comments of a consumer. It is possible to create fan clubs or social networks of a particular company or particular brands. Interactivity is the main feature of Internet through such means as e-mail, discussions, questions and answers and other that enables a company to communicate with its customer. An organization has to employ such internet marketing communication tools, which would help to take advantage of all opportunities that are provided by interactivity – the most important being reaching and maintaining long-term relationships with customers that are based on individual needs. This contact is most usually initiated by a consumer, who seeks for information, wants to communicate, receive answers and by doing so finds him-/herself in the middle of the structure of marketing communication and manages it. There are five broad benefits, reasons or objectives of internet marketing, which are:

- Grow sales (through wider distribution, promotion and sales); although this may not be practical for all products, an online presence is still important in supporting the buying decision leading to sales through traditional channels. An online presence also offers opportunities to sell into new markets and reach particular segments.
- Add value (give extra benefits online); could be done at different stages of buying process, whether pre-sales, during or post-sales support.
- Get closer to customers (by tracking, asking questions, creating a dialogue, learning about them); customers are easily accessed through chat rooms, questionnaires, web logs, databases so that their attitudes, interests and buying patterns are learned.
- Save costs (of service, sales transactions and administration, etc.);
- Extend the brand online (reinforce brand values in a new medium).

Educational institutions as any other business or social activity nowadays could not survive without e-marketing. Incorporating information and communication technologies into marketing operations they have already acknowledged the importance of having an internet web site, which could help to communicate the ideas, increase the quality of customer service and provide many other functions successfully. It was mentioned before that the customers of educational institution develop long-term relationship with service provider, thus the quality and efficiency of these relationships determine customer satisfaction.

2. Students' Opinion about Effectiveness of Internet Marketing Tools

In order to find out the opinion of prospective and current students about higher education institutions' web sites and the effectiveness of internet marketing tools that are being used the survey was executed using the Lithuanian Web portal for surveys (www.apklausa.lt). The link to the Lithuanian on-line survey was later forwarded to personal contacts through all types of channels (email, social network web sites, etc) and to bachelor, master and doctoral students of our university. The sample size was 198 respondents. The survey contains two parts – a short demographical and main part, although in the main part questions have been grouped into blocks according to research object. All questions were composed closed and compulsory in such a way to minimize ambiguity and provide clear answers. Some questions contained one or multiple choice answers, while the others were given a score scale ranging from 1 to 10 to find out the effectiveness or importance of those indicators. All respondents had to express their opinion about factors influencing their choice of particular educational institution, information being provided, aspects representing higher educational institution on its web site, important qualities of a web site, participation in various discussion clubs, ratings, social networks, etc. [7].

Socio-demographical portrait: Respondents' general demographical characteristics were needed to draw a concise social-demographical portrait. Significant socio-demographical characteristics in this research were – respondents' gender (women – 66%, men – 34%) and study level - master, bachelor or doctoral degree. Respondents' age was omitted because it in most cases could be related to study level. The survey was addressed to school students as well, and the assumption that only 11-12 grade students would be interested replying the questionnaire was made. There were two major groups of respondents: master degree students, with a score of 41 % and bachelor degree students reaching 38 % of total number of respondents. 5 % of respondents were PhD students.

- *Internet usage:* The questions how much time the respondents spend on the Internet daily and what type of information most of the time being searched are important because it may reveal the respondents' priorities and needs. Research provides the astonishing truth that even 59% of respondents spend more than 5 hours a day browsing the internet, searching for particular information, etc (Fig. 1). This is a lot of time having in mind that the second highest score of 25% spend 3 to 5 hours on the Internet daily. If we put these two groups together that would make 84% of respondent spending vast amounts of time on the Internet. Given in this research, we have found out that almost all respondents use the Internet for leisure time needs (93%). The second most popular answer indicated that the Internet is being used for studies (89%). Work and entertainment take up consequently the 3rd and 4th places with scores 77% and 74%.

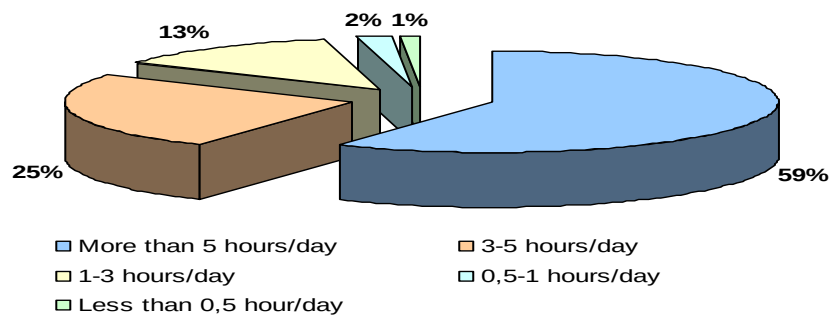


Fig. 1: Internet usage, daily

Source: authors

- *Sources of information about educational institutions.* The leading source of information regarding studies is educational institution's website that scored total of 79%, specific websites that provide information about studies in a range of educational institution - 38%, and only one fourth of survey participants admitted "open-door" days at educational institutions to be effective source of information. 49% of respondents use various publications. Multiple answers were possible, having in mind that respondents would probably not focus on one information source only. The results let us conclude how important educational institution's web site is an information related to study programmes, admission dates, other general issues relevant to entrants has to be carefully presented, organized and placed.

Higher Education Internet Marketing Tools. Questions were aimed to find out the usage of the educational institution's website, its relevant on-line services and valued qualities. The majority of respondents being asked how often they connect to educational institution's website voted for couple times a week and couple times a month, consequently gaining 28% and 33% of votes. Only 5% of participants told that they check the website daily.

- *Relevance of online services.* In order to increase the effectiveness of a study process and facilitate it an educational institution may consider relocating some of its services from the form of physical delivery to online delivery. Viewing examination results (86%) and schedules (75%), possibility to use online conspectus (92%) and library's online services (74%) were the top answers voted by the majority of respondents, while the least popular answer was taking online examinations (only 20% of participants found it relevant). The rest of the online services reached just around the average of 50% respondents' interest.
- *Preferred types of rich media.* The opinion regarding types advertisement found on the Internet is rather important as educational institution may possibly advertise itself on certain web sites often visited by its target customers to draw the traffic to its own web site and raise the interest about its services, especially before the yearly admission period. The results of the questioning show that there was no strong opinion about the issue. The answers were scattered across the scale, with no strong preferences to one rich media type or another. Brand marks and poltergeists were considered not effective at all as the biggest percentage of respondents gave these two types the majority of smallest scores. Text links and both animated and non animated banners were considered to be a little bit more effective than other forms

of rich media (the highest score of 10 was granted by 10% and 13% consequently). The most effective type of advertisement found on the Internet according to all respondents was video ad, where the votes of 53% of respondents scattered from 7 to 10 points in the scale of effectiveness.

- *Online discussion clubs.* The appearance of new communication channels and methods have influenced the way people interact with each other on personal, work, and educational issues as well. Various discussion clubs and forums gather the communities sharing mutual experiences together. This word-of-mouth information is valuable as everyone is sharing personal experiences and opinions. Almost two thirds (64%) do not participate in discussion clubs supported by educational institution's web site, while the rest 36% split into 6% of those who are active participators and 30% of unsatisfied users who would be willing to participate in such discussion clubs, but they are not supported by institutional web sites (Fig. 2).

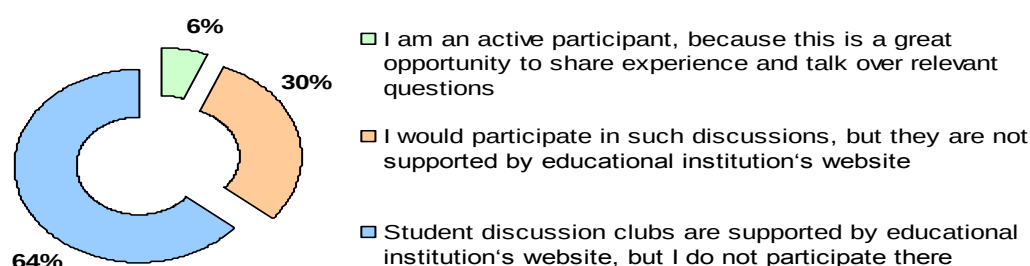


Fig. 2. Participation in discussion clubs

Source: authors

- *Online social networking.* Social networking – is the way 21st century communicates now. While actual distances between people grow, keeping internet relationships becomes more important. Social networking websites function like an online community of internet users. Members of social networks are able to see their friends' status, make comments and much more. This is a kind of permission marketing – become my friend and get the latest news about me. This is the reason social networking web sites are being used not only by individuals, but by all types of organizations, companies, brands, etc. The fact, that social networking is very popular was again approved by survey results, where only 3% of all respondents confessed they were not members of any online social networking web sites. 97% of respondents were either rather inactive (28%), active (37%), or very active (32%) members of online social networking web sites. This information gives some background for consideration of information related to educational institution sharing on social networking web sites. As these sites are being treated by the majority as friendly and fun (voluntary participation), the acceptance of information provided there could be higher.

According to survey results we are able to conclude that educational institution's web site is a top information source for many respondents in a search of information regarding studies, although a decent amount of them confessed that web sites were not as great in respect of information comprehensiveness.

3. E-marketing Model for Higher Education Institution

There are many stakeholder groups of an educational institution [9]. Every group probably expects to find some sort of relevant information or service dedicated specifically for it. That makes the web site a very complex system and hard to describe. It is easier to split it into the blocks according the target users who have similar interests and preferences. Our proposed e-marketing model concentrates on the most important target group of higher education – service consumers – students (both prospective and current). The model (Fig. 3) represents all type of internet marketing tools and options that are grouped into blocks according web site goals they help to achieve. The most important goals of educational institution's web site, which are directed to both prospective and current students, are:

- To attract prospective students and to provide them sufficient information;
- To provide effective customer service;
- To build a community.

These goals were combined in the model with the web site success factors of content quality, technical quality, service quality and online community, which were chosen according survey results. Two goals of attracting prospective students and providing information will be discussed together, although in the model they are displayed separately.

Attract prospective students and provide sufficient information. A higher educational institution as well as any other commercial or non commercial establishment is nothing without its consumers, or in our case – students. The decision about a certain institution is not accidental or occasional, as it does not induce the need for the service, but the need derives from a person based on his/hers personal social background and motivation. The decision is usually carefully thought through evaluating various options and facts and educational web sites are the primary search source for information. This is the reason one of the goals of a web site is attracting potential customers and providing information. This section is split into two groups of content and both technical and visual means. According to survey results the content is more important, as respondents reached an agreement that such factors as study programmes, scientific activity, participation in public and international projects and the rest from the group are well representing. It is important to mention that both university, staff, current students and alumni achievements were treated as important information, based on that future students make assumptions about quality of studies, and the value they create. A very useful fact about the research is school graduates' reliance on current students and alumni reference as a major influencing factor on decision making about a certain educational institution. This can be successfully exploited on higher education's institutions web site as references provided by "happy users", thus these references would be treated as reliable, not occasionally found anywhere on a random Internet web site.

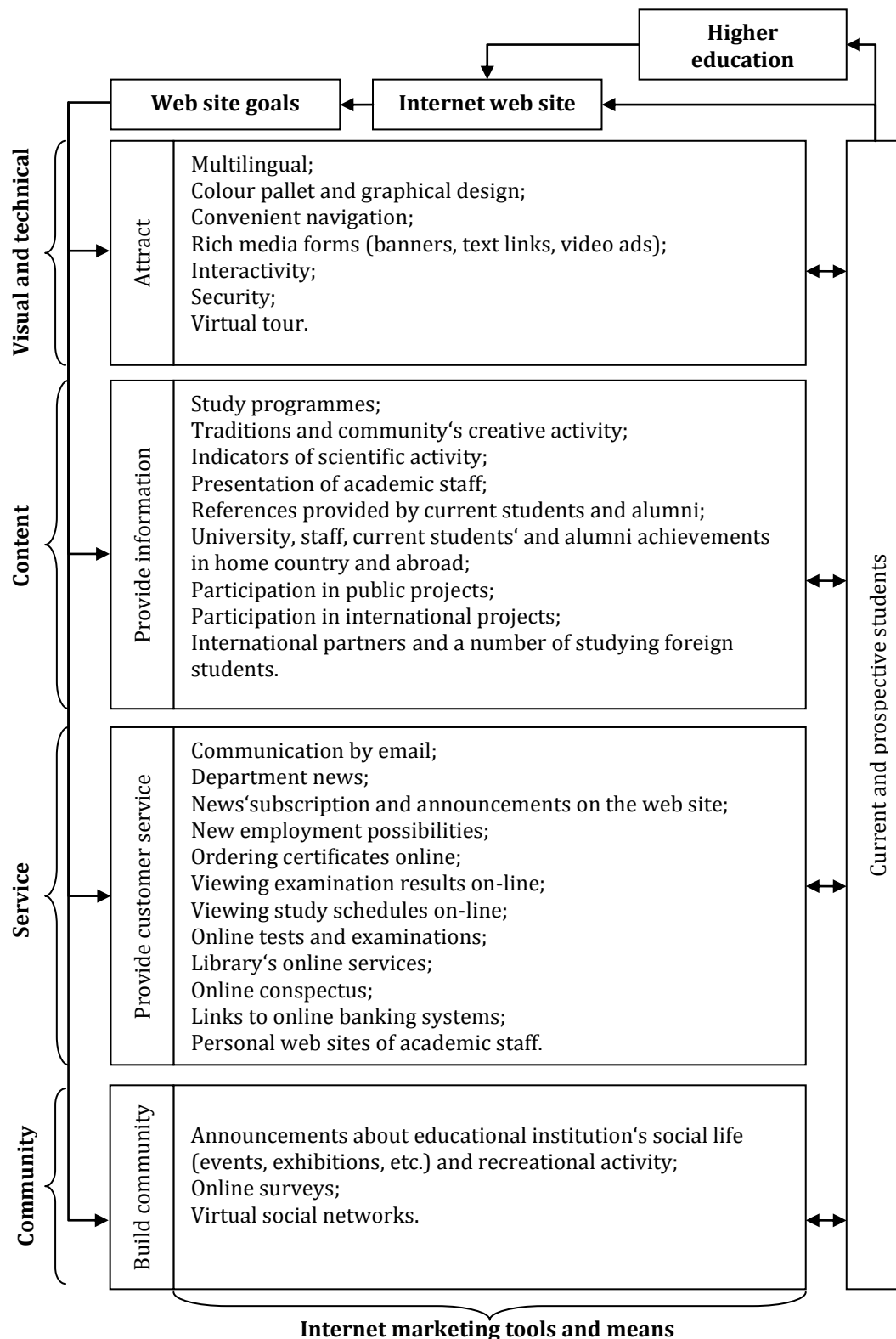


Fig. 3. Higher education institution internet marketing model

Source: authors

A second block of e-marketing means that help attract and inform potential customers, is named as *technical and visual*, because they deal with such aspects as navigation, colour pallet and graphics, interactive options, etc. Meaningfully selected background colours and graphical presentation enhance the image and brand of educational institution in the web presence. Psychological contiguities between colours and impressions are able to enhance the message of being dynamic, revolutionary, innovative, professional, leading, fun, friendly, etc. Rich media forms may successfully be exploited on educational institution's website as well in terms of content presentation (for example video shoots), rather than any type of advertising that they are primarily associated with. Another important factor is convenient navigation.

Provide customer service. Another block of means is related to customer service activities. Efficient customer service in both real and virtual worlds helps to enhance loyalty, increase satisfaction and guarantees effective collaboration between interacting parties. Higher education institution has a wide range of administration services that are often delivered physically. The research results revealed those options that respondents considered to be effective on-line. An internet marketing model includes such administrative services as communication by email (between department and students), ordering certificates on-line, receiving announcements regarding studies, new employment possibilities. Delivering all of these services virtually an educational institution is able to increase productivity of customer (student) service administration. Nowadays any information update is expected to be appearing first virtually and can be accessed from any location. That guarantees increased notification of customers about any changes, novelties, etc.

Build community. There are many interest groups at educational institution that can be divided regarding scientific activity or let's say hobbies. If not the physical, then at least virtual share of ideas or knowledge has to be secured. With a help of online social networking web sites, which according to survey results are extremely popular, the communication among group members can effectively take place. A university department may have its virtual account, where all members, both teachers and students, could share interesting information, links or announcements to future events related to field of study. New group members will be able to join each year with every new enrolment bringing some fresh ideas.

Conclusions

- The significance of higher education institution web site in the context of a source of providing information was proved by 79 % of survey respondents, although a decent amount confessed that web sites were not as great in respect of information comprehensiveness. The most relevant online services were: viewing examination results (86%) and schedules (75%), possibility to use online conspectus (92%) and library's online services (74%). According to survey respondents an educational web site should consider such aspects as employing rich media forms, provide news subscription possibilities (40%), enriching study programmes by interactive

- presentation (81%), uploading questionnaires (66%), and building communities via social networks (97%).
- The proposed e-marketing model represents all type of internet marketing tools and options that are grouped into blocks according web site goals they help to achieve: attract prospective students and to provide them sufficient information; provide effective customer service; support community relations. The proposed model that is based on student expectations should help higher education marketing specialists to exploit the opportunities provided by ICT, increase the efficiency of communication between an educational institution and its target customers and to achieve a competitive advantage in the sector among other educational institutions.

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Instrument of Regional Disparities Reduction – RFID Technologies in Tourism Development¹

Abstract

In recent years, tourism became a global phenomenon, which is a very important social activity affecting the behavior and thinking of not only world's, but also Czech population. It's no doubt that it is a significant economic area, which is characterized by unusual range and progression. Tourism represents an increasing comprehensive phenomenon with political, social, economic, cultural, ecological, and the aesthetic dimension. This is an important part of many national and regional economies, worldwide it brings the largest export benefits, and tax revenues; therefore it is a substantial factor in the balance of payments of many countries, resp. regions. Surely, logistics is a part of this sector. People usually don't awake to the fact that the logistic technologies play very important role here. We speak of e. g. purchase and supply, transport, identification of services and persons, etc. This paper is focused on the identification within tourism development, above all on the identification by radio frequency (RFID). Here the hypothesis H_0 stands: "The companies in tourist trade using RFID technologies are profitable and may help to its region to achieve any competitive advantage and to strengthen its economic position". In the introduction this technology is explained, subsequently there are outlined the basic principles and methods of its functioning - i. e. the utilization of passive and active tags. Then SWOT analysis of RFID is mentioned. The essential part of the paper is a description of the practical use of RFID in tourism development – i. e. the identification of persons (entrance tickets, chip bracelets, smart ID cards, passports, etc.). Then the analysis of the standard classic identification and identification by radio frequency follows, in particular the cost analysis. The comparison of these two methods adverts to the advantages, but also to the disadvantages of RFID. In conclusion, the return on RFID by the net present value is calculated and the hypothesis H_0 is confirmed.

Key Words

disparity, region, radio frequency identification (RFID), tourism, technologies, NPV

JEL Classification: R11, G11, L83

Introduction

Logistics is a significant part of tourism, logistic technologies play very important role here. We speak of e.g. purchase and supply, transport, identification of services and

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persons, etc. This paper is focused on the identification within tourism development, above all on the identification by radio frequency (RFID). The aim of this paper is to verify/refuse the hypothesis H_0 : "The companies in tourist trade using RFID technologies are profitable and may help to its region to achieve any competitive advantage and to strengthen its economic position". Radio frequency identification (RFID) is a generic term that is used to describe a system that transmits the identity (in the form of a unique serial number) of an object or person wirelessly, using radio waves. It's grouped under the broad category of automatic identification technologies [7]. RFID is in use all around us. If you have ever chipped your pet with an ID tag, visited any culture action with chip bracelets, etc., you've used RFID. In addition, RFID is increasingly used with biometric technologies for security.

1. Principles and Methods of RFID

An RFID system consists of three components: a tag (or multiple tags), a reader or interrogator and the necessary supporting infrastructure (both hardware and software). An RFID reader, or interrogator, is a device to communicate with the RFID tag. It broadcasts a radio signal, which is received by the tag. The tag then transmits its information back to the reader. Readers can either be portable handheld terminals or fixed devices that can be positioned in strategic places such as loading bays in shipping and receiving facilities, or the doors in transport trucks. RFID tags, also known as transponders, are usually small pieces of material, typically comprising three components: an antenna, a microchip unit containing memory storage and an encapsulating material. Tags can be either read-only or read-write tags. These terms refer to whether or not the information stored on the tag can be changed or erased. A *Read-only Tag* is a form of RFID tag that has an identification code (more specifically, an Electronic Product Code - EPC, see Fig. 1) recorded at the time of manufacture or when the tag is allocated to an object. Once programmed, the data on the tag cannot be modified or appended but it may be read multiple times. A *Read-Write Tag* is a tag that can have its memory changed, or written to, many times. Because their ID codes can be changed, they offer greater functionality albeit at higher price.

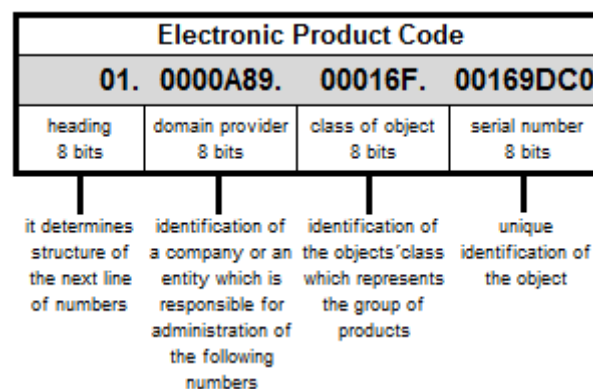


Fig. 1: EPC structure

Source: [9, p. 1286]

While commonly seen as a replacement for the Universal Product Code (UPC), or bar code, RFID tags differ from bar codes in several ways. More than one tag can be read at a time. Tags do not require a direct line of sight for reading and may be read through hard material such as book covers or other packaging material. Each tag can uniquely identify the object to which it is attached, even if that object is one of a multitude of identical items. It is these latter characteristics that are the cause of many of the privacy concerns associated with the use of RFID technology.

2. SWOT Analysis of RFID Technology

In this part the main strengths, weaknesses, opportunities and threats of RFID in tourism are mentioned:

Strengths

- Real time of information.
- Wide selection of possible variants (transponders, reading/recording items).
- Lower costs for servicing and maintenance.
- More information – unique data.
- No other controls are needed.
- Reduction of operating costs.

Weaknesses

- High cost structure.
- Gigantic amount of data – loss of accuracy.
- Too expensive for now.
- Reading of codes at a distance – potential thieves.
- Question of privacy.

Opportunities

- New technology (higher flexibility of production).
- Source of possible competitive advantage.
- Possible global enlargement.
- Growing market (higher number of customers).
- Quality monitoring.
- Higher safeness.

Threats

- Slower economic growth may stop the demand.
- Market growth may attract the competition.
- New process technology – competition with lower costs.
- Possible negative publicity.
- Unwillingness of implementation by suppliers.
- No legal limitations.
- Data protection – important data.
- Customers apprehension – loss of relevant data, customers profiles, etc. [8]

Simply we may then summarize its advantages and disadvantages into the following Tab. 1.

Tab. 1: RFID positives and negatives

Advantages	Disadvantages
direct visibility for reading and recording to tags is not necessary, sinking of error rate, improved management of goods flow, higher level of automatization, digital obtaining of information, speed of information acquisition, mobility, resistance and variability of medium	impassableness of radio waves through water and metal, sharing of frequency with other older phone and wireless technologies, i. e. frequent interruptions of frequency, RFID tags' placing on marked objects (codes are not read by reason that they are covering, there are impassable stops etc.).

Source: [1]

3. RFID Practical Utilization in Tourism

Many public and private sector organizations are either using or planning to use RFID technology. Because the technology basically turns an inert object into one capable of communicating, the potential for use is enormous and limited only by our imagination and the capabilities of the technology involved. Potential uses in the near future include:

1. Supply Chain Management (monitoring and controlling the flow of goods from raw materials through to finished product, from manufacturer to consumer).
2. Product Integrity (ensuring that products are authentic and have not been altered in any way).
3. Warranty Services (marking durable goods with a tag incorporating a product registration code to facilitate warranty services).
4. **ID, Travel, and Ticketing** (providing a means to verify the identity of the traveler and to ensure that the documents are genuine).
5. **Baggage Tracking** (monitoring and controlling the movement of baggage from check-in to loading on an airplane).
6. **Security** (transportation management, biometry passengers check, secure cryptology transmissions, introduction RFID for luggage handling). [13, p. 128]

3.1 Identification of Persons

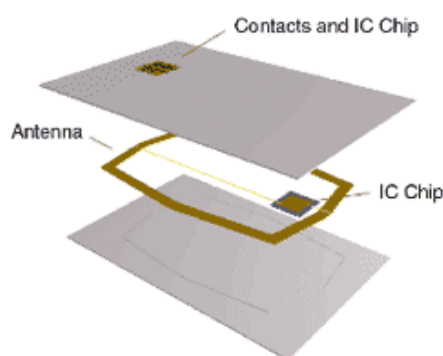
For the identification of persons we may simply use chip bracelets, smart ID cards, passports, etc. (the examples follow, the economic comparison is mentioned in part 4 and 5). Precise and easy identification is very important for the development of tourism – i. e. cultural and social actions, hotels, airports, etc.



Note: These bracelets may contain chips like: Tag-it™ HF- I, Mifare®Ultralight, or Mifare®Standart 1K, Mifare®Mini. Usually they are made of plastic or silicon material; they hold memory inside; multiple usage is possible. They are non-negotiable and long-life.

Fig. 2: Example of RFID chip bracelet

Source: [3]



Note: A smart card (or chip card/integrated circuit card – i. e. ICC), is any pocket-sized card with embedded integrated circuits. There are two broad categories of ICCs: *Memory* cards contain only non-volatile memory storage components, and perhaps dedicated security logic, *Microprocessor* cards contain volatile memory and microprocessor components. The card is made of plastic.

Fig. 3: Example of smart ID card

Source: [11]

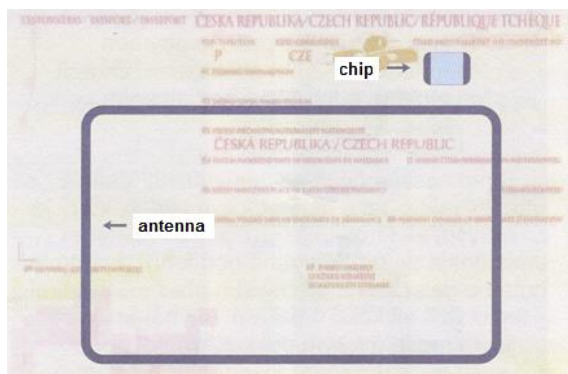


Fig. 4: Example of passport with RFID chip

Source: [2]

In recent years new passports with radio chip (RFID) have been introduced. The chip contains biometric data of the owner (digitized photo and now also fingerprint). Data from the passport's chip can be read by machine and at a distance. Data about where, when and who traveled can be automatically held then.

4. Cost Analysis - Comparison of Standard Identification and RFID

The expenses for passports are the same for all people according to the law, for bracelets and smart ID cards the expenses depend on several aspects (number of pieces, type of material, colour, required capacity, type of reader, range of possible information, relations between supplier and customer, etc.). When we compare costs connected with identification of persons by standard methods and by RFID, we will find out then the following statements:

Tab. 2: Cost analysis – Passports

	Costs	Request Fulfilment	Validity
Standard passport	1,500.00 CZK	15 days	6 months
Passport with RFID chip	☺ 600.00 CZK	☹ 30 days	☺ 10 years

Source: [2]

For the costs confrontation of identification by bracelets the comparable types were chosen. The main common characteristics of bracelets were: plastic material, unicoloured (see tab. 3).

Tab. 3: Cost analysis – Bracelets

	Costs/piece with VAT	Costs/reader with VAT
Bracelet with barcode (EAN 8 or EAN 13)	3.12 CZK/piece	3,700.00 CZK/piece*
	☺ price	
	☹ activities till 48	
Bracelet with RFID chip (MIFARE Mini)	5.20 CZK/piece	3,900.00 CZK/piece**
	☺ short- and longterm activities	
	☺ possibility of serial numbering	
	☺ multiple utilization	
	☺ long-life	
	☹ price	

Note: * reader type MS 5145 Eclipse; ** reader type TWN3 EM Marin

Source: [6, 3]

For the cost analysis of smart ID cards were these characteristics considered: 1 (offset) colour on front and back page, no metallic colour of front and back page, white signature zone, 1 row for signature zone, white colour of thermoprint, 2 rows for thermoprint, black colour of emboss, 2 rows for emboss, no magnetic tape (see tab. 4).

Tab. 4: Cost analysis – Smart ID cards

	Costs/piece with VAT	Costs/reader with VAT
	12.00 CZK/piece	4,300.00 CZK/piece*
Card with barcode (EAN 13)	☺ price ☹ non-negotiable ☹ direct contact with reader	
	25.00 CZK/piece	4,100.00 CZK/piece**
Card with RFID chip (MIFARE Standard)	☺ contactless card for reading and record ☺ security by 32 bits password (i. e. high safety) ☺ laser programming ☺ 2 KB capacity of memory ☺ utilization in these applications: access control, network log-on security, noncash payments, attendance systems, biometric identification, etc. ☹ price	

Note: * reader type MS6200 Pulsar L; ** reader type ProxPoint Plus 6005

Source: [6, 5]

5. Net Present Value of RFID

In this part return on RFID by one of the dynamic methods (net present value) is calculated. The net present value is equal to the following mathematical formula:

$$NPV = -In_0 + \sum_0^t \frac{CF_t}{(1+r)^t} \quad (1)$$

where: In_0 initial expenses,
 CF_t cash flow in a given year,
 r discounted rate,
 t durability life.

First discounted cash flow in given years was calculated (row No. 3 in tab. 5), then the net present value was figured out like the sum of present values of individual cash flows and negative value of initial expenses according to the formula above.

From the above it is clear that the acceptable value of NPV is any non-negative number. A zero NPV value means that, from the perspective of cash flow, the project is neither profitable nor loss-making. However, a large part of the assets of the company has also non-cash benefits, which are not considered by NPV calculation. Any positive NPV value is good, resp. the higher NPV value, the better economic situation financial managers can expect. [12]

Example: Firm ABC Ltd. in economically depressed region would like to buy 1,000 pieces of smart ID cards for its full time staff, external employees, students, and visitors. An

annual fluctuation about 25 % is assumed. What type of cards the company should purchase – just with EAN barcode, or with read-write RFID chip?

1. Calculation of initial expenditures:

1,000 smart ID cards with EAN barcode; 12 CZK/card; 4,300 CZK/reader (data from tab. 4)

1,000 smart ID cards with RFID chip; 25 CZK/card; 4,100 CZK/reader (data from tab. 4)

$\text{EAN } In_0 = 1,000 * 12 + 4,300 = 16,300 \text{ CZK}$

$\text{RFID } In_0 = 1,000 * 25 + 4,100 = 29,200 \text{ CZK}$

2. Calculation of cash flows in individual years – hypotheses:

Durability life of the card (t) is 10 years.

Discounted rate (r) is equal to the discount rate of the Czech State Bank 0.25 %.

Cash flows in individual years are equal to the opportunity costs of purchase of non-negotiable cards with EAN barcode (12 CZK/card) and fluctuation of 25 % (i. e. in the first year $12 * 250 = 3,000$). In the next years inflation of 1.5 % is always added to cash flow of last year (row No. 2 in tab. 5).

Tab. 5: Net Present Value calculation of RFID

Years	CF0	CF1	CF2	CF3	CF4	CF5
Cash flow	-29,200.00	3,000.00	3,045.00	3,090.68	3,137.04	3,184.09
Discounted cash flow	-29,200.00	2,992.52	3,029.83	3,067.61	3,105.86	3,144.59

Years	CF6	CF7	CF8	CF9	CF10	NPV
Cash flow	3,231.85	3,280.33	3,329.53	3,379.48	3,430.17	2,461.35
Discounted cash flow	3,183.80	3,223.49	3,263.69	3,304.38	3,345.58	

Source: own calculation

1. When we compare only initial costs then it is more economical for the company to purchase smart ID cards with just EAN barcode ($\text{EAN } In_0 16,300 \text{ CZK} < \text{RFID } In_0 29,200 \text{ CZK}$). But the financial managers can not forget those two main disadvantages of EAN cards: non-negotiability and direct contact with the reader.
2. Net present value of RFID cards is higher than zero ($\text{NPV} = 2,461.35$) with our determined hypotheses, advantages of RFID technology are included here (negotiability, contactless card, long- life, capacity options, etc). Purchase of cards with read-write RFID chips is acceptable then.

6. Discussion

The main idea of this article was to demonstrate a positive influence of technologies on tourism development, resp. regional development. From the above mentioned (positive

net present value in part 5 of this paper) we can claim here, that the hypothesis H_0 was verified: "The companies in tourist trade using RFID technologies are profitable and may help to its region to achieve any competitive advantage and to strengthen its economic position". In other words, if the firms in tourist trade using modern identification systems and are able to evaluate these technologies by the appropriate methods, they become profitable. It may also attract the other investors and companies to the region, so the economic position of the region could be strengthened then. Companies in tourist trade located in the economically depressed areas don't be afraid of new technologies, vice versa - it is a good step for their future development!

Conclusion

Radio Frequency Identification (RFID) is a subset of a group of technologies for automatic identification. RFID uses radio waves to help machines with the objects/persons identification. It has been around for a long time, nowadays it is getting more important above all in logistics, resp. in tourism development – ID, travelling, ticketing, baggage tracking, security, etc. This paper was focused on identification of persons in tourism by passports, bracelets and smart ID cards. First cost analyses were mentioned, then return on smart cards with RFID chips was calculated. Several hypotheses for the net present value were determined (durability life, discounted rate, cash flows, etc.) and some specific types of chips, cards and readers were selected. The initial costs are higher, but from the view of several years the purchase of cards with read-write RFID chips is profitable. So the result is favourable: net present value is a positive number and we may assume that the companies in tourist trade using RFID technologies are profitable and may help to its region to achieve any competitive advantage and to strengthen its economic position – the hypothesis H_0 was verified. In conclusion it is necessary to say that it depends on the determined hypotheses and selected types of chips, cards and readers mentioned above – the higher requirements, the higher initial costs and lower return. RFID is getting more significant in tourism development and the companies may expect cheaper, more available technologies in the near future.

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Banking Competition in the Czech Republic, Slovakia, and Poland

Abstract

The aim of the paper is empirical estimation of the competitive conditions of the banking industry in the Czech Republic, Slovakia and Poland during the period 2000-2009. At the beginning of 1990s, the analyzed countries started to transform from centrally planned into market oriented economies and bank restructuring and privatisation has made huge strides during 1990s. We apply the New Empirical Industrial Organization approach, especially the Panzar-Rosse model to estimates the level of competition during the period 2000-2009. We estimate H statistic for a panel of banks, which represent almost 85% of the market in these countries. The paper also measures and compares the degree of banking competition in two sub-periods, 2000-2004 and 2005-2009, in order to investigate development of the competitive structure of the banking industry in countries. While the Czech banking market can be described as perfectly competitive during the period 2000-2004, the intensity of competition decreased in the second sub-period and the market can be characterized as one of monopolistic competition in 2005-2009. The monopolistic competition in the Czech banking market was also revealed in the full sample 2000-2009. The Poland's banking sector can be characterized as a monopolistic competition in the whole period as well as in the first sub-period. By contrast, we revealed a perfect competition in the second sub-period. In Slovakia, banks operated under a monopoly structure in the full sample as well as in the first sub-period; in the second sub-period the banking industry is characterized as a monopolistic competition. While the competitive conditions worsened over time analyzed in the Czech banking sector, the competitive conditions increased in the Polish and Slovak banking sector.

Key Words

competition, Panzar-Rosse model, banking sector, Czech Republic, Slovakia, Poland

JEL Classification: D40, G21

Introduction

The Czech, Slovak and Polish financial system is traditionally bank-based and banks play an important role in the economy. At the beginning of 1990s, the analyzed countries started to transform from centrally planned into market oriented economies. The bank restructuring and privatisation of the banking sectors were realized during 1990s. These countries joined the European Union in 2004.

In literature there are two major approach of thought in the methodology of assessing competition among banks: the structural and the non-structural approach. The

structural approach includes the structure-conduct-performance paradigm and the efficiency hypothesis. This theory states that if banks enjoy a higher degree of efficiency than their competitors, they can increase shareholder value or will gain the market share by reducing prices. In reaction to the theoretical and empirical deficiencies of structural models, non-structural models of the competitive behavior have been developed: the Iwata model [5], the Bresnahan [1] and Lau [6] model and the Panzar and Rosse [8] approach.

The aim of the paper is empirical estimation of the competitive conditions of the Czech, Slovak and Polish banking industry during the period 2000-2009. We apply the New Empirical Industrial Organization approach, especially the Panzar and Rosse [8] approach based on panel data for commercial banks in analyzed countries. In the paper we use the methodology according Stavárek and Řepková [11]. The rest of this study is organised as follows. Section 1 describes the Panzar-Rosse model. Section 2 describes the methodology and data. Section 3 analyses results for the Czech, Slovak and Polish banking sector, and the last section concludes the paper.

1. Panzar-Rosse model

The method developed by Panzar and Rosse [8] determined the banks' competitive behavior on the basis of the comparative static properties of reduced-form revenue equations based on cross-section data. The model assumes a price elasticity of demand greater than unity, and a homogeneous cost structure. The market power is measured by the extent to which a change in factor input prices (δw_{k_1}) is reflected in the equilibrium revenues (δR_i^*) earned by bank i . Panzar and Rosse [8] defined a measure of competition, the H statistic as the sum of the elasticities of the reduced form revenues with respect to factor prices:

$$H = \sum \left(\frac{\partial R_i^*}{\partial w_{k_1}} \right) \left(\frac{w_{k_1}}{R_i^*} \right) \quad (1)$$

where: R_i^* is the revenue function in equilibrium and w_{k_1} is a vector of input prices of bank i .

The estimated value of the H statistic ranges between $-\infty < H \leq 1$. In particular, the H statistic is non-positive ($H \leq 0$) if the market structure is a monopoly or a perfectly colluding oligopoly. In such a case, an increase in input prices will increase marginal cost of the bank and reduce equilibrium output as well as total revenue accordingly. If H lies between zero and unity ($0 < H < 1$), the market structure is characterized by a monopolistic competition. Total revenues increase less than proportionately to changes in input prices, since the demand facing individual banks is inelastic. The H statistic is unity ($H = 1$) if the market structure is characterized as a perfect competition. Any increase in input prices will increase marginal and average costs without changing the equilibrium output of any individual bank.

An important feature of the H statistic is that it must be performed on observations that are in long-run equilibrium. Competitive capital markets will equalize risk-adjusted rates of return across banks such that, in equilibrium, rates of return should be uncorrelated with input prices [7]. The equilibrium test is carried out with the return on assets, replacing bank revenue as the dependent variable in the regression equation for the H statistic. The E statistic is derived from the equilibrium test and measures the sum of elasticities of rate of return with respect to input prices [4]. If the E statistic is equal to zero ($E = 0$), it indicates long-run equilibrium, while $E < 0$ reflects disequilibrium.

2. Model formulation and data

The dependent variable in the following equation chosen for the paper is defines total revenue to total assets, rather than only the interest part, in order to account for the fact that the importance of non-interest income has increased greatly in recent years in the banking sector. In a more competitive environment, the distinction between interest and non-interest income becomes less relevant, as banks are competing on both forms [3], [9]. The existence of accounting differences across countries is an additional argument in favor of having a comprehensive view of bank revenues. And the dependent variable is divided by total assets in order to account for size differences [2].

$$\ln TREV_{it} = \alpha_0 + \alpha_1 \ln PL_{it} + \alpha_2 \ln PK_{it} + \alpha_3 \ln PF_{it} + \beta_1 \ln ASSET_{it} + \beta_2 \ln RISKASS_{it} + \varepsilon_{it}, \quad (2)$$

where: $TREV_{it}$ is ratio of total revenue to total assets
 PL_{it} is ratio of personnel expenses to number of employees
 PK_{it} is ratio of other expenses to fixed assets
 PF_{it} is ratio of annual interest expenses to total loanable funds
 $ASSET_{it}$ is sum of total assets
 $RISKASS_{it}$ is the ratio of provisions to total assets
 i denotes the bank ($i = 1, \dots, N$) and t denotes the time ($t = 1, \dots, T$).

PL_{it} , PK_{it} and PF_{it} correspond to the three input prices: labor, capital and funds. Consistently with the intermediation approach, we assume that banks use all three inputs. Other explanatory variables are chosen to account for bank-specific factors. Bank-specific factors are additional explanatory variables which reflect differences in risks, costs, size and structures of banks. The total asset variable ($ASSET_{it}$) is included to take account of possible scale economies. The provisions to total assets variable ($RISKASS_{it}$) is a measure of the riskiness of the bank's overall portfolio. The model assumes a one-way error component as described by

$$\varepsilon_{it} = \mu_i + \mathcal{G}_{it}, \quad (3)$$

where: μ_i denotes the unobservable bank-specific effect
 $\mathcal{G}_{it}$ denotes a random term which is assumed to be IID.

The H statistic is given by:

$$H = \alpha_1 + \alpha_2 + \alpha_3. \quad (4)$$

For obtaining equilibrium conditions the model is defined as follows:

$$\ln ROA_{it} = \alpha_0' + \alpha_1' \ln PL_{it} + \alpha_2' \ln PK_{it} + \alpha_3' \ln PF_{it} + \beta_1' \ln ASSET_{it} + \beta_2' \ln RISKASS_{it} + u_{it} \quad (5)$$

$$u_{it} = \theta_i + \vartheta_{it}, \quad (6)$$

where: ROA is the return on assets ratio

θ_i is the bank-specific effect

ϑ_{it} is an IID random error.

The banking market is deemed to be in equilibrium if

$$E = \alpha_1' + \alpha_2' + \alpha_3' = 0. \quad (7)$$

The dataset used in the analysis covers all major banks in analyzed countries of the period 2000-2009 and has been collected from the annual bank reports and BankScope database. Over the sample period, the sample banks controlled on average about 85% of the analyzed banking market with the remaining share controlled by branches of foreign banks and “special” credit institutions (building societies, state banks of special purpose, and others). The dataset consists of 15 Czech banks, 30 Polish banks and 13 Slovak banks over 10 years. To allow for heterogeneity across the banks, we use an error-component model, with the bank-specific error components estimated as fixed effects.

3. Empirical analysis and results

The empirical analysis begins with a test for market equilibrium. Since the analyzed banking sectors went through dynamic development during the period of estimation it would be very ambitious to test only for equilibrium over the full sample. Instead, we run regressions of two 5-year sub-periods and also a rolling regression of a 4-year window in order to reveal periods of market disequilibrium.

Tab. 1: Equilibrium test in the Czech banking sector

	Czech banking sector	Slovak banking sector	Polish banking sector
2000-2009	Diseq.	Equil.	Equil.
2000-2004	Diseq.	Equil.	Equil.
2005-2009	Equil.	Equil.	Equil.
2000-2003	Diseq.	Equil.	Equil.
2001-2004	Equil.	Diseq.	Equil.
2002-2005	Equil.	Equil.	Equil.
2003-2006	Diseq.	Diseq.	Equil.
2004-2007	Equil.	Diseq.	Equil.
2005-2008	Equil.	Equil.	Equil.
2006-2009	Equil.	Equil.	Diseq.

Source: Authors' calculation

Table 1 reports the results of estimation of equations (5) and (7) in the Czech, Slovak and Polish banking sector. To conserve the space only the results of the market equilibrium or disequilibrium are presented. We found that the Czech banking market was alternately in equilibrium and disequilibrium, which demonstrates a dynamic development of this banking sector. The results suggest that the market equilibrium over the whole estimation period is questionable. On the other hand, the market was in equilibrium in most of the sub-periods.

Given the dynamic changes within the Slovak banking sector during the sample period, it is not surprising to find from the 4-year estimations that the market equilibrium may not have held over the full sample period. The rolling regression results show that in the sub-samples 2001–2004 and again in 2003–2006 through to 2004–2007 the banking market was not in equilibrium. However, the restriction that $E = 0$ (market equilibrium) is necessary for the case of perfect competition but not for that of monopolistic competition [7].

The results suggest that the Polish banking sector was in equilibrium over the whole estimation period and in both of the sub-periods. Only one 4-year window 2006–2009 is in disequilibrium. The hypothesis of equilibrium ($E = 0$) is confirmed for the Polish banking sector.

Next, we can proceed with estimation of equation (2) and calculation of the H statistic as in (4) for the Czech, Slovak and Polish banking sector.

Tab. 2: Test of competitive conditions dependent variable $\ln TREV$ in the Czech banking sector

Variable	2000–2009	2000–2004	2005–2009
<i>Intercept</i>	2.5225 ^a (3.7816)	5.6205 ^a (3.6942)	-0.3509 (-0.3286)
<i>lnPL</i>	0.5146 ^a (5.2622)	0.7774 ^a (3.9067)	0.5931 ^a (3.7248)
<i>lnPK</i>	-0.0661 (-1.3127)	-0.0434 (-0.5574)	-0.0634 (-0.9586)
<i>lnPF</i>	0.1946 ^a (5.0808)	0.2233 ^a (3.7116)	0.0500 (0.8587)
<i>lnASSET</i>	-0.3794 ^a (-6.9989)	-0.6588 ^a (-4.7820)	-0.1836 ^b (-2.3493)
<i>lnRISKASS</i>	0.0220 ^a (2.7123)	0.0121 (1.0089)	0.0083 (0.6463)
H0: $\mu_i=0$	$F(14, 121) = 18.9609^a$	$F(14, 53) = 10.3248^a$	$F(14, 48) = 17.8131^a$
H0: $H=0$	$F(1, 121) = 28.9103^a$	$F(1, 53) = 15.9874^a$	$F(1, 48) = 13.5835^a$
H1: $H=1$	$F(1, 121) = 3.4531^c$	$F(1, 53) = 0.0317$	$F(1, 48) = 7.1352^b$
H	0.6431	0.9573	0.5797

Note: ^{a, b, c} denote significance at 1%, 5% and 10% level, t-values in parentheses

Source: Authors' calculation

The results presented in Table 2 show tests of competitive conditions in the Czech banking sector. All explanatory variables have consistent coefficients as far as the sign is concerned. However, the magnitude and significance vary considerably across the periods. Negative and significant coefficients of total assets document the bank size has a negative effect on total revenues and indicates negative economies of scale in the Czech banking sector. The price of funds was significant over the full sample and in the first sub-period demonstrating an ability of banks to offset more expensive funds by higher revenues. A significantly positive impact of the riskiness of bank's portfolio on

total revenues was found for the whole estimation period and it supports the argument that higher risk commands a higher compensating return.

The null hypothesis that the bank fixed effects are jointly zero ($H_0: \mu_i = 0$) is rejected at the 1% significance level for the full sample, for the first sub-sample as well as for the second sub-sample. This indicates the usefulness of the fixed effects panel model and suggesting that the base levels of the dependent variables differ. A significance test on the sum of the input elasticities show that the H statistic lies between zero and unity in the full sample and the second sub-period. By contrast, the H statistic in the first sub-period is not significantly different from unity. The results show that the null hypotheses $H = 0$ and $H = 1$ can both be rejected at the 1%, 5% and 10% significance level for the second sub-sample and full sample, which indicates a monopolistic competition. For the first sub-sample the null hypotheses $H = 0$ can be rejected at the 1% significance level, but null hypothesis $H = 1$ cannot be rejected at the 10% significance level, which indicates a perfect competition. We can conclude that the Czech banking market is monopolistic-competitive in general. Whereas the Czech banking sector can be characterized as one with perfect competition in 2001–2005, the intensity of competition decreased to the level of monopolistic competition in 2005–2009.

Tab. 3: Test of competitive conditions dependent variable $\ln TREV$ in Slovakia

Variable	2000–2009	2000–2004	2005–2009
<i>Intercept</i>	-0.3776 (-0.2449)	0.0708 (0.0576)	-2.2414 (-0.6295)
<i>lnPL</i>	-0.2190 (-1.3592)	-0.1777 (-1.2761)	0.1236 (0.2635)
<i>lnPK</i>	0.1807 ^a (3.4608)	-0.1201 ^b (-2.2158)	0.1370 (1.3374)
<i>lnPF</i>	0.0498 (1.4282)	0.2414 ^a (5.8516)	0.0110 (0.1906)
<i>lnASSET</i>	-0.2227 ^c (-1.6385)	-0.2395 ^b (-2.3098)	-0.0331 (-0.1018)
<i>lnRISKASS</i>	0.0093 (0.2732)	-0.0378 (-1.5469)	0.0389 (0.4347)
$H_0: \mu_i = 0$	$F(13, 113) = 0.0004^a$	$F(12, 45) = 3.4511^a$	$F(13, 50) = 1.5627$
$H_0: H=0$	$F(1, 113) = 0.0042$	$F(1, 45) = 0.1176$	$F(1, 50) = 0.3254$
$H_1: H=1$	$F(1, 113) = 31.1803^a$	$F(1, 45) = 41.3323^a$	$F(1, 50) = 2.3372$
H	0.0115	-0.0564	0.2716

Note: ^{a, b, c} denote significance at 1%, 5% and 10% level, t-values in parentheses

Source: Authors' calculation

Table 3 shows the estimation of the competition in the Slovak banking sector. The bank specific fixed effects were significant in the full sample period and in the first sub-period but they were not significant in the second sub-period. The coefficients of the unit price of funds are positive and statistically significant at the 1% and 5% levels of significance in the full sample period and in the first sub-period and positive and statistically insignificant in the second sub-period. Respectively, while the coefficient of the unit price of labor is negative and statistically insignificant at any conventional level of significance in the full sample and in the first sub-period. The sign of the coefficient of total assets variable is negative and statistically significant in the full sample and in the first sub-period, suggesting that size-induced differences between banks may lead to higher total revenue per euro of assets [10].

Tab. 4: Test of competitive conditions dependent variable $\ln TREV$ in Poland's banking sector

Variable	2000–2009	2000–2004	2005–2009
<i>Intercept</i>	0.5389 ^b (2.0214)	1.3542 ^b (2.3428)	1.6737 ^b (2.5310)
<i>lnPL</i>	0.0261 (0.7993)	-0.0391 (-0.6294)	0.2788 ^c (1.9205)
<i>lnPK</i>	0.0443 ^c (1.5284)	0.0720 (1.0944)	0.0441 (1.1766)
<i>lnPF</i>	0.4419 ^a (14.6399)	0.5198 ^a (9.2455)	0.5195 ^a (6.9867)
<i>lnASSET</i>	-0.1813 ^a (-6.4093)	-0.2836 ^a (-4.6085)	-0.2187 ^a (-4.0821)
<i>lnRISKASS</i>	0.0365 ^b (2.2064)	0.0122 (0.3548)	0.0107 (0.5782)
$H0: \mu_i = 0$	$F(24, 177) = 11.0108^a$	$F(24, 75) = 3.7842^a$	$F(24, 72) = 17.4329^a$
$H0: H=0$	$F(1, 177) = 85.2209^a$	$F(1, 75) = 20.0959^a$	$F(1, 72) = 60.9773^a$
$H1: H=1$	$F(1, 177) = 77.1716^a$	$F(1, 75) = 13.1505^a$	$F(1, 72) = 2.1311$
H	0.5123	0.5527	0.8424

Note: a, b, c denote significance at 1%, 5% and 10% level, t-values in parentheses

Source: Authors' calculation

The Wald statistic (F-statistic) for testing the hypothesis $H = 0$ suggests that the null hypothesis cannot be rejected at the 10% level of significance, while the Wald test for testing $H = 1$ indicates that the null hypothesis can be rejected at the 1% level of significance for the full sample period and for the first sub-period. The null hypotheses $H = 0$ and $H = 1$ can both not to be rejected at the 10% significance level for the second sub-sample period. H statistics lies between zero and unity and banks operate under the monopolistic competition in 2005-2009. We can conclude that the Slovak banking market operated in an environment of monopoly in the full sample period and in the first sub-period and the banking market operated in an environment of monopolistic competition in the second sub-period.

The results of the competitive conditions in the Polish banking sector are presented in Table 4. Like in the Czech banking sector, negative and significant coefficients of total assets indicate negative economies of scale in the Polish banking sector. The price of funds was also significant over the full sample as well as in the first and the second sub-period. A positive and significant coefficient of riskiness of bank's portfolio was found for the whole estimation period.

The null hypothesis that the bank fixed effects are jointly zero ($H0: \mu_i = 0$) is rejected at the 1% significance level for the full sample as well as for both of the sub-sample. A test of competitive conditions show that the H statistic lies between zero and unity in the full sample and the first sub-period. By contrast, the H statistic is not significantly different from unity in the second sub-period. The results show that the null hypotheses $H = 0$ and $H = 1$ can be rejected at the 1% significance level for the first sub-sample and full sample, which indicates the monopolistic competition. For the second sub-sample the null hypotheses $H = 0$ can be rejected at the 1% significance level, but the null hypothesis $H = 1$ cannot be rejected at the 10% significance level, which indicates perfect competition. We can conclude that the Polish banking sector is monopolistic-competitive in general. Whereas the Polish banking sector can be characterized as a monopolistic competition in 2001–2005, the intensity of competition increased to the level of perfect competition in 2005–2009.

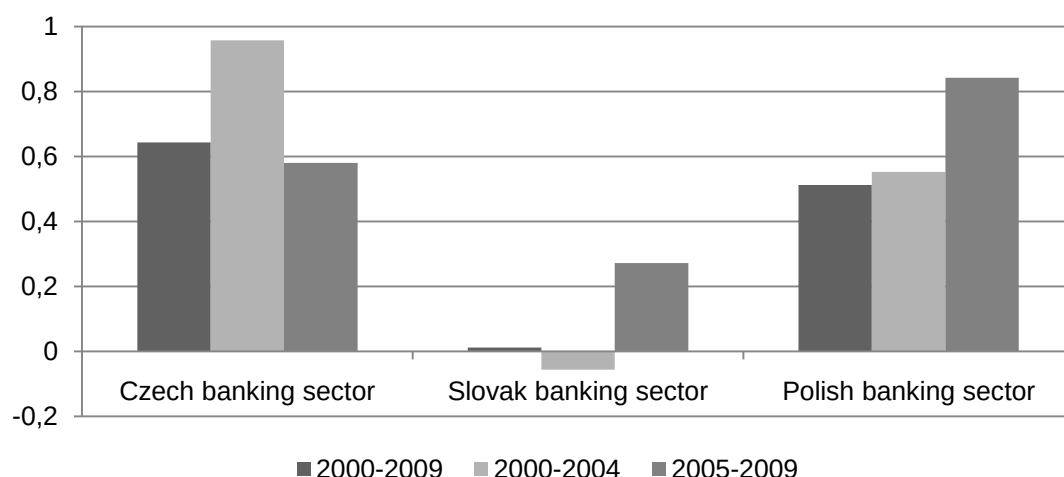


Fig. 1: Estimation of H statistics in the Czech, Slovak and Polish banking sector

Source: Authors' calculation

Figure 1 summarizes the H statistics in analyzed countries in the full sample period 2000-2009 and in the first sub-period 2000-2004, as well as in the second sub-period 2005-2009. In the Czech banking sector the H statistic computed for the full sample is 0.6431, for the first sub-period is 0.9573, and for the second sub-period 0.5797. In the Polish banking sector the H statistic computed for the full sample is 0.5123, for the first sub-period is 0.5527, and for the second sub-period is 0.8424. In the Slovak banking sector the H statistic calculated for the full sample is 0.0115, for the first sub-period is -0.0564, and for the second sub-period 0.2716. In the Czech banking market the estimate of the H statistic was significantly lower in the second sub-period than in the first sub-period, indicating a worsening of competitive conditions in the Czech banking sector. In Slovakia and Poland, the H statistic increased between the first and the second sub-period, therefore we can conclude that the competitive conditions improved over time analyzed in the Polish and Slovak banking sector.

Conclusion

The aim of this paper was to estimate the competitive conditions in the Czech, Polish and Slovak banking industry during the period 2000-2009. The test for market equilibrium proved that while the Polish banking sector was in equilibrium in most estimation period, the Czech and the Slovak banking sectors have not held market equilibrium over the full sample period.

The empirical results of the Panzar-Rosse model indicate that while the Czech banking market is described as perfectly competitive during the period 2000-2004, the intensity of competition decreased in the second sub-period and the market is characterized as one of monopolistic competition. The monopolistic competition in the Czech banking market was also revealed in the full sample 2000-2009. More concretely, in the Czech banking sector the H statistic computed for the full sample is 0.6431, for the first sub-period is 0.9573, and for the second sub-period 0.5797. The Poland's banking sector is characterized as a monopolistic competition in the whole period as well as in the first

sub-period. By contrast, we found it to be a perfect competitive in the second sub-period. In the Polish banking sector the H statistic calculated for the full sample is 0.5123, for the first sub-period is 0.5527, and for the second sub-period is 0.8424. In Slovakia, banks operated under a monopoly structure in the full sample as well as in the first sub-period; in the second sub-period we revealed a monopolistic competition. In the Slovak banking sector the H statistic computed for the full sample is 0.0115, for the first sub-period is -0.0564, and for the second sub-period is 0.2716.

We concluded that the competitive conditions worsened over time analyzed in the Czech banking sector and the competitive conditions increased in the Polish and the Slovak banking sector. The disadvantage of the Panzar-Rosse model is that it determines only two extremes of competition, i.e. the perfect competition and the monopoly, and the monopolistic competition. It ignores other case of competition, e.g. an oligopoly. This may plead in favor of alternative measures of competitive conduct, such as the Bresnahan-Lau approach.

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Tourists' Attitudes Towards Travel Agencies¹

Abstract

Technological developments and intense competition in tourism in the recent years have increased the need for travel agencies to concentrate on retaining and attracting the right consumers. Knowing how customers perceive their services, what they considered important and what factors guide and influence their behaviour, is crucial for the success of travel agencies. They need to understand the underlying dimensions of customer attitudes and satisfaction and how to improve them. Travel agencies are forced to search for new ways to differentiate themselves and gain a better competitive position in order to improve their service perceptions and customer loyalty. Developing a successful strategy thus requires knowledge of the attributes that consumers use to evaluate services in tourism. Valid and reliable measures of perceived value would allow individual travel agencies the ability to identify the dimensions of perceived value in which they perform well or poor.

The paper presents partial findings of the research focused on customer satisfaction in tourism conducted by the Department of Marketing in 2009-2010. It examines the relationship between customers and travel agencies as well as the impact of customers' demographics (age and income in particular) on their perceptions and attitudes towards services offered by travel agencies by applying multi-attribute model that has been used also in brand image studies.

Key Words:

tourism, customer, attitudes, travel agency, multi-attribute model

JEL Classification: L83, M31

Introduction

The recent trends in tourism have brought a dramatic rise in competition and the intense battle for customers. [8] There is no doubt that changes in tourism have been to a great extent affected by demanding customers that have more alternatives in travelling and spending their holidays. Their life-style, preferences and needs have changed. Everyone who has health, money and time can travel almost anywhere around the world. [8] This is why tourists are more experienced, sophisticated and price sensitive. [16] In many cases, they will demand cheaper holidays and have increased requirements for service quality. [6] The trends brought by new technologies and

¹ The paper presents the partial results of the research that has been undertaken at the Department of Marketing at the Faculty of Economics, Technical University of Liberec. The research project „Customer satisfaction and the methods of its measurement in the tourism services” has been supported by the internal grant competition called „Students' grant competition”.

logistics lead to disintermediation of travel agencies that is driven mainly by the internet, low cost airlines and on-line hotel booking. This limits the needs why customers would like to use a travel agency for booking their holiday. The range of services offered by the travel agencies is thus narrowed.

This increases demand on business operations and first of all on marketing activities and strategy development of travel agencies. The increased expectations of customers have made travel agencies to recognize the importance of service quality, customer satisfaction and loyalty. Travel agencies have to concentrate on retaining and attracting the right customers because it is more expensive to attract new customers than to retain existing customers. [17] A better understanding of customers' holiday choice behaviour, their loyalty and patronage habits, differences in their perceptions and preferences for various holiday destinations can help travel agencies to differentiate their product and service design according to customers' needs. [19] (Understanding of customer needs and attitudes is thus a "must" for successful strategy formation. [13])

The paper presents partial findings of the research focused on customer satisfaction in tourism conducted by the Department of Marketing in 2009-2010. It examines the relationship between customers and travel agencies as well as the impact of customers' demographics (age and income in particular) on their perceptions and attitudes towards services offered by travel agencies by applying multi-attribute model that has been used also in brand image studies.

1. Customers' perceptions and attitudes

Travel agencies need to analyze needs and satisfaction of their customers to know how customers perceive their services, what they consider important and what factors guide and influence their behaviour. For this reason they need to understand how customers perceive their services. Knowing the underlying dimensions of perceived customer value, travel agencies would be able to identify the dimensions of perceived value in which they perform well or poor. [15] With the rising competition and increasing opportunities for holidays it is becoming extremely important for travel agencies to know how tourists view competing agencies and how they choose them. A better understanding of tourists' agency choice behaviour, their satisfaction, attitudes and differences in their perceptions and preferences for various services can help travel agencies to develop their strategies and successfully position themselves in the market. [7] [19] [20]

Attitude is the customer's global evaluation of a product/service offering. It depends on customers' prior attitude, modified by his or her perceptions of current performance, prior expectations about performance, and the discrepancy between the expectations and subsequent perceptions. [5, p. 2] Customer attitudes and image perception play an important role in their choice process. Understanding of customers attitudes can be beneficial for companies simply because customer attitudes guide their behaviour. The more positive attitude held with strong convictions, the higher probability that customer will choose a product/service to buy. [2] Customers who enjoy buying a particular

product/service from a particular company are likely to develop favourable attitudes toward the product (company) and become more loyal to it. Attitudes are often used by companies for evaluation of their marketing actions, advertising campaigns; they are also very useful in segmenting markets and choosing target segments.

Customer attitudes are formed on the basis of experience, information, customer preferences, satisfaction and lifestyle. [3] [4] An overall attitude of customers towards a product/company is actually a function of customer beliefs about the product/company attributes and the importance of the attributes to overall customer satisfaction with the product/company, and loyalty. [1] The customer's perception is formed by the customers' perceived importance of the attributes. It is obvious that importance of attributes to individual shoppers can be different. This difference is influenced by demographic and socio-economic characteristics of customers as well as by their personal values, lifestyle and shopping orientation. [14] The important aspect of customers' attitudes is that customer attitudes are dynamic and change over time as they are a result of either customer prior experience or can be formed even in the absence of actual experience based on a store and/or brand reputation. This fact is particularly very important in tourism that is very sensitive to constantly changing customers' attitudes influenced by changes in their lifestyles and travelling possibilities.

Over the years, a number of different methods of measuring customers' attitudes and company image have been developed including *customer prototypes*, *semantic differential*, *open-end technique*, *multidimensional scaling*, *psycholinguistic* and *numerical comparative scales*. Many methods of attitude and image measurement were borrowed from psychology and sociology. [18]

This paper explores tourists' attitudes towards travel agencies. It examines tourists' perceptions of travel agencies focusing on the impact of customers' demographics (age and income in particular) on their attitudes towards services offered by travel agencies by applying multi-attribute model.

The model measures customer attitudes as a function of the strength of beliefs about an object and an evaluation of these beliefs. It provides for selected attributes to be differentially weighted by customers' importance of each attribute. [11] Attitudes of customers are reinforced by their beliefs (the cognitive component) and often attract strong feelings (the emotional component) which may lead to particular intents of shopping behaviour (the action tendency component). The model is presented by the equation (1).

$$A = \sum_{i=1}^n W_i * B_i \quad (1)$$

where: A the attitude towards a particular travel agency

W the weight or importance of attribute i

B the evaluative aspect or belief toward attribute i for a particular travel agency

n number of attributes important in the selection of a given travel agency. [11]

The model proved to be more reliable in predicting customer preferences and measuring store image than demographic, personality or general attitude models. To overcome the problem of identifying salient travel agency attributes, an exploratory research focused on identifying the attributes important in the tourist's travel agency selection was conducted using open-end questions. Respondents were encouraged to list as many attributes as possible.

2. Research methodology

The research explores tourists' attitudes towards travel agencies by evaluating travel agency service attributes and examining the relative strength and importance of the travel agency dimensions in their choice of holiday providers. Along with travel agencies' value attributes perceptions (evaluations), perceptions of the agency attribute importance were examined as well. Demographic (age) and socio-economic (income) characteristics were used to examine tourists attitudes towards the travel agencies.

The research was conducted in judgmentally selected towns in the Czech Republic in the period of November 2009 – February 2010. Data were collected by interviewer-administered questionnaires. Respondents were selected by non-probability quota sampling method using age and gender as quotas since the requirements for representative sampling were impossible to fulfil. Respondents interviewed for the study, were men and women of different age and income levels who had an experience with the services offered by the travel agencies. Descriptive analysis was used to understand and interpret the results of the research. . Means were used to get descriptive information and understand the perception and importance of the selected attributes for respondents when selecting a travel agency. The multi-attribute model was used to explore tourists' attitudes towards travel agencies.

3. Demographic profile of respondents

The sample included 506 respondents, of which 36 percent were interviewed in large towns (with more than 50,000 inhabitants) and 64 percent were interviewed in small towns (fewer than 50,000 inhabitants). The sample consisted of 53 percent men and 47 percent women. Most of the respondents (71 percent) were in age of 21-50 years. About 37 percent of the respondents were single, 46 percent were married and 16 percent were divorced. Majority respondents (77 percent) lived in a household with 2 – 4 members. One person households represented about 18 percent. The respondents' total household income per month varied widely. The largest percentage of respondents (48 percent) fell in to the middle range income category with monthly household income CZK 20,000 – 40,000. The proportion of respondents in the lowest category (less than CZK 20,000) represented 22 percent and the highest income category (over CZK 40,000) 30 percent.

4. Tourists' attitudes towards travel agencies

This chapter presents findings related to tourists' attitudes towards travel agencies. By calculating the mean for each attribute measurement, both for agency attribute evaluation and attribute importance, attitudes of tourists towards travel agencies were examined by using multi-attribute attitude model. The ten attribute dimensions considered to be specific for travel agencies and important for tourists when buying a holiday were used in the study. The results of travel agency attribute evaluation by tourists are summarised in Table 1.

Tourists evaluated travel agencies relatively well. The highest mean score on the scale 1 – very good evaluation to 5 – very bad evaluation was 2.32. Price, services of the travel agencies and personal experience of tourists with the travel agency were attributes that got the worst evaluation. On the other hand, way of booking holiday, transportation, food and accommodation were attributes that were evaluated the best. These attributes represent services that are in many cases out of the control of the travel agency. This shows that there is potential for travel agencies to improve their services, image, customer care and professional approach of their personnel.

Tab. 1: Travel agency attributes evaluation by tourists

Travel agency attributes	Age categories			Income categories				Total
	A	B	C	1	2	3	4	
Way of booking	1.72	1.70	2.00	1.86	1.81	1.72	1.57	1.73
Transportation	1.94	1.86	2.00	1.96	2.12	1.91	1.73	1.93
Food	2.08	1.99	1.89	2.12	2.22	1.83	1.93	2.02
Accommodation	2.09	1.99	2.04	2.26	2.22	1.89	1.83	2.03
Purpose of the holiday	2.22	1.98	2.17	2.29	2.23	2.00	2.00	2.12
Services in holiday destination	2.17	2.11	2.07	2.26	2.23	2.11	2.00	2.14
Image of travel agency	2.15	2.14	2.24	2.36	2.26	2.10	2.03	2.17
Personal experience	2.28	2.21	2.10	2.27	2.36	2.20	2.10	2.23
Services of travel agency	2.18	2.06	2.02	2.39	2.36	2.18	2.08	2.24
Price	2.31	2.24	2.42	2.41	2.32	2.33	2.24	2.32

Note: 1 - Very good attribute evaluation, 5 - Very bad attribute evaluation

Age categories: A to 30 years; B 31 – 50 years; C over 50 years

Income categories: 1 less than CZK 20,000; 2 CZK 20,001 – 30,000;
3 CZK 30,001 – 40,000; 4 over CZK 40,000.

Source: author's calculation

The travel agency attribute importance was explored by the same attributes. The respondents evaluated the importance of selected attributes by selecting five the most important attributes (the same ones according to which they evaluated travel agency) and ranking them from the most important (ranked 1) to the least important (ranked 5). The importance of customer value attributes stated by mean scores is shown in Table 2.

The findings presented in Table 2 shows that the purpose of the holiday and price play the most important role when choosing a travel agency. Food and services provided in the holiday destination, way of booking holiday and transportation were considered to be less important. Services offered by the travel agency, personal experience of tourists

with the travel agency, accommodation and image of the travel agency were perceived by tourists to be the least important attributes for choosing a travel agency.

Tab. 2: Travel agency attributes importance by tourists

Travel agency attributes	Age categories			Income categories				Total
	A	B	C	1	2	3	4	
Purpose of the holiday	2.42	2.34	2.30	2.53	2.39	2.40	2.13	2.37
Price	2.78	3.15	3.46	2.62	3.00	3.25	3.23	3.01
Food	3.89	3.89	4.21	3.94	3.86	4.04	3.93	3.93
Services in holiday destination	3.90	4.01	4.33	4.20	3.94	4.10	4.00	3.99
Way of booking	4.26	4.15	4.27	3.89	3.77	5.35	3.73	4.22
Transportation	4.49	4.34	4.04	4.17	4.42	4.48	4.64	4.36
Services of travel agency	4.63	4.14	5.14	4.45	4.21	4.93	4.31	4.45
Personal experience	4.59	4.50	6.42	5.25	5.31	4.52	4.65	4.75
Accommodation	4.82	4.84	5.00	4.45	4.86	4.74	5.13	4.85
Image of travel agency	5.70	5.28	6.07	5.53	6.00	6.22	4.81	5.62

Note: 1 - Very good attribute evaluation, 5 - Very bad attribute evaluation

Age categories: A to 30 years; B 31 – 50 years; C over 50 years

Income categories: 1 less than CZK 20,000; 2 CZK 20,001 – 30,000;
3 CZK 30,001 – 40,000; 4 over CZK 40,000.

Souce: author's calculation

The findings of agency attribute importance complement the results on tourists' travel agency evaluation (presented in Table 1) and were used in tourists' travel agency attitude analysis. Values of agency attribute evaluation and attribute importance were multiplied and summated to provide the total attitude of tourists towards travel agencies. The total attitude scores towards travel agencies were calculated for each age and income category and as the total attitude towards the travel agencies. The results are presented in Table 3.

Tab. 3: Tourists' attitudes towards travel agencies

Travel agency attributes	Age categories			Income categories				Total
	A	B	C	1	2	3	4	
Attitudes towards travel agencies	77	82	95	91	93	89	79	87

Note: the most positive attitude (min. value)=55¹; the negative attitude (max. value)=255; moderate attitude (average value)=165

Age categories: A to 30 years; B 31 – 50 years; C over 50 years

Income categories: 1 less than CZK 20,000; 2 CZK 20,001 – 30,000;
3 CZK 30,001 – 40,000; 4 over CZK 40,000.

Souce: author's calculation

As it could be expected, respondents with the highest income expressed the most positive attitudes towards the travel agencies. Attitudes of lower income tourists were

¹ The most positive attitude was calculated by using the maximum (5=the best) values of travel agency attribute evaluation for each attribute in index calculation. Similarly, the negative attitude was calculated by using minimum (1=the worst) value of agency attribute evaluation for each attribute in summation. As the agency attribute preference were ranked from 1 (the most important) to 5 (the least important), values from 1 to 5 were used in calculations.

less positive. As far as the age of respondents was concerned, younger respondents had more positive attitudes towards the travel agencies than older ones.

Conclusions

The research on tourists' perceptions and attitudes towards the travel agencies has shown that the perception and attitudes of tourists towards travel agencies vary by their age and income. Tourists with higher income perceive and evaluate services of travel agencies better than tourists with lower income. Younger tourists evaluate way of booking, transportation and image better; however all other attributes were evaluated more positively by older tourists. As far as the importance of the travel agency attributes is concerned, price and the purpose of the holiday were found to be the most important attributes when selecting the travel agency. Price is the attribute that is more important for tourist with lower income and younger tourists. Older tourists seem to be less demanding. Price, food, services in the holiday destination, and services of travel agencies, way of booking, personal experience, accommodation and image of travel agency are attributes that are more important for younger customers of travel agencies. Customers of higher income put higher importance on the purpose of the holiday, service in the holiday destination, service of the travel agency, personal experience and image of the travel agency.

The findings of this research indicate that the more positive attitudes towards the travel agencies are held by higher income and younger potential customers of the travel agencies. The customer's requirements for travel agency services are changing. The trend away from retail agent shops towards online travel sites of various types is causing retail shops to re-evaluate their service offering. According to Lusch and Vargo, "customers are no longer seen as a separate but rather as an integrated economic system. Both the customer and the firm are co-creating by sensing and experiencing together, integrating resources for individual and collective benefit, and learning how to better serve each other. ...customers are part of an extended enterprise and co-producers of the firm's marketing". [12, p. 8, 6]

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Advanced Ways and Means of Civilian Notification in Crisis Situations

Abstract

On March 11 a massive earthquake occurred near Japan, created extremely destructive tsunami waves which hit Japan just minutes after the earthquake. Millions of people were affected by lack of electricity, water, transportation and information. Similar situation took place in smaller size in Liberec region during flooding in August 2010. The current emergency communication systems in Japan, as well as in the Czech Republic, were unable to distribute needed warning information before bad accident to all potential disaster victims. The level of economic and human losses during similar situations depends substantially on timely and high-quality notification. It needs to be targeted to every affected person in imminent danger to direct them to implement appropriate lifesaving and health and property protection. The sharing, distribution and dissemination of adequate information in special and unexpected situations is one of the crucial roles of any governmental level. Unfortunately this role is not always fulfilled correctly. With appropriate information distribution, it should be possible to not only save on material values but also human lives. The Germany introduced Katwarn system, based on new generation of mobile phones. The Katwarn capabilities are compared with the Radio-Help warning system, which was developed by experts of the Technical University of Liberec and private media sector. This article describes Radio-Help system as an advanced solution based on the integration and exploitation of existing ICT. The special broadcasting sender transmits in HD-Radio or DRM mode data and voice to Personal Communication Terminals (PCT) that are, for the most part, already integrated within mobile phones. The role of PCT is compared with that of position codes in digital broadcasting. Matching of internal and received codes activates radio reception in the target location.

Key Words

communication, emergency, crisis, information, distribution, radio-help, KATWARN

JEL Classification: A12, L96, O31

Introduction

Society of the 21st century is increasingly exposed to various crises, ranging from natural disasters and industrial accidents to terrorism. Apart from the crisis affecting large areas and regions we have been experiencing crisis of a local character with growing intensity - whether in the field of transportation (calamities affecting motorways) or due to weather conditions (local floods, windstorms). The rate of economic and human losses during such events is highly dependent on timely and accurate notification of each affected person about the imminent hazard and provision of guidelines for organization of saving lives, health and property.

1. Latest examples of information lack in crisis situations

On March, 11th a massive earthquake occurred near Japan, created extremely destructive tsunami waves which hit Japan just minutes after the earthquake. Millions of people were affected by lack of electricity, water, transportation and - information. A month after the earthquake the number of crash victims raised above 27 thousands of people. On the TV and Internet we watched practically on-line the big tragedy. For many people on movies (especially driving their cars or watching tsunami from bridges) that were last seconds of their lives. They really got – in Japan - no warning information?

Japan has the most advanced early-warning system in the world. A nationwide online system launched in 2007, it detects tremors, calculates an earthquake's epicenter and sends out brief warnings from its 1,000-plus seismographs scattered throughout the country, one of the most earthquake-prone nations on the planet [1].

Similar situation - in smaller dimension - took place in Liberec region in August 2010. A massive flash floods killed people, destroyed homes and livelihoods. Some 2,000 people were evacuated during the disaster, which destroyed hundreds of homes. Many roads and bridges were damaged or made impassable by the floodwaters, and several rail lines were forced to close. The center of the town of Frýdlant was covered in some hours by 1.5 meters of water. The costs of the damage caused in the Liberec region were in excess of 7 billions of crowns (280 million EUR). Almost 5,000 homes were for more than three days without either electricity or gas supply. More then 200 people have to be evacuated by helicopters...Why people did not leave their homes in time? Why did not get the urgent information that the level of the water will dramatically rise in minutes?

The 2009 European floods were a series of natural disasters which took place in June 2009 in Central Europe. Austria, the Czech Republic, Hungary, Poland, Romania and Slovakia were all affected. The heavy rains caused overflowing of the rivers Oder, Vistula, Elbe and Danube. At least 13 people were killed in the Czech Republic alone. Sudden and severe cloud-bursts caused floods, not only near big rivers but also in the countryside. In a few minutes, the water level in small rivers rose massively (e.g. from 35 cm to 6 m in region Novy Jicin). One of the first affects of these floods was the loss of electricity, the ability to watch TV and listen to the radio. Mobile phone transmitters were also damaged.

One shall on this occasion mention also the absence of crisis notification during the widely publicized crisis such as the tsunami disaster in 2004, flooding in New Orleans in 2005 and terrorist attacks in London in July 2005 and Moscow in March 2010. Crisis events experienced in recent years in the Czech Republic would be for example the also floods in 1997, 2002 and 2006, the damage caused by hurricanes Kyril and Emmy, and the mass car accidents - such as 189 vehicles on the highway D1 in March 2008. Timely, and preferably preventive, targeted information on imminent threats would probably significantly reduce the loss of life, health and property.

Existing technological infrastructure of emergency notification is not established for such “soft” crises as power black-outs, leading to a total loss of functionality of virtually

all modern technologies. Perhaps the famous black-out took place in August, 14th, 2003, when a quarter of population the USA stayed for more than 24 hours without electricity... Other wide-spread black-outs occurred in last years in Italy, Brazil etc. Mrs. Dana Drabova (head of the State Office for Nuclear Safety) said in Liberec (April 2010), that the total electrical black-out in the Czech Republic is a question of a short time and the Czech Republic stayed 5 times during last two years just a few minutes before total electrical black-out.

Is there now a possibility, in the current information age, to alerted in time and thus have a better chance for saving lives, health, and materials? The current "Unified warning and notification system" falls under the authority of the Fire and Rescue Service (FRS), and the regional administrations of the Czech Republic [5]. Under FRS authority, there was a development and partial disseminated - in a minimum of applications in terms of widespread impact on the inhabitants - wireless connection to municipal and city exchanges of wired and wireless radio. Centrally operated sirens of civil defense are only sporadically equipped with vocal parts, which could explain to the people the reason behind the raised alarm and transmit instructions for further remedial steps. Broad expansion of such systems to the entire territory of the Czech Republic represents a build out of a brand new infrastructure at the cost in the tens of billions of crowns. The government does not have sufficient financial resources for this purpose. Therefore a truly effective system of emergency notification using existing technology and design philosophy remains a proclamation.

2. KATWARN as a possible solution?

Risk communication theory is based on the assumption that people leave themselves vulnerable because they are uninformed or unconvinced about the consequences of their actions. Providing accurate, helpful information would change people's beliefs about a hazard and lead to an adoption of appropriate mitigation strategies. This is a bit of an oversimplification, because many other factors and obstacles are involved, but it illustrates the general principle.

At the beginning of March 2011 the Czech TV informed about Katwarn (Catastrophe Warning) - new German early warning system, designed in the Fraunhofer Institute for Software and Systems Engineering. The core idea of Katwarn is that people can only be protected from dangerous situations, extreme weather and forest fires if they are alerted at the right time at the right place. The role of it is to amend and broaden possibilities and efficiency of warning systems.

Katwarn employs various warning channels in order to reach people affected by disasters: They base on classical warning channels like e-mail, text messages (SMS) and fax. Additionally to the conventional interaction channels for instance the phone or radio, different warning technologies are in addition being checked. These alarms operate freely of the power grid and like fire alarms, they might emit sound and light signals, however they might in addition send out language and text signals to issue warnings in ultimate situations — even where different systems have already not

succeeded. To caution the older generation, in actual, specific messages are being developed that will be included in TV broadcasts (special flashes for the TV set will be compiled, which univocally draw your attention to dangers and give instructions) that supply a clear notice of potential dangers and tell what's to be done [7].

Warning devices are being distributed and installed in public as well as private buildings. Those devices are independent from the power supply and like fire detectors they are able to emit audio-, light-, speech- or text-signals. Therefore, they are able to issue warnings even in cases in which other systems had already failed. The Katwarn would also create a large collection of parallel items of information that might interfere with each other.

The system employs color-marked warning thresholds: The threshold values can be adapted to the occurrences – it is crucial that the concerned persons can evaluate the potential for danger immediately on the basis of a simple color scale and are able to act accordingly. The warnings are being issued and disseminated by a warning editorial department in the control center. The system will initially issue warnings by postcode; later on it will be able to adjust it on street or geo-coordinates level.

This system converts information needs of users into requests. Afterwards, the requests are being structured and processed by special components: The so called »Content Broker« provides the required contents, the »Locator« makes available the location of concerned persons or the object observed and the »Timer« determines the time of delivery. Via the component »Presentation Producer« all pieces of information for each end device are being processed and sent to the users. As is described on the web-pages of Fraunhofer Institute for Software and Systems Engineering, the prototype system is now being tested in a number of field trials [7].

The KATWARN is surely a big step ahead to distribution of adequate information to right place. As was presented on the Czech TV, the main communication channel of the KATWARN system is the mobile phone communication and e-mails. Its positioning system is currently based on post codes.

As was described in [8, 11], irrespective of the applied technical solution, the system of information services for crisis, disasters and unexpected emergencies must fulfill following requirements:

- the system has to be accessible to every citizen,
- the system has to be accessible everywhere,
- the system has to be independent of the functionality of mobile networks and internet,
- the system has to be independent of functionality of the electric power network.

On the base of the information from public media is possible to say, that KATWARN does not fully respect three of these four points. Mobile phones can be switched-off by the law in such cases like terrorist attacks etc. Other case of inoperability of mobile networks could be described by the situation in London, 7 July 2005. Thanks to terrorist attack the

mobile telephone networks did not collapse but were heavily congested and users had extreme difficulty making calls. The similar situation happened by beginning of floods in 2010 in the Czech Republic.

One of the first “affects” of floods is not only black-out of electricity, but mostly disabling of communication cells. This situation happened in the Czech Republic not only in 2010 but also by previous floods, especially in 2002 and 2009 [10].

The current early warning systems in the Czech Republic are designed to work independent of electricity in very limited mode for 72 hours. What will be after this time?

3. Radio-Help as a potential way

For harder terrorist attacks, which could be directly or in its consequences focused on the very essence of information infrastructure of the state, the Czech Republic has not prepared any electronic medium to be used for adequate crisis communication. Members of the solution team, Milan Brunclík and Jan Skrbek, are the authors of the technical and media solution of direct local distribution of information called “Radio-Help”, which shall be effective even in cases of total collapse of societal infrastructure. The solution, substance of which is protected by a variety of published Czech patent applications - PV 2008-131 (Personal crisis terminal), PV 2008-160 (Crisis radio and TV transmitter), PV 2008-253 (Personal service terminal), PV 2008-254 (Terminal of forced listening), PV 2010-260 (Encryption and decryption of broadcasting based on the position of listener) - preserves direct distribution of crisis communication, even in case of long-term collapse of electric network, classic radio and television broadcasting, mobile phones, landline phones and the Internet. One of the base functionalities of the system is the possibility of urgent (local and selective) notification in case of threats or crisis situations.

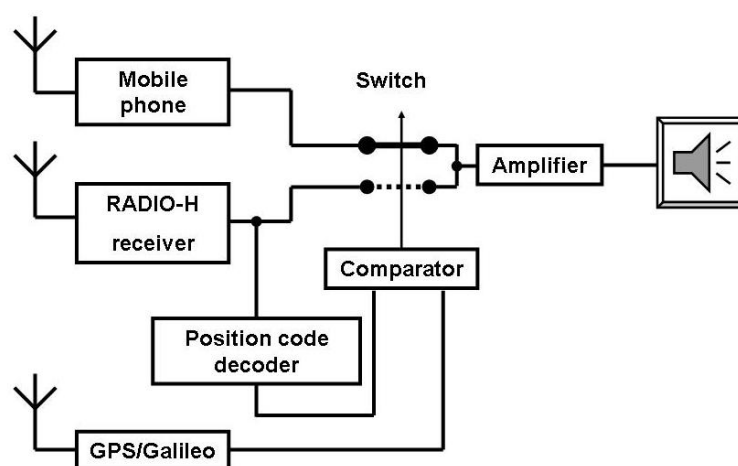


Fig. 1: Block-scheme of Personal Communication Terminal

Source: [9]

From technical point of view, the solution of targeted broadcast for a geographically defined area consists in a superposition of digital positional data to the transmitted information. The receiver of such signal is equipped with a positioning system. Broadcast targeting is performed by comparing the positional coordinates of the receiver (in the form of satellite positioning system) with the codes that are a part of the trigger partition in the beginning of each broadcasting session (Fig. 1). When an external position code, which is transmitted by an authorized transmitter, conforms to an internal position code of the receiver, the forced listening broadcast session is activated (i.e. the session targeted for listening in the defined area). More detailed information about the locally target distribution of information is listed in the authors' patent applications [2], [3], [4].

As it was described in [11, 12], the core task of the Radio-Help project was to find an appropriate technology for targeted one-way communication. In other words – it was necessary to define two main components of a radio-broadcasting system, sender and receiver, based on current transmitting protocols and technologies.

The main requirements defined for a sender are as follows:

- the single sender has to cover a large region (the state),
- the sender must be able to use a secure and safe dedicated frequency (under the state/military control),
- the sender has to be able to broadcast not only sound, but also identification codes for receivers,
- the broadcasting content must be under responsible control.

For these communications it is possible to apply the existing, well proven, technology of HD Radio or DRM Radio. Both of these systems are analog with a superposition of digital signal (Skrbek, 2009). With HD-RADIO technology, broadcasters can use the current radio spectrum to transmit free analog simultaneously with new higher quality digital signals. This eliminates the static, hiss, pops and fades associated with today's radio caused by conditions known as multipath, noise and interference. It is necessary to say that the system Radio-Help is possible to start (at least to test) immediately at current RDS broadcasting systems.

The crucial point of the system is the receiver - "Personal Communication Terminal" – PCT (Fig. 1). In principle it could be an HD-RADIO or DRM receiver that is integrated into wide-spread personal equipment, e.g. a mobile phone, but is independent and fully separated from its hardware and software. The recipient of any crisis communication would only hear sound from their own mobile-phone. The PCT could also be recharged by internal or external mechanical boost of the battery.

The PCT is equipped with a position system (GPS and/or Galileo) that generates position codes. The transmitter of Radio-Help digitally sends an identification code for the targeted area (i.e. the position code) and/or a special code of an individual PCT. The PCT continually checks the internal and/or position code of the Radio-Help sender and activates itself for receiving the broadcast only with matching of the internal and

received identified code. If position and/or internal codes of PCT and broadcasting sequence do not match, no sound is activated on the receiver. If internal and receiving codes match, the system automatically switches the receiver on for reception of crisis information. The only thing required to upgrade a current mobile phone (with GPS) is the addition of one Radio-Help chip with a code comparator.

The receiver of Radio-Help can be integrated into any audio and audio/video devices. Immediately it could be used in all voice sirens and public information systems (e.g. in supermarkets, shopping centers, schools, factories etc.). Such systems just need once setup (e.g. by the initial switching on) the position code. Wide areas of applications bring the integration of Radio-Help receiver into sound systems in cars and navigation systems.

System of Radio-Help is stable and workable in such situations like black-out of electricity, mobile phones, Internet and public broadcasting. From the comparison of both system mentioned above is evident, that the stability, operability and efficiency of Radio-Help is much better then of the Katwarn system.

Conclusion

Radical change in the system for informing the population in crisis is not a question of discussion in terms of whether to carry it out, but only a question of how and when to decide on its implementation and where to allocate the necessary resources

Precondition for negotiation on revising the concept of emergency notification is an accurate statement of all the benefits of the new solution when compared with the existing status. For this purpose, it is necessary to find adequate forms and allowing their relevant evaluation. Results of assessment of the economic effects in case of ensuring full awareness of the citizens and other stakeholders in crisis situations and comparison to the damage and losses in the current system of emergency notification should be an important argument for the introduction (or refusal) of a geographically addressed system for crisis communication and notification.

According to available information, nobody properly studied the impact of crises and of its macroeconomic and microeconomic aspects, from the perspective of prevention of some losses due to full accessibility of all relevant information. One of the possible ways is to create simulation models of historical crises. Variable component is the rate of awareness of citizens and institutions in the affected localities, which could be achieved with the use of technical information tools providing alternative levels of awareness. Economic parameters of these models will be confronted with real data of real events.

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The Prospects of Supported Export Financing in the Czech Republic

Abstract

Succeeding in business internationally involves much more than transplanting a business model or shipping a product overseas. Risk management, regulatory compliance, and especially financing are the key elements in achieving success in the international marketplace. The need of export financing results from the higher financial requirements of the foreign trade, in comparison to the domestic trade. The reasons of the higher costs of exports include the geographical distance from the point of production to the point of consumption, the chronological mismatch between the physical transfer of goods and/or services and the payment for them, and finally the higher risk of export operations. From the point of view of the global international trade, the Czech Republic is a small opened economy, with its foreign trade dependent mostly on the countries of the European Union. Worldwide, and in the Czech Republic as well, the governments support export activities of local producers, and they offer loan programs specifically designed to help the producers to develop or expand their export activities. The support of export credit financing is generally based on the Arrangement on Guidelines for Officially Supported Export Credits (commonly known as the Arrangement). The aim of this article is to analyze the current status of export financing in the Czech Republic, the possibilities of official financial support, and to detect potentials for the Czech companies involved in the foreign trade. The article analyses the performance and structure of Czech exports, describes the current status of the state export financing support, and traces the prospects of export financing in the Czech Republic. Findings of this article indicated substantial growth potential of export financing, especially export financing with the state support and accompanying export credit insurance.

Key Words

export, export financing, international trade, credit, arrangement

JEL Classification: **G21, F36**

Introduction

Exports of goods and/or services have a positive impact on the growth of competitiveness of domestic companies and on the increase in the labour productivity, which is followed by the decrease of unemployment. The importance of exports for the performance of the economy is obvious to most of the countries all over the world. This leads to the official or unofficial state support of exports by various types of tools – like an administration of information, a consultancy, or a financial support.

The international trade is usually closely associated with raised requirements on financial resources in comparison to the domestic trade. The reasons of the higher costs of exports include the geographical distance from the point of production to the point of consumption, the chronological mismatch between the physical transfer of goods and/or services and the payment for them, and finally the higher risk of export operations. [1]

There is a general consensus on the positive effects of the state support of exports for domestic economy, but of course there are also critical voices which highlight distortions in economy caused by the state support. On the other hand, how can an economy be competitive without the state support on the global market, where most of the participants use the benefits of some kind of the state support? Consequently, the most important goal of the state support of exports is to provide to the domestic exporters as good conditions, as the foreign competitors do.

The aim of this article is to analyze the current status of export financing in the Czech Republic, the possibilities of official financial support, and to detect potentials for the Czech companies involved in the foreign trade. The article analyses the performance and structure of Czech exports, describes the current status of the state export financing support, and traces the prospects of export financing in the Czech Republic.

Methodology used in this article encompasses an analysis of current legislation and literature related to export financing, an assessment of influence of exports to the Czech economy, and consequently an assessment of influence of export financing to exports. A questionnaire survey was performed.

1. The legal scope

The world's leading industrial countries, which are major creditors as well as major exporters of capital goods, have struggled to develop rules that constrain the negative aspect of export subsidization through bilateral programs, while preserving its positive potential. Beginning in the 1970s, countries of the European Union, Japan and the United States undertook an effort to develop international rules on export credits and foreign aid. The result was establishment of the Arrangement on Officially Supported Export Credits (commonly known as the Arrangement). Formalized in 1978, the Arrangement is coordinated through the Trade Directorate at the Organization for Economic Cooperation and Development (OECD). The Arrangement has emerged as the primary body of international rules that govern export credit practices and substitutes, in many respects, the World Trade Organization (WTO) in this area.

The Arrangement is a Gentlemen's Agreement among the Participants; it is not an OECD Act, although it receives the administrative support of the OECD Secretariat. As of March 2011, the members of the OECD Arrangement included: Australia, Canada, the European Union, Japan, Korea, New Zealand, Norway, Switzerland and the United States. [2]

The export credit financing in the Czech Republic must observe international obligations - supported financing is provided in accordance with the principles of the World Trade Organization (WTO) and with the rules of the OECD Arrangement. All related activities are fully subject to current banking regulations, primarily, Act No. 21/1992 Coll. on banks as amended, special Act No. 58/1995 Coll. on insurance and financing of exports with the state support as amended, and Act No. 253/2008 Coll. on selected measures against legitimization of proceeds of crime and financing of terrorism, and others. The regulations concerning export credit insurance and financing within the European Union are specified among others by the Council Directive No. 98/29/EC of 7 May 1998, on harmonisation of the main provisions concerning export credit insurance for transactions with medium and long-term cover.

In the Czech Republic, the financing of exports perform the commercial banks and primarily the Czech Export Bank (hereinafter only "CEB"), a banking institution specialized in the state support of exports. It was set up in 1995 and is one of the pillars of the government's pro-export policy system. The CEB mission is to provide state support for exports through the provision and financing of export credits and other services connected with exporting.

In 1992, the Export Guarantee and Insurance Corporation (EGAP) was founded as a state-owned export credit agency, insuring credits connected with exports of goods and services from the Czech Republic against political and commercial risks. EGAP is a state-owned company, and acts in compliance with Act No. 58/1995 Coll. on insuring and financing export with state support, as amended.

The basic strategic document for support activities of the state towards Czech entrepreneurial entities is the Export Strategy of the Czech Republic for the period of 2006–2010. The force of this document was extended even for the year 2011.

2. The importance of exports and export financing for the Czech Republic

The performance of the Czech exports in 2010 took place under the conditions of the gradual recovery of the global economy and a renewal in the growth of external demand. Czech exporters have reacted to the improvement in external conditions by increasing their activity. They have succeeded in reversing the trend of falling exports that had been evident for the majority of year 2009 and have gradually returned exports to their level in the pre-crisis period. In 2009 exports fell year-on-year by 14%, in 2010 they rose by 17%. Total volume of the Czech exports in 2010 was 2,515 billion CZK. On the other hand, imports into the Czech Republic rose to 2,393 billion CZK from 1,989 billion CZK in 2009. This situation led to the decline of the balance of trade surplus from 150 billion CZK to 122 billions CZK. Despite of this fell, the balance of foreign trade remains one of the highest in the European Union.

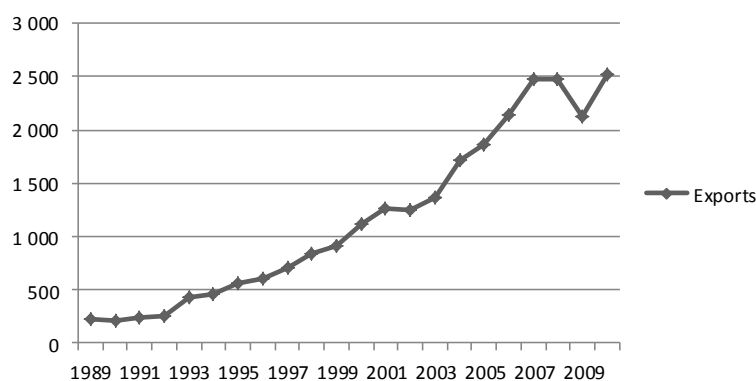


Fig. 1: Total exports of the Czech Republic in billions CZK from 1989 to 2010

Source: Czech Statistical Office [3]

The Czech foreign trade is dependent mostly on the countries of the European Union. Up to 84% of all Czech exports was directed into the markets of the EU member states. In the Czech foreign trade, the most dominant trade partner is Germany with the share on total Czech exports of 32.5 per cent. The second important trade partner is Slovakia, where Czech producers exported almost 9 per cent of the total volume of exports. This situation causes that the Czech exports are exceptionally dependent on cyclical developments in the EU countries. The diversification of exports and the search for new markets outside the European Union remain an imperative for the coming period.

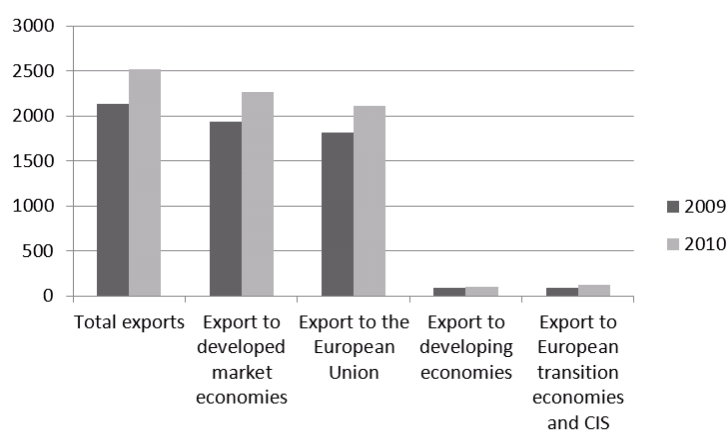


Fig. 2: Czech exports 2009-2010 according to group of countries in billions CZK

Source: Czech Statistical Office [4]

Tab. 1: The territorial structure of the Czech exports in 2010

Country	Exports in billions CZK	Export in % of total
Germany	694,482	32.5
Slovakia	186,946	8.7
Poland	123,064	5.8
France	122,810	5.7
Great Britain	105,875	5.0
Austria	100,007	4.7
Italy	94,407	4.4
Other countries	711,032	33.2
Total exports	2,138,623	100.0

Source: Czech Statistical Office [5]

The importance of exports for the Czech Republic can be illustrated by the share of exports on the Gross Domestic Product of the Czech economy which reached 69 % in 2010. This ratio ranks the Czech economy among opened economies. The openness of the Czech economy is comparable to the other countries of a similar size, like the Netherlands (58%), Slovakia (68%), Hungary (52%), or Ireland (63%). The GDP of the CR increased to 2,518 billion CZK in 2010 from 2,125 billion CZK in 2009, and continued in the ascending trend (with exception in 2009, due to the financial crisis). From the point of view that higher exports contribute to the growth of the GDP, any support of exports is in public interest of the whole economy.

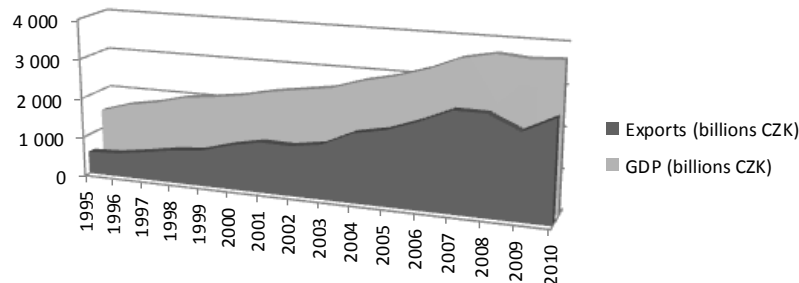


Fig. 3: Contribution of the Czech exports to the Czech GDP in billions CZK

Source: Czech Statistical Office [3]

Not surprisingly, economies that depend more on trade are more vulnerable to global trade shocks. The drop in aggregate demand resulting from the global financial crisis of 2007 - 2009 led to dramatic decline in global trade. Yet, not all countries were affected at the same time or to the same extent. Naturally, the small open economies that depend on trade were most affected. In richer countries, recessions even do last longer, reflecting the advanced-economy nature of the crisis.[6] The Czech Republic was also affected by the effects of global crisis (see drop in GDP in 2009 in Fig. 3), but it is already slowly recovering, according to figures of the year 2010.

3. The financing of exports

The need of export financing results from the higher financial requirements of the foreign trade, in comparison to the domestic trade. Generally, export operations are connected with the higher risk. In the foreign trade, it is possible to define different types of risk according to various criteria. To the most important risks in the foreign trade belong: a market risk, a commercial risk, a transport risk, a territorial risk, an exchange rate risk, a responsibility risk, etc. The relationship of the exporter to the general risk of all business operations has to be active, and such companies should define their risk policy, based on a monitoring and a prevention of the possible risks, a selection of proper payment terms, and an insurance. On the other hand, to stay out of risk usually doesn't lead to better perspectives, but to the loss of entrepreneur's opportunities. [7]

The export credits play an important role in the economy and the international trade. They serve as a tool of diversification on the market, they can stimulate the economic

growth of the world markets, and they belong to the most important tool of the government support of exports. Worldwide, and in the Czech Republic as well, the governments support export activities of local producers, and they offer loan programs specifically designed to help the producers to develop or expand their export activities. The support of export credit financing is generally based on the Arrangement on Officially Supported Export Credits (the Arrangement).

Export finance products may be generally divided into two groups: pre-shipment and post-shipment finance products. The post-shipment finance products are used to finance the transit period between shipment of the goods and receipt of the payment. The pre-shipment finance is used to improve the cash flow of businesses by enabling them to purchase raw materials to produce goods, or to buy goods, provided that they are not the producers.

From the other point of view, the export credits may be divided into short-term, medium-term and long-term credits according to maturity period. According to the method of guarantee, the export credits operations may be divided into guaranteed and not guaranteed. For completeness of the foreign trade financing listing, it is necessary to mention the import credit operations as well, which are used for financing of imports, and are proposed mostly by the commercial banking institutions.

Export operations in the Czech Republic can be financed either by the domestic banking system (commercial banks), or by the Czech Export Bank, a banking institution specialized on the export financing with the state support. The most important products supporting exports of the Czech Export Bank are: [8]

- **Credit for pre-export financing** – enables the Czech producer or exporter to finance costs connected with realization of deliveries for foreign buyer (importer). Financing covers the purchase of raw material and other components for export production, the purchase of material in store, overhead costs, personal costs, i.e. wages, social and medical insurance costs, investment costs in connection with production, and production extension. The loan is repaid by the receivables resulting from the delivery of goods or services.
- **Direct export supplier's credit** - enables the Czech exporter to finance delivery or shipment of goods and/or services.
- **Direct export buyer's credit** – this type of credit is provided to the foreign importer of the Czech goods and services who is the debtor in this operation. But the financial funds are paid directly to the Czech exporter, after the delivery of goods or services.
- **Indirect export buyer's credit** – the mechanism of indirect export buyer's credit is similar to the direct export buyer's credit, but the difference is that the loan is granted to the bank of importer, not to the importer directly.
- **Investment credit** - enables the Czech investors to obtain long-term credit facility for investment abroad.
- **Refinancing of supplier's export credit** - enables an exporter's bank to obtain funds which it can use to provide credit to the exporter under more favorable terms.

- **Refinancing of buyer's export credit** - enables an exporter's bank to obtain funds which it can use to provide credit to the foreign importer or his bank under more favorable terms.
- **Bank guarantees** - a guarantee ensuring that the liabilities of the debtor will be met.
- **Additional financial services** - documentary payments are a way to ensure that the importer, through documents, retains control of the goods until they are paid for.

The support of exports is a part of the general economic policy of the Czech Republic. The state is assisting in acceleration and multiplication of positive effects achieved by Czech firms on foreign markets by the system of the pro-export policy. The intentions of the Czech Republic to support exports are summarized in the "Export Strategy of the Czech Republic for the period 2006 - 2010", prepared by the Ministry of Industry and Trade of the Czech Republic and approved by the Government in 2005. [9]

The national export policy should support just tools that are directly related to export processes. The tools which could determine the general economic environment of a country (e.g. tax system, support of business etc.) are not allowed. The state support of exports in the Czech Republic is based on state guarantee to the specific institutions. There are two basic forms of the state support of export financing:

- export credits insurance against territorial risks and long-term risk of the foreign buyer's payment failure,
- preferential conditions on export credit financing, comparing to the market conditions (in particular the height of interest rates and the maturity of loans).

3.1 Export credits insurance

Risk associated with foreign trade lending is growing as the maturity of the loans is longer. The settlement of insurance events can grow up to the limits that exceed the financial capacity of common commercial insurance company, and to reinsure this operation is even harder. These reasons lead to the necessity of the state guarantees provided by a specialized insurance company, which in the Czech Republic is above mentioned Export Guarantee and Insurance Corporation (EGAP).

EGAP serves as so called ECA (Export Credit Agency). ECAs provide wide range of financing services, such as guarantees, loans and insurance, in order to promote exports in the domestic country. The main activity of EGAP is to provide an export credit insurance against export credit risks with the state support to all Czech exporters regardless their size, legal form, or volume of insured exports. EGAP supports in substance products and territories where the commercial credit insurance companies are not interested to operate, i.e. primarily medium- and long-term export credits and territories with a higher level of the political risk. The state support of insurance is realised in the form of a state guarantee for EGAP's obligations arising from insurance of those risks. [10]

The importance of the guaranteed export credits insurance for the whole system of export financing is sometimes missed out, but its role, especially in the medium and long term financing, can be crucial. A guaranteed insurance of export financing products can be a critical condition for realization of a trade into a country with higher territorial risk.

3.2 The state support of export credit financing

The support of export credit financing is generally based on the Arrangement and the Czech legislation. The goal of the state support of export activities of local producers is to help the producers to develop or expand their export activities, and consequently to support the growth of the whole national economy. Official financing support may be provided in forms of direct credit financing and refinancing, or interest rate support.

In 2010, the priority of the state support increased due to the government policy against the global economic crisis. The CEB and EGAP were granted by higher amount of funds. The insurance capacity of EGAP increased from 150 billion CZK to 200 billion CZK, and the insurance funds increased by 1 billion CZK. In case of the CEB, the stock capital was raised from 2.9 billion CZK to 4 billion CZK, and the bank was granted by 741 million CZK, intended for the export financing with the state support (but from this amount the CEB utilized only 493 million CZK in 2010).[11]

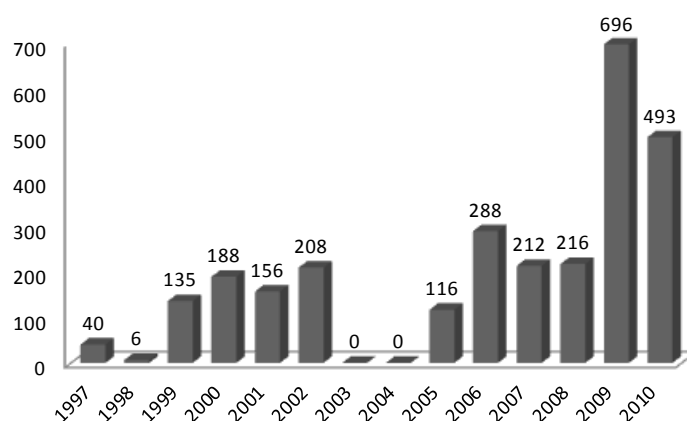


Fig. 4: State support of export financing to the CEB in millions CZK

Source: Czech Export Bank [11]

The increased volume of the state support had positive effects on the total volume of new credits, which reached 38.5 billion CZK in 2010 (more by 53% in comparison to 2009). [10] Even EGAP registered higher volume of new insurance contracts in 2010 (65 billion CZK). The policy of higher state support of exports is supposed to continue even in 2011. The targets of the support are export with high value added and the highest possible support of innovations.

On the other hand, the flow of the state financial support to credits provided by commercial banks is minimal, due to too complicated and time-consuming administration connected with the system of interest difference even up provided for export credits with fixed rates.

3.3 IMU system

The final minimum commercial lending interest rate in the domestic market represents Commercial Interest Reference Rate (CIRR). The CIRR is fixed for each currency of the Participants to the Arrangement. CIRRs are set on the 15th of each month. In the period from 15 April until 14 May 2011 the actual CIRR is 4.14 % for CZK, and from 3.09 % to 4.15 % for EUR. [11] CIRR should closely correspond to the rate for first class domestic and foreign borrowers, it should be based on the funding cost of fixed interest rate finance, and it should not distort domestic competitive conditions. [2]

As an additional tool to the export credit financing with state support, the Czech legislative allows refund of interest rate differences by granting export credits at a fixed rate to the commercial banks. This system is called IMU (interest make-up) system, and it was prepared by the Czech Ministry of Finance, the Czech Ministry of Industry and Trade, the CEB, and EGAP. This tool is widely used in the most of the EU countries. The IMU system is defined in the public notice 278/1998.

The IMU system is based on bilateral refund of fixed interest rates set on the basis of CIRR. The application of this system should contribute to better services of export financing sector and to the higher standard for exporters. The process of export financing should be easier because the commercial banks will not demand financial resources from the CEB, but they will finance export credits at fixed rates on the basis of CIRR from their own resources. The difference between their credit costs and the CIRR will be refunded by the state. The state support is mainly in the elimination of the market interest rate risk. On the other hand, the maximum amount of provision is limited. [13]

Even if this system does not work efficiently at present, after its wider utilization it might be beneficial for all involved parties – exporters, commercial banks and even the state. Exporters can benefit from the fixed interest rate for a certain period of time. A commercial bank involved in IMU system is insured against higher cost of capital and gets compensations from the state. In case that the bank's costs of sources of financing descend, a bank has to pay these interest gaps to the state. By this process the system should be self-financing.

3.4 Country Risk Classifications of the Participants to the Arrangement on Officially Supported Export Credits

State support of export financing is primarily intended for exports to countries with a certain level of risk. According to the Agreement, the countries are classified into seven categories according to the country risk. The classification is performed once a year by OECD.[2] Special category “0 – zero” is represented by countries with the highest level of GNI per capita. Export credits into these countries are supposed to be without any territorial risk, and consequently the insurance of commercial risk must be without any state support. The reason is to eliminate potential advantage of state-owned ECAs on the market of credit risk insurance.[14]

Exports to countries of the EU usually belong to the category zero, so these exports cannot use the advantage of state support. Only a financing of exports into countries with higher risk is supported by state benefits. According to Country Risk Classifications of the Participants to the Arrangement on Officially Supported Export Credits valid as of March 2011, there are five countries of the EU with the higher territorial risk classification: Bulgaria – classification 4, Latvia – class. 5, Lithuania – class. 4, and Poland – class. 2. [15]

4. A questionnaire survey among the Czech exporters

A questionnaire survey among 50 Czech exporters was carried out by the author of this article. The goal of this survey was to obtain actual information on the utilization of export financing among Czech exporters. The contact information on exporters was picked up from the Czech Exporters Directory which is an official database of CzechTrade, the national trade promotion agency. The selection of exporters was incidental, and the rate of return was 10 per cent. The results of inquiry therefore don't represent general status, but background of experience of participating exporters.



Fig. 5: Results of the questionnaire: the use of export financing by Czech exporters

Source: own investigation

Apparently to results of the questionnaire, the interviewed companies usually don't use any form of export financing. The reason probably is that they use any other form of financing available on the financial market. Provided they use any form of export financing, they preferably use services provided by the Czech Export Bank, followed by other commercial banks. In the comments they emphasized high costs of export credits and too complicated administrative connected with export financing as the most serious problems.



Fig. 6: Results of the questionnaire: a bank providing export credit financing for exporters

Source: own investigation

Conclusion

In recent years, the Czech Republic has become an export-oriented country which growth is driven primarily by exports. To the most significant problems of Czech exports belong relatively low level of geographical diversification (concentration of Czech exports to the states of the European Union), the dependency on a few key commodities, and a small number of exporters. The financing of exports could be a serious problem for some of the exporters. The Czech Republic, like the other countries, defined its effort to support export financing in its legislation, based on the OECD Arrangement on officially supported export credits.

The Czech Republic defined its Exports Strategy, and the state-owned organizations CEB and EGAP were founded with the exports support as the main objective. There are several additional organizations supporting exports in the CR.

According to the questionnaire survey among selected Czech exporters, there are still some problems connected with the access of exporters to the supported financing. One of the most serious problems is the administration connected with the process of export financing. Accessibility of small and medium sized enterprises to the supported financing also belongs to the problems which should be taken into account. The significant and prosperous companies usually can choose from wider range of proposed financing possibilities under more advantageous conditions.

The small and medium sized enterprises therefore could represent the growth potential of exports, so the state support of export financing should take these companies more into consideration. It could be done by a simplified and accelerated access to financing and insurance services provided by CEB and EGAP, or commercial banks.

The commercial banks also offer a significant growth potential in providing of export credits, because they can offer supported export credits as well as CEB, and they would like to do so, after the simplification of the legislation.

It is necessary to highlight also the role of export credit insurance, especially for the medium and long term export financing, which would be without corresponding insurance almost unfeasible.

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Territorial Marketing in the Czech Republic: Between Path-Dependency and Learning

Abstract

There are numerous obscurities connected with territorial marketing. Substantial misunderstandings can occur since this concept was labeled by different notions so far. Naturally, the same – with even higher intensity – holds true for transition/post-transition economies. Satisfactory definition of territorial marketing becomes increasingly complicated task also due to the fact that municipality/region represents much more complex unit than enterprise itself. Common signs of territorial marketing can be thus found rather in used instruments, methods, concepts or common objectives. The main objective of the paper is to provide the insight into the practice of territorial marketing in the Czech Republic, which is a typical post-transition country. Our research was accomplished in the municipalities of Moravian-Silesian region, South Moravian and Vysočina regions as these NUTS III self-governing territories embody all principal functional characteristics of Czech regions. As it is shown, there is rather spontaneous than planned development of this concept in the Czech space. Distrust between public and private sectors, lack of finance for the accomplishment of territorial marketing, immaturity of institutions, non-coordinated regional and local development, skeptical attitude to the innovations on the one hand and non-critical acceptance of vogue conceptions on the other hand are just a sample of rather unfavorable factors plaguing Czech municipal milieu. At the same time, there exists sufficient room for the future application of selected components of territorial marketing in this country, which concerns various territorial scales. Last but not least, municipalities in the Czech Republic developed certain routines, which are often of ad-hoc character but which are in compliance with country's socioeconomic milieu and turned out to be efficient in the practice of territorial marketing.

Key Words

territorial marketing, territorial development, Czech Republic

JEL Classification: R19, R50, R58, M31

Introduction

Territorial marketing represents hitherto rather vague notion. This can be ascribed among others to different names assigned to this concept. While English literature usually names territorial marketing as place marketing, German regional and geographical schools most frequently refer to *komunales marketing*. To make the whole situation complicated even more, numerous authors talk about regional and local marketing, spatial marketing, municipal marketing or city marketing [2, 8].

Essentially all of these conceptions deal with the attempts to adapt marketing instruments to the needs of particular territories. It is commonly claimed that spatial applicability constitutes a new function of marketing. However, the derivation of satisfactory definition of territorial marketing becomes increasingly complicated task just for the sake of the fact that municipality or region represents much more complex unit than enterprise itself. Common signs of territorial marketing can be thus found rather in used instruments, methods, concepts or common objectives.

It is apparent that wide utilization of territorial marketing did not appear as a bolt from the blue. Regional and municipal marketing constitute one of the consequences of immense social and economic transformations that took place between 1970-ies and 1980-ies in virtually all developed countries and are succinctly describable as the move from fordist paradigm of societal development towards a post-fordist one [6, 14].

Local and regional development started to be perceived mainly in terms of the stimulation of endogenous potential [12, 13]. In order to stimulate the local potential it was necessary to accomplish institutional reforms and to introduce new, flexible methods of the management of the territories. At the same time, one could contemplate the growth of the importance of networking and networks in local and regional development [5, 15]. The same applies to the conception of embeddedness, relational assets or social capital [1, 9]. Marketing that was formerly applied only in private firms became the subject of so-called marketing broadening, which enabled its partial application also in the realm of municipal and regional development [7, 10].

For the purposes of this article the territorial marketing should be comprehended as a process whereby local and regional activities are related as closely as possible to the demands of targeted customers. The intention is to maximize the efficient social and economic functioning of the area concerned, in accordance with the goals that have been established [4].

There are only little doubts that territorial marketing finds itself in a specific stage in contemporary Czech Republic. Long-term deformation of many components of life manifested itself in painful drawing on development strategies well-known in advanced countries. Briefly speaking, conditions for the accomplishment of territorial marketing in the Czech Republic are far from perfect.

The objective of the paper is to provide the insight into the contemporary practice of territorial marketing in municipalities of the Czech Republic. Data concerning territorial marketing in the Czech Republic were gained on the basis of questionnaire survey that was accomplished in more than 100 municipalities in South Moravian region, Moravian-Silesian region and Vysočina region. Managements of these municipalities represented the respondents of this research.

These territories embody all principal functional characteristics of Czech regions and thus can serve as a proper sample for such kind of research. Moravian-Silesian region is the territory with high degree of urbanization and from the economic perspective it is region with structural problems. On the contrary, the settlement system of South

Moravia is quite a motley one. In spite of some problematic micro-regions, the economic structure of the whole South Moravian region is relatively diversified. And last but not least, Vysočina region represents the territory with specific rural problems. Analyzed municipalities selected on the basis of expert estimations in above mentioned regions thus represent the object of our research.

In the framework of the questionnaire, particular questions were formulated and possible answers to these queries offered. Returns from respondents reached about 60%. Likert scale ranging from 1 to 5 turned out the most pertinent one for such kind of research (the higher number, the higher intensity of the phenomenon concerned). This scale was used in the majority of questions. Descriptive statistics, like mean, median, and standard deviation, were used to describe the basic features of the data in the study. Moreover, the independent samples t-test was used to compare the values of the means from two samples and to test whether it is likely that the samples are from populations having different mean values. Last but not least, it has to be mentioned that territorial marketing in the Czech Republic desperately needs an empirical research and our research was one of few of its kind in this country.

1. Czech municipalities in brief

Settlement system of the Czech Republic is rather homogenous (see also Fig. 1). As to the municipalities, which are basic units of this research, the Act on Municipalities of 1990 allowed for disintegration of municipalities amalgamated during socialism. Consequently, the number of municipalities increased from about 4100 in 1990 to about 6200 at present. This process led to an emergence of a large number of very small municipalities.

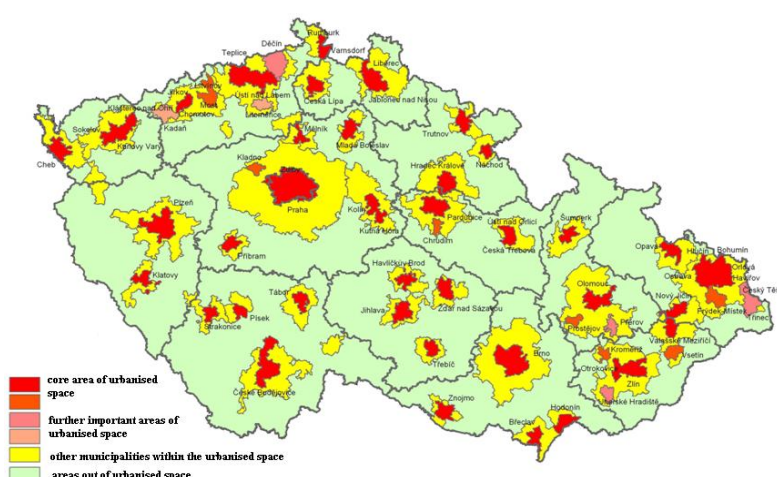


Fig. 1: Settlement Structure of the Czech Republic

Source: authors

Comparisons show that if municipalities are bigger, their managements and budgets are usually more stable, they have also quality staff and can tackle self-governmental activities more deeply. They are also perceived as respected partners in various kinds of

negotiations. On the contrary, the self-government in small municipalities is very weak in financial and professional matters and has limited bargaining-power in relation to the state government as well as private sector developers. Small municipalities can solve merely small problems. The lack of finance is typical for them and very often, they face numerous problems when asking for loans. They can get just limited competences due to the insufficient financial resources as well as usual absence of experts [11]. Small municipalities can only hardly utilize the economies of scale [3]. In spite of above mentioned facts, in the last decade, the Czech Republic witnessed the whole wave of application of territorial marketing at the municipal level.

However, history matters and long-term period of socialism beset country and its institutions in a profound and long-lasting way. Not surprisingly, general conditions for the accomplishment of territorial marketing in the Czech Republic are far from perfect and include for instance great administrative-territorial centralization in terms of competences and financial resources, distrust between public and private sectors, lack of finance for the accomplishment of territorial marketing, skeptical attitude to the innovations on the one hand and non-critical acceptance of vogue conceptions on the other hand etc. [10, 12, 13, 14].

2. Practice of territorial marketing in the Czech Republic

The municipalities were asked first what their source of information about territorial marketing was. The most important sources of information concerning territorial marketing were publications and specialized journals (70.6%). Internet is of great importance too (56.9%) and its relevance will moreover with highest probability grow in the near future. On the contrary, visits abroad are surprisingly low source of information on territorial marketing (21.6%). Tab. 1 shows the statistics of the answers to the question: 'What are the target groups of your municipal marketing activities?'

Tab. 1: Target groups in municipal marketing

	N	Mean	Median	St. Deviation
Citizens/groups of citizens	65	4.34	5	0.92
Visitors of municipality	68	4.15	4	0.87
Potential visitors of municipality	64	3.94	4	0.97
Local entrepreneurs	61	3.77	4	1.02
Non-municipal entrepreneurs	60	3.62	4	1.24
Municipal employees	54	2.69	3	1.43

Source: authors

As it is shown, citizens of the municipality as well as their groups constitute the most important target groups in territorial marketing. The same applies to the visitors of municipality and potential visitors of municipality. Municipal employees on the contrary remained at the bottom of territorial marketing priorities, which shows the severe underestimation of internal markets.

The next question in the framework of the questionnaire was formulated as follows: 'Which of the following target groups would you like to attract to your municipality?'

Tab. 2 presents the results of this research. Domestic investors and tourists create the most attractive target groups. Surprisingly enough, people with university education represent the least important target group. The municipalities are still not aware of the fact that inflow of new inhabitants (mainly educated ones) to certain extent co-determines their position on future mental and investment map. At the same time, one has to consider relatively stiff property market and subsequent problems with finding a new flat.

Tab. 2: Target groups the municipalities would like to attract

	N	Mean	Median	St. deviation
Domestic investors	67	4.52	5	0.77
Tourists	67	4.52	5	0.70
New inhabitants	60	4.13	5	1.13
New small entrepreneurs	61	4.11	4	1.25
Foreign investors	66	4.09	4.5	1.13
University-educated people	60	3.78	4	1.22

Source: authors

Taking into account pivotal marketing objectives of municipalities, it is interesting to see the importance of the attraction of new investors as well as the change of municipal image from tourist perspective. Both topics are currently fashionable in Czech municipal marketing practice. On the contrary, competition among municipalities or introduction of more competitive environment in public services provision did not attract sufficient attention so far. It is plausible to assume, however, that the importance of the latter will rise in not so distant future (see Tab. 3).

Tab. 3: Main marketing objectives of municipalities

	N	Mean	Median	St. Deviation
Attraction of new investors	65	4.31	5	0.88
Change of municipal image from tourist point of view	66	4.14	5	1.01
Citizens, tourists and entrepreneurs as clients of the municipality	65	3.88	4	1.11
Enhancement of identification of individuals and public sector with their municipality	62	3.40	4	1.18
Success in municipal competition	65	3.32	4	1.25
Introduction of competitive milieu in the sphere of public services	63	3.03	3	1.22

Source: authors

Territorial marketing can only hardly work properly without adequate communication instruments. Press still remains the most important form of communication with wide public. However, internet sites become increasingly important because they enable bilateral or multilateral communication as well as continuous information updating. Although it does not seem that newspapers or boards should be entirely abolished before long one can assume that internet will become the most important instrument for the communication of municipal managements with the public. On the contrary, a little weight of roundtables, discussion forums as well as of help with settling the conflicts

shows rather unsatisfactory degree of attention devoted to the public participation (see Tab. 4).

Tab. 4: Forms of communication with the public

	N	Mean	Median	St. Deviation
Press	62	4.55	5	1.02
Internet	66	4.32	5	0.96
Boards	62	4.22	4.75	1.06
Distribution of infomaterials	59	3.34	3	1.11
Exhibition	55	3.16	3	1.41
Local radio	54	2.98	3	1.67
Local TV	44	2.89	3	1.67
Help with settling various conflicts	49	2.69	3	1.49
Questionnaires and interviews with citizens	51	2.59	3	1.22
Roundtables and discussion forums	48	2.21	2	1.53

Source: authors

As it is visible in Tab. 5, concrete projects that lead to tangible results constitute one of most relevant elements when accomplishing municipal territorial marketing. The same applies to the communication with citizens, entrepreneurs and further target groups residing in the municipality. On the contrary, more general concepts, such as marketing as a philosophy of municipal development, are rather the matter of the future. This reveals certain fragmentariness and spontaneity when implementing the marketing at the municipal level. This process is unfortunately often of trial – and – error character.

Tab. 5: Which elements of territorial marketing are implemented/planned to be implemented in individual municipalities

	We do not implement/we do not plan	We implement	We plan
Marketing as a philosophy of municipal development	25.5%	41.2%	33.3%
Co-operation with maximum number of the actors of municipal development	9.8%	76.5%	13.7%
Improvement of the public service quality	9.8%	76.5%	13.7%
Understanding the different target groups	17.6%	54.9%	27.5%
Analysis of municipal strengths, weaknesses, opportunities and threats	9.8%	64.7%	25.5%
Accomplishment of concrete projects	3.9%	86.3%	9.8%
More efficient municipal management	7.8%	66.7%	25.5%
Intensification of municipal promotion	3.9%	74.5%	21.6%
Communication with citizens, entrepreneurs and further target groups within the municipality	3.9%	84.3%	11.8%

Source: authors

Wider and more contextual perspective that would enable to avoid the mistakes related to the process of learning the territorial marketing is clearly absent. Unsatisfactorily low attention is paid to understanding the different target groups that actually represent one

of essential categories of territorial marketing in general. Territorial marketing can be only hardly accomplished without prior delimitation of its target groups.

Tab. 6: Groups belonging to relationship marketing

	N	Mean	Median	St. Deviation
Municipal population	64	4.06	4	0.85
Investors	60	3.97	4	1.13
Important entrepreneurs	60	3.75	4	1.10
Tourists	61	3.61	4	1.07
Suppliers	63	3.52	4	1.16
Politicians	61	3.46	3	1.07
Municipal employees	61	3.41	3	1.31
Journalists	62	3.28	3	1.26
Potential employees	58	2.69	3	1.17

Source: authors

Relationship marketing does not seem to be well-developed in Czech municipalities. The biggest attention is devoted to the relations with the population of the given municipality as well as to the relations with investors. The opposite pole is distinctively occupied by the market of potential employees. This fact confirms that the consciousness of the necessity of the quality of municipal employees is hitherto rather underdeveloped. The role of networking and namely connections in gaining the working opportunities in the public sector offers the plausible explanation of this phenomenon (see Tab. 6).

There are numerous problems with introduction and implementation of territorial marketing in Czech municipalities. Apart from typical lamentations related to the lack of finance we can contemplate mainly different perception of marketing by different actors of territorial marketing. Not surprisingly, our research found a little ability of the relevant actors to communication and mutual co-operation, which is a typical symptom of post-transition country (see Tab. 7).

Tab. 7: Problems with implementation of territorial marketing

	No	Yes
Different actors perceive territorial marketing in a different way	35.3%	64.7%
Development of the municipality is not goal-oriented	74.5%	25.5%
A little tendency of important actors to dialogue and mutual co-operation	37.3%	62.7%
Too dominant position of certain individuals or groups	70.6%	29.4%
Lack of interest and little involvement of individual actors	51.0%	49.0%
Lack of finance	35.3%	64.7%
Frequent political disputes that impede the introduction and implementation of territorial marketing	68.6%	31.4%
Belated or insufficient involvement of municipal council in marketing implementation	78.4%	21.6%
Unclear delimitation of competences between municipal management and people implementing municipal marketing	70.6%	29.4%

Source: authors

Decomposition of gathered data allows us to draw on some more detailed pictures of the state of municipal marketing in the Czech Republic. Size differentiation of municipalities was taken as a useful point of departure. Independent samples t-test proved that differences in some answers for municipalities under 10,000 of inhabitants and above 10,000 of inhabitants were statistically significant at the 5% significance level. Thus, in the sphere of the target groups the municipalities would like to attract, differences in the following answers were statistically significant: foreign investors (Sig. 0.00), new inhabitants (Sig. 0.02) and university-educated people (Sig. 0.03).

Size of municipality naturally influences the priorities in the attraction of target groups of inhabitants. Smaller towns and villages prefer the inflow of any new inhabitants to the detriment of university-educated people. Vice versa, municipalities with more than 10,000 inhabitants prefer primarily new people with university education. The attractiveness of bigger towns is connected not only with the greater number of working opportunities but also with generally qualitatively and quantitatively better facilities. Bigger towns can consequently afford the selective attraction of new inhabitants. It is also worth noticing that smaller towns and villages prefer rather home investors and their larger counterparts are much more open to the international investment environment. As to the relationship marketing, journalists (Sig. 0.01) attract much greater attention of larger municipalities, which is natural as fight for a good position on the mental maps has permanently increasing tendency namely among larger towns and cities.

Conclusion

Territorial marketing becomes increasingly popular notion both in theory and practice. At the same time, the general perception of territorial marketing is truly differentiated and hence its common denominators should be sought rather in used instruments, methods, concepts or goals. The situation is complicated even more in transition countries that find themselves in a pilot stage of territorial marketing and that suffer from the reproduction of former institutions.

Research on the practice of territorial marketing in Czech municipalities fully confirmed afore mentioned suppositions. Territorial self-governments with sufficient competences and financial resources represent an indispensable component of adequate application of territorial marketing in municipalities. In the Czech Republic, where territorial self governments are rather suppressed both in terms of competences and financial resources, the implementation of territorial marketing happens in a trial – and – error way.

Municipalities in the Czech Republic suffer from limited financial resources, which causes that territorial marketing cannot be applied as a general philosophy of municipal development. The attention is on the contrary devoted to the chosen elements of territorial marketing that promise to attract missing finance. These pecuniary motives lead to the concentration on external target groups and partial underestimation of internal ones. Municipalities also underline the importance of concrete measures and

particular projects that in contrast to general proclamations can lead to genuine and tangible development. This shows that territorial marketing which is not included in the legislation of the Czech Republic does require specific program and project support. In sum, Czech territorial marketing at the municipal level indeed finds itself between path-dependency on historical development and a process of learning the new marketing philosophy.

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The Profitability of Moving Average Methods in the Czech Stock Exchange

Abstract

With the development of on-line commercial systems the instruments of technical analysis are becoming more accessible and very easily usable. However, is the trading based on technical analysis profitable? This paper is dealing with the profitability of the business strategies which use the following indicators of technical analysis: Simple Moving Average (SMA), Bollinger Bands (BB) and Moving Average Envelopes (MAE). All the mentioned indicators are the application of the moving average of the length N . The moving average was gradually counted for 199 lengths $N=2, 3, 4 \dots 200$. MAE are then counted for 4%, 6% and 8%. Bollinger Bands (BB) are counted for 1.6, 1.8 and 2.0 multiple of standard deviation. The profitability of particular methods is counted using the data from the Prague Stock Exchange in the space of 5 years from 1 January 2006 until 31 December 2010, specifically for the prices of the following shares: ČEZ, Komerční Banka and Telefonica O2. In contrast with other papers there are included the transaction costs in the amount of 0.4% of trade volume and dividends paid after imposition of taxes. The profitability of particular methods in given parameters is then compared to passive strategy Buy and Hold (BH). In total 4179 results were obtained for was the set parameters (597 for SMA, 1791 for BB and 1791 for MAE). Calculations proved that trading based on the strategies mentioned above is interesting mainly for brokers who earn money from the realised trade fees. Trading according to the SMA method did not beat BH in any length of average and in any share. The MAE and BB strategies showed slightly better results, they managed to overcome the BH strategy in 24% of cases. However, the triumphant strategy parameters were quite different for particular shares. The results show that using the strategies mentioned above is not beneficial for investors and occasional beating the market is just a case of luck.

Key Words

technical analysis, simple moving average, Bollinger bands, moving average envelopes

JEL Classification: C41, G11

Introduction

One of the possibilities used for prediction of stock prices is the Technical Analysis (TA). TA is understood as a wide complex of methods which, according to the past trade prices and volumes, predicts the future prices. Academicians, in contrast to the views of many practitioners, were sceptic to TA for a long time. The reason was the commonly accepted Efficient Market Hypothesis by Fama [1], which considers the chance to reach above-average profit impossible. The second reason might have been several early and widely cited negative empirical studies of technical analysis in the stock market such as

Fama and Blume [2], Jensen and Benington [3]. However, posterior studies such as Sweeney [4] and Brock [5] prove the TA methods to be capable of outperforming the market. The number of papers exploring the profitability of different TA methods grows along with the cost reduction of computing power and the development of electronic databases. Common feature of most of the papers is that they check the fruitfulness of given methods in world stock exchange indexes. Transaction costs as well as dividends paid are often omitted in calculations. According to the research, which was held already in 1997, some of the TA methods are used by more than 50 % investors in the Czech Republic [6]. Based on this mentioned research the most used are the methods of moving average.

This paper is focused on the profitability of several methods of moving average which are commonly accessible in on-line trade systems. The profitability of these methods is tested for specific shares, negotiable in the Czech stock exchange. The moving average is used in a big amount of methods. Among different variants of moving average, the Simple Moving Average (SMA), the Exponential Moving Average and the Weighted Moving Average belong to the most frequently used ones. The sell or buy signals are then generated by intersection of the averages with the assets price or by intersection of two averages of different lengths. Another possible application is to add and deduct certain value to the moving average, getting channels that way. The sell or buy signals are generated by intersection of the asset price with the channel bound. It is possible to get a big number of business strategies by the combinations of different types of moving average, diverse lengths and the way of channel construction. In this paper we are going to focus on the profitability of the following strategies:

- Simple Moving Average (SMA)
- Bollinger Bands (BB)
- Moving Average Envelopes (MAE)

The following first chapter describes business rules of investigated strategies and the procedure of capital value calculation. The second chapter describes comparative passive strategies and the data, the research was made with. The third chapter then presents the results.

1. Trading rules

N -day simple moving average in time t is computed according the following formula:

$$SMA_N(t) = \frac{\sum_{i=t-N+1}^t P_i}{N} \quad (1)$$

where: P_i are closing prices in particular days.

Buy signal is the situation, when the share price crosses the SMA line from below. Sell signal is the situation, when the share price crosses the SMA line from above. The trading signals are thus defined as follows:

$$\begin{array}{ll} \text{buy} & P(t-1) < SMA_N(t-1) \text{ and } P(t) > SMA_N(t) \\ \text{sell} & P(t-1) > SMA_N(t-1) \text{ and } P(t) < SMA_N(t) \end{array} \quad (2)$$

The Envelopes are the parallel lines which follow the moving average in $k\%$ lags above and below the line of moving average. The envelopes create a band in which the stock price usually moves. If the stock price leaves the band, it should indicate the oversold or overbought level of the market. Buy signal is the situation, when the stock price crosses the lower envelope from below. Sell signal is whereas the situation, when the stock price over-crosses the upper envelope. N -day envelope of simple moving average in time t is computed according the following formula:

$$MAE_N^{k\%}(t) = SMA_N(t) \cdot \left(1 \pm \frac{k}{100} \right) \quad (3)$$

The trading signals are defined as follows:

$$\begin{array}{ll} \text{buy} & P(t-1) < MAE_{lower}(t-1) \text{ and } P(t) > MAE_{lower}(t) \\ \text{sell} & P(t-1) > MAE_{upper}(t-1) \text{ and } P(t) < MAE_{upper}(t) \end{array} \quad (4)$$

Bollinger Bands are specific type of envelopes. In contrast to fixed percentage deviation above and below the moving average the lines are created by adding and deducting k -multiple of standard deviation to moving average. N -day Bollinger band of simple moving average in time t is computed according the following formula:

$$BB_N^k(t) = SMA_N(t) \pm k \cdot \sqrt{\frac{\sum_{i=t-N+1}^t (P_i - SMA_N(t))^2}{N}} \quad (5)$$

The trading signals are defined as follows:

$$\begin{array}{ll} \text{buy} & P(t-1) < BB_{lower}(t-1) \text{ and } P(t) > BB_{lower}(t) \\ \text{sell} & P(t-1) > BB_{upper}(t-1) \text{ and } P(t) < BB_{upper}(t) \end{array} \quad (6)$$

Calculations are done for the following parameters. Moving averages are calculated for lengths from $N=2$ to $N=200$, MAE for 4%, 6% and 8%. BB are calculated for 1.6, 1.8 and 2.0 standard deviation multipliers. Technical indicators are calculated using closing prices. In case of generated buy or sell signal, this trade is realised for the opening price of the following trading day. If the investor kept the shares in time of the record date for paying dividends, the dividend amount is after taxation added in the moment of short sale and it is then invested. Calculations include transaction costs, it means the fee in the

amount of 0.4% from the trade volume (according to the FIO tariff, KOBOS market). One transaction is understood as asset buy and subsequent sell. The whole stock capital is always invested, i.e. the share can be divided at will. Short selling is not considered and two consecutive buying are not allowed. Capital value is computed according to stated recurrence relation:

$$K_i = K_{i-1} \cdot \frac{(S_i + D_i) \cdot \left(1 - \frac{f}{100}\right)}{B_i \cdot \left(1 + \frac{f}{100}\right)} \quad (7)$$

And after n trades the capital value will be:

$$K_n = K_0 \prod_{i=1}^n \frac{(S_i + D_i)}{B_i} \cdot \left(\frac{1 - \frac{f}{100}}{1 + \frac{f}{100}} \right)^n \quad (8)$$

where: $K_0 = 1.000$ is initial capital value,
 K_n is capital value after n^{th} transaction,
 S_i is sale price in i^{th} transaction,
 B_i is purchase price in i^{th} transaction,
 D_i are paid out dividends after taxation in i^{th} transaction,
 f are transaction costs in trade volume percentages.

2. Data

The described methods and their profitability were tested in the period from 2nd January 2006 until 30th December 2010 in three share issues in Prague Stock Exchange. The following shares are concerned: ČEZ, Komerční banka, Telefonica O2. The Buy and Hold (BH) strategy was used as the controlling method for profitability verification of the mentioned methods. Computing the future capital value by the controlling method the transaction costs were not calculated and continuously paid out dividends were not invested. Capital value $K_{30.12.2010}$ at the date 30th December 2010 is calculated according the formula:

$$K_{30.12.2010} = \frac{P_{30.12.2010} + \sum D}{P_{2.1.2006}} \quad (9)$$

where: $P_{2.1.2006}$ is the initial share price
 $P_{30.12.2010}$ is the closing share price
 D is sum of paid out dividends after taxation.

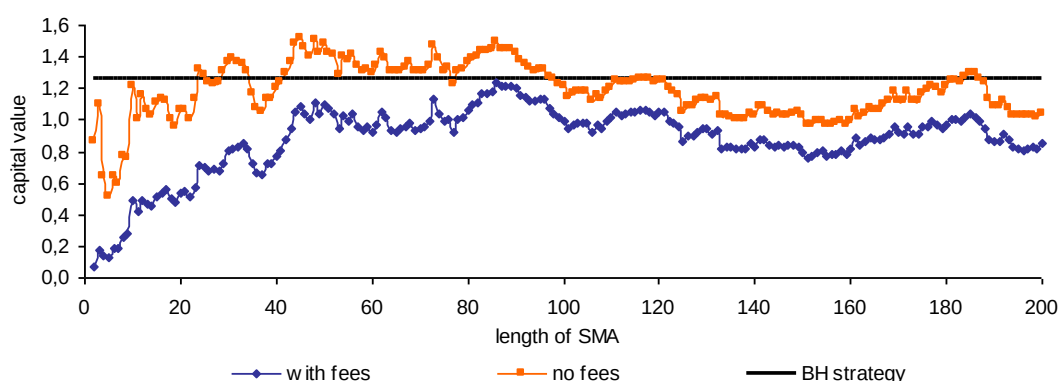
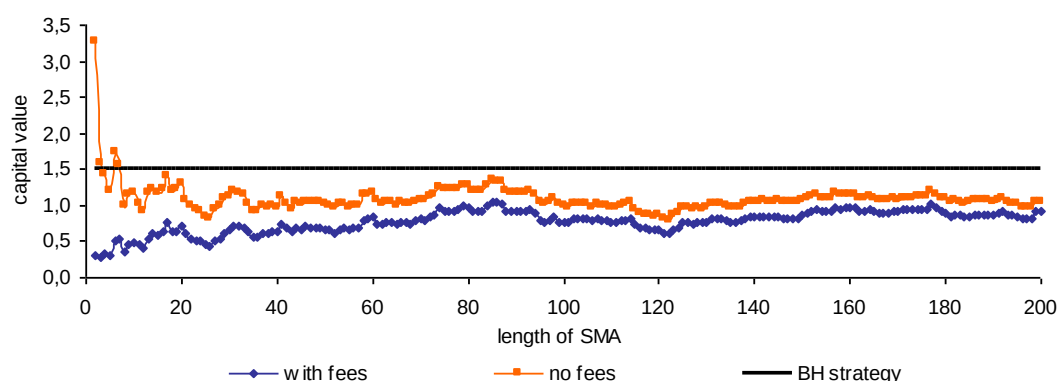
Tab. 1: Specific values for mentioned share issues

Share	$P_{2.1.2006}$	$P_{30.12.2010}$	ΣD	$K_{30.12.2010}$
ČEZ	742	783	151.3	1,259
Komerční banka	3456	4435	790.5	1,512
Telefónica O2	527	381.5	215	1,131

Source: own

3. Results

By defining these parameters (calculated lengths of moving average and widths of channels) there are 4179 results obtained (597 for SMA, 1791 for BB and 1791 for MAE). Considering this great number of calculated variants the results are presented in charts. The charts also clearly show that the results for the same parameters of given business strategy are for different shares often very different. In the charts there is as well clearly seen the fact that a small change of the chosen parameter can have a big influence on the obtained result.

**Fig. 1: Capital value using SMA strategy for ČEZ shares***Source: own***Fig. 2: Capital value using SMA strategy for Komerční banka shares***Source: own*

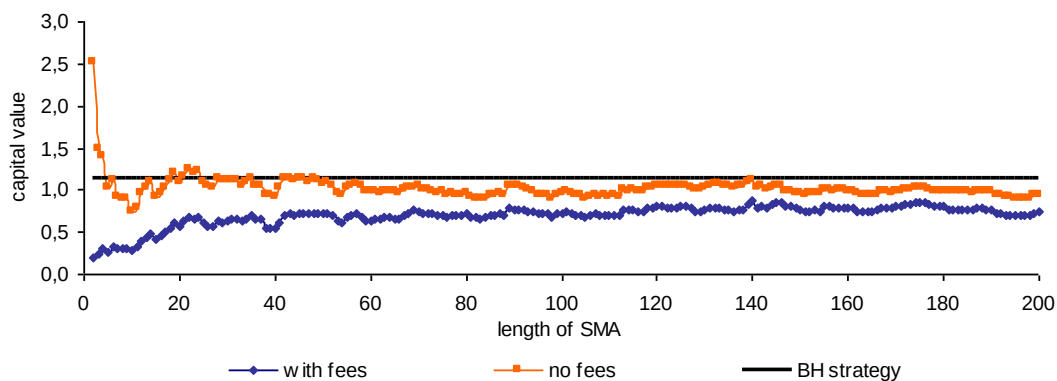


Fig. 3: Capital value using SMA strategy for Telefonica O2 shares

Source: own

Trading according the SMA strategy is not profitable for investors. Achieved results are seen in Fig. 1, Fig. 2, and Fig. 3. To have comparison, the results for this strategy without fees are also shown. The charts clearly demonstrate the fact that for short moving averages, low N , eventual profits are absorbed by the fees. In case of zero fees it is possible to find moving average length N for each share, when we can reach higher valorisation than when using the BH strategy. After including transaction costs to calculations we cannot reach higher valorisation than when using the BH strategy for any moving average length N . There is an interesting fact that the best results were reached for moving average length N approximately 90.

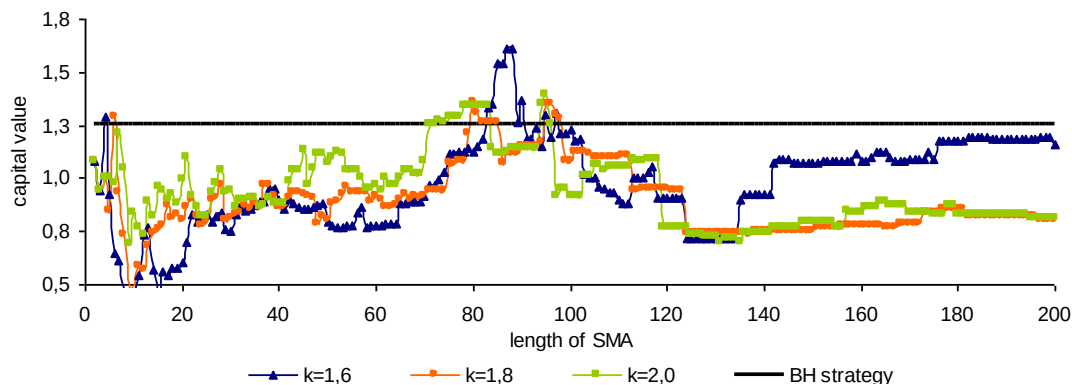


Fig. 4: Capital value using BB strategy for ČEZ shares

Source: own

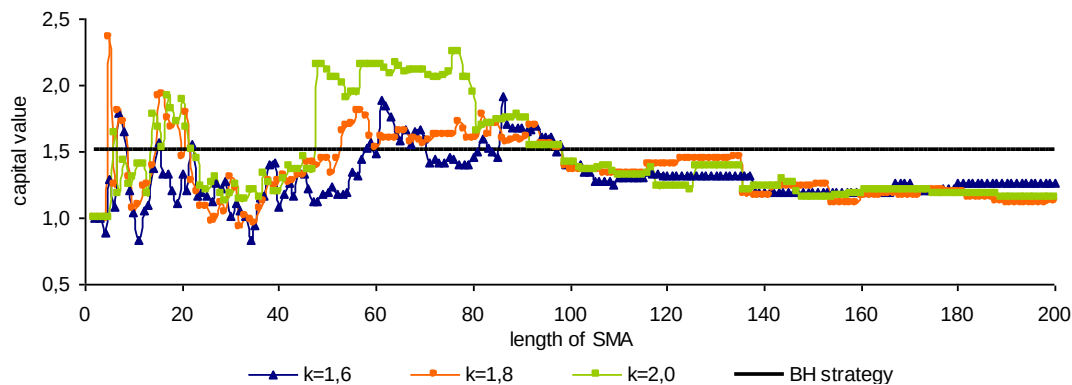


Fig. 5: Capital value using BB strategy for Komerční banka shares

Source: own

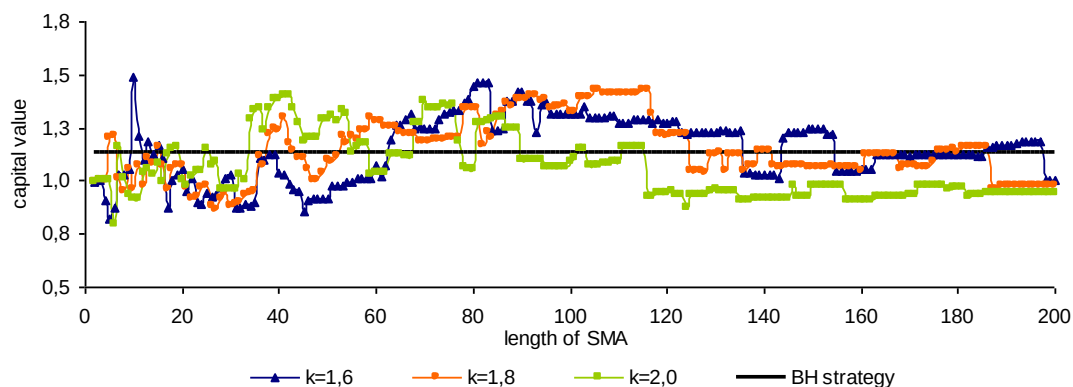


Fig. 6: Capital value using BB strategy for Telefonica O2 shares

Source: own

Strategies BB (Fig. 4, 5, 6) and MAE (Fig. 7, 8, 9) show the same attributes. It is not possible to claim clearly which of the strategies is more profitable. For both methods a moving average length N and a channel span which beat the BH strategy can be found. Unfortunately, it is different average length and different channel span for each share, so it is not possible to choose parameters (moving average length and channel span) of given methods explicitly. Beating the BH strategy is more or less the case of coincidence or luck. It is also evident that even relatively small changes of moving average length can have a significant influence on the given strategy profitability. Compared to SMA strategy, there was lower number of trades for given lengths. It is true that the wider the channel and the bigger the length, the lower number of trades.

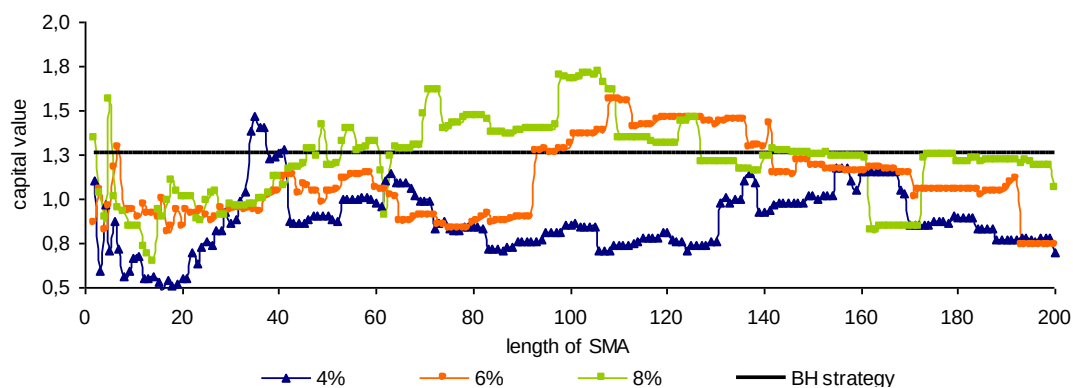


Fig. 7: Capital value using MAE strategy for ČEZ shares

Source: own

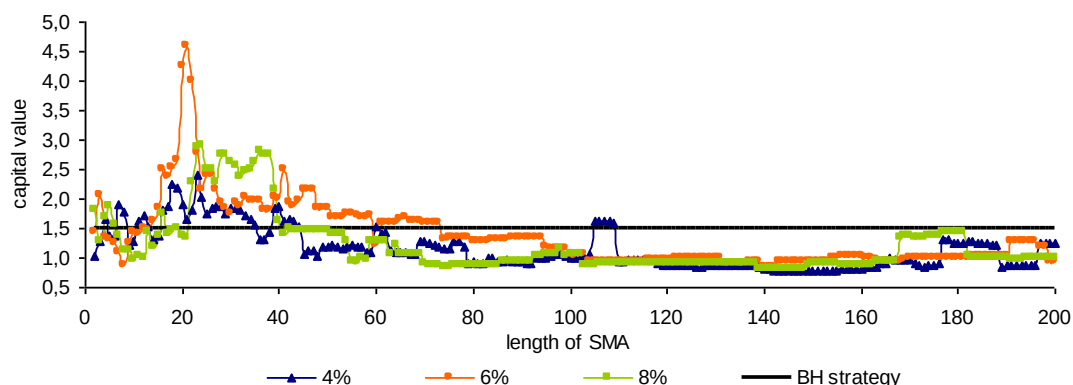


Fig. 8: Capital value using MAE strategy for Komerční banka shares

Source: own

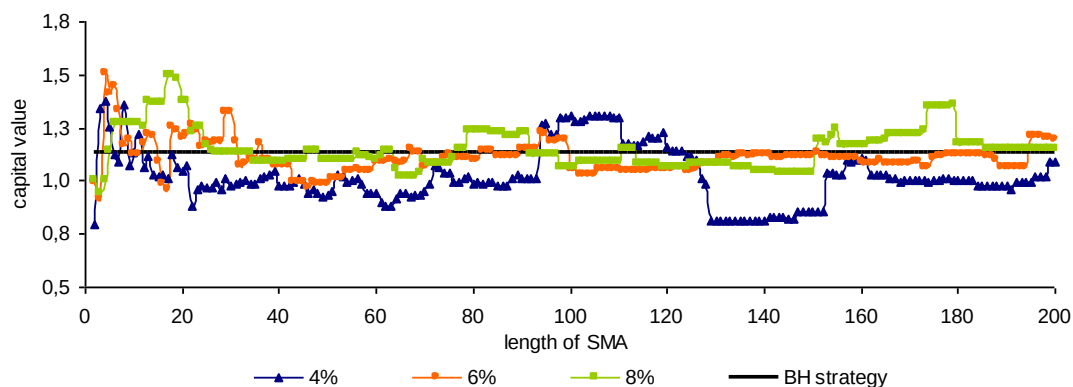


Fig. 9: Capital value using MAE strategy for Telefonica O2 shares

Source: own

Conclusion

On the basis of realized calculations we can claim that trading according to above described methods of technical analysis is profitable mainly for brokers, who profit from frequent trade commissions. The calculations show that trade strategy based on simple moving average did not bring better results for any moving average length than Buy and Hold strategy. However, when a suitable channel is created around the average, we get better results. Buy and Hold method was defeated in 24.4 % out of 3582 calculated variants. If only shorter average lengths $N < 101$ were computed, the method would be defeated in 34.2%. It is not even possible to decide whether the Bollinger Bands method with 431 winnings (283 for $N < 101$) or Moving Average Envelopes with 442 triumphs (327 for $N < 101$) are better. However, the triumphant strategy parameters were quite different for particular shares. We can state that using the strategies mentioned above is not beneficial for investors and occasional beating the market is just a case of luck.

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Benefits from Advanced Technology Utilization¹

Abstract

This paper brings selected results of the survey targeted on adoption and utilization of advanced manufacturing technology in the Czech Republic. The main focus is on the phase of advanced manufacturing technology anticipated and realized benefits. There will be connected the most often reported technologies with the gained benefits (tangible and intangible) from its utilization in the article. Mentioned benefits and results were gained from the open question in the questionnaire investigation that was made by the research team at the University of Hradec Králové on the Faculty of Informatics and Management. The topic benefits from advanced manufacturing technology is very important for a lot of managers, owners, researchers, specialists and also globally for advanced industrialized economies. Benefits of advanced manufacturing technology have been investigated for a long time from various points of view. Researchers are not interested only in implementation and using of advanced manufacturing technology in the companies and in the identification of benefits that are important for a company and that are realized, but also in the evaluation and measurement of benefits and in the following development of investment into advanced manufacturing technology and in other problems that are connected with advanced manufacturing technology and evaluating of the benefits. The goal of the article is to identify various kinds of benefits arising from advanced technologies on the basis of data gained from the questionnaire investigation. We may comprehend that ICT are the part of the advanced technologies that were examined under mentioned investigation.

Key Words

advanced manufacturing technology, benefit, evaluation, identification, survey, utilization

JEL Classification: L00, O30

Introduction

Over the last couple of years, investing into AMT (Advanced Manufacturing Technologies) has become very frequent and common in the Czech Republic. Manufacturing companies that want to compete in the Czech, European or Global market are beginning to invest, respectively have already invested into AMT. When investing into AMT, companies must carefully take into consideration many important factors. In

¹ This research has been supported by specific project Advanced technology used for support of the business management at the University of Hradec Králové on the Faculty of Informatics and Management.

the article we will focus primarily on the anticipated and realized benefits in the companies that are connected with planning, implementation and utilization of AMT.

At the beginning of this article we define the AMT term. Numerous definitions of AMT have been developed. Such as Youssef defines AMT as “a group of integrated hardware-based and software-based technologies, which if properly implemented, monitored, and evaluated, will lead to improving the efficiency and effectiveness of the firm in manufacturing a product or providing a service” [14, pp. 40-42]. The next, a more global definition that combines the work of Zairi [15, pp. 123], and Zammuto and O'Connor [16, pp. 701] AMT, defined broadly, “is a total socio-technical system where the adopted methodology defines the incorporated level of technology. AMT employs a family of technologies that includes computer-aided design (CAD), computer-aided manufacturing (CAM), flexible manufacturing systems (FMS), manufacturing resource planning (MRP II), automated material handling systems, robotics, computer-numerically controlled (CNC) machines, computer-integrated manufacturing (CIM) systems, optimized production technology (OPT), and just-in-time (JIT)”. We have developed a simplified definition for this article: “AMT is commonly known as a term used for description of the new technology in manufacturing which utilizes the power of many new technologies and particularly computers.”

As for classification of technologies we employ terms “hard technologies” and “soft technologies”. “Hard technologies” include hardware and software (CAD, CAM, CIM, CNC, LANs, FMS and robots) whereas “soft technologies” encompass methods and techniques (JIT, manufacturing cells, MRP I, MRP II, SQC, TQM [13, chap. 37.1.1].

1. Research methodology

The data on that is this paper based were collected during the second half of 2008 and in the first three months of 2009. The survey instrument was developed in the Czech Republic in 2007 and in the first half of 2008. The questionnaire comprised of the following sections.

Questions in the first part were intended to establish the planning and implementation of advanced technologies (ATs) in the companies. In part number two the respondents were asked about anticipated and realized benefits findings before and after implementation of ATs. The third part was aimed at measuring of benefits after implementation of ATs (what methods, concepts and tools are used in the company as the base of the measuring of benefits from AMT? What metrics do you use for the measuring of the benefits? What indicators do the managers use for the evaluation of the conditions for the implementation of AMT in the company? Can you give one example of a typical AT in the company and the specific benefits and the metrics for the measuring of the benefits? The last question was dedicated to the problems with the measuring of the benefits). The fourth part of the survey was designed to explore opinions about the need of ATs investment and criteria used for measuring to assess the performance of senior executives (evaluation of their effort). The last part is dedicated to evaluation of

the business performance (methods and concepts that are used for measuring and utilization of EVA - economic value added – performance indicator in the companies).

To assure a straightforward comparison of collected data in different countries we carefully followed some of the questions used by our predecessors. The survey was aimed at those companies who, it was believed, would have had some experience in the utilization of AMT and that the person who was asked to complete the questionnaire should have had a significant contribution to make in decision in the field of AMT. A number of databases were reviewed (with the main stress on data acquired from EDB - company Creditinfo Czech Republic, s.r.o. - and Czech business register) to identify the manufacturing companies in the Czech Republic.

We finally chose sample size of 1127 firms in 2008. Within our last survey we decided to include also the small sized Czech manufacturing firms. Our sample consisted of small-, medium- and large-sized companies. The questionnaire was mailed out together with a covering letter. After a follow up letter sent to non respondents and a follow up telephone reminder to a selection of companies and oral interviews, the survey resulted in a total of 132 replies being received and usable in the final analysis. This represented a response rate of 11.62 per cent. Table 1 summarizes the profile of respondents firms. This profile may have influence on the used types of technologies and the sequence on the anticipated benefits before implementation or realized benefits after implementation.

Tab. 1: Profile of respondents firms

Number of employees	Number of companies	Ratio of all respondents	Ratio of involved companies
50-99	76	57.6	61.8
100-499	37	28	30.1
500 >	10	7.6	8.1
Total	123	93.2	100
Unknown state	9	6.8	
Total	132	100	

Source: [1, pp. 116]

This article deals with the selected results corresponding to the first and third part of our questionnaire only and due to limited space we cannot dwell on the other issues here. From the third part is taken the question - Can you give one example of a typical advanced technology in the company and the specific benefits and the metrics for the measuring of the benefits? Readers who are interested in further details and results from the questionnaire investigation are advised to look at [1] or [8].

2. Advanced technologies in survey in the Czech Republic

A total of 28 AT were listed in the questionnaire. Respondents were asked to indicate whether or not they had made an investment in each of these ATs or whether they are planning investment in it.

Most often used technologies by the Czech respondents are CAD, CNC, CAE, TQM, workflow, MRP and ERP. “Soft” technologies are in the involved companies used more than “hard” technologies (three hundred and twelve to two hundred and ninety six). Those results were expected by the research team in association with the situation in the Czech Republic. Technologies that are not now used a lot and that are very interesting may be the opportunity for better competitiveness in the future. The detailed data about planned and used technologies in the companies are in [1] or [12].

3. Anticipated and realized benefits from utilization of advanced technology

Lots of authors have been engaged into the description of the benefits from AMT. In publications dealing with the same issue we will find a lot of similar but also different points of view by defining and description of the benefits that are anticipated and realized due to using of AMT. In the dissertation thesis [8] or in article [12] there is made the detail review of the authors aimed on the benefits from AMT and who published their outcomes in the technical papers, journals or scientific articles in the conference proceedings.

One of the most devoted authors in benefits from AMT is Sohal. In his publications [5], [6], [7] and in others defined 26 benefits that managers and owners of the companies may anticipate before investment into AMT or that really appear from investment into AMT. Those 26 benefits were included into survey in the Czech Republic. The detailed results from this question are in [1], [8] or [12].

From results of review it is possible to state that the most often perceived and published benefits are better flexibility, reduced costs, increased throughput, improved quality, improved production and obtaining competitive advantage. From the outcomes it is possible deduce that researchers from abroad are oriented on production optimization, profit increase and on obtaining competitive advantage. Those factors affect significantly the run of business and its successful keep up on the global market. It is necessary keep in mind the importance of those factors and to take other potential benefits into consideration.

The benefits of AMT have been widely reported and can be classified as tangible and intangible. The tangible benefits are benefits which can be easy quantified in monetary value. They include reduced unit cost, increased throughput, inventory savings, less floor space, improved return on investment (ROI) and others. The intangible benefits, which are difficult to quantify, include better image, an enhanced competitive advantage, increased flexibility, improved product quality, quick response to customer demand, time-to-market, and other synergistic effects. These benefits may still offer many other improvements with respect to organizational improvements and management satisfaction. When strategic approaches are used, the justification is made by considering long-term intangible benefits. Although operational and organizational benefits are often associated with AMT, all AMTs are not the same and do not provide

the same benefits. Due it we asked the managers on the individual technology and realized benefits from it.

Tab. 2: Technology and benefits in open question

Technology	Frequency of technology	Benefit	Frequency of benefits
CNC	20x	Improved quality	9x
		Increased productivity	7x
		Increased throughput	5x
		More accurate production	4x
		Reduced costs	3x
		Widening product range	2x
		Reduced production time	2x
CAD	9x	Increased throughput	4x
		Increased flexibility	3x
		Improved quality	2x
		Enhanced company image	1x
		Improved response to variations in product mix	1x
		Reduced time for projecting	1x
RFID	5x	Widening product range	2x
		Obtaining competitive advantage	2x
		Reduced costs	1x
		Monitoring of efficiency	1x
MRP	5x	Reduced work in progress	3x
		Increased productivity	5x
		Smaller material reserves	2x
		Optimization of production	1x
Robotics	3x	Increased productivity	1x
		Increased accuracy	1x
		Reduced costs	1x
Data warehouse	3x	Better controlling	1x
		Increased productivity in connection with SW	1x
		Increased flexibility	1x
		Increased profit	1x
CAD/CAM	2x	Increased flexibility	1x
		Increased sales	1x
		Reduced costs	1x
		Increased throughput	1x
JIT	2x	Reduced costs	1x
		Better forwarding to customer	1x
Workflow	2x	Reduced time of service mission	1x
CRM	2x	Increased quality	1x
		Increased throughput	1x
		Better communication with customers	1x
CAPP	2x	Better quality	1x
		Acceleration through order	1x
		Optimization of process	1x
Automatic control	2x	Increased quality	1x
		Better control	1x

Source: GAČR No. 402/07/1495, own elaboration

4. Concretization of benefits for individual technology

The research team asked the managers and owners in the questionnaire - connect the realized benefits with the concrete technology that is used in your company.

There was the risk for not answering due open question and not prepared multiple choice possibility. Fears of it were unwarranted. Some of managers referred by one technology more benefits and some answered more technologies.

There are presented chosen results from this question in the table 2 above. Technology that was presented once by managers was not presented in this article.

From the table 2 is evident that the most often referred technologies are CNC, CAD, RFID, MRP, robotics and data warehouses. Those technologies were also mostly marked in the first question – in the prepared variations of the planned and used technologies in the company. From detailed table is evident that managers in open question referred more “hard” technology than “soft” technology. The results are not the same as in the first part of the questionnaire. There predominated “soft” technology [1, pp. 99-103].

Collectively it is possible to state that the referred examples of the concrete benefits correspond with the chosen technology well. It is a pity. The results do not contain big surprise. Technologies with associated benefits were expected also with the research team from the Faculty of Informatics and Management.

We will get interesting look on the presented benefits in table 2 from AT when we will take a look on the same data from the other point of view (see table 3). There are presented the most often referred benefits from open question in the next table. The benefits that were indicated fourth and less are not presented below.

Tab. 3: The most often referred benefits

Benefit	Total
Improved quality	17
Increased throughput	11
Reduced costs	10
Increased productivity	9
Widening product range	6
Faster production	5
Increased flexibility	5

Source: GAČR No. 402/07/1495, own elaboration

Managers mostly often indicated improved quality, seventeen of them. With the distance is continuing increased throughput, reduced costs and increased productivity. The most often presented benefits are intangible benefits such as improved quality, widening product range, faster production or increased flexibility. Above mentioned benefits are the same with the most often published reputable authors. It is a little bit surprising that there was no often answered enhanced company image. This benefit was valued in the

prepared question by the managers abroad as realized on the highest position [5], [6], [7] and in the Czech Republic it was the 6th position [1], [8] or [12]. In open question this benefit was not mentioned by the managers.

Conclusion

The findings of this research have some positives and negatives to offer to the Czech companies. Most often used technologies by respondents are CAD, CNC, CAE, TQM, workflow, MRP and ERP. The new technologies may be used much more in the companies than till this time. Some of Czech managers and employees are afraid to use the technology with the vision of substitution of their work with it. They do not take into consideration that technologies may help them in their work and in their next personal progress. Nevertheless technologies will be in the company implemented, the labour forces will have to ensure production.

The positives are that Czech managers evaluate a lot of benefits very positively, such as improved quality, increased throughput, reduced costs, increased productivity, faster productivity, widening product range, increased flexibility etc.

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Entrepreneurial Dynamics in Turbulent Times – Can It Be Effective?

Abstract

The dynamics of a company, where all the planned activities run through this organization, must be coordinated on every level. If the organization is quite small and the owner is not a good manager or coordinator, the level of risk and dynamics will increase. It should be mentioned that survival problems are showing up mostly in companies that have been trading for 2-3 years but studies about the influence of the strategic skills of owners in dealing with business resources in a changing or turbulent environment cannot be found. Changes in the business environment along with innovation procedures bring about new situations that need to be solved not just effectively but with care and in an original way and finally with added value for the customer. The main goal of this paper is according literature review provide practical modelling of required business skills to help business owners with adaptability process. Original methodology was used to find dynamics strategic skills, which push the owner to be innovative and successful. This area is presented as a case study, especially made for the area of health care businesses. The QRBITS analysis was presented as special tool for analysing health care businesses environment and resources. Finally, model of dynamical entrepreneurship is presented with combination of final effectiveness strategy evaluation tool. Research part of the paper was supported by the Internal Grant Project of the Silesian University IGS SU 7/2011.

Key Words

dynamics, effectiveness, entrepreneurship, health care, strategy

JEL Classification: D21, I11, L26, L89

Introduction

The tendency towards static decision making and exiting from the market, due to a critical environment or situation – is why it is important to study this entrepreneurial behaviour in a practical way. Each organization is defined as a system, which is effective only if (1) it achieves its goal and (2) it effectively uses its human and other resources at minimum cost [15]. Many research groups see a business unit only as an element of the market, coping with its situation applying its own strategy and a destructive approach to the innovation based on Schumpeter and his followers. Few people actually think about the relationship between strategy, goals and decision-making inside an organization or the relationship between managers and owners, who actually attend to the routine work and duties. Recent literature and research studies focus significantly on measuring turbulence in the industry [2][25] based on the start up and exit rate of emerging

companies and the relationship between GDP growth and company ownership [4][19]. Entrepreneurial dynamics seem to have become a significant phenomenon in the last few years. Techniques to monitor the implementation of new competencies and technologies should be context sensitive (based on strategy), reflect the unique characteristics of the business area and respect the design of the organization [16]. Strategic plans usually lack a main focus because businesses identify and attempt to address too many issues at once. This problem is compounded by mixing strategic and operational issues, whereby the emphasis is not placed on achieving the maximum results from one target area, along with the feeling that adaptability and dynamics are crucial for business success [27][22]. This problem will be discussed in following sections to identify main components and business skills, which both could bring maximum effectiveness.

1. Dynamics and strategy

Dynamics is based on the provision of information and the feedback about errors which cause strategic changes. Changes should be effective when a negative feedback and rapid reaction clash with a clearly defined strategy [1][9][26]. Dynamic decision making is perceptive when it encompasses the following three principal components [17]:

- practical behaviour in the area of doing business,
- monitoring skills in the area of thinking about providing the business,
- self-evaluation in the area of one's responses.

Practice in the business area allows becoming familiar with problems and avoiding a turbulent and non-dynamic decisional spiral. Traditional models of skills cover only a few variables such as the structure of an organization, climate, processes and leadership without dynamic points such as the behaviour of other elements [3][6][16]. The research on the influence of the attribute of competency on the adoption and use of innovation usually suffers from a variety of measured issues. In these types of organizations there are well positioned highly skilled people, but the result of learning by innovation or knowledge activities is very limited [10]. Strategy preparation and the measurement of its effectiveness is very difficult and brings about certain dilemmas – which variables are dependent in each part of the business plan, if the selected variables have an impact only on the desire of the company – as if artificial, trying to look like a target or they are real measurable and objective values. Firms often do not actively respond to changes in the external environment due to their dependence on attractive resources, rather they confront compliance in order to make something less necessary. Another possibility of measuring the effectiveness of a strategy is to use financial ratios and budgeting. Ratios are often used for cost benefit analysis, cost effectiveness (more variations are used to provide the maximum effect) and threshold spending (obtained directly from the cost-effectiveness measure by multiplication). Turbulent times bring about not only new technologies but well-informed people, who use their potential in business practise [8]. They create their own business repertoire which causes dynamic behaviour in the market on any level of the organization. In particular these tendencies

are observed in the area of services such as banking, professional services or medical care and legal services, which require consistency and conformity.

2. Dynamics in health care businesses

Health care businesses are of course like normal business providing services and they share many characteristics with them. But some significant differences do exist, which is why it is important to study them. If a typical example of the information flow is: professional provider of service (general practitioner-GP) and patient as a receiver of the service, then the GP has weak linkage with the receiver of the service and payer of the service (when the service is paid from insurance) and the GP does not have a feedback about service satisfaction in this tripartite (Medicare provider, patient and insurance company) [18]. Managing own business in the health care are is sometimes difficult because of non-regular payment and non-regular pricing. The price of the service is not prepared by the physician, but by the regulator of the market – Ministry of Health [11]. After that, the payment of the “final price” has two parts – payment from the health insurance and payment from the patient. According this physician obtain capitation payments (fixed amount per registered patient, which they obtain as monthly amount), which could dramatically change the potential of health care business in a future according to population-based payments. The dimensions of firm performance used as variables in health services research are endogenous like vertical or horizontal integration, chain ownership, boundaries on the market in light of the strategies of existing and possible competitors [23]. Diers et al.[7] discovered an elasticity dependence on three main factors which are knowledge, skills and attitude. In his research he described 33 knowledge elements, 35 skill elements and 26 attitude elements in 6 areas, which could provide entrepreneurial dynamics. This method could be abbreviated (analogy with traditional SWOT analysis) and could be interpreted as “QRBITS” and should make a strategic profile of each health care unit. Each area covers internal factor areas (Quality, Resources, and Bridge) and external factor areas (Interpretation, Team, Sustainability) which have an influence on the overall dynamics.

Tab. 1: QRBITS Scheme

Internal factors	External Factors
Quality	Interpretation
Medical improvement	Understand principles of Care
Behavioural improvement	Access to Care
Gain patient trust	Environment for Care
Value partnership with patients	
Resources	Team
Limitations of technologies	Power of external lobbying
Service costs	Networking possibilities
Therapeutic relationship	Reputation
Comfortable with uncertainty	Patient base
Bridge	Sustainability
Communication barriers	External counseling and education
Judgment	Feedback for service
Accept differences	Openness for change

Source: [7], Factor Classification by author

3. Study setting and design

Small businesses offer their new services and products in the local market, inspired by an original global product, so they mostly offer a cheaper, home-made imitation of some innovation [21]. Their strategic behavior is mainly influenced by the degree of the creative and innovative work of an entrepreneur along with serious work and risk taking. In many case studies, firms having between 10 and 49 employees are proactive in the process of on-going learning and innovative processes. They are still under pressure from the market to offer a unique product or service in order to survive and be competitive. They create qualitative and quantitative barriers to support an innovative climate within the organization based on the owner's personality, financial resources and others competencies which could cause low innovative activity [5][21]. The main purpose of this research was to find dynamic components of these skills.

According to the review of literature that was carried out in advance of any primary research being undertaken, nobody has yet tried to combine this wide area of comparative skills, represented by the 120 qualitative items based on the methodology of Scroggins and Rozell [13].

The on-line questionnaire collected data from 608 active respondents in the Czech Republic, (during period of July to December 2010; pre-test phase off-line 120 respondents June to September 2009), who identify main competencies needed for business success. Research sample was formed from people who in the past provided their own business in the role of business owners (22.2 %) and 77.8 % in the role of employee (current position: employee 82.6% active business owners 17.4%).

The analysis is based on statistic data analysis multidimensional statistic methods in qualitative research area, using Principal Components Analysis (PCA). All collected data were processed in SPSS for Windows, ver. 18. To get more sophisticated results and to identify dominant tendencies, we used PCA with a VARIMAX rotation (factor loading minimization); applicability of data was examined by the Bartlett's test of sphericity with the values of the presented results being under $P < 0.05$ and for all the data we used the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) with a recommended minimum value of 0.6 [24].

Tab. 2: Research sample by size

Company type	Employment	Percent
Very small	Up to 9	25.8
Small	10 to 49	31.4
Medium	50 to 249	20.6
Large	250+	22.2
Total		100

Source: own research data

We used only factors with more inter-factor correlation coefficient value more than 0.5 and accounted their share on the total competence model as 100%. Secondly, the research sample was divided into two groups by the gender to compare preferences within examined groups (see illustration below).

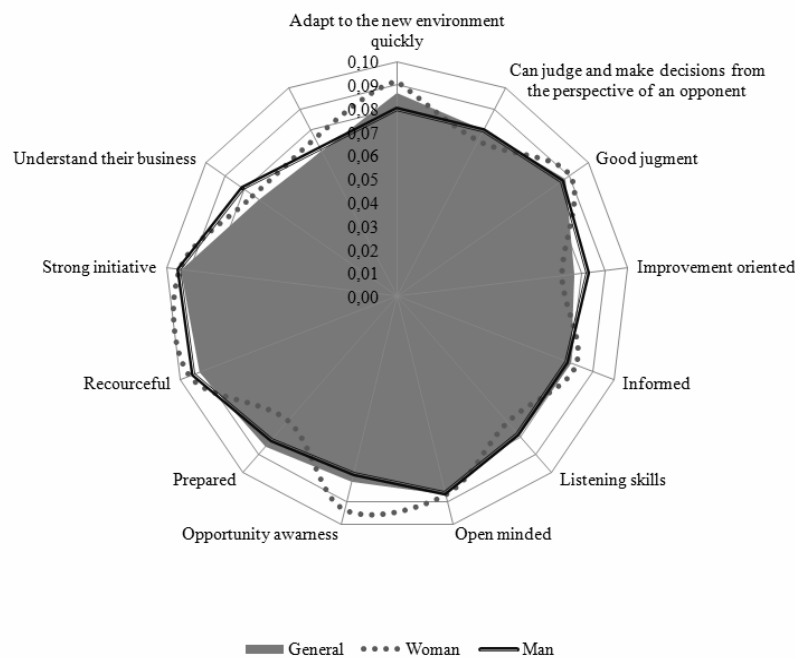


Fig. 1: Dynamical Strategic Skills

Source: own research data

In comparison, the table below shows the differences between business behaviour five years ago and in the crisis period of 2009-2010. It seems that small businessmen understood that not only basic managerial knowledge and procedures such as organising and analysing are needed for success, but also some special skills for the position of the innovator and a part of the model maximizing the effect of the innovations and absorption of new knowledge under turbulent times.

Tab. 3: Competency model supporting dynamical entrepreneurship

Intellectual competencies	Emotional competencies	Difference equal to the new way of thinking
Organizing	Create vision	Adaptability
Analyzing	Delegating	Judgment
Controlling	Innovative	Open minded
Planning	Creative	Strong initiative
Learning	Sensitive	
Monitoring	Supporting	
Evaluating	Team builder	

Source: [20] and own research (third column)

By means of this concept we want to describe significant parts of the strategic plan, which could bring about dynamics of a business unit and this part was prepared ONLY for health care business owners (384 respondents, second phase of the research). There were some factors, which may be mentioned in long term plans and could be significant for strategy development, KMO significance= 0.731 (Personal plan=0.832, Production plan=0.712, Financial plan=0.823 and Marketing plan=0.790). According to this in the questionnaire they evaluated their changed behaviour as being due to carrying out business on the scale.

Tab. 4: Strategic components dynamics

	homecare	GP	specialists	pharmacy	stomatologists	physiotherapists	psychologists
Managerial skills							
Organizing	2.1	2.64	2.54	2.47	2.28	2.14	1.69
Leadership	2.6	2.52	2.75	2.05	2.48	3.21	1.44
Motivation	2.5	2.34	2.37	2.09	2.5	3.28	1.81
Communication	1.6	1.79	1.84	1.74	1.87	2.4	1.31
Logistics							
Distribution	2.6	3.44	3.6	2.49	3.28	2.81	2.94
Promotion	3.4	4.19	3.81	3.05	4.11	3.84	2.5
Purchasing of material	2.5	2.97	3.27	2.14	2.44	3.02	2.29
Innovations							
Equipment	3.9	3.24	3.46	3.13	3.13	3.63	3.31
Financial resources	3.3	2.7	2.88	2.49	2.74	3.35	2.25
Direct Payments							
Administrative skills	3.3	2.63	2.82	2.51	2.58	2.67	2.44
Payments from insurance company	3.4	1.9	2.22	1.92	1.98	2.79	1.69
Atmosphere							
Business culture	4	3.57	3.21	3.08	3.56	3.26	2.56
Social atmosphere	2.4	2.74	2.6	2.77	2.8	2.37	2.63

Note: 1-in advance, 2-till 1 month, 3 till 3 months, 4- 6 months, 5-one year, 6-never

Source: own research

This research confirmed that in services the most important factor for the dynamic development of personal planning is the relationship with the production plan. Most are independent on direct payment from customers such as homecare services or physiotherapists so they have to develop these types of skills to be successful in this business.

4. Discussion

All variables must be taken into account to achieve strategic goals. Each research and dynamics measurement must explain the internal and external validity of their results. In many cases it may bring about more internal validity for the research sample but still need another phase of experiments to be able to generalize about this model. Internal validity is significant for the first phase and first conclusions and provides an opportunity to develop the idea. But on the other hand, this approach brings about problems with the strategic prognosis using only internal valid models in another type of company. Another dilemma could often be called the “socially desired effect”, where different ideas are not presented because they do not encompass normally used methods or strategy elements. This could cause future problems with strategy development and strategy dynamics [14]. The consequential time delay could cause more behavioural change and may well have an impact on the final effectiveness. **This approach divides final effectiveness into [12]:**

- **Sleeper effect** (delay of impact) if the effect is measured only as the difference before and after the change process and the final effect could be greater because of the re-engineering of the main process, new activities and innovations. This approach was used as a model for factors influencing strategic behaviour.
- **Backsliding effect** (decay of impact), if the dynamics is measured after the project, on-going process, so the deviation with the plan and the final effect is near zero.
- **Trigger effect** (borrowing from the future), businesses are prepared for some problems due to their business area and internal and external procedures and they improve their leadership, strategy and goals. It appears to be similar for business plan preparation according to market analysis, price analysis, customer analysis and other factors.
- **Historical effects** (adjusting for secular trends), for the compilation of strategy dynamics businesses use customer segmentation and price diversification to spread the risk. It is practical to first see the partial effect of dynamic decision making on observed groups and after that it should be used as a strategy as a whole.
- **Contrast effect** (treatment effect), the plan and the implementation do not join together in the future.

The difference in responding to the business environment and the self interests of companies brings about constraints on being dynamic. Many companies have as the main goal for their future not innovation, but merely survival.

Conclusion

Finally, according to Green [12], we should compare and divide Strategy Effectiveness into five effects which were primarily used for education strategy evaluation, but, when used as a normal trend inasmuch that all business are learning organizations, this approach is very suitable and analogically could be added to modern managerial trends. Some of the dilemmas facing static planning dynamics cannot be resolved simply by trying harder to measure and evaluate. Some will not yield to quantitative and deductive solutions as an index method or behavioural study. All of them are based on conceptual and inductive analysis to clarify and to expand the theoretical and experiential managerial basis for describing what passes as a health care practice as well as at strategy planning and its effectiveness.

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Application of Value Added Tax as a Tool of Economic Policy within the Economic Crisis (2008 – 2011)¹

Abstract

Paper focuses on development of rates of value added tax in EU Member States within the period of economic crisis. In the field of VAT rates – while maintaining a minimum limit given – the Member States retains considerable autonomy and thus a space for consideration of national interests. Although community law defines the basic legal constraints of VAT rules in individual countries, the Council Directive 2006/112/EC on the common system of value added tax, as amended, leaves some areas open for the Member States. In the context of the economic crisis, when fiscal interventions of national governments are absorbed by individual economics more perceptively, the current legislative in the area of VAT rates and a relative flexibility in its applying enable to find new opportunities for improving of VAT system performance in EU. This is the reason why value added tax is used as an important instrument of economic policy in the time period observed.

The aim of the paper is to determine competently the trends and tendencies in development of VAT rates by using methods of analysis, synthesis and deduction. There is also considered influence of the Green Paper on the future of VAT [SEC (2010) 1455 final].

Key Words

value added tax, European Union, VAT rates changes, economic crisis, tools of economic policy

JEL Classification: H20, E62, K34

Introduction

Globalization, as a phenomenon of current world economic life and also one of the causes of economic crisis due to interconnections of markets, has been reflected in areas that historically belong to powers of monarchs and governments. One of these areas is fiscal policy.

Although fiscal policy remains outside the common policies (Treaty of Lisbon, 2008) [1], European Union is trying to harmonize at least those kinds of taxes that help functioning of internal market which is based on free movement of goods, persons, services and capital.

¹ Paper is partial outcome of SGS project no SP2011/48.

1. Aim and Methodology

In the European Union, there are currently [2] given constraints for particular taxes: (i) personal income taxes remain in competencies of national governments; (ii) indirect taxes, as directly affect functioning of Single Market, stay in the centre of attention and harmonization efforts; (iii) corporate taxes should promote free movement of capital and should not cause harmful competition among countries; (iv) social and pension systems should eliminate discrimination against people of any Member State and should not represent a barrier of free establishment and investing in any of EU Member State.

Value added tax is the most harmonized tax within the single internal market of the European Communities [3]. Although the Community law defines the basic constrains of VAT legislative form in the Member States, the Directive No. 2006/112/EC on the common system of value added tax, as amended, leaves a certain freedom for Member States. One of the most visible characteristics of VAT is its rates which are – while maintaining the established minimal limits – fully in the responsibility of Member States [4]. With effect from 1 January 1993 the 92/77/EEC Directive introduced minimum limits of tax brackets: (i) 15% for basic (standard) rate and a (ii) 5% for one to two reduced rates [5].

Prolonging of minimum rates was made by the 96/95/EC Directive (this directive prolonged validity of minimum rates based in 92/77/EEC Directive until 31/12/1998), the 99/49/EC Directive (until 31/12/2000), the 2001/4/EC Directive (until 31/12/2005) that prolonged term until 31/12/2010, and the 2010/88/EU Directive [6] that newly prolonged this term until 31/12/2015.

In this time (30/4/2011), Member States are bound only by this framework; setting of specific rates is in their powers. At the same time the basic VAT provisions of 2006/112/EEC Directive on the common system of value added tax defines a possibility to use reduced rate for certain kinds of commodities. Aim of the paper is analysis of using all these possibilities of rates that are given to Member States by legislative act of ES/EU or their changes during economic crisis. There is also dealt with the extent of possible use of reduced rates in particular EU countries. Paper is to point out to different approaches to using of VAT changes as a potential tool for reducing of negative impacts of economic crisis.

The main method of this paper is analysis of legislative instruments relating to Community law. Other methods used are comparison, deduction and synthesis.

2. Material and Results: Changes in VAT Rates in EU in Period Observed

To overcome economic crisis, Member States use standard tools of economic policy including instruments of fiscal policy, hence taxes. Among the most common changes in taxes, there can be included changes [7] in direct support of household spending power

by reductions in the personal income tax. This happened more often through increases in allowances than cuts in rates, because of equity considerations but also because an increase in allowances, having a proportionally higher impact on lower-income households. In a few cases PIT rates were even increased, but this was typically limited to higher incomes.

With a notable exception of the United Kingdom, Member States have generally not opted for temporary VAT rate cuts as a way to boost consumer spending in the short run. In general, as world prices decreased with the onset of the recession, Member States did not cut excise duties on energy products (except of Italy). A wide variety of measures targeting individual sectors were introduced. In particular, several Member States tried to slump in the housing sector by granting tax reductions of various kinds; other measures aimed at supporting stock prices or reducing inheritance taxes.

It can be said that the most visible changes (according to criteria of impact on public budgets and taxpayers) were made in area of value added tax. It is quite understandable because increase in VAT rates means increase in public budgets revenues; it is rather simple and effective. Also increase of rates is not perceived as negative as it is in the case of increasing personal income tax [8], [9].

Tab. 1: Development of VAT rates in Member States

Member State	VAT abb.	on 1/01/2008	on 1/01/2009	on 1/01/2010	on 1/01/2011
Belgium	BE	6; 12; 21	6; 12; 21	6; 12; 21	6; 12; 21
Bulgaria	BG	7; 20	7; 20	7; 20	7; 20
Czech Republic	CZ	9; 19	9; 19	10; 20	10; 20
Denmark	DK	25	25	25	25
Germany	DE	7; 19	7; 19	7; 19	7; 19
Estonia	EE	5; 18	5; 18	9; 20	9; 20
Greece	EL	4,5; 9; 19	4,5; 9; 19	4,5; 9; 19	6,5; 13; 23
Spain	ES	4; 7; 16	4; 7; 16	4; 7; 16	4; 8; 18
France	FR	2,1; 5,5; 19,6	2,1; 5,5; 19,6	2,1; 5,5; 19,6	2,1; 5,5; 19,6
Ireland	IE	4,8; 13,5; 21	4,8; 13,5; 21,5	4,8; 13,5; 21	4,8; 13,5; 21
Italy	IT	4; 10; 20	4; 10; 20	4; 10; 20	4; 10; 20
Cyprus	CY	5; 8; 15	5; 8; 15	5; 8; 15	5; 8; 15
Latvia	LV	5; 18	10; 21	10; 21	12; 22
Lithuania	LT	5; 9; 18	5; 9; 19	5; 9; 21	5; 9; 21
Luxembourg	LU	3; 6; 12; 15	3; 6; 12; 15	3; 6; 12; 15	3; 6; 12; 15
Hungary	HU	5; 20	5; 20	5; 18; 25	5; 18; 25
Malta	MT	5; 18	5; 18	5; 18	5; 18
Netherlands	NL	6; 19	6; 19	6; 19	6; 19
Austria	AT	10; 12; 20	10; 12; 20	10; 12; 20	10; 12; 20
Poland	PL	3; 7; 22	3; 7; 22	3; 7; 22	5; 8; 23
Portugal	PT	5; 12; 21	5; 12; 20	5; 12; 20	6; 13; 23
Romania	RO	9; 19	9; 19	9; 19	5; 9; 24
Slovenia	SI	8,5; 20	8,5; 20	8,5; 20	8,5; 20
Slovakia	SK	10; 19	10; 19	10; 19	10; 20
Finland	FI	8; 17; 22	8; 17; 22	8; 12; 22	9; 13; 23
Sweden	SE	6; 12; 25	6; 12; 25	6; 12; 25	6; 12; 25
United Kingdom	UK	5; 17,5	5; 15	5; 17,5	5; 20

Source: own comparison according to data obtained from [10]

Possibility of using reduced rate was analyzed in two ways: (i) use of 5% reduced rate, and (ii) use of reduced rate for services newly included in Annex III of 2006/112/EC Directive.

In the whole period observed, in EU countries has prevailed systems with two or three VAT rates except of Denmark (uniform rate of 25%) and Luxembourg (four rates). In some Member States there still has existed the exception to so called super-reduced VAT rate (less than 5%). Changes in rates were not made by 13 EU countries. That means rate changes were performed by most Member States. Development of rates is illustrated in Tab. 1. As a principal reason for the changes performed, there was declared reflection of economic crisis and even all changes made during 2010-2011 were justified with same reason.

Standard rate of minimum level, e.g. 15%, is used in Cyprus and Luxembourg only. In other countries, standard rate is significantly higher. In last three years, VAT rates have been increased in only 14 of the 27 Member States, including the Czech Republic. It has involved mainly the standard rate, not the reduced one. Standard rate has been generally increased by new Member States. From the old Member States, standard rate has been raised by Greece, Spain, Portugal, Finland and United Kingdom.

The second fact analyzed, which can be under a significant influence of the economic crisis is about EU member states using or respectively not using a possibility of the new application of reduced VAT rate to some services: (i) services originally registered in Attachment IV according to the article 106 of the 2006/112/EC Directive (services with a high share of labour), and (ii) restaurant and catering services.

The history of the effort to support higher employment by reduced tax rate with services, which are labour - intensive, goes back to 1999, when the 1999/85/EC Directive was approved and which changed the 77/388/EEC Directive in terms of the possibility of the experimental application of reduced VAT rate to services with a high share of labour. These services were defined in the Attachment of the 77/388/EEC Directive, which was marked with IV and completely adopted by the 2006/112/EC Directive with effect from 1 January 2007. It included: (i) minor repairs of bicycles, shoes and leather goods, garment and furnishing goods (including repairing and refashioning), (ii) renovation and repair of private flats and blocks of flats excluding materials which make a substantial part of the value of the service provided, (iii) windows cleaning and house cleaning, (iv) homecare services (e.g. chare and child care, senior care, sick and disabled persons care), (v) barbershop and hairdresser.

Member states could have chosen two of five services, to which they applied reduced rate. On 5 May 2009, 2009/47/EC Directive was adopted and among other things it cancelled article 106 of the 2006/112/EC Directive. With effect from 1 January 2010 services stipulated in the Attachment IV were transferred into Attachment III, which means, that member states can apply reduced tax rate to all these services originally stipulated in Attachment IV. Attachment III was extended with delivery of books on any medium and restaurant and catering services.

However, not all member states used all possibilities granted by amendment of 2006/112/EC Directive with regard to national fiscal interests. All possibilities which amended 2006/112/EC Directive granted with effect from 1 January 2010 were fully used by one EU country – Slovenia, another two states – Finland and Malta used possibilities of the Directive in four cases. Latvia is the only state, which extracted one service from reduced rate and transferred it to the basic rate. However, it came to the paradoxical situation, and as a result of the increase in basic rates in five EU states, there is an increase in tax burden on the service selected instead of the possible reduction of the rate of the service selected (as a result of possible transfer from basic VAT to reduced VAT).

On 31/12/2010, only 10 EU states have used a possibility to apply VAT reduced rate to restaurant and catering services; since 1/1/2011 it is newly used by Sweden and Denmark.

Appendices (Appendix 1 and appendix 2) illustrate development of applying reduced VAT rates on services newly listed (since 1/1/2010) in Annex III according to 2006/112/EC Directive:

1. services originally included in Annex IV according to article 106 of 2006/112/EC Directive (services with a high share of human labour);
2. restaurant and catering services.

At the end of 2010, Directive no 2010/88/EU was adopted; it prolonged validity of minimum standard rate. Reasons of this legislative step referred to Commission are as it follows:

- The standard rate of value added tax (VAT) currently in force in various Member States, combined with the mechanism of the transitional system has ensured that this system has functioned to an acceptable degree. With new rules on the place of supply of services which favour taxation at the place of consumption, the possibilities for exploiting differences in VAT rates through relocation have been limited further and potential distortions of competition reduced.
- To prevent a growing divergence in the standard rates of VAT applied by the Member States from leading to structural imbalances in the European Union and distortions of competition in some sectors of activity, it is common practice in the field of indirect taxes to set minimum rates. It is still necessary to do so for VAT.
- Pending the outcome of consultations on a new VAT strategy which is expected to address future arrangements and corresponding levels of harmonisation, it would be premature to set a permanent standard rate level or to consider changing the minimum rate level.
- It is therefore appropriate to maintain the current minimum standard rate at 15 % for a further period long enough to ensure legal certainty, while allowing further review.
- This does not preclude a further revision of VAT legislation before 31 December 2015 to address the outcome of the new VAT strategy [6].

3. Discussion

In the light of the result above presented, it is obvious that even the European Union (Commission) itself does hardly find acceptable consensus of other VAT development. On 1 December 2010, Commission published so called Green paper on the future of VAT {SEC(2010)1455 final} which covers some ideas and proposals of future existence of VAT system for public consultations.

According to the Green paper, the approach followed in the last decade has been to simplify and modernise the current VAT systems by increments. It has produced positive results, although it has reached its limits. There are also a number of factors indicating that the time is now right for broader reflections, such as (i) the complexity of the current system that results in administrative burdens for businesses, (ii) maximising revenue collection and tackling the system's susceptibility to fraud, (iii) making the single market work better because the fact that domestic and intra-EU transactions continue to be treated differently for VAT purposed may be an obstacle to the better functioning of single market, (iv) changes in technology and the economic environment as these technological changes may offer the possibility of new and alternative ways of collecting VAT to reduce burdens on business and VAT losses.

Discussions on the future of VAT have been divided between two major headings. The first one concerns the principles of taxation of intra-EU transactions on which an EU VAT system should be based. The second covers issues which need attention irrespective of any choice to be made on the treatment of intra-EU transactions.

Other themes covered in Green paper deal with ensuring the neutrality of the VAT system (in the light of VAT scope, exemptions from VAT, deductions, international services, legal process, derogations, VAT rates, etc.), implementing the definitive arrangements based on taxation at origin, and creating an efficient and modern administrating of the VAT system [6].

Conclusion: Quo Vadis, VAT?

In the context of the economic crisis, when fiscal interventions of national governments are absorbed by individual economics more perceptive, the current legislative in the area of VAT rates and a relative flexibility in its applying enable to find new opportunities for improving of VAT system performance in EU. One of such opportunities is a convergence of VAT rates, which could be helpful in the process of simpler performance of the EU internal market. Another possibility is a reduction of administrative burden which currently accompanies a process of VAT administration on the level of payers as well as on the level of tax administrator.

On the other side it is necessary to deal with potential negative impacts or threats which can appear during (or while solving) the economic crisis. First of all there is a question if in the case of changes in VAT during the economic crisis it does not come or will not

come only to increasing of these rates in accordance with predominance of effort to fill revenue part of public budgets. It is also related with the question, if during the economic crisis member states will not be prefer only their own fiscal interest to the EU interests. The last risk is a possible existence of no links between changes, which are performed without deeper connections with a longer time period.

An interesting circumstance of VAT changes can be also its influence on the price level. This is investigated with households according to the changes in final prices (including VAT) of commodities of the market basket [9]. Although the inflation change is a result of many factors (when some of them have opposite effect), it is obvious that an increase in VAT rates – *ceteris paribus* – lead to increasing of the price level.

The economic crisis substantially “has stirred” stagnant waters of VAT rates changes. However these changes did not have a positive side aspect of reduction of VAT rates range in the European Union, but they result from fiscal interests of individual EU Member States. However, in any case, a better rates harmonization contributes to the running of the single internal market.

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Appendices

Appendix 1: Changes of reduced rates from previous Annex IV of 2006/112/EC Directive used by Member States

	BE	BG	CZ	DK	DE	EE	EL	ES	FR	IE	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
Minor repairs of bicycles																											
2009: Annex IV	6	20	19	25	19	18	9	16	19.6	13.5	20	15	21	19	6	20	18	6	20	7	20	19	20	19	22	25	15
2010: Annex III	6	20	20	25	19	20	9	16	19.6	13.5	20	15	21	21	6	25	5	6	20	7	20	19	8.5	19	8	25	17.5
2011: Annex III	6	20	20	25	19	20	13	18	19.6	13.5	20	15	22	21	6	25	5	6	20	8	23	24	8.5	20	9	25	20
Minor repairs of footwear and leather goods																											
2009: Annex IV	6	20	19	25	19	18	9	16	19.6	13.5	20	15	21	19	6	20	18	6	20	7	20	19	20	19	22	25	15
2010: Annex III	6	20	20	25	19	20	9	16	19.6	13.5	20	15	21	21	6	25	5	6	20	7	20	19	8.5	19	8	25	17.5
2011: Annex III	6	20	20	25	19	20	13	18	19.6	13.5	20	15	22	21	6	25	5	6	20	8	23	24	8.5	20	9	25	20
Minor repairs of clothing and household linen (including melding and alteration)																											
2009: Annex IV	6	20	19	25	19	18	9	16	19.6	13.5	20	15	21	19	6	20	18	6	20	7	20	19	20	19	22	25	15
2010: Annex III	6	20	20	25	19	20	9	16	19.6	13.5	20	15	21	21	6	25	5	6	20	7	20	19	8.5	19	8	25	17.5
2011: Annex III	6	20	20	25	19	20	13	18	19.6	13.5	20	15	22	21	6	25	5	6	20	8	23	24	8.5	20	9	25	20
Renovation and repairing of private dwelling excluding materials which form a significant part of the value of the service																											
2009: Annex IV	6	20	9	25	19	18	9	7	5.5	13.5	10	15	10	19	15	20	18	6	20	7	5	19	8.5	19	22	25	5
2010: Annex III	6	20	10	25	19	20	9	7	5.5	13.5	10	15	21	21	15	25	18	6	20	7	5	19	8.5	19	22	25	5
2011: Annex III	6	20	10	25	19	20	13	8	5.5	13.5	10	15	22	21	15	25	18	6	20	8	6	24	8.5	20	23	25	5
Window cleaning and cleaning in private households																											
2009: Annex IV	21	20	9	25	19	18	19	16	5.5	14	20	15	21	19	6	20	18	19	20	22	20	19	20	19	22	25	15
2010: Annex III	21	20	10	25	19	20	19	16	5.5	14	20	15	21	21	6	25	18	19	20	22	20	19	8.5	19	22	25	17.5
2011: Annex III	21	20	10	25	19	20	23	18	5.5	14	20	15	22	21	6	25	18	19	20	23	23	24	8.5	20	23	25	20
Domestic care services (e.g. home help and care for children, elderly, sick or disabled persons)																											
2009: Annex IV	21	20	9	25	19	18	9	16	5.5	ex	ex	15	21	19	ex/15	20/ex	18	19	20	22	5	19	20	19	22	25	15
2010: Annex III	21	20	10	25	19	20	9	16	5.5	ex	ex	15	21	21	ex/15	25/ex	5	19	20	22	5	19	8.5	19	22	25	17.5
2011: Annex III	21	20	10	25	19	20	13	18	5.5	ex	ex	15	22	21	ex/15	25/ex	5	19	20	23	6	24	8.5	20	23	25	20
Barbershop and hairdressing																											
2009: Annex IV	21	20	19	25	19	18	19	7	19.6	13.5	20	15	10	19	6	20	18	6	20	7	20	19	20	19	22	25	15
2010: Annex III	21	20	20	25	19	20	19	7	19.6	13.5	20	15	21	21	6	25	18	6	20	7	20	19	8.5	19	8	25	17.5
2011: Annex III	21	20	20	25	19	20	23	8	19.6	13.5	20	15	22	21	6	25	18	6	20	8	23	24	8.5	20	9	25	20

Source: own comparison according to [9]

Appendix 2: Application of reduced rates listed in Annex III of 2006/112/EU Directive by Member

	BE	BG	CZ	DK	DE	EE	EL	ES	FR	IE	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
Restaurant and catering services, while it is possible to eliminate supply of (alcoholic or non-alcoholic) beverages																											
2010: Annex III	12	20	20	25	19	20	9	7	5.5	13.5	10	8	21	21	3	25	18	6	10	7	12	19	20	19	22	25	17.5
2011: Annex III	12	20	20	25	19	20	13	8	5.5	13.5	10	8	22	21	3	25	18	6	10	8	13	24	20	20	13	12	20

Source: own comparison according to [9]

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The Application of the Long and Short Combo Option Strategies in the Building of Structured Products

Abstract

The financial market crisis, which climaxed in March 2009, has caused risk aversion, especially among the investors from post-communist countries who had not experienced such a huge devaluation of financial investments before. This aversion has resulted in a greater interest in products which guarantee a return on investment. In trying to attract investors again, the issuers offer many so-called structured products. For conservative investors, it is especially suitable to invest in products which guarantee a return on investment and, at the same time - provided that other conditions are met - they offer a so-called bonus, the amount of which varies with products. Although with most such products there is a so-called maximum bonus defined, it is often an interesting yield, especially when compared to very low interest rates on deposits. It is an interesting direction for scientific research to find out how parameters of such a structured product are set, i.e. how the issuer can ensure without a risk the resources needed for the realisation of the given structured product payment profile. The aim of this paper is to analyze some of the existing structured products and to prove that their creation is possible by utilizing option strategies known as the Long and Short Combo.

The paper builds on the papers [7] and [10], which have analyzed the Long and Short Combo Strategies with regard to their utilization in trading or hedging. The source of inspiration for this new application of the mentioned option strategies was the paper [9] which deals with the principle of the so-called Speed Certificates creation, which can also be classified as structured products, although they are without an investment guarantee.

There are two main outcomes of the article. The first one is the proof that the Bonus Deposit VI structured product offered in Slovakia has the same profit profile as an alternative investment consisting of the purchase of an underlying asset and the creation of the Long Combo option strategy. The other one is the proof that the Currency Deposit EUR/PLN structured product has the same profit profile as an alternative investment consisting of the exchange of EUR for PLN and the creation of the Short Combo option strategy.

Key Words

structured products, option strategies, payment profile

JEL Classification: G15, G11

Introduction

Perhaps the most significant feature of today's financial markets is a continuous innovation of investment Instruments. The issuers continue expanding their offers of investment products in order to satisfy all types of investors with regard to their

attitude to risk, as well as to the estimated price development of the given underlying asset.

These are the instruments which are known as structured products. Since these are products which have been used by investors on developed financial markets more and more, it is worth studying the fundamentals of their creation. Uncovering these fundamentals will enable us to understand why the parameters of the given product are set just this way, but most of all it will enable us to judge the probability of reaching the possible maximum yield.

It can be stated that practically every structured product has a certain option element built in it. If the value of the underlying asset is fundamental for the payment of a bonus yield only at maturity of the given structured product, then the so-called vanilla options were certainly used in its creation. Otherwise, more complicated barrier or other so-called exotic options were used.

Lately, the so-called guaranteed products have been popular with investors. In this paper we will show how the Long and Short Combo option strategies can be used in their creation.

It will be demonstrated on the guaranteed products offered in Slovakia under the name Deposit VI and Currency Deposit EUR/PLN. The sequence of steps will clarify how guaranteed products can be created using these option strategies for other underlying assets as well.

1. Features of Guaranteed Products

The significant losses on financial markets after the onset of the mortgage, financial and economic crisis have forced the investors to realize the investment risk much more than before. That is also a reason behind the popularity of guaranteed products, with which issuers flooded the financial market.

Their most fundamental common feature is the investment guarantee (or a guarantee of low return as well), in case the product is held until its maturity. This guarantee removes the risk of loss. Apart from this, the guarantee product includes also an opportunity to get a so-called bonus yield, the payment of which, however, is possible only when certain conditions are met which are connected with the underlying asset value at maturity (or to maturity). The bonus yield is almost always limited to a specific value. Thus, the investor loses the possibility to achieve a return higher than the maximum value of the bonus yield, which is basically a fee for the guarantee of investment return in case of negative development of the underlying asset value.

An example of a guaranteed product is, for instance, the Bonus Deposit VI offered in Slovakia by a certain bank. It is a three-year product, which at the guaranteed product maturity gives the client a guarantee of principal and of a bonus yield of 100% appreciation in value of the underlying asset, i.e. the European EUROSTOXX 50 index,

though only up to the maximum amount of 18%. The function of profit from this structured product at maturity depends on the EUROSTOXX 50 index value at maturity.

If we call the index value S_0 at the time of the product issuance, and S at maturity of the product, then the function of profit from the Bonus Deposit VI product at time of its maturity is as follows:

$$P_1(S) = \begin{cases} 0 & \text{if } S < S_0, \\ S - S_0 & \text{if } S_0 \leq S < 1.18 S_0, \\ 0.18 S_0 & \text{if } S \geq 1.18 S_0. \end{cases} \quad (1)$$

The question is why the maximum bonus yield is set just at the amount of 18% and, also, what the issuer should do in order to ensure without a risk the resources necessary for the payment to the investor depending on the development of the underlying asset.

Another example is a product called Currency Deposit EUR/PLN offered in Slovakia by the same bank. In this case, it is again a three-year product, which guarantees after the first and second years a yield of 1.5% p.a., and at the end of the third year, i. e. at time of the product maturity, the principal will be paid together with a bonus yield of 125% of the exchange rate appreciation, when compared to the initial exchange rate. The initial exchange rate is set at the 95% of the rate k_0 on 29/7/2010. The maximum bonus yield is at 18.08% of the initial exchange rate. If the exchange rate does not appreciate, only the principal will be paid after the third year.

We are once again interested in finding out how the parameters of this guaranteed product were made and how the issuer will ensure this payment profile without a risk.

In the following part of this paper we will prove that the Long and Short Combo option strategies can be used in the creation of guaranteed products.

2. The Long and Short Combo Option Strategies

The Long Combo strategy can be created by buying n put options with a strike price x_1 and a premium $\overline{p_{1B}}$ per option and, at the same time, by selling n call options with a higher strike price x_2 and a premium p_{2S} per option.

The function of profit from the overall Long Combo strategy is as follows (see [7])

$$P_2(S) = \begin{cases} -n(S - x_1 + \overline{p_{1B}} - p_{2S}) & \text{if } S < x_1, \\ n(p_{2S} - \overline{p_{1B}}) & \text{if } x_1 \leq S < x_2, \\ -n(S - x_2 + \overline{p_{1B}} - p_{2S}) & \text{if } S \geq x_2. \end{cases} \quad (2)$$

The Short Combo strategy can be created by selling n put options with a strike price x_1 and a premium $\overline{p_{1S}}$ per option and, at the same time, by buying n call options with a strike price x_2 and a premium p_{2B} per option.

The function of profit from the overall Short Combo strategy is as follows (see [7])

$$P_3(S) = \begin{cases} n(S - x_1 + \overline{p_{1S}} - p_{2B}) & \text{if } S < x_1, \\ n(\overline{p_{1S}} - p_{2B}) & \text{if } x_1 \leq S < x_2, \\ n(S - x_2 + \overline{p_{1S}} - p_{2B}) & \text{if } S \geq x_2. \end{cases} \quad (3)$$

These strategies are very interesting, especially when they can be created using a suitable selection of strike prices in such a way that no costs are needed for their creation.

In case of the Long Combo it is conditioned by

$$p_{2S} - \overline{p_{1B}} \geq 0 \quad (4)$$

and in case of the Short Combo the condition is

$$\overline{p_{1S}} - p_{2B} \geq 0 \quad (5)$$

3. The Fundamentals of the Guaranteed Products with Limited Bonus Yield Creation

Let us suppose that we want to create a structured product with a maturity in t years, which guarantees the principal and, in case of the increase in the underlying asset price, also a bonus yield at 100% of the underlying asset appreciation in value, however, only up to the amount $k\%$.

The function of profit from a structured product defined this way at its maturity is

$$P_4(S) = \begin{cases} 0 & \text{if } S < S_0, \\ S - S_0 & \text{if } S_0 \leq S < (1+k)S_0, \\ k S_0 & \text{if } S \geq (1+k)S_0, \end{cases} \quad (6)$$

where: S_0 is the underlying asset value at time of the product issuance
 S at time of its maturity

The issuer can create such a structured product using the Long Combo strategy as follows:

- he will buy the underlying asset at S_0 ,

- he will buy a put option with a strike price $x_1=S_0$ and a premium $\overline{p_{1B}}$,
- he will sell a call option with a higher strike price $x_2=S_1$ and a premium p_{2P} , where the strike price $x_2=S_1$ he will select in a way which meets condition (4). These are the options for the same underlying asset with the same expiry as that of the given structured product.

As the function of profit from the purchase of the underlying asset from S_0 is $P(S) = S - S_0$, then we will get the function of profit from all three operations, if we add to it the function of profit (2) for $n=1$, $x_1=S_0$ and $x_2=S_1$.

We get:

$$P_5(S) = \begin{cases} \overline{p_{2S}} - \overline{p_{1B}} & \text{if } S < S_0, \\ S - S_0 + \overline{p_{2S}} - \overline{p_{1B}} & \text{if } S_0 \leq S < S_1, \\ S_1 - S_0 + \overline{p_{2S}} - \overline{p_{1B}} & \text{if } S \geq S_1. \end{cases} \quad (7)$$

By comparing (6) and (7) we conclude that if $p_{2S} - p_{1B} = 0$ and $\frac{S_1 - S_0}{S_0} = k$, then the functions of profit are identical. It is obvious from this construction that the limitation of the bonus yield cannot be arbitrary, but it depends on the selection option of the strike price $x_2=S_1$ while the condition (4) is met. It is also easy to see that the issuer's profit can be achieved at $p_{2S} - p_{1B} > 0$.

Let us suppose that we want to create a structured product with a maturity in t years for an exchange rate of n units of the main currency for an alternative currency. It is logical that the investor wants to make money by a reverse exchange in the future as a result of the alternative currency appreciation in value, but with a guarantee of the principal, in case the alternative currency depreciates.

Thus, a structured product guarantees a return of principal and it offers a possible bonus return of 100% appreciation in value of the exchange rate, but maximum up to $r\%$.

The function of profit from a structured product defined this way at maturity is as follows:

$$P_6(S) = \begin{cases} nr \frac{k_0}{k} & \text{if } k < k_0(1-r), \\ n \left(\frac{k_0}{k} - 1 \right) & \text{if } k_0(1-r) \leq k < k_0, \\ 0 & \text{if } k \geq k_0, \end{cases} \quad (8)$$

where: k_0 is the rate of exchange of the main currency for the alternative one at time of the product issuance and k at time of its maturity

The issuer can create such a structured product in the following way:

- he will exchange n units of the main currency for an alternative one at a rate k_0 , i.e. he will have $K_0 = nk_0$ units of the alternative currency,
- he will sell n put options for the purchase of the main currency for the alternative one at a strike price $x_1 = (1-r)k_0$ and a premium $\overline{p_{1S}}$ per option,
- he will buy n call options for the purchase of the main currency for the alternative one at a strike price $x_2 = k_0$ and a premium p_{2B} per option, where the strike price x_1 will be chosen in such a way that the condition (5) is met and the expiry of the options is identical with the maturity of the structured product.

If at expiry of the options the rate is $k \geq k_0$, i.e. the alternative currency will unexpectedly depreciate in value, then the issuer will use for the reverse exchange the call options which guarantee the exchange rate k_0 .

If at expiry of options the rate is $k < (1-r)k_0$, i.e. the alternative currency will appreciate in value above $r\%$, the issuer must buy from the buyer of the put option the main currency at a less profitable rate $k_0(1-r)$.

If at expiry of the options the rate is $k \in ((1-r)k_0; k_0)$, then the options will remain unused and the issuer will exchange reversely nk_0 units of foreign currency at the current rate k .

It can be proven that the function of profit of the issuer from all three operations (the exchange at rate k_0 and the Short Combo option strategy) is as follows

$$P_7(S) = \begin{cases} \frac{nrk_0}{k} & \text{if } k < (1-r)k_0, \\ n\left(\frac{k_0}{k} - 1\right) & \text{if } (1-r)k_0 \leq k < k_0, \\ 0 & \text{if } k \geq k_0. \end{cases} \quad (9)$$

Thus, it is identical with the function of profit (8), which proves that the proposed way can lead to the creation of a structured product.

Note 1: The proposed way also brings to the issuer a profit which we have not taken into consideration. The issuer can deposit the alternative currency in a t -year term deposit, or he can buy a credible bond offering a regular annual return. These additional resources the issuer can keep or he can use part of them to guarantee (apart from the principal) also a regular annual return for the investor. This way a structured product becomes more attractive (example: currency deposit EUR/PLN).

Conclusion

Guaranteed products with a limited bonus yield are popular with many investors especially in times of increased volatility. We have demonstrated in this work that they can be created by combining an underlying asset with Long or Short Combo option strategies, where the expiry date of used options is identical with the maturity of the guaranteed product.

The application of the mentioned option strategies has been demonstrated on two specific structured products offered in Slovakia, namely Bonus Deposit VI and Currency Deposit EUR/PLN. The described sequence of steps helps the reader to understand how the individual parameters of a structured product are created, especially the amount of the bonus yield and the impact of various factors on achieving it. At the same time, it is obvious how these option strategies can be used to create other structured products.

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Backtesting Results and the Type of the Security¹

Abstract

Financial risk modeling and its subsequent management is a very important and no less challenging task of quantitative units of financial institutions. Due to the nature of complex portfolios and based on recent evolution at financial markets, contemporary research is focused either on tails modeling or dependency modeling or both. The main task of this paper is to examine a potential contribution of Lévy based subordinated models as a tool to estimate the risk of particular positions across the world financial markets. Such models are generally defined as a geometric Brownian motion evaluated in a random time, which can be specified as any nondecreasing process. Such cases are gamma process or inverse Gaussian process leading to variance gamma model or normal inverse Gaussian model. Moreover, on the basis of backtesting procedure and utilizing various tests of exceptions in the risk estimation we can analyze the efficiency of a particular model with respect to a given security. In this context we try to identify, if there is any important difference/similarity of particular assets in question and/or which kind of test seems to be the most useful. With respect of that we analyze foreign exchange rate and stock positions by evaluating a large set of tests, including the frequency test, Basel traffic test, Kupiec test, Christofferson test or TUFF (time until first failure) test. The results can be interesting for financial policy evaluation.

Key Words

financial risk, risk estimation, capital requirement, backtesting, lévy models, variance gamma model

JEL Classification: C46, E37, G17, G24

Introduction

An inherent part of activities of any financial institution is to deal with financial securities, such as equities, bonds, currencies and even financial derivatives. It is very difficult to find a financial security, which would generate its future cash flow without any risk. In this context, we should distinguish credit risk, ie. the probability, that the issuer or party in a short position will not be able or willing to meet the obligation in a given time and at a given amount, and a market risk, which relates to the fluctuation of market prices, including theirs mutual relation.

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Since financial institutions are very sensitive on the confidence as perceived by their clients, they should take any unexpected movement in the risk amount very seriously. Financial risk measuring and its subsequent management is therefore very important and no less challenging task of quantitative units of financial institutions. However, any risk estimation should be accompanied by an approval that the way in which it was modeled and quantified is sufficiently reliable.

Concerning the market risk, one of the most important steps is to run the so-called backtesting procedure – on a set of historical data we evaluate the risk model stepwise and examine whether its features are as desired. Obviously, it can happen that a given model works differently for distinct assets. Moreover, various ways of backtesting procedure can perform differently, too. In this paper, our task is to compare if there is any important difference/similarity of particular assets (FX rates and equities) and/or which kind of test seems to be the most useful – for deepen insight into the (market) risk management problem see eg. Hull (2007) or Resti and Sironi (2007).

We proceed as follows. In the following section we briefly review the problem of financial risk model validation. Next, we provide some basic facts about the modeling of financial returns via standard market model or alternative variance gamma model. Next, in Section 3 we describe the data used in this study and finally, in Section 4, particular backtesting approaches are applied in order to evaluate the efficiency of a given models.

1. Backtesting procedure

Within the backtesting procedure, the ability of a given model to estimate the future losses is to be tested. In the context of the market risk, the backtesting procedure can be applied on models in the form of VaR, cVaR or even overall distribution of the losses. Loosely speaking, applying the historical data, ie. true evolution of the market prices of financial instruments, the risk is estimated at time t for time $t + \Delta t$, where Δt is usually set to 1 business day, and compared with the true loss observed at time $t + \Delta t$. This procedure is applied for moving time window over the whole data set.

In line with the standards for bank supervision as defined within Basel II, let us assume that the risk is estimated for one day horizon, $\Delta t = 1$. Denote Value at Risk of a portfolio X estimated at day t for the next day $t + 1$ on a given significance level α as $\text{VaR}_X(t, t + 1; \alpha)$ and the true loss observed at $t + 1$ with respect to the preceding day t as $L_X(t, t + 1)$.

Within the backtesting procedure on a given time series $\{1, 2, \dots, T\}$, two situations can arise – the loss is higher than its estimation or lower (from the stochastic point of view, the equality shouldn't arise). While the former case is denoted by 1 as an exception, the latter one is denoted by zero. In this way, we get the sequence $\{I_X(t + 1), \alpha\}_{t=1+m}^{T-1}$, where m is a number of data (days) needed for the initial estimation. On the sequence, it can be tested whether the number of *ones* (exceptions) corresponds with the assumption, ie. αn (where $n = T-1-m$), whether the estimation is valid either unconditionally or conditionally, whether bunching is present, etc.

The basic test suggested in 1995 by Kupiec (Kupiec, 1995), is the frequency test (FRQ) – the observed number of exceptions is compared to the expected number of exceptions. Since the true number of exceptions is distributed according to the binomial distribution, we can simply test the equality of observed and expected numbers of exceptions.

Similarly, Kupiec's test (Kupiec, 1995) is derived from a relative amount of exceptions, ie. whether its probability is different from the statistical point of view from the assumed probability. The Kupiec's test takes into account only the number of exceptions. A given likelihood ratio on the basis of χ^2 probability distribution with one degree of freedom is formulated as follows:

$$LR_{POF} = \frac{\pi_{\exp}^{n_1} (1 - \pi_{\exp})^{n_0}}{\pi_{\exp}^{n_1} (1 - \pi_{\exp})^{n_0}} \quad (1)$$

where: $\pi_{\exp}$ is expected probability of exception occurring

π_{obs} is observed probability of exception occurring

n_0 is the number of zeros

n_1 is the number of ones.

By contrast, in order to assess whether the exceptions are distributed equally in time, ie. without any dependency (autocorrelation), we should define the time lag first: in Christoffersen (1998) it is defined as the stage, when exception at one time moment can significantly help to identify whether another exception will (not) follow on the subsequent day. Therefore, we replace the original sequence by a new one, where 01, 00, 11 or 10 is recorded. Then we have the likelihood ratio as follows:

$$LR = \frac{\pi_{obs}^{n_1} (1 - \pi_{obs})^{n_0}}{\pi_{01}^{n_{01}} (1 - \pi_{01})^{n_{00}} \pi_{11}^{n_{11}} (1 - \pi_{11})^{n_{10}}} \quad (2)$$

where: $\pi_{ij} = \Pr(I_t = j | I_{t-1} = i)$

$$\pi_{obs} = \frac{n_{01} + n_{11}}{n_{00} + n_{01} + n_{10} + n_{11}}$$

Obviously, we can evaluate these two tests together by calculating the following likelihood ratio:

$$LR_{MIX} = \frac{\pi_{\exp}^{n_1} (1 - \pi_{\exp})^{n_0}}{\pi_{01}^{n_{01}} (1 - \pi_{01})^{n_{00}} \pi_{11}^{n_{11}} (1 - \pi_{11})^{n_{10}}} \quad (3)$$

Another alternative is to test the time until the first failure, ie. when the first exception arises. Here, the likelihood ratio,

$$LR_{TUFF} = -2 \ln \left(\frac{\pi_{\exp} (1 - \pi_{\exp})^{k-1}}{\left(\frac{1}{k}\right) \left(1 - \frac{1}{k}\right)^{k-1}} \right) \quad (4)$$

is again of χ^2 distribution with one degree of freedoms (here, k refers to observed time to the first failure).

2. Modeling of returns

Let us denote the price of a financial asset at time t by S and its return as x . Since the prices of financial assets can change at any time by any amount, the convention is to use a continuous compounding. Therefore, we can get the return x by evaluating the natural logarithm as follows:

$$x_t = \ln \frac{S_t}{S_{t-1}} \quad (5)$$

In order to model the returns of financial assets, a random term should be considered. For a long time, the standard assumption was the normality of the returns, ie. the random term was of (standard) normal distribution, the probability distribution of only two parameters, the mean and the variance. However, many alternative models, taking into account also the higher moments of the distribution of returns, namely the skewness and kurtosis, have been suggested recently. One of the most popular approaches is to utilize some kind of subordinated Lévy models.

2.1 Standard market model

Assuming that μ is the long-run average of the price returns, σ is its volatility and the random term ε is of standard normal distribution, ie. $\varepsilon \in \mathcal{N}[0, 1]$, we can formulate the stochastic model for the return x as follows:

$$dX = \mu dt + dZ_t = \mu dt + \sigma \sqrt{dt} \varepsilon \quad (6)$$

where: Z_t denotes the Wiener process (standard Brownian motion).

Such kind of model is very simplifying since it takes into account only the first two moments of the underlying probability distribution. However, empirical evidence of financial returns regularly provides many arguments against such simplifying assumption – extremal returns are more common than they should be according to the assumption of normality and positive returns are more common than negative (or vice versa, depending on the reference asset).

2.2 Lévy subordinated model

The major task of financial model building is therefore to allow one to fit also extreme evolution of market prices. It is a matter of fact that returns at financial markets are neither symmetrically distributed nor without exceed peaks (or heavy tails) over time, which is in contradiction to Gaussian distribution. A very feasible way to fit both skewness (non-symmetry) and kurtosis (heavy tails) is to apply a subordinated Lévy model, a rather non-standard definition of Lévy models as time changed Brownian motions, which goes back to Mandelbrot and Taylor (1967) and Clark (1973).

Generally, a Lévy process is a stochastic process, which is zero at origin, its path in time is right-continuous with left limits and its main property is that it is of independent and stationary increments. Another common feature is a so called stochastic continuity. Moreover, the related probability distribution must be infinitely divisible. The crucial theorem is the Lévy-Khintchine formula:

$$\Phi(u) = i\gamma u - \frac{1}{2}\sigma^2 u^2 + \int_{-\infty}^{\infty} (\exp(iux) - 1 - iux\mathbb{I}_{|x|<1})\nu(dx) \quad (7)$$

For a given infinitely divisible distribution, we can define the triplet of Lévy characteristics,

$$\{\gamma, \sigma^2, \nu(dx)\} \quad (8)$$

The former two define the drift of the process (deterministic part) and its diffusion. The latter is a Lévy measure. If it can be formulated as $\nu(dx) = u(x)dx$, it is a Lévy density. It is similarly to the probability density, with the exception that it need not be integrable and zero at origin. The first focus at Lévy models with jumps goes back to 1930's. The most recent and complete monographs on the theory behind and/or application of Lévy models are Applebaum (2004), Cont and Tankov (2004), Barndorff-Nielsen et al. (2001) and Bertoin (1998).

A subordinated Lévy model can be defined on the basis of a Brownian motion (6) by driving it by Lévy process $\ell(t)$ with unit mean and positive variance κ . The only restriction for such a driving process is that it is non-decreasing on a given interval and has bounded variation.

Hence, we replace standard time t in

$$X(t; \theta, \vartheta) = \theta dt + dZ(t; \vartheta) \quad (9)$$

by its function $\ell(t)$:

$$X(\ell(t; \kappa); \theta, \vartheta) = \theta \ell(t; \kappa) + \vartheta Z(\ell(t; \kappa)) = \theta \ell(t; \kappa) + \vartheta \varepsilon \sqrt{\ell(t; \kappa)} \quad (10)$$

Due to its simplicity (tempered stable subordinators with known density function in the closed form), the most suitable models seem to be either the variance gamma model – the overall process is driven by gamma process from gamma distribution with

parameters of shape a and scale b depending solely on variance κ , $G[a, b]$, or normal inverse Gaussian model – the subordinator is defined by inverse Gaussian model based on inverse Gaussian distribution, $IG[a, b]$. For more details on variance gamma model see e.g. Madan and Seneta (1990) (for symmetric case) and Madan and Milne (1991) and Madan et al. (1998) (for asymmetric case). Detailed description of Lévy process modeling via Monte Carlo simulation can be found eg. in Tichý (2008) and some interesting implications for portfolio risk estimation in Tichý (2009, 2010).

3. Data set description

The data set we consider in our study comprises of daily prices of five foreign currencies (CHF, EUR, GBP, USD, PLN, with respect to CZK) and five stocks (Amazon.com – AMZ, Logitech International SA – LGI, Microsoft Corporation – MCS, Ryanair Holding – RYA, Petroleum Development Corporation – PET) over 10 years horizon, ie. January 1, 2000 to December 31, 2009. It follows that we have picked up 2,268 observations of log-returns for ten distinct securities, four more or less global FX rates, one local FX rate, and six equities from different branches and regions, although three of them can be regarded as technological. Hence, we should be able if there is any difference in risk modeling, estimation and model validation among local currency of a neighboring country, two European national, but globally recognized currencies, global European currency and USD, still recognized as a number one in the world. Similarly, selected stocks provide quite high liquidity, relatively long history of data and different regions/segments of the developed world. Basic descriptive statistics – mean, variance, standard deviation, skewness and kurtosis – of daily log-returns are reported in Table 1.

Tab. 1: Descriptive statistics of daily log-returns

FX rate	CHF	EUR	GBP	USD	PLN
<i>mean</i>	-0.0001	-0.0001	-0.0003	-0.0003	-0.0001
<i>st.deviation</i>	0.0042	0.0042	0.0064	0.0079	0.0067
<i>skewness</i>	-0.0007	-0.0015	-0.0737	-0.0247	-0.3472
<i>kurtosis</i>	10.1245	10.6649	8.5879	6.6574	10.1479
Stock	AMZ	LGI*	MCS*	RYA*	PET
<i>mean</i>	0.0002	-0.0002	-0.0005	-0.0002	-0.0006
<i>st.deviation</i>	0.0415	0.0409	0.0263	0.0374	0.0352
<i>skewness</i>	0.4269	-0.5912	-0.6326	-0.7485	0.4441
<i>kurtosis</i>	11.1686	10.3389	16.378	13.896	9.7047

Note: * Kurtosis is calculated except for several illiquid periods.

Source: own

It is apparent, that the mean returns p.a. varies substantially – the only security with positive drift is AMZ. Similarly, also the variance of returns is various. Next, we can see that skewness is mainly negative, except AMZ and PET and kurtosis very high, generally higher for stocks.

4. Results

In this section we will report the results for VaR for 1% significance assuming both the standard market model (SMM) and variance gamma model (VGM). We will evaluate the basic frequency test (FRQ), Kupiec test of relative amount of exceptions (POF), the test for the time until first failure (TUFF), test of independency (IND), conditional coverage test (CCV), and finally also mixed Kupiec test (MIX) and transform the LR values into the model significance – the higher value in the table, the better, ie. 0.02 indicates, that the model shouldn't be accepted when 5% probability is chosen. However, if there is no occurrence of two subsequent exceptions, the IND (and CCV) tests cannot be evaluated – in this case we report “---”.

A very important decision is to choose optimal time window for estimation of the parameters of the model. We will consider 50 days (ten weeks), 100 days (twenty weeks), 250 days (one year), 500 days (two years) and 1,000 days (four years). Obviously, the time window will have impact on the available length for the model testing. Due to the lack of space, only the results for 100 days (Table 2) and 250 days (Table 3) are reported. Before we start to comment the results we should note that the VG model utilize also higher moments of the underlying distribution – more importantly, since kurtosis is the measure of the occurrence of *extreme* scenarios relative to the common ones, the model should work better for longer time window.

Tab. 2: P-values for SMM/VGM model and 100days estimation window

FX rate	CHF	EUR	GBP	USD	PLN
<i>FRQ</i>	0.01/0.02	0.00/0.28	0.00/0.35	0.00/0.08	0.00/0.21
<i>POF</i>	0.04/0.06	0.15/0.57	0.00/0.49	0.01/0.18	0.00/0.45
<i>TUFF</i>	0.37/0.36	0.39/0.27	0.42/0.26	0.40/0.32	0.47/0.29
<i>IND</i>	0.10/0.09	0.13/0.00	---/---	0.61/0.40	0.00/0.00
<i>CCV</i>	0.03/0.04	0.01/0.01	---/---	0.03/0.28	0.00/0.00
<i>MIX</i>	0.03/0.10	0.03/0.02	0.03/0.34	0.00/0.01	0.00/0.10
Stock	AMZ	LGI	MCS	RYA	PET
<i>FRQ</i>	0.08/0.20	0.00/0.01	0.00/0.00	0.11/0.21	0.00/0.00
<i>POF</i>	0.17/0.43	0.00/0.02	0.01/0.01	0.25/0.44	0.00/0.01
<i>TUFF</i>	0.32/0.28	0.41/0.04	0.39/0.40	0.31/0.29	0.55/0.41
<i>IND</i>	0.41/0.33	0.03/0.56	---/---	0.00/0.00	0.13/0.66
<i>CCV</i>	0.29/0.46	0.00/0.65	---/---	0.00/0.01	0.00/0.02
<i>MIX</i>	0.09/0.05	0.00/0.01	0.01/0.01	0.05/0.26	0.00/0.00

Source: own

Starting with the standard market model (SMM), there is no time window that would allow us to estimate the risk (VaR measure in particular) in such way that the observed exceptions might be considered as statistically similar to the assumption. However, if we concern ourselves only at stocks, with longer time window, we mostly get very good results for FRQ and POF tests. Moreover, also IND and CCV test might suggest us to accept the model as a reliable. By contrast, for shorter time window, we get such recommendation only for AMZ stock. Surprisingly, also the VaR models for CHF and EUR FX rates can be accepted with 50days time window. Since the most important parameter (it is virtually the only one when one day VaR is considered) for SMM model is standard deviation, the reason might be that FX rates volatility is rather unstable and

heterogeneous in comparison with stocks. Another interesting implication is that TUFF test suggests us to accept the model for all securities and time windows. Similarly, also the IND test mostly leads to model acceptance – except PLN and RYA for all time windows. In case of the rest of the securities, we can find only one or two of the considered time windows when the model should not be accepted.

However, we are interested mainly in the power of VGM model to improve the backtesting results. For better orientation we stressed by bold font higher p-values in both tables. It is apparent that VGM really overcome SMM for most of the securities, time windows and tests. The only two exceptions are the tests of independency and time until first failure, when SMM provides slightly higher p-values. However, even in this case, VGM usually provide sufficiently high p-values so that we can accept the model. Notwithstanding, in case of PET the VaR model is not reliable and for PLN and RYA we should be very careful in the model implementation – the values are very low for most of the tests.

Tab. 3: P-values for SMM/VGM model and 250days estimation window

FX rate	CHF	EUR	GBP	USD	PLN
<i>FRQ</i>	0.00/0.13	0.00/0.47	0.00/0.24	0.00/0.01	0.00/0.55
<i>POF</i>	0.00/0.28	0.00/0.94	0.00/0.71	0.00/0.20	0.00/0.89
<i>TUFF</i>	0.41/0.29	0.42/0.23	0.41/0.26	0.42/0.30	0.39/0.22
<i>IND</i>	0.00/0.05	0.20/0.23	0.18/---	0.20/0.06	0.00/0.00
<i>CCV</i>	0.00/0.08	0.00/0.48	0.00/---	0.00/0.07	0.00/0.00
<i>MIX</i>	0.01/0.44	0.00/0.26	0.00/0.33	0.00/0.02	0.00/0.00
Stock	AMZ	LGI	MCS	RYA	PET
<i>FRQ</i>	0.38/0.30	0.13/0.94	0.02/0.78	0.31/0.39	0.00/0.00
<i>POF</i>	0.17/0.61	0.27/0.09	0.06/0.43	0.62/0.77	0.00/0.00
<i>TUFF</i>	0.24/0.25	0.29/0.14	0.33/0.19	0.26/0.24	0.47/0.41
<i>IND</i>	0.03/0.28	0.05/---	0.47/---	0.00/0.00	0.01/0.18
<i>CCV</i>	0.08/0.49	0.08/---	0.14/---	0.01/0.00	0.00/0.00
<i>MIX</i>	0.00/0.01	0.00/0.01	0.00/0.01	0.00/0.01	0.00/0.00

Source: own

On the basis of five distinct time windows we can recommend as an optimal the one year time window. Although a one year horizon is not ideal with respect of rare events, the longer horizon would lead to overestimation or underestimation of realized volatility.

Conclusion

An efficient management of financial risks can increase the performance of any given entity. Moreover, the risk measurement and subsequent capital allocation can be used to increase competitiveness among particular units of a given institutions. In this paper we have shown a powerful tool to estimate the (market) risk – the subordinated Lévy model. We have also analyzed the model power with respect to various time windows and a selection of backtests. This analysis is important in order to asses a vulnerability of financial institutions and to design the most powerful model with respect to particular positions and new products introduction.

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Customers' Profitability: Methodological Approaches

Abstract

In terms of global economic development the role of customer portfolio for an enterprise has been emphasized. There are different approaches how to evaluate the customer portfolio, starting from Customer Life Time models, Retention and Migration models, RFM models and Capital Asset Pricing model to models based on activity and costs to serve. Although the idea that marketing should be concerned with the profitability of individual customers is not new, insufficient situation occurs both in theoretical and practical approaches. Marketing is entering a stage where investment and returns can be credibly measured and indeed marketing functions can be related to market capitalization and shareholder value creation. Also managers' ability (based on proper assessment) to construct an efficient customer portfolio can create a substantial competition advantage.

This contribution treats with four research objectives: to provide overview (with commentary) on current methods of customer base assessment; to advocate the theoretical framework of considering customer portfolio as one of company's asset; to outline the basic issues which are usually abstracted from (but due to current trend they have been no more just a marginal issue); to formulate an alternative methodological approach in order to precise the outcomes of customer profitability evaluation. This article also mentions the evolution from product or brand-centred marketing to customer-centred marketing. Although the objective of this article is to review the arguments for the customer equity management paradigm in marketing, it also aims to develop implications for research and practice.

Key Words

customer life time value, customers' profitability, portfolio assessment, customer equity

JEL Classification: M31, M40, G12

Introduction

Organizations have been under pressure to meet financial and other objectives in global markets. Marketing as a managerial tool needs to become more accountable with respect to the marketing investments that are made and the returns generated from these programs; hence to increase shareholder value. Intangible assets represent important proportion of the shareholder value. That is why marketers need to use the marketing-based intangible assets (as Customer Equity) – the sum of lifetime values to the organization of its current and future customers. To be able to monitor and manage marketing's contribution, these assets should be measured through standardized methods.

1. Methodology

This contribution is based on literature review and own search. Author faces the requirement of companies to provide such methodology which is both sufficient enough in recording and explaining important facts and also easily available (in terms of demanding data).

There are four research objectives:

- To provide overview of most frequent current methods of customer base assessment;
- To advocate the theoretical framework of considering customer portfolio as one of company's asset;
- To outline the basic issues which are usually abstracted from (but due to current trend they have been no more just a marginal issue);
- To formulate an alternative methodological approach in order to precise the outcomes of customer profitability evaluation.

2. Reasons of customer profitability revision

Customer profitability is the difference between the revenues earned from and the costs associated with the customer relationship in a specified period. It applies to the fact, that as a profitable customer such person can be considered, that overtime, yields a revenue stream that exceeds by an acceptable amount the company's cost stream of attracting, selling and servicing this customer.

The biggest challenge in measuring customer profitability is the assignment of costs to customers. While it is usually clear what revenue each customer generated, it is often not clear at all what costs the firm incurred serving each customer. For components of cost not directly related to serving customers, the calculation of customer profit must use some method to fully allocate these costs to customers if the total of customer profit is to match the operating profit of the firm. If the firm decides not to allocate these non-customer costs to customers, then the sum of customer profit will be greater than the operating profit of the firm.

The new trend of marketing is to be focused on customer management and customer profitability instead of product profitability. This trend is described by many authors [15], [20] as follows:

- From goods to services: all developed and many emerging economies are showing long-term transformation from goods to services (measured as a share on GDP and employment);
- From transactions to relationships: disciplines like Customer Relationship Management have been developing;

- From customer attraction to customer retention: many studies illustrate the fact that it is more cost-effective to keep an existing customer than attract a new one;
- From product focus to customer focus: product become secondary to satisfying customers;
- From Brand Equity to Customer Equity.

Methods of measuring customer portfolio value have to reflect these changes and to adapt to companies' requirement to be given an efficient management tool for measuring and hence increasing customers' profitability.

3. Customer portfolio management

Customers generating risky cash flows share characteristics with other business assets. Similar to financial assets, these customers provide an expected return, whereby some of them provide a larger but potentially more unsteady cash flow in comparison to others. However, compared to financial assets, customer relationships are more difficult to measure and to manage [19]. There is no liquid market where they could be "traded" and customers contain individual risks and might suddenly decide to terminate a non-contractual relationship with a company. These issues have to be taken into account when trying to develop a model for customer portfolio optimization, something that has been neglected by marketing managers [16].

Some authors argue that it is difficult to consider customer to be assets of a company, as customers and assets do not have identical features. The idea of "owning" customers is dangerous because customer relationships must be continuously managed and customer loyalty must be earned. However, customer base is certainly a market-based asset that should be measured, managed and tracked over time [2]. Srivastava, Shervani and Fahley [17] discuss how market based assets, such as customer or partner relationships, can increase shareholder value by accelerating and enhancing cash flows, decreasing the volatility and vulnerability of cash flows, and increasing the residual value of cash flows.

Many researchers criticise the fact that the financial accounting rarely captures the intangible assets (for example customers, brands) that might represent even the majority of firms' value [14].

3.1 Customer life time value

CLV is generally defined as the present value of all future profits obtained from a customer over his or her life of relationship with a firm. CLV is similar to the discounted cash flow approach used in finance. However, there are two key differences. First, CLV is typically defined and estimated at an individual customer or segment level. This allows us to differentiate between customers who are more profitable than others rather than

simply examining average profitability. Second, unlike finance, CLV explicitly incorporates the possibility that a customer may defect to competitors in the future.

In spite of this simple formulation, researchers have used different variations in modelling and estimating CLV. Some researchers have used an arbitrary time horizon or expected customer lifetime [14], whereas others have used an infinite time horizon [5]. Gupta and Lehmann [4] showed that using an expected customer lifetime generally overestimates CLV quite significantly.

It is also important to point out that most modelling approaches ignore competition because of the lack of competitive data. Finally, how frequently we update CLV depends on the dynamics of a particular market. For example, in markets where margins and retention may change dramatically over a short period of time (e.g., due to competitive activity), it may be appropriate to revise CLV more frequently.

3.2 Retention and migration models

Retention and migration models have been each developed for different industry settings – intend to incorporate a customer-specific repurchase probability. These models typically consider churning or migration risks [3]. In retention models, a “lost-for-good” situation is assumed, where customers not buying in each period are seen as lost customers. When repurchasing at a later date, they are treated as new customers. Migration models assume an “always-a-share” situation, where customers always satisfy their needs in a specific area, say fast-food, (e.g. McDonald’s) in each period. Since both models focus only on the churning risk – which is just one risk factor that should be considered – none of these models seem adequate to incorporate all relevant customer risks in a portfolio context.

3.3 Capital Asset Pricing Model

Another approach is based on capital market theory and the Capital Asset Pricing Model (CAPM) which defines the Weighted Average Cost of Capital (WACC) as minimum rate of return [5]. Here, the net present value (NPV) of a customer segment is given by the expected cash flows discounted with the segment-specific, risk-adjusted WACC. CAPM only considers systematic risks, whereby it is assumed that unsystematic risk can be neglected due to perfect diversification. Defining a market portfolio with respect to customers is quite a challenging task. The “market portfolio” in a CRM context is often defined as the company’s current customer base [16]. In such a view, this is inadequate if a decision about changing the portfolio weights of different segments is to be taken within a growth strategy of the company. Another shortcoming of the CAPM is the assumption of homogeneous expectations of all investors; e.g. for the underlying segment specific risk rate [7]. Thus application for customers’ portfolio is limited.

3.4 RFM Models (Recency, Frequency, Monetary)

RFM models create “cells” or groups of customers based on three variables—Recency, Frequency, and Monetary value of their prior purchases. The simplest models classify customers into five groups based on each of these three variables. Some authors prove that customers’ response rates vary the most by their recency, followed by their purchase frequency and monetary value [8]. It is also common to use weights for these cells to create “scores” for each group. Mailing or other marketing communication programs are then prioritized based on the scores of different RFM groups.

Whereas RFM or other scoring models attempt to predict customers’ behavior in the future and are therefore implicitly linked to CLV, they have several limitations [12]. First, these models predict behavior in the next period only. But customers purchase behavior should be estimated not only in Period 2 but also in Periods 3, 4, 5, and so on. Second, RFM variables are imperfect indicators of true underlying behavior, it means they are drawn from a true distribution. This aspect is completely ignored in RFM models. Third, these models ignore the fact that consumers’ past behavior may be a result of firm’s past marketing activities. Despite these limitations, RFM models remain a mainstay of the industry because they are easy to implement in practice.

3.5 Activity-based costing (ABC)

Most academics, have advocated the ABC system as the most appropriate costing method for measuring customer-service costs. Kaplan and Cooper [9] stated that the ABC system is, in theory, the most appropriate method for determining customer-service costs in companies with complex product, customer, and service requirements. However, despite this endorsement, ABC accounting has traditionally been applied to the measurement of costs in industrial activities, and only a limited number of empirical studies have applied this system to customer-service activities.

ABC system, after more than a decade of slow growth, had been achieving greater acceptance as a marketing and logistics cost-determination tool. In addition to these contributions, various conceptual studies have associated logistics activities and customer-service costs [3].

3.6 Cost-to-serve (CTS)

The term “cost-to-serve” has been used to describe customer-service costs by several authors [13]. However, the term “cost-to-serve” (CTS) has not been universally adopted in the literature. Other terms with a similar meaning include customer service cost, marketing costs and logistics costs. In the costing process of different objects, such as customers and marketing channels, Kaplan and Cooper [9] recommended the allocation of sales, marketing, distribution and administrative expenses to the costing objects. They noted that such an allocation of expenses is not usually applied to customers – because it is generally considered that these expenses are fixed and that any allocation would be

random and confusing. However, in view of the growth of these expenses in all companies are not actually fixed costs but they could not be considered variable costs – because they are not directly influenced by sales volumes. Therefore, Kaplan and Cooper [9] created a distinctive categorization to be applied to SMDA expenses – “super variable” expenses.

3.7 Time driven ABC

Anderson and Kaplan [1] proposed a so-called time-driven ABC”. The novelty of this approach is its emphasis on time as an activity-time driver and its determination of the unit times of services and non-used capacity time. For this reason, in this research we aim to facilitate Customer Profitability Analysis by positive “cost-to-service” as the cost of the administrative, commercial, and logistic activities related to customer-service delivery, as measured through the ABC methodology.

4. Items not included in portfolio valuation

4.1 The Value of customer references

The indirect value of customer references is the additional value (over and above the direct financial value measured by customer lifetime value/customer equity) that accrues to the firm through their relationship with that customer. Probably the most-explored area is advocacy, or word of mouth, early identified as an important element of relationship marketing and associated not just with satisfaction but also with relationship duration. Advocacy has repeatedly been shown to have a strong impact on purchasing behaviour and can be influenced by marketing strategies [6]. Consequently, it is positively correlated with company growth. The advocacy concept has been extended to include customer reputation or reference ability [18].

Customers have the capacity to affect corporate profitability by influencing the perceptions and actions of others. Customers have an impact on other customers, company's employees and other groups, through their transactions and communications. Specifically, they can affect others by recommending a product to other consumers (or warning them not to buy it), serving as role models to legitimise the use of the product or use the product in a way that affects brand image.

Customers can share their experience in consumer communities, providing tips for the company and solving problems for other customers. Company representatives participating in these forums can use the knowledge gained to improve services to non-participating customers.

4.2 The Value of customer knowledge

Interactions with customers are a strategic opportunity for companies to learn. These insights can be thoughts or opinions on current products and services, future needs and ideas for product innovations. It is interesting to note that product innovation ideas frequently emerge from end-users and customers, rather than from within the organization. Capturing customer knowledge and involving customers in the innovation process can represent for the company very profitable manner.

Customer involvement occurs in different phases of the new product development process. Some customers are only involved in the initial stages of the process; others in the final stages and others interact continuously with the provider during the entire course of development. Comparing different methods for involvement requires a framework to which the methods can be related. Kaulio [10] proposes a framework based on two dimensions:

1. The longitudinal dimension, which includes the issues of interaction between customers and the design process.
2. The lateral dimension, which captures the depth of customer involvement in the design process. This dimension is further divided into three different categories:
 - design for, (the products are designed based on customer research but the customer is not further involved)
 - design with (denotes an approach which, in addition to the above, also includes displays of different concepts for the customer to react upon)
 - design by (signifies an approach where customers are actively involved and partake in the product design).

5. Suggested methodology approach

Although many authors have developed many sophisticated models, usually the lack of attention is paid to the proper customers' segmentation. Also the value of customers' references and value of customers' knowledge are not usually taken in account. Sometimes such models for customer profitability analysis are chosen which are too demanding on data supply. For the company to increase the profitability of its customer portfolio, methodological procedure is suggested as follows:

5.1 Cross-segmentation and Customer Lifetime Value

As today's software enable various grouping there is no reason to insist only on segmentation according to traditional customers' segmentation criterion like demography, behaviour, preferences, etc. It should be possible for each company using even basic software to create groups based on customers' profitability. Every person in the company (having access to the software) should be able to make qualified decisions

on the investment in customer and related issues (for example solving claims, searching for business solution, etc).

Because customer profitability varies over time, customer lifetime value (CLV) is likely to be a more useful measure than a single-period metric. By calculating CLV, firms can differentiate customers who've made one-off purchases showing profitability in one period from those who've established a relationship with the company and are more likely to generate higher profits in the longer term. Even though some authors [11] claim that deterministic approaches with assumed certain predicted cash flows seem fairly unrealistic and unsuitable (since CLV is characterized by a prospective calculation of customer values), the attempts for CLV determination should be made for recognizing profitable customers and efficient customer investment.

5.2 Margin evaluation

Margin is understood as a company's total sales revenue minus its cost of goods sold, divided by the total sales revenue, expressed as a percentage. The gross margin represents the percent of total sales revenue that the company retains after incurring the direct costs associated with producing the goods and services sold by a company. As discussed in this contribution, there are advantages and disadvantages of various methods how to properly express cost of goods and also cost of customer. Author suggests deciding according to the most important criterion: the required data availability. Without proper "feeding" by relevant data the models cannot provide adequate outputs. Also these models should serve as managerial tools for better decision making, they should not be the main objective of managerial work.

5.3 Customer impact

Customer impact measuring has become important part of customer portfolio value. The ability of certain customer to hit and influence other people should be recognized and be treated similar to the "actual" value, which is based on real sales.

5.4 Customer knowledge value

Both researchers and practitioners should fully discover the potential of customer knowledge and struggle for using customer as a knowledgeable agent who might be even happy to help to create a profitable business.

Although all the financial statements on the value of customers' knowledge will always be based just on the rough estimations with great portion of uncertainty, author predicts highly increasing trend in customer involvement and tries to outline the potential the customers' knowledge for the business development.

6. Conclusion

Customers might be considered company's asset as they performance many identical features with other assets. The fact that customer relationship (and hence the value of each customer) is difficult to measure and manage does not apologize managers to count just revenues. As other sources, also marketing expenditures should be allocated effectively; hence the measurement of effectiveness is needed.

Current models should be enriched by additional items as value of customer knowledge and value of customers' references. Also potential value should be expressed for better managerial decision making. In the same time, including customer risk into the customer value evaluation is highly recommended.

Managing customer portfolio, increasing its value and evaluating profitability of each customers seem to be the crucial issue influencing company's performance and hence its competitive advantage in terms of global economy.

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Labour Market Regulation and Labour Market Performance: Empirical Evidence from the European Union¹

Abstract

The paper deals with one of the institutional aspects of the labour market - employment protection legislation (EPL). The level of employment protection legislation is often associated with the level of labour market regulation. In other words the stricter employment protection legislation is the higher level of labour market regulation. The core of the paper is focused on a comparative analysis of the level of labour market regulation in the field of employment protection legislation among EU Member States. The OECD approach is used in the paper, 2003 and 2008 data were used. The practical part is focused on the analysis of the relationship of the labour market regulation and unemployment and testing of the dependence of these two variables. A nonparametric (distribution-free) rank statistic (the Spearman's Rank Correlation Coefficient) was applied. Test was performed on the data of the Czech Republic and other countries of the European Union based on of the mathematical and statistical program. The least regulated labour markets can be found in Ireland and United Kingdom. On the contrary, the most regulated labour markets can be found in Portugal, France, Germany and Spain. The values of the Spearman's Rank Correlation Coefficient suggested weak, positive relationship between EPL and the unemployment rate, respectively very weak, negative relationship between EPL and the employment rate. However, the null hypothesis, that there is no association in the underlying bivariate population, was accepted for both cases.

Key Words

regulation, employment protection legislation, european union, correlation, unemployment

JEL Classification: J08, J31, J65, J80

Introduction

Employment protection legislation (EPL) is one of five key institutional aspects which can have possible impact on labor market performance. The traditional set of the institutional aspects is composed of active labor market policies, taxation of labor, wage

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bargaining and a system of unemployment benefits. These various aspects can affect the unemployment rate, or employment rate respectively, however, this relationship is statistically not significant. The aim of this paper is to compare strictness of employment protection legislation in the selected European Union Member States. The paper is structured as follows: the introductory section deals with methodological-theoretical aspects of employment protection legislation (the purpose of its existence and its influence on labor market performance). In the second, empirical, part, we compared the level of labor market regulation among EU Member States. We used one of two widely used approaches in determining the degree of strictness of employment protection legislation - the Organization for Economic Cooperation and Development (OECD) approach. We also computed correlation coefficient for estimation the possible relationship between EPL and the unemployment rate, employment rate respectively.

1. Theoretical background

Employment protection legislation (EPL) refers to hiring and firing rules [5]. Casez and Nesporova [7] structure EPL more precise: as rules governing unfair dismissals, termination of employment for economic reasons, severance payments, minimum notice periods, administrative authorization for dismissals, and prior consultations with trade union and/or labour administration representatives.

Countries exercise different approach to EPL. Some of these differences result from the regulation in itself. Legal protection against unfair dismissal is provided [1]: (i) by laws of general scope -such as labour codes, labour acts, or civil codes; (ii) by specific legislation - e.g., dealing with individual employment contracts or individual and collective dismissals; and (iii) by constitutional provisions (in particular regarding non-discrimination or equality of opportunities). In addition, to primary legislation exist collective agreements which are most relevant for collective dismissals, while constitutional or legislative provisions on the protection of human rights and protection against unfair labour practices provide protection in case of individual dismissals. In some countries are collective agreements even the main source of employment protection (e.g. Scandinavian countries).

Some authors consider employment protection legislation as the “rigidity/flexibility” continuum [2]. At the rigid end, non-regular contracting is restricted, hiring standards may be in force, employer dismissal rights are controlled, and severance, notice, and administrative requirements are substantial. At the flexible end, statutory (or collectively bargained) regulations are minimal and market mechanisms largely determine hiring and firing. According to [8] some of these rules of law were adopted as a “pillow” in case of a fall in labour demand which can have negative effects on employment while others are designed to protect employees from arbitrary dismissals; some regulations imply transfers from employer to employee (notice and severance pay), the others are lie a taxes to be paid to the third party and imposing a deadweight loss (e.g. procedural requirements).

We can find out two parallel view of EPL. The first one supposes that strict EPL can impede effective labour market performance and implicitly the economy. The latter one is based on an opinion that employment will be more stable and individual contracts long-term if EPL is stricter. In other words – strict EPL reduces hiring and firing and stabilize the flows within labour market.

We will analyze the first approach supporting existence EPL and its strictness. The first reason why EPL exists is findings that in many models and besides this in reality too the market interactions are not such as to ensure that laissez-faire employment relationships achieve complete efficiency [1]. Cazes and Nesporova [7] mention that strictness of EPL could influence both employers decision making and employees decision making: the main argument supporting EPL has connection with employees safety during job performance, job and income security and not least an advantage of stabile employment relationship that encourages investment in specific human capital and thereby upgrade the productivity of the worker. Another argument in favour of EPL has connection with willingness of workers to accept technological change and internal job mobility, with a potential increase of productivity. At the macro level, EPL is considered a stabilizer in labour market adjustment process in case of economic shock. Strict EPL significantly increase unemployment rate [14] or [4]. But EPL still has positive effects on youth labour market participants and long-term unemployed. We can find this argument also in [7]: better employment protection to certain vulnerable groups is expected from EPL (especially to older workers, employed women during their pregnancy and maternity leave, single parents taking care of small children and disables workers). These groups in case of dismissal would face difficulty to find a new job and source of income. EPL helps to moderate the discrimination against these groups of workers, supports their employment and helps to preserve social welfare funds otherwise necessary for income support of disadvantaged groups of the labour force.

EPL has potential impacts on various aspects of labour market function. According to authors who mention arguments against EPL, we can say if labour market flexibility represents for economy performance a positive phenomenon then EPL represents a barrier. That is why freedom in the process of hiring and firing is necessary for employers. Though, according to [12] workers protection against unfair or discriminating dismissals is desirable. However these two aspects can be hardly promoted simultaneously in practise (workers protection and freedom of workers do dismiss on economic grounds). So it is the question if these two goals are in negative direction, in other words if fulfilment of one goal means automatically an impossibility of fulfilment of the latter one.

Main argument against EPL (e.g. in [2]) is based on a statement that EPL restricts firm behaviour in the labour market. This increases labour costs and implicitly EPL could reduces total unemployment. The idea behind most employment protection rules is to enhance job security by making dismissal costly to the employer. However, by making dismissals more costly, employment protection regulations can also have the unintended effect of creating hiring disincentives for employers. There are various ways in which these rules can affect labour market outcomes including employment levels, labour dynamics (i.e., employment fluctuations), and the composition of employment.

The similar argumentation is in [12]: (i) EPL obviously impedes employment adjustment by reducing both flows from employment, because of the legal hurdles, and flows into employment by making employers more cautious about hiring; and (ii) It may also influence wage determination, for example by raising the power of insiders or by lengthening unemployment duration. Finally, because of the excessive caution of employers, it may impede the absorption of new entrants into the labour market thereby reducing participation rates and raising relative youth unemployment rates.

Some authors understand EPL as deadweight costs which protect only low-income workers (there is no influence on job security of high-income workers) [3]. In some studies (e.g. [9]) effects of EPL are ambiguous: protection is attractive for those who are employed and unpopular for those who look for a job. EPL tends to lower short-term unemployment and raise long-term unemployment. But the effect on total unemployment is ambiguous. For the society the costs of existence stricter EPL may be twofold [6]: (i) first, the labour market duality between “insiders” and “outsiders” contributes to increasing labour market rigidity, inequality and social exclusion requiring additional costs for their mitigation; (ii) second, the fear of well-protected workers to lose their privileges and become exposed to uncertainties of the labour market prevents them from moving to more productive jobs elsewhere.

2. Empirical results

OECD has developed a system of indicators for the measurement of the level of job protection. These indicators consist of 21 items that quantify the costs and procedures associated with firing and hiring [13]. Individual dismissal of workers with regular contracts: incorporates three aspects of dismissal protection: (i) procedural inconveniences that employers face when starting the dismissal process, such as notification and consultation requirements; (ii) notice periods and severance pay, which typically vary by tenure of the employee; and (iii) difficulty of dismissal, as determined by the circumstances in which it is possible to dismiss workers, as well as the repercussions for the employer if a dismissal is found to be unfair (such as compensation and reinstatement).

Additional costs for collective dismissals: most countries impose additional delays, costs or notification procedures when an employer dismisses a large number of workers at one time. This measure includes only additional costs which go beyond those applicable for individual dismissal. It does not reflect the overall strictness of regulation of collective dismissals, which is the sum of costs for individual dismissals and any additional cost of collective dismissals.

Regulation of temporary contracts: quantifies regulation of fixed-term and temporary work agency contracts with respect to the types of work for which these contracts are allowed and their duration. This measure also includes regulation governing the establishment and operation of temporary work agencies and requirements for agency workers to receive the same pay and/or conditions as equivalent workers in the user

firm, which can increase the cost of using temporary agency workers relative to hiring workers on permanent contracts.

Figure 1 shows the strictness of EPL in the selected EU Member States. We can see that the index reached its highest values, and therefore most stringent EPL, in the case of Greece, France, Portugal, Spain and Luxembourg. On the contrary, the least strict EPL existed in two Anglo-Saxon countries – United Kingdom and Ireland. The most liberal conception of EPL among countries of the Visegrad group was in Hungary and the Slovakia. In this context it should be mentioned that there was very strict EPL during the period of centrally planned economy in these countries [15]. According to [16] in most cases, stringent regulation of permanent employment contracts are accompanied by strict regulation of temporary contracts. Differences between the limit values of the strictness of EPL is largely determined by the concept of regulatory diversity of part-time jobs or other forms of non-standard employment, such as the in Anglo-Saxon countries there is very low or almost no regulation of these types of contracts. In contrast with these countries are countries with high overall EPL index (see above) rather strict rules on temporary contracts, such as when their extension is limited and also maximum duration is set.

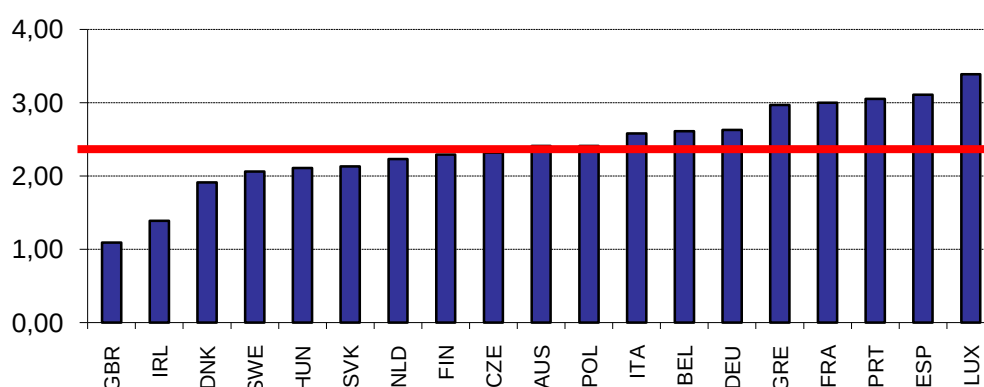


Fig. 1: Overall EPL Index, 2008

Source: OECD

The next figure provides comparison of the overall index of EPL in 2003 and 2008. Its interpretation is as follows - the closer a point lies on the diagonal, the smaller change of this index turned up over time. The figure can be used to: (i) comparison of countries according to their values of EPL strictness, (ii) a comparison of changes in the level of EPL strictness. It also shows that there have been only minor changes of the overall EPL index in most EU countries. Among the countries that made the most changes towards more flexible EPL, whether in permanent contracts or temporary, is Portugal (new legislation came into force on 1 February 2009).

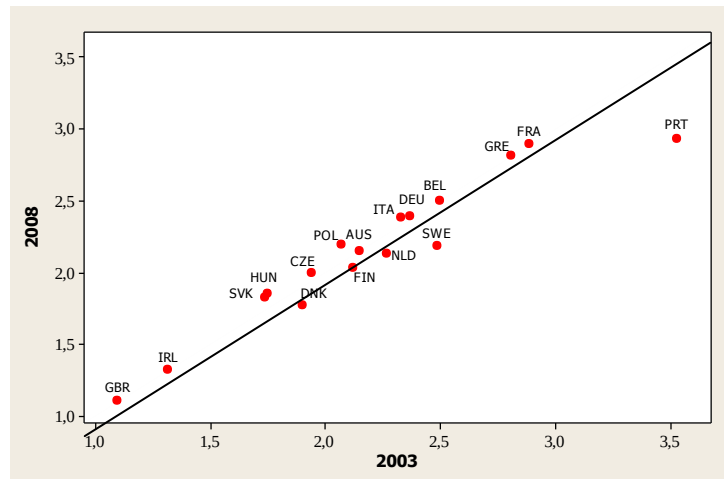


Fig. 2: Overall EPL over time

Source: OECD

The last figure shows comparison of the employment and unemployment rates for selected countries. We applied OECD data (the year 2008), so we have taken into account that the financial crises had a significant negative impact on labour market performance, mainly on the unemployment rate. As it is evident from the Figure 3, the best labour market performance was reached in the group of countries that can be found in the bottom right area (Denmark, Austria, Slovenia, United Kingdom, Luxembourg and Netherlands).

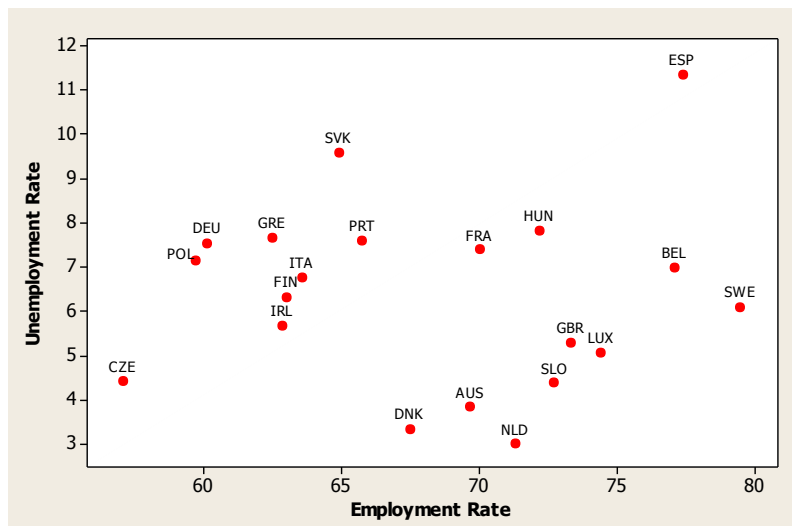


Fig. 3: Employment vs. unemployment (as %, 2008)

Source: OECD

3. The Spearman's rank correlation test

The Spearman's Rank Correlation Coefficient is a nonparametric (distribution-free) rank statistic proposed by Ch. Spearman in 1904 as a measure of the strength of the associations between two variables. The Spearman rank correlation coefficient can be used to give an R-estimate, and is a measure of monotone association that is used when

the distribution of the data make Pearson's correlation coefficient undesirable or misleading. As with any other hypothesis test, for Spearman's test you take a sample, work out the test statistic from the sample and compare it to the critical value appropriate for the sample size, the required significance level and whether the test is 1- or 2-tail.

The Spearman's rank correlation coefficient is defined by [10]:

$$r_s = 1 - \frac{6 \sum_{i=1}^n (i_x - i_y)^2}{n \cdot (n^2 - 1)} \quad (1)$$

where: $(i_x - i_y)$ is the difference in the ranks given to the two variable values for each item data
 n is number of individuals of phenomena ranked

The value of $r_s = +1$ means perfect positive correlation, r_s value close to zero means no correlation and r_s value -1 means perfect negative correlation. Moreover, the smaller the correlation coefficients the more likely the data points will be scattered on the graph. Without considering scatterplots, t-test significance analysis, and slope analyses it is easy to misinterpret correlation coefficients. In our case, we computed this r_s for two variables: the overall EPL index (year 2008) and the unemployment rate (year 2008). The sample size (n) was 20 countries. According to [11] in examining the two measurable variables it must be expected that the same values of both variables can be found. Then same values are assigned the same serial number that is calculated as the average of the serial numbers. For this purpose we used a corrected version of the Spearman correlation coefficient, where the term $n(n^2 - 1)$ replaced by $n(n^2 - 1) - c$:

$$r_s = 1 - \frac{6 \sum_{i=1}^n (i_x - i_y)^2}{n \cdot (n^2 - 1) - c} \quad (2)$$

where: c is correction coefficient which is computed as:

$$c = \sum_{j=1}^k (c_j^3 - c_j) \quad (3)$$

where: c_j is a number of repetitions.

From the r_s (0.3307), we can say that it shows that the two sets of data show weak, positive correlation. It means, in other words, that the coefficient's value suggested positive relationship between EPL and the unemployment rate (the increase in the EPL strictness is followed by the increase in the unemployment rate). In the case of the possible relationship between the EPL and employment rate, the value of the

Spearman's Rank Correlation Coefficient was -0.07406 which indicates very weak, negative correlation.

Because the ranks used in Spearman test are not drawn from a bivariate Normal population, the tables of critical values are worked out differently from those for the Pearson's product moment correlation coefficient and, hence, have different values.

The null hypothesis should be written in terms of there being no association between the variables. This conveys the purpose of the test: investigating possible association in the underlying population.

Now the question remains whether the true population correlation is 0. If the sample size exceeds 10, the test statistic is approximated by a t -statistic with $n-2$ degrees of freedom, as shown in Equation 4:

$$t = r_s \sqrt{\frac{n-2}{1-r_s^2}} \quad (4)$$

where: r_s is Spearman's correlation coefficient
 n is sample size

Then the null and alternative hypotheses are:

- $H_0: \rho_s = 0.0$
- $H_A: \rho_s \neq 0.0$

If the computed t value exceeds the critical t value, we may accept the hypothesis of heteroscedasticity; otherwise we may reject it.

Spearman's rank correlation coefficient in the first case was 0.3307 and our computed the test statistics was 1.4866. To test the null hypothesis using the t -statistic, we go to the t -distribution table with $n - 2 = 18$ degrees of freedom for the appropriate significance level. Using a significance level of 0.05, we get critical t -values equal to 1.734 so the null hypothesis, that there is no association in the underlying bivariate population, would be accepted. In the second case, the value of test statistics was -0.31508 and we obtained the same result as in the previous case.

Conclusion

We used two approaches to measuring strictness of labor market legislation. Although both approaches are often used to describe the institutional framework of labor market performance, the theoretical construction of these indicators has been criticized in labor market literature. In the case of the OECD approach, a point of contention is a subjective assignment of weights to each subindex which are used for calculating the overall EPL index. At least regulated labor markets can be found in Ireland and United Kingdom. On

the contrary, the most regulated labor markets can be found in Portugal, France, Germany and Spain. The values of V-4 oscillate around the average, or are below this value. In addition, the Czech Republic level of EPL strictness, according to the OECD approach, is significantly higher than if we used the World Bank approach. OECD recommends cutting the length of notice and severance pay requirements, within the meaning of the terms of notice by the length of employment in the case of the Czech Republic. It is also recommended to simplify other procedures for firing. These steps are particularly important in the context of the ongoing economic crisis, when excessive employment protection is likely to hamper any recovery process. The values of the Spearman's Rank Correlation Coefficient suggested weak, positive relationship between EPL and the unemployment rate, respectively very weak, negative relationship between EPL and the employment rate. However, the null hypothesis, that there is no association in the underlying bivariate population, was accepted for both cases.

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Public Investments as a Way of Stimulating the Economic Development in Poland – Selected Theoretical and Practical Issues

Abstract

The EU accession of Poland has led to a big rise in investments throughout the country. One of the reasons behind this rise is full access to EU funds, which can be granted to public investors. Public investors in Poland are now able to perform and finance all their investment projects without any serious limitations. A lot of investments are being carried out by territorial self-government units. It should also be emphasized that public investments belong to economic development stimulants. They are particularly important now when the world is struggling with the economic crisis. Owing to the public sector investments the consequences of this crisis may be alleviated. It can easily be seen in Poland, a country which is currently preparing for the 2012 European Football Championships. Poland and the Ukraine are going to host this event and, consequently, both of these countries are investing a lot in the projects connected with the EURO 2012. The biggest investment expenditure is the development of infrastructure in the countries. The main aim of the paper is to discuss these issues and to outline the role of public investment in the country's economic development. The author also deals with the methodical issues related to the economic evaluation of investment projects in the public sector. These problems are discussed in a synthetic way. When formulating his conclusions, the author employs induction, deduction and synthesis methods. The paper also draws on the studies of the literature. Another source of information here is the Internet. Besides, the author makes use of descriptive and graphic techniques, i.e. tables.

Key Words

public investments, economic development, cost-benefit analysis (CBA)

JEL Classification: E2, O12, H54

Introduction

In 2009 Poland was the only EU country to maintain a positive economic growth rate, measured as the Gross Domestic Product (GDP). According to the Central Statistical Office (*Główny Urząd Statystyczny - GUS*) of Poland, the GDP rate in 2009 was 1.2%. Similarly, in 2010 and Q1 2011 this rate was still positive. For example, in January 2011 the GDP in fixed prices in Poland was 4.2% (as given by the Ministry of Economy) and, according to *GUS*, the GDP in fixed prices in Q4 2010 amounted to 4.4%. This is the best illustration to show the condition of the Polish economy which, despite the current global crisis, is still growing. There are a number of reasons behind it. Clearly, one of the

reasons for the sustained economic growth in Poland is substantial investment in the public sector. It's connected with the access to EU funds (after Poland's accession to the European Union), among other factors. Public investors are now able to use EU funds to finance their projects, without any major difficulties or limitations. In particular, these tasks are performed by communes, which should be regarded as typical public investors. According to the official statistics, Polish communes can be divided into rural communes, urban communes and rural-urban communes; there are also towns with the rights of powiat. Public investments are carried out, at the same time, at the central administrative level, with the voivodes representing the authorities in their regions. The public investment issues have currently become so important due to the fact that Poland is making a lot of efforts to prepare to the EURO 2012 Football Championships. Therefore, huge investments are being made in the area of infrastructure, but this is not the only reason. In Poland, the value of investments related to the organisation of the EURO 2012 is expected to reach PLN 3.4 bn. The performance of such a big national project contributes to the country's economic development, as well as alleviating the consequences of the financial crisis in Poland. It should be emphasized here that due to the scale of investment expenditure and the scope of investment projects, the organisation of the EURO 2012 Championships in Poland is considered to be 'a national investment project'. Numerous infrastructural facilities are being built, the existing ones are being modernised and accompanying investment projects are being performed in the private sector. This stimulation function is clearly not the only function performed by public investments. All these issues are discussed in the paper and its author attempts to explain the importance of public investments as stimulants of economic growth in the country and in the regions. The key aim of the paper is to discuss the problems of public investments and, in particular, such issues as the role of public investments in stimulating the economic growth and the local development and measurement of effectiveness and effects of public investments. The paper is mostly theoretical. The author formulates the conclusions and makes the comments based on his own expertise, as well as the review of the literature on this subject. The paper also includes the conclusions drawn by the author during his scientific research conducted under the research project entitled 'Financing investment projects of the public sector – access to sources and their effectiveness. Stage 1', which was performed in 2006 under the direction of Prof. Krzysztof Marcinek in the Department of Investments and Real-Estate, the University of Economics in Katowice, as so-called statutory research. The author did part of the research within this project. In the paper the author also drew on the knowledge he acquired during Stage 2 of the statutory research, i.e. the project entitled. 'Financing investment projects of the public sector – access to sources and their effectiveness. Stage 2'. Project leader: Prof. Krzysztof Marcinek. The University of Economics in Katowice, Katowice 2007 (the author also did part of the research within this project). The business data presented in the paper comes also from the Ministry of Sport and Tourism, the Ministry of Economy and the Central Statistical Office. The paper shows only a synthetic view of the issues in question. Some selected problems are analysed in more detail. A starting point in the paper is the assumption that a standard example of public investments are infrastructural projects. Therefore, the author uses such terms as 'a public project' and 'infrastructure' interchangeably, i.e. these terms should be understood as a public investment. Please note, however, that these terms are not fully interchangeable in formal terms, although they commonly tend to be used in that way in business practice. It was also assumed that the investment policy is pursued

by the state and the territorial self-government units (communes) through public projects.

1. Public investments and stimulation of economic development in Poland

From the theoretical point of view, public projects may be divided into specific types based on a large variety of criteria, which is also well described in the literature on the subject. The scientific literature often uses the criterion of a business line or a type of industry. The type of industry in which given investment projects are performed determines their specificity, costs and risks. The construction of a gas pipeline, for instance, is much more capital-intensive than the construction of a public library building. In principle, the same criteria which are used to categorise commercial projects may also apply to projects in the public sector. Public investments can be divided into small and big ones (or small, medium and big ones) or short-term and long-term ones (or short-, mid- and long-term ones). These are the traditional criteria which are used in almost every investment project undertaken in the public and the private sectors. Apart from such a division, we can also take into account the division of investment projects into the basic ones and the accompanying ones. This division is quite useful in business practice. It's often the case that a big road investment project is accompanied by a number of smaller investments, such as the construction of some additional, previously unplanned, access roads, modernisation and extension of some parts of the infrastructure in the close neighbourhood of the basic investment etc. Public projects can also be divided into stand-alone, complementary or mutually exclusive ones. For instance, if we have some mutually exclusive public projects, there is a need to abandon one or more of them in a situation when a decision has to be made which potential undertaking (or undertakings) are to be selected and performed. This means that the performance of one project excludes the other one (or ones). The best example may be a situation when a commune needs to decide which communal investment projects to carry out but they don't have enough funds to finance several projects at the same time. In the case of complementary public projects – as mentioned before – it is just the opposite, i.e. the performance of some investments requires other projects to be carried out as well, e.g. after a school building is constructed, an access road and a bus stop have to be built as well. Public investments, just like any other investment projects, demonstrate a number of features. There are a multitude of such features, e.g. limited application of market prices, but from a practical point of view, attention should be drawn to a few fundamental characteristics, namely:

- their performance takes a lot of time (sometimes a few years or even more than a decade, i.e. big road or railway construction projects);
- public projects are highly capital-intensive and generate huge expenses (these are usually high value projects, such as water basins and bridges);
- they are service-related and common access projects (healthcare);
- they are in use (operation) for a long time;

- the project affects the situation in a specific region (in a given community) but sometimes has also impact on the entire economy (a major road and rail hub, a motorway etc.);
- the investment expenditure cannot be recovered (e.g. uncompleted construction of a nuclear power station in Żarnowiec, Poland, in the 1980s);
- the effectiveness of such investment projects is hard to determine;
- these projects are highly dependent on political decisions.

When conducting such analyses, we should always keep in mind the aims of public investments. They are identified and thoroughly described in the scientific literature. Public investments differ from commercial investments. One important aspect should be mentioned here, i.e. one of the key aims of public investment, in its mezzo-dimension, is to contribute to the local development.

The individual components of such local development are presented in Tab. 1.

Tab. 1: Components of local development

Economic growth and a rise in employment	A growth in GDP per capita, new spatial development and economic facilities, new attractive jobs, a reduction in unemployment
Higher prosperity and living standards	A rise in local and regional incomes, improved working conditions, better standards of living, leisure, healthcare and public safety
Higher investment attractiveness	Attractive location offers, high quality workforce, R&D potential, modern ICT facilities, active destination marketing, including the promotion of business, culture and tourism
Technological development and innovations	Technologically advanced companies and products, technology transfer centres, growth of R&D centres, innovation networks, local and regional innovation circles
Restructuring of business operations	Restructuring of companies and higher competitive advantage, reclamation of post-industrial areas, business structure diversification, new markets and economic links
Development of services and social resources	Better access to specialised medical, educational, cultural, sporting and leisure services, new facilities, equipment and institutions in social services sector, new forms of social services
Higher vocational, social and geographic mobility	Changes in the social and vocational structure of inhabitants, new professions and competences, more frequent changes of jobs and places of residence, civil activity, involvement in public issues
Development of institutional infrastructure	New public administration institutions, institutions supporting business development and environment, consolidation of human and financial capitals located in local and regional institutional infrastructures, public-private partnership
Environmental improvement	Restoration of natural values, elimination of pollution and environmental threats, development of environmental monitoring systems, better environmental awareness
Strengthening identity and integration processes	New indicators of local and regional identity, 'coming back to roots', creation of a new image of territorial self-government units, integration symbols, inward and outward integration processes

Source: [10] [4]

As emphasised at the beginning, public investments are one of the effective ways of dealing with the consequences of the crisis. At the same time, public investments should be regarded as spatial policy instruments. In macroeconomic terms, they are a catalyst for economic growth. All over the world, a well-developed infrastructure is an incentive for investing private capital, including foreign direct investments, e.g. a decision that a local road network is to be built by a commune may encourage private investors to invest in this region and, consequently, lead to a rise in the number of private companies operating in the proximity of the newly built road infrastructure (motels, restaurants, petrol stations etc.) “[...] The importance of communal investment projects for other investments, development of local businesses and the economic growth as such is determined by the following factors:

- well-planned infrastructural investments trigger other investments, e.g. provision of utilities to construction areas may attract construction investors,
- investments financed by a commune generate jobs for local businesses and, as a consequence, contribute to a higher demand on the construction services market,
- investments – by creating a local labour market – are the most effective method of combating unemployment,
- infrastructural investments, just like other municipal investments, improve the living standards for the local community,
- without certain investments, some areas of business activities cannot develop,
- a lack of investments, especially in economic and social infrastructures, is a dangerous barrier to economic growth,
- a lack of necessary investments into environmental protection and other areas is a barrier to sustainable development, may lead to the permanent deterioration of living standards for the local community, the failure to satisfy their basic needs, and result in social discontent”[3].

Therefore, public investments may perform a dual function, i.e. microeconomic and macroeconomic one [5]. The macroeconomic function is particularly vital here as it brings benefits for a big number of entities, mainly business ones. The most important benefits are creating conditions for a growth in national income, creating new jobs (elimination of unemployment) or creating conditions for transformations of the national economy structure [5]. We can also analyse direct and indirect effects of public investment. At the same time, the scientific literature mentions two important functions performed by public investments in the economy, namely the allocation and the stabilisation functions. In Poland, especially now i.e. during the economic crisis, the stabilisation function is particularly important and it “should be associated with the way public investments affect economic processes, in macroeconomic terms, in order to ensure that specific objectives, such as e.g. stabilisation, are met”[5]. The stabilisation function is currently a key priority for governments in many countries. This has direct impact on a country’s economic development, and Poland may be the best example here. It should be kept in mind, however, that Poland is currently facing the effects of the global economic crisis, too. In Q1, 2011 the rate of inflation rose significantly. According to GUS, in January, 2011 inflation in Poland, measured as the Consumer Price Index (CPI), was 3.8%. Poland also has a huge public finance deficit. Nevertheless, it’s predicted that “[...] in the years of 2011-2012, with an average increase in gross

expenditure on fixed assets of close to 8 percent, the rate of investment will exceed the level of 21 percent again. [...] In 2012 the positive contribution caused by public investment will become gradually less visible, and a rise in gross expenditure on fixed assets will be maintained by a growing investment demand of private companies. [...] In the short-term forecast, a rise in total investment will be affected by high dynamics of gross expenditure on public fixed assets, supported by an inflow of EU structural funds, e.g. due to the projects related to the preparation to the EURO 2012 Football Championships, together with the Ukraine"[13]. The stages of key and important infrastructural projects for EURO 2012 are presented in Tab. 2.

Tab. 2: Stages of key and important infrastructural projects for EURO 2012

	2007	2008	2009	2010	2011	2012
PLANNING*	91%	84%	58%	11%	2%	0%
EXECUTION	9%	16%	38%	80%	51%	2%
COMPLETION	0%	0%	4%	9%	47%	98%

Planning stage	Starting stage	Execution stage	Completion stage

Note: * The "PLANNING" stage means the period from the time an investment project is initiated and planned to the time when a bidding process is completed and a contractor is selected, and the "EXECUTION" stage means the actual performance of construction works by the contractor.

Source: [11]

2. Measuring effects of investment in investment projects of the public sector, with the focus on Cost-Benefit Analysis (CBA)

Both in theory and in practice, an important issue, when discussing the nature of public investment, is the way of determining its economic effectiveness as well as the course of an investment process itself, including the procedures to follow in planning, execution and results of public investments. As mentioned above, there are serious difficulties in measuring the financial effectiveness of investment projects in the public sector. The Cost-Benefit Analysis (CBA) is recommended, in theory and practice, in order to measure the effectiveness of public investments. The CBA method can be used to compare alternative resources which may be employed in a given project, in terms of their effectiveness [7]. "[...] The relation between the notion of effectiveness and the Cost-Benefit Analysis results from the impact that project results may have on the prosperity of specific social groups. [...] If a project demonstrates a positive value of net benefits, it is possible to find transfers which will improve the situation for at least one person, without worsening the situation of any other individual. [...] The practical performance of the CBA analysis, in the ex-ante evaluation of the project, involves a detailed procedure which is made up of the following stages:

1. identification of a set of project alternatives,
2. identification of participants, in terms of benefits and costs involved,

3. calculation of effects and selection of measures,
4. quantitative forecast of effects during a project life cycle,
5. introduction of monetary values for every type of effect,
6. discounting of costs and benefits in order to arrive at the present value,
7. calculation of an ENPV for every alternative,
8. performance of sensitivity analysis,
9. making recommendations based on the ENPV and sensitivity analysis”[7].

In this process, special attention should be paid to the calculation of the ENPV (Economic Net Present Value). The following formula may be used in this calculation:

$$ENPV = \sum_{t_1=1}^n \sum_{i=1}^j \frac{CF_{it_1} + K_{it_1}}{(1 + SDR)^t} + \sum_{t_2=1}^N \frac{NSB_{t_2}}{(1 + SDR)^{t_2}} \quad (1)$$

where: i represents the i -th category of costs/benefits, $i = 1, 2, \dots, j$
 t_1 the subsequent given period of analysis (year) during the commercial use of the investment, $t_1 = 1, 2, \dots, n$
 CF_{it_1} is the i -th category of cash flows
 K_{it_1} stands for adjustment of i -the category of cash flows to effective prices (shadow prices), $K_{it} = 0$ for the category of costs/benefits which are exchanged on the effective market, $K_{it} \neq 0$ for the category of costs/benefits which are exchanged on the distorted (ineffective) market;
 SDR social discount rate
 NSB_{t_2} net social benefits in period t_2 [8]

Summing up, the entire process of measuring the effectiveness of public projects is basically aimed at comparing discounted costs and discounted benefits, generated by investments. As we can see from the *ENPV* formula, the discount rate here is the social discount rate of *SDR*. As a result:

- if $ENPV \geq 0$ then the investment is effective from the social point of view, i.e. the project is justified,
- if $ENPV < 0$ then the investment is not effective from the social point of view, i.e. the project is not justified [8].

With reference to public investments in Poland, also other evaluation criteria are used when measuring the effects (benefits), which can be provided by the performed public projects.

Some examples of indicators applied to verify the effects of performed infrastructural projects are presented in Tab. 3.

Tab. 3 Examples of indicators used to verify results of infrastructural projects

Types of projects	Examples of result indicators
Road infrastructure	travel or commute time shorter by ... minutes better access to transport services – EES indicator better road load capacity (in case of modernisation projects) by ... kN/axis
Solid waste	a rise in the number of households using a given landfill site by ... % a rise in the volume of recycled waste by ... % or ... m ³ /year a reduction in the volume of waste coming to a landfill site by... t/year landfill site life longer by ... years
Water supplies	a rise in the volume of water supplies by ... m ³ /year a rise in the number of households connected to the water supply system by ... % extension of the water supply system by ... km improved quality of drinking water for ... thousand litres of water a day, supplied to ... inhabitants
Sewage disposal	construction of ... a collector sewer with capacity of... m ³ /d connection of ... inhabitants to the sewage system capacity of the existing sewage treatment plant increased by ... m ³ /d reduction in the volume of non-treated sewage poured directly into containers of a catchment basin of the given treatment plant by ... %
Technical infrastructure	a rise in accommodation by ... % beds a rise in the number of tourists visiting a commune by ... % creation of ... new tourism-related jobs
Air protection	reduction in air pollution by ... Mg/year (incl. CO ₂ , NO _x , CO, dust) reduction in environmental penalties paid by a commune by ... PLN/year

Source: [9]

As we can see in Tab. 3, potential benefits which are expected from an investment can be understood and quantify differently, depending on the type of public investment.

Conclusion

„Public investments occupy a special place among the instruments of a state's investment policy, as they are the most powerful method of intervention, and this intervention is direct”[15]. This is directly connected with state interventionism, which is most commonly associated with the period of the Great Crisis in the years of 1929-1933, when public investments were believed to be an effective method of ‘fighting with the recession of the world's economies’. The current economic crisis has a lot of parallels with the crisis of 1929-1933. First of all, both these crises are severe and long-term. They lead to a lot of economic effects for many countries and business entities. There is a wave of corporate bankruptcies in almost every section of the economy. Public finances in numerous countries are also threatened e.g. a crisis in Greece. According to the Polish Central Bank (*Narodowy Bank Polski - NBP*) in Poland “[...] an instrument, which may alleviate the consequences of the economic crisis and contribute to a rise in the rate of investment in the mid-run is the promotion of Public-Private Partnership (PPP), based on the principles of the new law on public-private partnership, which came into force on 26 February, 2009. [...] In the present economic situation, fierce competition among

private entities trying to win PPP contracts with public entities (which concerns e.g. big cities, administrators, EU programs, organisers of sporting events, etc.) should contribute to the execution of public administration investment plans”[12]. “Currently, in Poland, this form of project execution is becoming increasingly popular. [...] It’s still, however, much less common than in the United States or some Western European countries”[1]. As stated by A. Akintoye, M. Beck and C. Hardcastle “[...] it has been used in industrialised countries, such as the United States, in Easter Europe, the Pacific Rim and in countries with tremendous new infrastructure demands, such as in Latin America”[2].

In conclusion, attention should be drawn to the fact that public investments need to be supported by the state’s general investment policy, determined by the available budgetary resources, which, in reality, affect the size, type and profile of investment projects to be carried out. The structure and the amount of the total investment expenditure are the best evidence, showing how this policy is followed by the state in the specific sections of the economy. According to A. Drobniak, “[...] public projects tend to be identified with proposals concerning the policy or the laws, which are directly related to the sphere of regulation”[6]. Therefore, they may be seen as the instruments used by the state to achieve certain objectives, i.e. the economic and, in most cases, long-term ones.

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Identification of Barriers to Better Matching of Economic Education and Labour Market Needs

Abstract

The paper reflects current problem of the links between education and labor market needs. The needs as well as dynamics of changes in the labor market affirm how useful and beneficial the whole process of education is; at the same time, they initiate changes in the content, structure, and quality of education. This contribution is concerned with the importance of education as a public good with a special respect to economic education. Development of economic education and its current state in Slovakia has been compared with the situation in selected EU and OECD countries. The analysis of economic education and economic programmes was based on the extent to which economics education graduates are unable to find employment. On the basis of our research results we have identified the main barriers to better matching of economic education and labour market needs which are the source of inefficient private and public investment.

Key Words

system of education, economic education, economic programmes, public good, labour market, knowledge economy, unemployment

JEL Classification: J20, O15

Introduction

Economic and social development of the society is determined by educational and qualification potential of the labor force. The labor force level is directly influencing productivity of labor as well as the strength of economic growth. In the market economy on the one hand, education is an element and anticipation in the modern way of life; on the other hand, education itself is being influenced by a number of factors among which labor market occupies a prominent place. The needs as well as dynamics of changes in the labor market affirm how useful and beneficial the whole process of education is; at the same time, they initiate changes in the content, structure, and quality of education. The interaction of education and labor market needs belongs to frequently discussed problems also due to fact that it is difficult to uncover mechanisms that well accurately and duly bring into harmony the process of education with the processes of the supply and demand in the labor market.

The paper reflects current problem of the links between economic education and labor market needs; at the same time, it accents the perception of education as public property, while distinguishing primary, secondary, and tertiary education with regard to

deepening problem of deficit financing of education by the state, what can be considered as one of the barriers preventing stronger links between economic education and labor market needs. Taking into account the irreplaceable role of educational institutions in the link building process between education and labor market needs, the attention is paid to the development of economical education in the Slovak Republic with special respect to basic changes in the teaching of economic disciplines at universities what can be considered one important factor and condition for graduates to be competitive in the labor market. The degree of the competitive potential of the economic program graduates in the labor market is evidenced not only by the analysis of their unemployment development but also by its comparison to the total unemployment rate of the graduates. The labor market and graduates competitive potential in it should be the indicator that testifies the degree of balance between economic education and labor market needs.

Considering the extent of the paper, the examinations does not involve further important facts (such as the interest of requirements of employment and of employers in the economic program graduates, in their concrete skills; the demand for quality education and quality appreciation by the state), which influence the links between economic education and labor market needs. We inquire the problem of the links between economic education and labor market needs via three aspects (institutions) – through the role of the state, educational institutions, and the requirements of employment represented by the labor market. This very procedure is justified by the fact that the presence and mutual cooperation of these three pillars – institutions being representatives of common interest in developing knowledge economy - is essential and indispensable when uncovering and overcoming the barriers between economic education and labor market needs.

1. Education as public goods

Opinions as to the meaning and gains of education for economic growth and its perception as public goods differ, and they naturally influence decision making as to who is to take place in the educational services and to what extent; or, who makes profit from education (see for example: Čaplanová, A., Valach, E., Hronec, Š., Hronec, M.). The theory is mostly supported by the notion “public goods” and by specifying education as public goods in its various stages and forms of education.

“Public goods” is an economic notion which by its structure, however, overlaps economic reality. Samuelson (2008, p. 37) reads: “Public goods are commodities that can be used by anyone and nobody is excluded from benefiting... Considering the private sector as unable to support public goods sufficiently, the government must take initiative.” In a similar way, Macmillan Dictionary of Modern Economics gives a similar definition of “public goods” reading: “...if (commodity or service) is offered to one person, it becomes accessible to all individuals without additional expenditures. We therefore describe public goods that are non rival in consumption; consumption by one person does not diminish accessibility of the goods or service for anyone else”. (Pearce, D. W. et alii, 1995, p. 459) The second key phenomenon is the impossibility to exclude an

individual to benefit from the public goods; it can as well be consumed by a person who has not paid for it.

Education viewed by economics is placed among generally beneficial goods. As an example of generally beneficial goods with custody attitude of the state to its consumption is compulsory school attendance; the state by means of law makes pressure on individuals to consume limited amount of services through basic education. It presumes that it acts both in the interest of an individual and his future practice in society, and in the interest of the state.

The attitude of individuals as well as their preferences when they use these services is – with exclusion of the paternalistic role of the state – influenced by the environment in which man lives. For instance, inadequate value of education among low socialized Roma communities does not motivate school attendance of children from this environment because they do not consider it inevitable. Insufficient consumption of education as public goods will result in low education of individuals and finally in their inability to compete in the labor market when they mature; this exceeds social security expenditures of the state.

Education considered as consumer service has public character and its effects make themselves felt in the life of an individual and his family, but also in the society as a system. The right to education belongs to the elementary human rights and as such, it is constitutionally secured in developed marked economies. The Constitution of the Slovak Republic clearly characterizes education as public goods as well as the state's responsibilities to influence both quality and quantity of education; the result of it is the duty of a democratic society to provide for the access to education for all citizens. It signifies that education is not only a goal but also a means to reach personal freedom.

Even though the right to education is constitutionally secured, the consumption of education as public goods is determined in part by individual's competencies and also by social environment where he lives (e.g. parents' motivation to education is diverse). However, under the conditions of a democratic society, there must be equal access for all to education.

According to J. Benčo (2005, p. 51) "it is typical for education as pure public goods that it is quantitatively and qualitatively impartible goods with features of custody goods (as result of state paternalism). The state makes decisions for its citizens as to the quantity and content of education and formulates school policy." It is not possible to involve every stage of education among public goods; this criterion is fulfilled by elementary education only as it is realized through public educational institutions. As far as church and private schools are concerned, they belong to the alternative types of schools, the state is not their founder, and they belong to combined or private goods. Public university education belongs to combined collective goods as well. In this case, the exclusion from consumption is possible because it is conditioned by students' skills, or eventually by the stills of the applicants for university studies. The ranking of university education among combined goods is also supported by its multi-source financing that can be shared by students alongside with state subsidies and other sourcing. Private

universities belong to private goods that offer differentiated services to individuals, they are by means of market, not by the state; however, the state can contribute to their existence. The competition between public and private universities should serve as basis for higher efficiency of the educational process at universities as well as to increase quality education of students and their better competition chances in the labor market.

2. Comparing educational expenditures in the Slovak Republic and abroad

If education is public good, the state should take a great deal in its securing and financing. Even though discussions about this problem continue, nothing can change the duty to monitor the effectiveness of public finances that has been used in any amount. Viewed from the point of our interest we can formulate the question also as to if and how the state shows concern, eventually initiates pressure on closer links to employment practice and appreciation (by labor market) of real education quality and the quality of graduates training for future field experience. The answer is not simple but it can contribute to remove barriers that prevent better links between education and labor market needs.

The education expenditures are an integral part of state public expenditures. Public expenditures represent relations of the allocation and use of the public budgeted and unbudgeted resources in the budget system. Public expenditures are a means of financing the needs of institutions and organizations that safeguard the responsibilities and functions of the state. (Peková, J., 2002, p. 179)

Public expenditures represent the costs of the goods and services guaranteed and supplied by the government. The government guarantees by means of public expenditures to cover collective goods by the transfer payments in answer to the collective demand of the citizens. The degree of state public expenditures is limited by the economic situation of the state as well as by political decisions. This fact negatively influences financial stability of the state services and of all others that solve consequences of the market mechanism. (Hronec, Š., 2008, p. 21)

Public expenditure on education involve current expenses, interest payments, and other transfers and capital outlays. They are met by both budgeted and unbudgeted resources. The state budget finances universities, mainly state and public ones. Secondary and elementary schools are financed by the budgets of local and regional state administration and self administration. Education expenditures occupy an important place in the structure of public expenditures. Their amount largely determines overall development of education in society. The amount of expenditure on education is meaningfully determined by the efficiency of society's economic development that influences general amount of public expenditures as well together with political decisions of the state. The amount of education expenses therefore represents not only one significant criterion of the society's economic development efficiency but it also points to overall political and cultural level of the state.

Tab. 1: Total public expenditure on education in EU and in selected countries of the world (in % GDP)

Country/Year	2000	2001	2002	2003	2004	2005	2006	2007
European Union (27 countries)	4.88	4.99	5.10	5.14	5.06	5.04	5.04	4.98
Eurozone (15 countries)	:	4.98	5.00	5.03	4.95	4.88	4.88	4.85
Eurozone (13 countries)	:	4.98	4.99	5.03	4.94	4.88	4.88	4.84
Belgium	:	6.00	6.11	6.05	5.99	5.95	6.00	6.02
Bulgaria	3.97	3.78	4.03	4.23	4.51	4.51	4.24	4.13
Czech Republic	3.97	4.09	4.32	4.51	4.37	4.26	4.61	4.20
Denmark	8.29	8.44	8.44	8.33	8.43	8.30	7.98	7.83
Germany	4.46	4.49	4.70	4.70	4.59	4.53	4.40	4.50
Estonia	6.10	5.28	5.48	5.31	4.94	4.92	4.80	4.85
Ireland	4.28	4.27	4.29	4.39	4.70	4.75	4.74	4.90
Greece	3.39	3.50	3.57	3.58	3.82	4.00	:	:
Spain	4.28	4.23	4.25	4.28	4.25	4.23	4.28	4.35
France	6.03	5.94	5.88	5.90	5.79	5.65	5.58	5.59
Italy	4.55	4.86	4.62	4.74	4.58	4.43	4.73	4.29
Cyprus	5.35	5.93	6.55	7.29	6.70	6.92	7.02	6.93
Latvia	5.64	5.64	5.71	5.32	5.07	5.06	5.07	5.00
Lithuania	5.90	5.89	5.84	5.16	5.19	4.90	4.84	4.67
Luxembourg	:	3.74	3.79	3.77	3.86	3.78	3.41	3.15
Hungary	4.42	5.01	5.38	5.86	5.43	5.46	5.41	5.20
Malta	4.49	4.46	4.38	4.70	4.82	6.76	:	:
Netherlands	4.96	5.06	5.15	5.42	5.46	5.48	5.46	5.32
Austria	5.74	5.79	5.72	5.57	5.52	5.46	5.44	5.40
Poland	4.89	5.42	5.41	5.35	5.41	5.47	5.25	4.91
Portugal	5.42	5.61	5.54	5.57	5.29	5.39	5.25	5.30
Romania	2.86	3.25	3.51	3.45	3.28	3.48	:	4.25
Slovenia	:	5.89	5.78	5.82	5.76	5.74	5.72	5.19
Slovak Republic	3.93	4.00	4.30	4.30	4.19	3.85	3.79	3.62
Finland	5.89	6.04	6.21	6.42	6.42	6.32	6.14	5.91
Sweden	7.21	7.12	7.43	7.30	7.18	6.97	6.85	6.69
Great Britain	4.46	4.57	5.11	5.24	5.16	5.37	5.48	5.39
Croatia	:	:	3.72	3.96	3.90	4.02	4.11	4.07
Macedonia	:	:	3.35	3.39	:	:	:	:
Turkey	2.59	2.71	2.82	2.96	3.12	:	2.86	:
Island	5.81	6.24	6.79	7.70	7.48	7.59	7.55	7.36
Liechtenstein	:	:	2.96	2.46	2.43	2.29	2.06	:
Norway	6.74	7.18	7.58	7.54	7.47	7.02	6.55	6.76
Switzerland	:	5.42	5.75	6.00	5.91	5.72	5.50	5.18
Albania	:	:	:	:	:	:	:	:
USA	5.03	5.63	5.58	5.70	5.40	5.17	5.51	5.29
Japan	3.66	3.63	3.65	3.70	3.65	3.52	3.47	3.45

Source: OECD: Education at a Glance, Paris: 2009

When we compare ourselves with the developed European countries, the Slovak Republic is dragging behind with the education expenditures in the long term. It is especially significant in the area of tertiary education expenses what makes Slovak universities unable to reach comparable educational results in education in comparison with other developed countries. For example, the total expenditure on education in 2000

made in the OECD countries 5,736 USD in average for a student, while in Slovakia just 2,028 USD; the expenditures for tertiary education that year made 9,571 USD for a student in the OECD countries, while in Slovakia 4,949 USD only (OECD, Education at a glance, 2009). The total expenditure on education expressed in % of the Gross Domestic Product (GDP) in the countries of the European Union and in other countries of the world is featured in the Tab. 1.

As arises out of the Tab. 1, expenditure on education in 27 countries of the European Union years 2000 – 2007 was approximately 5 % of the GDP. The Slovak Republic considerably lags behind the average expenditure on education, what made detrimental ratio 4.98 % : 3.62 % for the Slovak Republic in 2007. Ever deepening problem of insufficient financing of education of the previous period is carried over to the future, unfortunately with even more powerful negative consequences for the quality of education as well as for the interest in or possibility of educational institutions to monitor not only the interest of potential applicants for studies but also their own “outcomes” – it is their graduates and demand for them by the requirements of employment through the labor market.

3. Economic education development in Slovakia after 1989

University economic education transformation in the SR was conditioned in a similar way as all the university education by socio-political and economic transformation of the whole society after 1989. Economic theory found itself facing “the problem of a profound change of the university system; changes in content, structure as well as research methods, understanding and explaining economic phenomena and contexts in particular”. It was necessary to begin shaping of university economic professionals to cope with fast changing practice and market environment. “Arising labor force market and especially demand was temporarily focusing the need for practical-pragmatic specialists with language and IT skills, accountants and tax experts, and only later and gradually comprehensive managers for various resorts including non-profit sphere.” (Uramová, M., 1997, p. 24)

Universities were forced to make changes in the content, methods, and forms of teaching, while bringing forward various requirements that either accelerated or decelerated the process of changes. Transformation complexity of the economic discipline changes was furthermore given by the need of fast and profound changes, by absorbing new approaches on the side of pedagogues and students at the same time, by personal restructure, by influx of new international findings and their liberalization as well as by additional actualities. (Uramová, M., 1997, p. 24)

It was necessary to realize changes in education together with the changes in inner and outer economic and political environment what considerably handicapped their implementation. In addition to national economic problems flowing out of the radical change of economic milieu, economic theory had to continually solve changes in categorial apparatus as well as in research methodology and new phenomena interpretation and context.

Taking the matter of economic disciplines transformation at Slovak universities generally, we may with certain simplification summarize it into the following areas: Transformation of content and methodology; transformation of material and technical conditions; transformation of human factor (both pedagogues and students); transformation of economic practice and its requirements. (Uramová, M. 1997, p. 25).

The process of democratization, de-ideologization and liberalization, through which all universities in Slovakia and in other post-communist countries came, was symptomatic for economic education as well. Economic theory got rid of the ideologically deformed approach that was explaining economic phenomena from the one political party point of view and became to be clarified in a pluralistic and liberal way that gave possibility for pedagogues to put on their own opinions; this gave possibility for various orientations and schools to come into existence. Transformative changes of economic education that began in the second half of the 90th were largely influenced by integrative tendencies in Europe as well as by the formation of common European university area in the sense of the 1999 Bologna declaration. The 2002 Lisbon meeting of the European Council accepted the need to increase competitiveness of European economy until 2010, and also the significance of developing and improving the quality of society based on knowledge through modernization of education. No less important task for further development of education brings the strategic document "Europe 2020", which emphasize even more the need to strengthen education for the sake of dynamic growth of labor market and to increase employment via quality in all stages and forms of education, including lifelong learning with greater involvement and participation of universities in implementation.

The above mentioned shows that the transformation of economic education - also accompanied by dynamic development of fields of knowledge, by the growing number of students and universities of economic orientation - from the beginning were a certain reflection of the need of newly emerging labor market which required new information about market economy mechanisms, about competitive milieu, regularities of open economy development, or about new principles of international distribution of labor and the need of larger involvement of the countries of former Eastern block. In the time to come, the economic education content should go on approaching European economic education both from student and teacher mobility the point of view and from point of view, but especially from the point of view of the European labor market. Even when we keep national specifics in education, education must reflect general trends of the European education; important effectiveness criterion is students successfully competing at the labor market, their employment or joblessness.

4. Unemployment of the economic school graduates

A rapid growth of the number of both secondary and university economic schools happened during transformation period. According to the data of the Statistic Yearbook SR, the number of secondary economy schools has increased by 285.4 % over the years 1991 to 2000. While in 1991 there were 41 secondary economic schools in Slovakia, the number of them increased to 117 until 2000 (Štatistická ročenka, 2001, pp. 440 - 444).

Following the year 1989 the economic universities have also experienced fast growth. The number of economic faculties has increased from 6 in 1991 to 15 in 2000; At present there are 20 of them. Rapid development of economic schools in Slovakia was originated by multiple reasons that caused a high demand for graduates of both secondary and university economic schools. It was due to previous undersized numbers, but especially due to economic restructuring that passed the focus from primary and secondary sphere to tertiary sphere, due to the development of private enterprise milieu, due to market economy that gradually substituted socialistic central-planned economy, and to additional reasons.

A dramatic growth of the number of students (from 62,737 university students in 1989 to 222,000 students in 2007, according to Kabát, L. 2009) and of graduates of economic education gradually filled the demand for this labor force, however, similarly as in other branches, there happened certain “overproduction” of economy graduates at the labor market. This fact is partly featured by unemployment monitoring of the graduates according to particular study areas in the SR that includes economy graduates, realized by the Office of Labor, Social Affairs and Family (until 2004 National Office of Labor).

The development tendencies in unemployment of economy graduates in the Slovak republic in 2000 – 2010 are specified in the Tab. 2.

Tab. 2: Development of the number of registered unemployed economy graduates

Group of study fields		Years (figures as per September)				
Number	Appellation	2006	2007	2008	2009	2010
62	Economic sciences	443	479	549	1,420	1,473
63	Economy and organization, trade and services	3,539	2,903	3,244	5,089	5,978
64	Economy and org., trade and services (secondary sch.)	3,811	3,434	3,701	6,203	6,542
62, 63, 64	Economic fields total	7,793	6,816	7,494	12,712	13,993
0 – 9	All fields total	21,448	19,134	19,404	33,370	35,246
62, 63, 64	Economic fields from the total number of registered unemployed (in %)	36.3	35.6	38.6	38.1	39.7

Source: Statistic data UPSVAR, 2006 - 2010. Self-processed.

Tab. 2 shows that in years 2006 – 2010, the development of the number of registered unemployed economy graduates tended to diminish. Beginning by 2007 the subject matter proved annual growth while growth rate significantly accelerated especially in 2009. The level of unemployment kept relatively high in the next year 2010 as well. Economic sciences graduates (62) until 2002 evidence growth in numbers, and there is a decline between 2003 and 2006. Beginning by 2007 there started a slight growth, and the next development copies the development of the total number of unemployed economy graduates. Annual decline of the economy graduates unemployment in 2000 through 2007 is obvious especially in case of study field Economy and organization, trade and services (63), where there the number diminished triply in the traced period. However, until 2010 the number of unemployed graduates almost doubled when compared with 2007. The smallest decline occurred in the study field Economy and organization, trade and services (secondary schools), where there happened significant increase of unemployed graduates from 2002 to 2005 if compared with 2000. In the period of 2002 – 2007 we see a continual decrease of this indicator; however this was

interrupted by a significant increase of the unemployed from 2009 to 2010. The development of the number of registered unemployed economy graduates from 2000 to 2007 proved decline, and in the last years it is possible to observe relatively fast growth. The participation of economic fields from the total number of registered unemployed graduates shows long-term increase. While in 2000 the participation of economic fields represented 30.1 % from the total number of registered unemployed graduates, it was already 39.7 % in 2010.

Here we tackle a problem to be solved that requires attention of both economic universities and secondary schools; they should more flexibly react to the needs of labor market. At the same time it is necessary to perceive that while relatively low rate of unemployed economy graduates can witness a good level of their training, it does not indicate the fact that these graduates really work in this area and the funds invested into their education have been and are adequately valorized. Tracing real engagement of economy graduates according to their study-field expertise has not been systematic until now, nor it is incorporated in the mechanism of the relationships state – educational institution – practice, with consequent implications for allocations of public and private sources, thus representing also a barrier that prevent closer links between economic education and labor market needs.

5. Barriers and perspectives of making closer links between economic education and labor market

The process of transformation in economic education has gone through profound changes since the beginning of the 90th, nevertheless it cannot be considered complete. From the perspective of present and future needs of practice there is a need to keep removing many barriers that lower both the effectiveness of economic education and possibilities to find job for economy graduates. We think it concerns one of the aspects (state – educational institutions – practice) that may be considered as priority when we take into account that especially educational institutions should become the powerhouse of changes for the sake of removing the barriers that prevent making closer links between their offered services and the needs of practice.

In sense of the above mentioned important tasks that need to be solved in cooperation with the state, economic educational institutions and practice, thus by means of solution to make closer links between economic education and labor market, we consider suggest:

- Permanently increasing the quality of teaching through innovation of the content of economic education and also attracting qualified pedagogical potential from abroad and from practice;
- Encouraging institutions of economic university education to create long-term partnerships with enterprise subjects, pursuing and flexibly answering the changing needs of labor market and of society;

- Increasing amounts of finances for university education and providing access to additional financial sources by means of public and private support as well;
- Creating conditions to expand access to university education especially in bachelors study programs while reflecting the needs of employers and the needs of labor market;
- Establishing regional partnerships that would respect the needs of the region in cooperation: university – company – secondary vocation school – regional self administration (so called “learning regions”), creating “tailored” programs of lifelong learning and counseling. At the same time it is necessary to use these funds to support transfer of technologies as well as mobilities of researchers and pedagogues in economy to industrial works.
- Keeping balance between asks and bids after university education while securing multiple sources of university financing that includes fees for university training and the use of the European Union Structural Funds.
- Directing public resources allocation into education with a special respect to graduates success in practice, preferring those employers in the labor market who systematically participate in perfection process of education, thus helping to overcome barriers that prevent closer links between education and practice.
- Introducing mechanism that would strengthen importance of quality education and the sense to implement it in the educational institutions.

Conclusion

The extent of tasks and areas that are to be paid attention for the sake of links formations between educational institutions and practice are of course not fully covered by this study. Problems and barriers, somehow conveyed from previous period, make for ineffective use of precious resources including financial means. These barriers cumulate also in connection with profound changes under the influence of increasing globalization, integrative and disintegrative tendencies as well as world crisis itself. By means of identification and understanding of these problems it is necessary to prevent devastation of human potential and to avoid devaluation of efforts and endeavors of educational institutions to give genuine quality services.

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InnoSkills: Innovation Guide for Small And Medium-Size Enterprises¹

Abstract

Innovation is vital for the survival of small and medium-size companies (SMEs). As innovation cycles are getting shorter, the frequency of innovations is increasing and they become repeated or even routine activities. However, SMEs can hardly afford the specialized staff for innovation management and they must often solve the related issues with their relatively limited resources. These tasks are usually distributed among middle management. The comprehensive and readily available guidance can help them to gain and upgrade necessary knowledge and skills and master suitable tools. Such a guide, based on the web platform, was developed in the Leonardo da Vinci project InnoSkills. Its main target groups are SME managers, consultants, students and researchers.

The contribution describes the main elements of the learning platform, supporting informal and cooperative learning and enriched by multimedia elements. The functionality of the platform is illustrated by selected examples of its use. Some of the tools used for the platform development and maintenance are described.

Key Words

innovation management, small and medium-size enterprises, web-based training materials and tools, Leonardo da Vinci programme

JEL Classification: M10, O32

Introduction

Innovations today determine the competitiveness of any organization; often they are pre-conditions of its survival. *“Innovation is a key driver for strengthening Central Europe’s competitiveness and it is a top policy priority for the European Union.”*²

¹ InnoSkills – Innovation Skills for SMEs, project LLP-LDV/TOI/08/IT/481 was supported by the Leonardo da Vinci programme of the European Commission. Its content does not necessarily reflect the position of the EC or the National Agencies, nor does it involve any responsibility for their part.

² Available from WWW: <<http://www.central2013.eu/news-events-publications/news/news-detail/article/54/central-europe-programme-launches-its-4th-and-last-call-for-project-proposals/>>

Each innovation is unique, has its start (idea) and end (commercialization, implementation, ...) – therefore has the basic properties of a project. However, as innovation cycles are getting shorter, the frequency of innovations is increasing and they become repeated or even routine activities. Therefore it is effective and efficient to immerse innovation projects within the process framework that creates relatively stable and uniform environment. The structured process facilitates communication within project teams, use of standard models, approaches, methods and tools.

Especially important is the initial phase of the innovation process – so called fuzzy front end of innovation. In this creative phase, ideas and alternative solutions are generated. Tacit knowledge is extremely important.

One of the components decisive for the success of innovation is organizational culture. It should support entrepreneurial approaches, risk taking, tolerance to “fair” failures, and create atmosphere supporting team work, knowledge sharing and mutual trust. Core innovation activities have to be supported by complementary activities.

The protection of intellectual property rights is the indivisible part of innovation processes. The value of intellectual property is reflected in the organization intellectual capital that more and more often is much higher than its tangible capital.

All the above mentioned issues (and many more others) must be properly managed in any company. While large companies can employ specialists in respective areas, SMEs must often solve the related issues with their relatively limited resources. The comprehensive guidance focused on middle management can help them to gain necessary knowledge and skills and master suitable tools. Such a guide was created in project InnoSkills, supported by the Leonardo da Vinci program.

1. ProjeCt description

The University of West Bohemia participated as a partner in project InnoSkills, focused mainly on enhancement of competencies of SME's employees in the area of innovation management

Project partners were Treviso Tecnologia (Italy, coordinator), LiNK MV and Pro-competence (Germany), E-Learning concepts Rietsch KEG (Austria), Parkurbis (Portugal) and Firenze Tecnologia (Italy).

Main output of InnoSkills [1], [2], [3] is the Innovation Guide. Compared to its previous version, the guide was upgraded and transferred to other languages, among others in Czech (so that now it is available in 12 languages). Among other resources, we used the resources created in U-SME innovation [5] and [9], [10], [14]. The project focused on practical needs of SMEs: in the literature, we can find a lot of information about theory, models, procedures, types of innovation, etc., which are predominantly in English, are sometimes too complex and not practical for the staff in SMEs; SMEs do not want sophisticated models, but a practical and understandable guide for the daily routine.

Such a model was elaborated in InnoSupport project [3] and the goal of InnoSkills was to further develop selected modules, to localize them into national environments and pilot them with potential users. Localization was not understood as simple translation, it involved also adding links to national resources and especially extending the guide by country specific case studies.

The Guide is accessible at WWW <<http://www.innosupport.net>> and is complemented by other elements for cooperative and informal learning: the resource library and innovation rooms.

2. Learning platform

Possibilities of the platform usage can be best illustrated by snapshot of its web page.

After you open the main page, you can select the language and view the tutorial that will guide you through the platform (see Fig. 1).

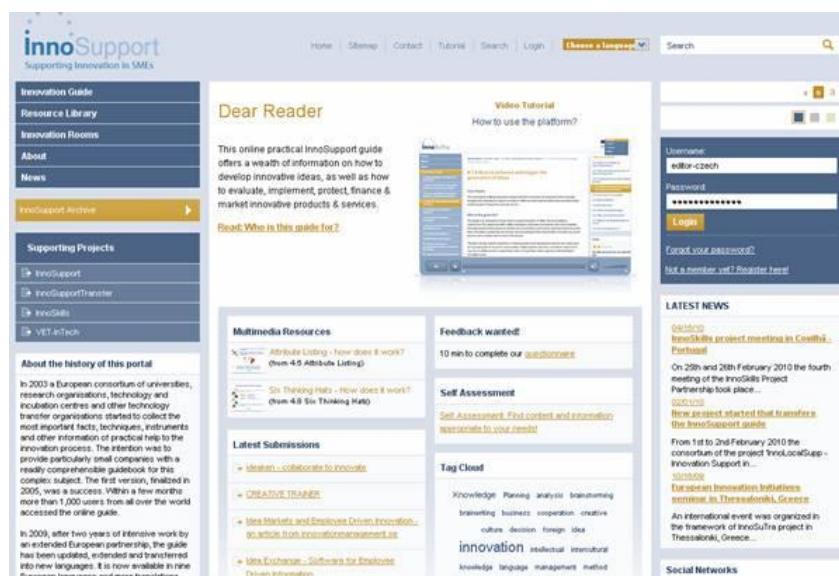


Fig. 1: InnoSupport home page, introduction to the platform

Source: www.innosupport.net

When your first experience is delightful and you intend to come back, we recommend you to register as a new user. After verification of your identity you will be granted access rights allowing you to add your resources to the library and use other possibilities of cooperation offered by the platform. Next time, you can login using your user name and password.

Your next step may be the entry to the Innovation Guide. You can start by completing the self-assessment questionnaire. If you answer the questions about your interests and knowledge of specific issues of innovation management, the system recommends you the most relevant components of the Guide.

The Guide consists of 39 modules grouped in 12 chapters (see Table 1). It is possible to download the modules in pdf format. However, some content (multimedia, tests ...) are available only in online version.

Tab. 1: Innovation Guide Table of Contents

1 Characteristics and types of innovation	6.4 Product Lifecycle Management
2 How to identify the innovation needs of a business problem	6.5 Continuous improvement
2.1 Innovation Audit	6.6 Innovative production strategies
2.2 SWOT analysis	7 How to protect innovations and intangible assets
2.3 Technological capability audit tool	7.1 Intellectual Property Protection Tools (including Non disclosure agreements)
3 How to specify the innovation needs of a business problem	7.2 International Regulations
3.1 Black Box Method	7.3 Intellectual Property Management Strategy
3.2 System and Process Analysis	8 Financing Innovations
4 Tools for developing innovative solutions	8.1 Sources of Finance for Innovation
4.1 Tools for developing innovative solutions	8.2 Business Planning
4.2 Brainstorming	9 Marketing of Innovation
4.3 635 Method	9.1 Optimising and controlling the acceptance of an innovative product/ service
4.4 Analogical Reasoning	9.2 Promotion tools for enhancing competencies of internet presentation & research
4.5 Attribute Listing	10 Human resources management policies to support innovation
4.6 Internal innovative Proposals	10.1 Human Resource competence requirements for innovations
4.7 TILMAG	10.2 Creating a Company Culture for Continuous Innovation
4.8 Six Thinking Hats	10.3 Knowledge Management for Innovation
4.9 TRIZ	11 Types of Innovation Networks
4.10 Creating creativity-booster at your workplace	11.1 Basics of Innovation Network
4.11 Creativity enhancing for micro-enterprises	11.2 Clusters
5 Evaluation of innovative solutions	11.3 Communities of Practice
5.1 Decision making	11.4 Social Network Analysis
5.2 Point Rating System	11.5 Strategic Alliances
5.3 Benchmarking process	12 Foreign languages & intercultural competences
5.4 Quality management in innovation	
6 Evaluation of innovative solutions	
6.1 New Product Development Methods	
6.2 Recycling strategies	
6.3 Product Testing Strategies (Rapid prototyping)	

Source: www.innosupport.net

The learning platform design is in compliance with the principles described e.g. in [11], [12], [13]:

- For the user's convenience the structure of the modules is uniform and orientation in the text is made easier by using icons.
- Modules are enriched by user friendly multimedia elements (flash, short videos) and self-assessment tests – see Fig. 2.



Fig. 2: Example of multimedia element

Source: www.innosupport.net

If you are the registered user and you have or know some interesting resources (your own document, web link, etc.) you would like to share with other users, you can upload it to the resource library and link it to the relevant module of the Guide. After that, all users see the link to your resource when they open the corresponding module. The process of the resource insertion into the library is explained in the short tutorial.

3. Innovation rooms

In innovation rooms you have access to selected tools supporting creativity, cooperation and knowledge sharing. In addition to specific tools and links to them, you will find here short guides to their efficient use and summaries of their benefits. Currently there are tools supporting the following activities:

- Brainstorming
- Mind mapping
- Collaborative text processing
- Whiteboards
- Online polling

The individual tools are described in detail in the Innoskills Informal Learning Guide [4].

And now we would like to wish you the pleasant experience with the platform. We would appreciate if you completed the questionnaire, in which you can share with us your experience. Do not be afraid to criticize - your feedback is very valuable and can help us to further improve the platform. The questionnaire is available at the home page, its completion is not too time demanding. Thank you for your response.

4. Project and website management

The project management was supported by the Team Organizer provided and administered by LinkMV. Its main component is the working space shared by all partners, each work package and meeting having its own directory for file storage. The free open source Content Management Framework TYPO3 [6] provides a backend for content management and a frontend engine for website display.

The process of development of the Innovation Guide content consisted of several steps:

- translation of modules from English to target language (Czech) (MS Word – doc),
- development of multimedia elements (ppt, mp3, flash), their transformation and inclusion into the database,
- preparation of online templates (English) with links to multimedia elements,
- conversion of doc files to online content (TYPO3),
- final edit and conversion of doc to pdf files and their inclusion into the platform for downloading,
- piloting

5. Project piloting

The piloting phase was the last one. Its objective was testing the developed learning material in all partner countries with different user groups to validate accessibility, usability, appropriateness, completeness and suitability of the developed material and support system. The complete results of the piloting phase are described in [7], here we present conclusions from this report Executive Summary.

Tab. 2: Size of companies involved in the survey

No. of employess	<10	<50	<250	>250
Austria ¹	11	8	2	1
Czech Republic ²	1	1	3	1
Germany	6	3	1	1
Italy ¹ (Treviso)	16	11	8	6
Italy ² (Tinnova)	7	8	2	5
Portugal	10	2	5	1
TOTAL	51	33	21	15

Source: [7]

105 SMEs and 15 large companies, students in Czech Republic and Austria and other individual testers were involved. Total number of respondents was 147. The participants were selected by project partners in respective countries, mostly on the basis of previous contacts. Micro, small and medium size companies were predominating (for details, see Table 1). The companies involved represent a wide range of industries and business activities, companies from manufacturing and service sectors have been involved in the survey. Predominant target groups were managers, R&D workers and consultants. At the UWB, we collected feedback from 13 participants, 6 of

them were students. The work with collaborative text processors was piloted with 4 consultants of BIC Plzeň and Technology Centre Prague.

The feedback from participants was collected and evaluated within the platform: the users completed the web-based questionnaire and the application embedded within the platform processed the data and prepared the report. The application allows to filter the data according to various criteria (country, characteristics of respondents, etc.)

The evaluation of the usability – structure and functionality of the platform - shows very positive results. All national reports emphasize the need of more SME related practical case studies and illustrations how to use the presented content in the national economic environment. The material is considered as covering a wide variety of topics, giving valuable and updated information, important resources (bibliographical data, links, etc.) and offering practical examples.

The results show that only the minority of our pilot users have chosen to use the Self Assessment Tool. Identified reasons are lack of time and the satisfaction with the detailed Innovation Guide Table of content (see Tab. 1 above), providing clear orientation in the guide. 97 % of the interviewees expressed their interest in further use of the Innovation Guide.

The specific piloting outcomes at UWB were:

- The **workshop on collaborative text processors** was very successful. The consultants of BIC and Technology Centre showed high interest in the use of the tools in their common work.
- The basic information about the platform, especially the Innovation Guide, among students of the Integrated Innovation Management course met with positive feedback, the seminars and workshops will use this resource as one of the recommended **study materials in future years. The platform will be integrated into UWB courses.** This will contribute to the project sustainability.
- We **expected to get more feedback both from students and from businesses.**
- Participants emphasized the importance of **more direct contacts** with companies – websites and e-mail are good tools, but they cannot replace face-to-face approach.

Generally speaking, the feedback was positive. The respondents particularly liked the video and flash movies, broad coverage of innovation issues, logical structure and intuitive navigation. As the main drawback not only users, but also we as co-authors see, is the lack of more case studies and practical examples relevant to SMEs.

As the main goal of the project was to develop the tool usable to SMEs, we did not use more sophisticated methods of statistical processes and hypotheses testing. We think that for our purpose of usability evaluation the assessment based only on simple averages, as presented in Table 3, is satisfactory. Naturally, the data collected can be further analyzed, it might be interesting to study correlations between various factors, etc., but such research exceeded the project extent.

Tab. 3: Summary results on structure and functionality of the platform

	completely agree			completely disagree			average
	1	2	3	4	5	6	
I found that the platform was easy to use	61	42	11	4	0	0	1.64
I found it easy to navigate through the content	51	53	11	4	0	0	1.73
I found the platform has a clear layout and format	47	47	18	5	2	0	1.89
I found the content easy to read	61	41	12	3	1	0	1.70
I found that the various functions were well integrated into the platform	42	50	21	2	1	0	1.88
I sometimes got lost in the platform (please tick "yes" or "no, never")	Yes: 44 (41%)			No, never: 63 (59%)			

Note: Total no. of respondents from 5 countries = 147 (not all answered all questions); data collected from May to September 2010.

Source: [7]

Conclusion

The piloting results are generally very satisfactory and confirm the project concept. They show that project partners managed to produce results which can fill a detected gap in innovation training in the way acceptable by practitioners. This creates promising conditions for dissemination and sustainability of project results. Based on the positive feedback the partners are encouraged to further develop the guide as agreed in the final project documents and to guarantee its further exploitation.

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Process Performance – A Significant Tool of Competitiveness of Enterprises in Contemporary Era

Abstract

Contemporary global economy slowly deals with the impact of economic crises. Enterprises are seeking new initiatives, which could help them to restart performance growth and ensure thus lasting competitiveness in the branch. It's evident that there is not possible to continue in the same way as before the crisis has occurred. A crisis has checked the resistance of the firms and their potential of risk management and flexibility in creation of post-crises development plans. Planning determinants have changed too – accent is being put on shorter planning periods, more scenarios involving active approaches involving innovation are needed. Most organizations were designed and operating for the industrial age of the past century, when capital was the scare resource, interaction costs were high and hierarchical authority and vertical integration structures were the key to efficient operation. More significant for the performance potential of the firm has become a feature on process effectiveness, seeking, drafting and management of correspondence between strategy, resources and organization in the firms. There is a need to remake the organizations of today into more adaptive, agile and focused organizations. The compliance between the dynamics of change of business environment and the tools of performance management based on strategy is today resolved using the process approach. It's also apparent that process management has become more developing and synthetic too. The contemporary architecture of company processes allows more flexibility, however it is more demanding with respect to knowledge potential and empowerment of employees. However it remains extremely important how to grasp the formulated strategy, how to distribute it and integrate into company processes and how to ensure their synergies within the framework of existing managerial competencies.

Key Words

strategic management, innovation, management by process, process performance, Balanced Scorecard

JEL Classification: M10, M16

Introduction

Contemporary enterprises operating in dynamically changing environment, deeply hit with crises, can remain competitive only if they are constantly improving their performance in spite of crashing demand, which may remain weak still for several coming years. The management responsibility is not only to properly manage the

company, to rethink their strategies in response to the changed economic landscape, but also to present its performance in a way that will persuade the owners and other key stakeholders about its competence and at the same time will objectively prove the company competitiveness.

The basic tool of the company organization and informed management of its future performance is the strategic management. Its elements are today routinely used in formulation, implementation and control of strategic goals within specified time-frames. Most companies' global strategies have been based on a vision of a world that's steadily, even rapidly, becoming more integrated, where the key challenge is keeping up with that integration. Contemporary strategies cannot be based on extended growth, they must emphasize advantage of differences – this means to focus strategy more on significant details of internal and external art. Demand will remain weak for several years. Many companies will need to try harder to local norms. Firms must be more discriminating about investments and pay more attention to emerging market competitors. Innovations still remain the key toward competitiveness preservations and how to accelerate the performance when the growth returns. But companies face a real dilemma: how to maintain that focus and manage costs tightly while keeping growth options alive for the future. The recent innovation strategies use "*Open innovations*" by breaking down traditional corporate boundaries, placing certain assets and project outside the company, in order to preserve opportunities for future growth [2]. Open innovation allows intellectual property, ideas and people to flow freely both into and out of the organization. That not only saves much of the time and money being invested in those projects, but also can nurture new supplier and partner relationships, promote processes with high value added, and generate high-margin licensing income.

Some of the current literature writes a process-centric organization, which has been defined as an organization whose managers conceptualize it as a set of business processes' where they place their primary emphasis on maximizing the efficiency of processes, and not on maximizing the efficiency of departmental or functional units. [4] While it is acknowledge that process-centric organizations will still have functional departments and divisions, they are seen only to exist in order to support the business processes and these functional units should be minimized as far as it is practicable. It is reasonable, when the organization is appropriately focused upon its business processes, and yet still capable of operating from functionally based perspective to provide the performance, management and delivery of strategic objectives, all while maintaining a successful and profitable business and creating or maintaining the desired competitive advantage. A potential weakness of a complete process view is that as one focuses on all the individual business processes to make them optimal, it is assumed that the sum of the individually optimized processes will be better for the organization than the previous functional view. If the process view will be taken to its extreme, each business process area could have its own staff. This has potential to create conflicts, duplication and additional expense for the organization. Resources need to be balanced across all the organizations key business processes in order to create the best optimal situation and it is often the addition of the functional view that achieves this. When the organization is ready and has grown in its process maturity, it will progressively see both sides, so that organization's management will no longer be separated into distinct functional- and process-based roles. The people within the organization will have a

culture that supports and encourages a continuous process improvement through process and the capability and skills to make it a reality. The number of separate improvement projects will reduce, as improving the business processes will be a continuous activity. Managers and team leaders should use the process and people performance reporting measures their contribution to the business.

1. Management by Process

The foundation of Management by Process framework starts with the formulation of vision statement, strategic goals and set of relevant strategies. However the strategy is only one part of the process-focused journey, execution matters are the most critical success factors of performance. Kaplan and Norton also support this view, when they state that: *“breakdowns in a company’s management system, not managers’ lack of ability or effort, are what cause a company’s underperformance. By management system, we are referring to the integrated set of processes and tools that a company uses to develop its strategy, translate it into operational actions, and monitor and improve the effectiveness of both. Various studies done in the past 25 years indicate that 60% to 80% of companies fall short of success predicted from their new strategies [6].”*

Process execution deals with the operational running of the business processes, allocation of people and use of technology – it is often called operational management. It requires a pro-active, dedicated and passionate approach. Process and Project execution share the same people and technology and impact largely the same processes. A tension within an organization may occur, if the managers and staff must divide their time between projects and process execution. Process execution cannot occur, to a high standard, without three basic components: people supported by technology and being able to understand business process performance. People capability is the centre piece via which a process- focused organization is created and sustained. Process leadership is responsible for driving and creation of the organization’s sustainability. One of tools for ensuring this mission is personnel controlling [8]. To introduce this system of controlling of personnel processes, relevant indicators, standards measure and criterion must be set. The character of indicators is both quantitative, which are simply used for evaluation and benchmarking, and qualitative, which need to create a relevant methodology to each process. In this way the gate for introduction the principles of knowledge management is open.

2. Process Performance

Performance establishment and measurement is about the true management of an organization’s business processes in a sustainable way. The true statement, that: *“if you are not measuring performance, you are simply not managing your business”* refers to the ability to immediately make decisions which many have influence on processes outcomes to be compared with the real and preset expected value. Process performance, that is the measurement and evaluation of business processes, is a significant part of the sustainability of process improvement and process management within an organization.

To be connected with the process governance, there is a powerful ability to actually manage the business effectively and efficiently in a sustainable manner. In order to achieve sustainable performance it is crucial that processes are managed, and managing processes requires continuous measurement of their performance. Measuring should ideally be linked to a higher-level organization objective to ensure that the processes are geared towards and evaluated by their contribution to this objective. Furthermore, measuring processes should also relate to evaluating the performance of the people involved. In other words, good process performance should be rewarded. The Balanced Scorecard (BSC) is an excellent way to measure the processes, as it not only deals with the short-term financial aspects but also covers the customer perspective and the internal view. In fact, it is important that all stakeholders' needs and expectations are covered in any score card that is established. Another benefit of the BSC approach is that it explicitly links the performance of the processes to the objectives of the organization, as well as linking initiatives to the specified objectives. This highlights the importance of carefully selecting the score card indices. An organization can cascade the BSC and Strategy Map management system top-down or bottom-up, but ultimately scorecard reporting, analysis and decision making should be flowing in both directions. Pushing the scorecard down through the organization too hard and too early could lead to resentment and a backlash. Flexibility is the key ingredient during the early stages of cascading. It is extremely useful mechanism for the first app. three layers within the organization, but once the lower echelons are reached, the performance measures need to be simple and able to be clearly understood by people. When process performance measures are determined there are several components to be taken into account. These include effectiveness (including quality), efficiency (including costs and time), adaptability, risk, and customer satisfaction. There will be different drivers in different parts of the organization. Continual measurement must be a key component in the establishment of process measurement and performance targets.

When organizations start measuring the performance of their processes, they often wonder how they compare across business units within their organization or with competitors. Benchmarking processes allows this comparison to take place [5]. Benchmarking is the process of comparing the organization with its competitors besides that, benchmarking is also active in seeking the best ideas, methods and approaches that are applicable to the enterprise and could contribute to increase its performance. Power benchmarking is based on data. It directly compares the results of organizations by using the selected set of performances criteria (processing times, costs, quality, customer satisfaction and profitability). Before comparing figures with other organizations, it is crucial to understand all the considerations and definitions used in the comparison to ensure that the figures are comparable.

Once measures are put in place, it is critical to create feedback loops to enable the continuous improvement of processes Deming introduced this mechanism in his Plan-Do-Check-Act approach [3]. Management not only obtains information from the processing itself, but also prior to the processing (feedforward) and after the processing is complete (feedback). In feedforward, prior to the process commencing their execution cycle, relevant influences and factors should be available to allow management to anticipate the impact of the processes and enable appropriate action to be taken. In feedback the actual end results of the measurement process will be compared with the

process targets and objectives. It is important to understand how the process needs to be adjusted to ensure that the next time it is executed, the process is better geared towards meeting the processing targets or objectives.

Sustainability of process improvement can only be achieved if people keep on using the improved processes in the correct way. In addition to improving existing processes, a newly created strategy map often identifies entirely new processes at which the company must excel. Table 1 shows a contingency table that explains the link between process improvements and BSC strategic priorities. The columns classify the organization's existing processes as either "*excellent*" or "*needs improvement*". The rows distinguish between processes identified on the BSC as strategic-contributing to the differentiation of the company's strategy, and those that are vital: necessary for the company's success but not creating a strategic difference. [6]

Tab. 1: Using the quality assessment and Balanced Scorecard together

Balanced Scorecard Assessment	Process Classification		
	Strategic	Improve to levels of quality excellence	Maintain high quality levels
	Vital	Improve to minimum acceptable quality levels	Potential to cut back current investment
		Needs improvement	Excellent
Quality assessment			

Source: [6]

Analysing processes, identifying bottlenecks and points of improvement, and acting upon them should be embedded in organizations as a way of life. People who execute the processes have to match the problems to excite the process owners to change used manners and find way for improvement. The *Kaizen* approach is a good way to include process thinking in everyone's job profile. The advantage of making small improvements is that they are normally quick and easy to implement with visible results. This also provides the employees with a feeling that they are making a difference and a contribution to the organization. Kaizen management keeps off overdoing – obviously over-production deprives the company of making profit as the result of making products more than actually needed. The elements of the business process improvement framework are following [1]:

- The organization's stakeholders and its strategy, which are included because they form the overall priorities of the organization. They define the critical areas where the organization needs to excel, and, even if this is not always the case, they should be backdrop against which any improvement project ideas are assessed.
- A through understanding of the current business processes. Business processes are an ideal unit of analysis for improvement work, and understanding how a process is currently performed is an invaluable platform for improving it.
- Performance measurement, which plays an integral part in improvement work. It helps assess which business processes should be improved, it gives insight into the current execution of the process, and it allows tracking of the improvement effects created.

- A business process improvement map, which is based on the Strategy map of BSC. It outlines, which business processes need to be improved over the long term, and it will contain details about more immediate projects. Because the strategic processes are featured in the BSC's process perspectives, they will receive continual review and attention from top management in their strategy review meetings.
- An organizational structure with skills, incentives, and attitudes that foment improvement. If the employees do not have basic values that support continuous improvement, or there are no incentives to invest extra effort in improvements, or no one has the responsibility of initiating improvements, the effects will be dismal.
- The business process improvement tools which help set a direction, guide improvement projects, and overcome a sense of not knowing how to get started with improvement work.

Management at the operational level is predominantly about the improvement and control of the processes essential to the business to achieve the objectives of the organization. Setting the direction and goals for business process improvement is a critical step, and one that needs to be addressed by higher management. While the introduction of technology can be a useful contributor for many organizations, business process improvement does not always need technology to be successful. It is far more important to get the process right before consideration of the implementation of the technology is being met.

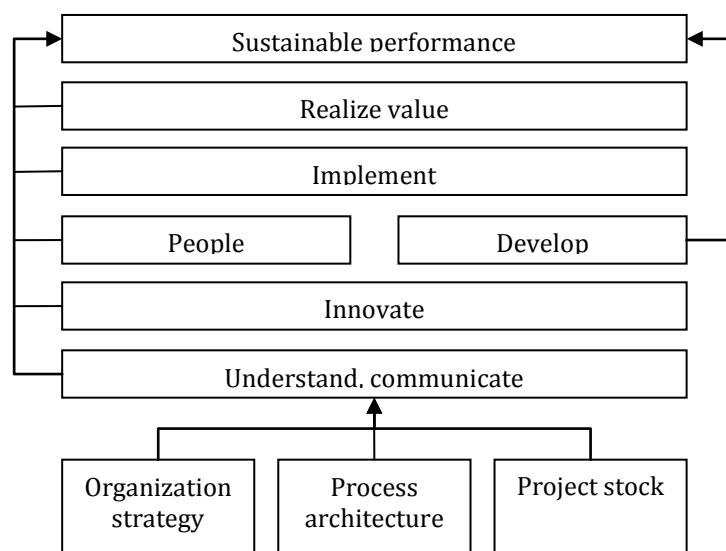


Fig. 1: Sustainable performance phase

Source: [3]

Although the term performance measurement system has come into general use, a system can in this context be of any size and complexity. Multifunctionality of this toolbox is supported by complex tools of performance management, e.g. BSC, EFQM and others. Reengineering was also the first process management movement to focus primarily on non-production, white-collar processes such as order management and customer service. It did not emphasize statistical process control or continuous improvement. Many firms all over the world undertook reengineering projects, but most

proved to be overly ambitious and difficult to implement. The most recent process management approaches are being concentrated around “Six Sigma” methodology. This methodology represents a return to statistical process control. *“Quality (six sigma) teaches you how to fish. The Balanced Scorecard teaches you where to fish [6]”*. Some firms are being to combine “Six Sigma” with more radical approaches to processes like “lean techniques”. The contemporary philosophy of ABC/ABM involves 3 areas which are globally overlapping processes of strategic management – operational (Activity based costing [ABC], tactical (Activity based cost management [ABCM] and strategic (Activity based management [ABM] [7]. Terminology has not been determined yet. In any case it is a managerial approach based on managerial costs structure. If we have mentioned performance, the prevailing attitude heads for statement that the world presents a great opportunity to be reengineered to reach rapidly growing performance. The influence of economic cycle on performance’s indicators has not been described yet. It has become a challenge to investigate the influence of economic crises and correlating influences of business environment on the organization and management of business processes and the performance which is absorbed in these.

3. Applied Use of Process Performance Management as a Toll of Setting Parameters of Corporate Strategy Controlling

Recent era forces plants to seek new ways to strengthen competitiveness after the ongoing crisis will subside. As a practical example a methodology of setting controlling indicators within the Balanced Scorecard support of strategy implementation in one middle scaled machinery plant has been completed in 2011.

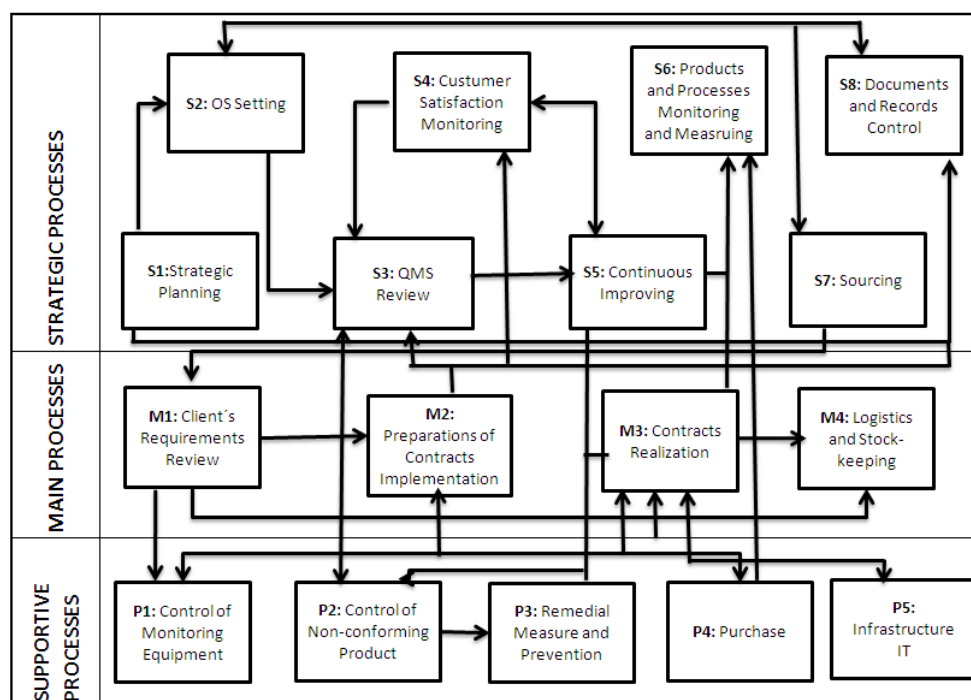


Fig. 2 Process Diagram of the Molins s.r.o. comp.

Source: [9]

The progress of this project was based on the pregnant strategy formulation, which was confront with the risk impact resulted in strategy scenarios as a platform for opening the BSC implementation. Before the short-termed strategic goals were set, the process architecture has to be created. The necessary condition for it was the completed process analyses and their division into strategic, main and supportive kind of processes. After that a process map could be drafted (see Fig. 2).

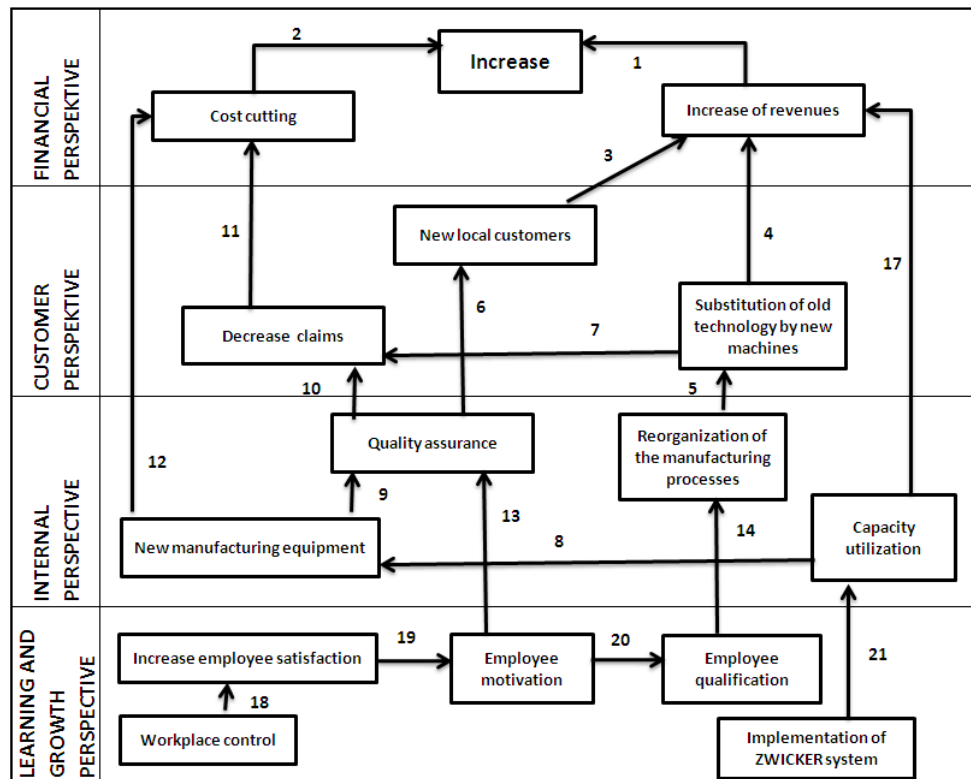


Fig. 3: Strategy Map of the Molins s.r.o. comp.

Source: [9]

The next step was the project of implementation of confirmed strategic plan by means of Balanced Scorecard on deduction of Key Performance Indicators. The standard proceeding implied the introduction of performance indicators into particular perspectives respecting the drafted process structure. The time schedule has been established, the competences were assigned. This step of the project resulted into the conduction of the strategy map of the organization (see Fig. 3).

For the effective controlling it is necessary to determinate the Performance Indicators at whole process levels, which form the base for monitoring and reporting the fulfilment of the Strategic Plan. The set of performance indicators, derived from the expected realistic scenario was ranked into three levels: Acceptable Value, Values Indicating Possible Complications and Critical Values. The tool of exertion regular environmental analysis beside financial analysis has been established. Responsibilities for monitoring and measurement of particular processes were delimited. Frequencies of reporting presentation were confirmed (see Tab. 2).

Tab. 2: Process Monitoring and Controlling in the Molins s.r.o. comp.

Process Number	Process Name	Method	Responsible Person	Frequency	Parameter	Target Value	Result	Remedy Measure
S1	Strategic Planning	Profit Assessment	CEO	1 a year	Business Plan	19,336,000 Kč		
S2	OS Setting	Monitoring by IA	CEO	according to IA plan	Nonconformity Number due to Lack of Competences	0		
S3	QMS Review	Internal Audit	Quality Manager	1 a year	Successfull Certification	0 Systematic Errors		
		Management Review		1 a year	Realization CA in Time	100%		
S4	Customer Saticfaction Monitoring	Satisfaction Survey Process	Sales and Logistics Manager	1 a year	Satisfaction	90%		
S5	Continuous Improving	Quality Goals	Quality Manager	1 a year	Set Goals	100%		
		CIP		continuously	Tasks Realization in Time	Implemented Measures		
S6	Products and Process Monitoring and Measuring	Monitoring by IA	Quality Manager	according to IA plan	Realization CA in Time	100%		
S7	Sourcing	Financial Monthly Report, Forecast, Budget	CEO	1 a month	See Separate Documents File	45,000,000 Kč		
S8	Documents and Records Control	Monitoring by IA	Quality Manager	according to IA plan		0%		
M1	Clients Requirements	Demand Reaction	Sales and Logistics Manager	continuously	Beclog of Demand	0%		
M2	Preparation of Contracts Implementation	Project Meetings	Technical Manager	Weekly	Time Schedule of Machines	0		
		Production Plan	Production Manager	Weekly	Time Schedule	0		
M3	Contracts Realization	Delays	Production Manager	1 a month	% of Operating Hours	< 2%		
		Sickness Absence		1 a month	%	< 5 %		
		Overtime		1 a month	% of Operating Hours	< 7 %		
		Output		1 a month	% of Planned Hours	100%		
		Late's		1 a month	%	< 40 Items		
		Efficiency		1 a month	% of Operating Hours	min. 70%		
		Costs of Wasters	Quality Manager	1 a month	Costs (Kč / month)	> 150,000 Kč		
		AE Delivery	Sales and Logistics Manager	1 a month		95%		
M4	Logistics and Stock-keeping	Vendor Delivery		1 a month		91%		
		Machine Overdue Spares		1 a month	Total Delays	500 Items		
P1	Control of Monitoring	Monitoring by IA	Quality Manager	according to IA plan	Realization CA in Time	100%		
P2	Control of Non-conforming Product	Number of Complaints	Quality Manager	1 a month	Claimed Pieces of the Total Supplied	< 1.8 %		
P3	Remedial Measure and Prevention	Pursuance Measure Control	CEO	continuously	Performing Assigned Tasks	Meeting Protocol		
P4	Purchase	Stock Volume	Sales and Logistics Manager	1 a month	Max. 12 mil.	< 12 mil.		
		Supplier Evaluation	Technical Manager	1 a year	Recommended "A"	93%		
					Eligible "B"	5%		
					Conditionaly Eligible "C"	2%		
		Covered by Material	Technical Manager	1 a week	Project Meeting	Dealy of Coverage		
P5	Infrastructure, IT	Monitoring by IA	IT Manager	according to IA plan	Infrastructure Inadequacies	0%		

Source: [9]

The above mentioned project of rising performance of a chosen plant has shown that modern management must prove the competences not only in organizing the plant's operation, but also the management staff must dispose of broad knowledge how to master an efficient strategy based on risk assessment and valid predictions, backed by methodology for the right implementation into internal processes and, not al least, to

keep up a control over the performance development during the period of planning. The outputs of the project provided data for completion of the Diploma Thesis on the Faculty of Economics of the University of West Bohemia [9].

Conclusion

The compliance between the dynamics of change of business environment and the tools of performance management based on strategy is today resolved using the process approach. The contemporary architecture of company processes allows more flexibility, however it is more demanding with respect to knowledge potential and empowerment of employees. Some companies apply flexible financial control in key sub-processes. However it remains extremely important how to grasp the formulated strategy, how to distribute it and integrate into company processes and how to ensure their synergies within the framework of existing managerial competencies.

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Evolution of the Clustering Phenomenon in the Lithuanian Grain Sector

Abstract

This paper provides an analysis of the clustering processes taking place in the potential clustering cores and indicates the specific features of the identified clustering phenomena. The study of the clustering phenomenon and identification of this process was carried out in the Lithuanian grain sector. The data was collected from four companies that could be named as potential clustering cores. One of these companies was characterized as carrying out most of its activities in accordance with the principles of the business cluster. Other one had only a few features of a cluster. The third one was identified as conforming to the corporate development principles, but is willing to join the cluster networks, and the last company, was found, is utterly autonomous and operates on the basis of the corporate development model in the market.

The research was oriented to explore the clustering phenomenon in the Lithuanian grain sector. In this paper the potential clustering resources were investigated and possible elements and specific features of the cluster phenomenon were identified. For achievement of this task, Structured Interview, designed for the investigation of the clustering phenomenon and its features; and Dialectic & Phenomenological Hermeneutic methods, selected for scientific interpretation of the provided answers, were used.

Facts found by this research, leads to the understanding that clustering can become the transitory activity of group of companies, which leads to the reinforcement of companies positions in the market up to the time when companies will be able to act independently. Based on research findings, networks of Lithuanian companies can be at least grouped: into genuine clusters, into groups of companies which temporally behave as a cluster and into groups of companies which simulate clustering process.

Key Words

clustering phenomenon, cluster, cluster core, grain sector

JEL Classification: L20, L25, Q13

Introduction

Clusters are commonly defined as geographic concentrations of related companies and associated institutions operating in a certain field and joined by the information networks and the elements of the value (input) chain. The major focus is on the geographical concentration and interaction in a value (input) chain [11]. In studies two scenarios of the cluster evolution were considered: cluster formation by some dedicated

actions and natural emergence of them [3, 4, 6, 10, 13, 14, 18]. In most cases the possibility to form a cluster artificially is evaluated sceptically. However, Ch. Ketels argues that a cluster can be created but first should be estimated does the resources spent to create a cluster would generate an economic value [7]. Numerous cluster researches show that cluster creation is a time-consuming and costly process. Besides, there is a high failure rate and some risk that investment will not pay off and will create a requirement for the public financing.

Numerous researches focus on the fact that evolution of most clusters is a spontaneous and natural process [3, 4, 9, 10, 13, 14, 16, 18]. Mostly it is fostered by the market demand and entrepreneurial drive. Such way of grow potentially lead to stronger and more successful but drawn-out cluster formation. The exception can be the formation of cluster based on disarrangement of monopoly after which monopoly splits into several small and medium enterprises. These enterprises are commonly related by their culture which is inherited from monopoly. Such cultural similarity can cause the later clusterization of mentioned businesses and can faster the process of clusterisation.

Earlier also where observed that in most cases positive conditions for cluster evolving have been determined by the historic processes taking place in regions, countries and unions of countries, and such aspects as geographical location, intersection of trade routes, industrial development in particular regions, presence of universities and enterprises could serve as an core for a cluster and ensure new investment from the outside, etc. Some authors [18, 14, 10] suggest different conditions important for the successful cluster development: entrepreneurship, manpower, human resources, communications, learning, financial resources, concepts, laws, educational institutions, location. It is possible to indentify the following interdependent aspects having direct impact on cluster evolvment and development: policy formation, promoting the partnership between participants; empirical cluster studies; formation of the cluster-based policy [12].

In Lithuania the idea of clusterization firstly introduced by J. Činčikaitė and G. Belazarienė [1], ETC and KTU VSI [2], KTU VSI [5] and Č. Švetkauskas [15]. Their works was formed the starting position for the further studies of the clustering phenomenon in Lithuania. These and later studies [8] most often where focused on the possibilities of cluster development in industrial (wood, textile, etc.) and service (tourism) sectors.

The clusterization in the Lithuanian grain sector has been briefly outlined in the study prepared by the KTU VSI and VŠĮ ŽVI [8]. The study suggests that judging by the structure and operation principles some of the sector companies in the future may develop as clusters. However, the performed study was more like an overview; therefore no detailed information regarding the phenomenal features of clusterization in this sector has been given. Other authors do not provide a more in-depth analysis of the clustering perspectives in this sector either. Having in mind that this is an important sector in the Lithuanian agricultural industry it has been decided to analyze and describe the phenomenal features of possible clusters in greater detail.

The *research topic* is an exploration of clustering phenomenon in the Lithuanian grain sector.

Objectives of the research are investigation of potential clusterization resources and identification of possible elements and specific features of the clusterization phenomenon.

Methodology of the research – Structured Interview, designed for the investigation of the clustering phenomenon and its features, and Dialectic & Phenomenological Hermeneutic methods, selected for scientific interpretation of the provided answers.

Methodology of the Research

In order to investigate the clusterization phenomenon the approach of the Structured Interview has been used. The questionnaire comprising 20 questions has been made up. The questions have been formulated in such a way that the analysis of the provided answers carried out by means of the Dialectic and Phenomenological Hermeneutic methods would result in information-bearing data. At the beginning 10 companies representing the Lithuanian grain sector have been invited to take part in the research. They have been selected according to their leadership in the field of sales and production. This selection has been based on the clusterization theory stating that namely these companies can become cluster cores or some kind corporate parents.

Previous studies have already shown that the cooperation of companies in such studies is listless. The most frequent refusals to participate in the studies were: too high self-esteem reasons, fear, distrust and inability to see the personal benefits. Similar excuses or their modifications have also been provided this time. Frequent reason for refusing to participate in the survey was a relatively high employment rate which was the reasoned by inability to find time to meet. There have been cases when a potential respondent promised to participate and asked for contact information, but later became unavailable even after receiving a reminder. In the course of the study were interviewed four companies¹. A refusal to participate in the study, unwillingness to express own position on current business conditions and avoidance of co-operation in the investigation hypothetically described as a non preparation for clustering. This hypothetical conclusion where based on the results obtained from the exploratory research.

Since the study is phenomenological in nature, it can be concluded that even a single interview is scientifically meaningful knowing and describing a certain phenomenon. Classic qualitative research practice does not require the large test sample, but the large test sample can be treated as a classification and diversity criterion of the existing phenomena (Vaitkevicius, 2010). Therefore, in this research, a large sample size was not intended, especially when companies refuse to participate in the study methodologically also were valuable.

¹ Companies' names are not published in order to veil their strategic and competitive identity.

3.1 Qualitative Research Instrument and its Application Methodology

A Structured Interview has been chosen for this research (see Table 1). If the sample is greater this type of interview can be processed applying the methods of statistical analysis. However, small samples also provide sufficient data for identifying the essential typological features of a phenomenon.

Questionnaire is designed as a tool to find out what the respondents know about clusterization phenomenon and to identify their readiness and openness to clustering process. These questions have been deliberately hidden in the context of other related matters. The mentioned respondent's characteristics have been judged not on the text provided as an answer to a particular question but on the combinations of respondent answers to appropriate questions, and on the form of the answer used (see Table 1). Text intention analysis and interpretation of the meaning interdependencies were done using Dialectic Hermeneutic method.

4. Preconditions for the Clusterization in the Grain Sector

Examination by the interview method the grain industry enterprises revealed that the largest grain processing companies equilibrate on the corporate and cluster development bound. This proves that the Lithuanian companies are ready to transform into more advanced business structures. Moreover, some of these companies operate under a simplified cluster model now. Their operating experience shows that currently in Lithuania the conditions are suitable for the formation of the cooperative structures that help to ensure long-term competitiveness and profitability for the companies.

Interviews revealed a positive attitude to the cooperation of companies, active search of new contacts, and their positive attitude to the external initiatives. It became evident that the companies are maintaining vertical and horizontal cooperation.

Some of the grain processing companies have taken the direction of the corporate development. It became evident from their focus to the search of new activities and from their investments in to the development. Furthermore, these companies operate not only in a grain processing area. They also have other activities which form two separate value chains: the production of breadstuffs, meat and dairy products. The value chains of mentioned companies are intertwined, because the owners of the companies are the same and they tend to connect all businesses into the one-piece value chain.

In this industry, the vertical integration is very common. It can be seen when grain Products Company open the bakery, set up or purchase agricultural companies, or contrary - the bakery purchases the mills. In this way they try to solve product quality issues and try to increase total profit.

Tab. 1: Hypothetical Question Interpretations

Questions	Implications in the Clusterization Research
What are the main economic difficulties that you face when performing your activities?	<i>A respondent's answers to these questions indicate his/her readiness to monitor internal and operating environment, which is very important when delegating the function of the cluster core. If a company is unable to define its current positions, then how would it represent a merger of several companies? The readiness for the clusterization can be considered only if a company identifies itself in the environment, is able to define itself and can realistically evaluate its potential.</i>
What are the main competitive advantages and disadvantages of your company?	
What are the main threats and opportunities for your business?	
What makes your business attractive to investors?	
Is the industrial sector, which is represented by your company (as well as providing services to this sector enterprises) is making enough efforts to increase its competitiveness?	
In what kind of activities, sectors or branches of industry your company reached an advantage comparing to its competitors?	
Is in the future your business shall to concentrate on other activities? Name what and why?	<i>These questions allowed evaluating the company's strategic potential. Companies, which negatively answers to the question what do they need cannot properly represent a cluster. If answering to these questions respondents emphasize their personal initiatives it means that companies do not seek for cooperation opportunities when solving various problems. If respondents are of the opinion that all or almost all of the problems should be solved by the government, then it can be hypothetically stated that the companies cannot be characterized as particularly competitive what is necessary for a company representing the core of a cluster. If companies clearly realize what roles they, other market participants and the state should play when solving problems, it means they are ready for strategic actions and can rightly be assumed as suitable candidates to become the cores for a clusters.</i>
What is the national and regional government's contribution to the solving of the problems, and to industry modernization?	
How you recommend solve these problems, if they should be solved by sector companies?	
How the indicated problems could be solved, if in their solving should take part not only the companies representing the sector but also the national and regional government?	
Are your business far from your suppliers and customers?	<i>These questions have been aimed to identify geographical features of a cluster. Ideally all the companies of the cluster should be concentrated in the same geographical location and be in a 2-10 km proximity to one another. We cannot eliminate the possibility that an evolving cluster can be regional or international in which case the companies would be located within the boundaries of a region, district, country, EU countries etc.</i>
Do you need a lot of efforts to reach them?	
Does your company have business partners manufacturing analogous products, which could be sold as the production of your company, in case it would be necessary?	<i>These questions are aimed to define a cluster and to identify its distinctive features. The way the respondents answer to these questions helps to evaluate the maturity of the cluster and the state of its development. For a deeper analysis of these issues additional questions have been provided. If the answer was "no", the additional question was "Why not?", if the answer was "yes", the additional question was "What advantages and what disadvantages of this collaboration can you indicate?"</i>
Does your company have enough business partners capable to supply products and materials necessary for the manufacturing processes?	
Does your company have business partners that sell the products manufactured at your company?	
Does your company have business partners that create products for your company (new products)?	
Does your company have business partners that provide training for your companies employees?	<i>Using these questions has been studied business cooperativeness. It was assessed whether the industry companies is willing to cooperate, or avoid doing so. Also the cooperation maturity and orientation to the clusterization processes have been evaluated.</i>
In which fields companies performing similar activities tend to cooperate, and in which do they tend to compete?	
Are in mentioned companies cooperative structures exist common values, a sense of community, relationships based on trust and / or collective knowledge and expertise (know-how)?	<i>This question was intended to highlight the factors leading to companies' cooperativeness. Usually, companies incapable to develop in corporative way are forced to cooperate. Although it may seem that such companies are forced to join into clusters and to develop their strengths, but they step by step create groups of dependent organizations that help to grow their business, or choose to expand the fields of their activities if such a possibility exists. Such view and way of thinking definitely contradicts the concept of the clusterization.</i>
Would it be an opportunity, you would choose to extend your business on your own or in cooperation with your partners?	

Source: own

According to the survey, grain processing companies are well-informed and relatively good strategic position in the food processing sector holding companies. However, companies only sometimes talk-about possibility to evolve under the cluster model. It can be seen from the fact that when talking about relations the companies tend to use the term *intermediary* rather than *partner*. Finally, the Phenomenological Hermeneutic analysis helped to explore the reasons of clusterization. These can be named as company's partial dependence from naturally developing cluster network. This means that although the company is not developing according to cluster model, but it can be a part of the cluster because the cluster purchases raw materials or services from it.

4.1 Phenomenal clusterization features of First Company

Interview allowed exploration of phenomenological features of *First Company* such as positive attitudes to cooperation and the search for new contacts and a positive notion towards external initiatives.

During the conversation, it appeared that the company cooperates both vertically and horizontally. This suggests that it can act under the simplified cluster model which can be described more accurate only after additional studies.

First Company holds a clearly defined position within a conditional cluster. Their position can be described as an agent-intermediator, moreover, they also are currently the main risk takers. This statement does not mean that only the company takes risk, but in many cases company to its own business risk takes and the common financial risk also, i. e. *First Company* not only buys grain, but also grants loans to farmers. This can be proved by the following statement:

„...It is definitely much easier for us to get credit under the deposit structure than for the farmers. ...They themselves depreciate the land 50 percent and they give only 50-60 percent after all. So, how can the solvency emerge? That's why we have to finance all of this, after all, if we still want to sell something...”

Another important phenomenological feature which shows the clustering process is an agreement made between competitors and helping to sell goods at a better price. This is not a cartel agreement, when all the producers set the same price, but rather a reciprocal support and cooperation with the aim to collect the required amount of products:

„...It is impossible to load 50,000 tons at once. So, here 20 are mine, 20 there...and 10 more there...so, we put them together. The most important thing is to deal this before you sell and not to be forced to make an arrangement, which is often the case. The same customer secretly buys from one, second and third leaving the only option - to face the fact. So then it is a strained corporation. This is not a corporation on principle but...this is why you usually” loose the price” and so on. And when you know that it is possible for you to sell 50 units instead of selling 25, the difference is in the price. There isn't many who talks here, but we have a talk here...”

There is one more phenomenological feature that shows the progress of the clusterization processes and can be associated with the inclusion of new market players into the trading process. In this case this is educational institutions.

Although their debut was not successful, but the attempt shows the company's readiness to act in accordance with the principles of cluster and carry out a range of new cooperative initiatives.

Interviewer: *Are there any partners who help to raise the qualification of company's employees?*

Respondent: *... really, we've started with one last year. They were optimistic about the selling, marketing and so on. They said – we'll do here – will be nice. We were sceptic, but decided to take a shot.*

The representative, answering to the question "whether among all the mentioned companies are common values, a sense of community, relations based on trust or on collective knowledge?" emphasized, that industry companies rely on each other. These answers also show the emergence of the clustering phenomenon in this sector: *"... if there wouldn't be trust, at least in some fields, there wouldn't be any possibility to do anything, if to be honest. If you thought that something is going on behind your back, it won't be good. Therefore there has to be some kind of confidence..." "...There are no quarrels. No discussions about our connections in the newspapers, no slander, nobody sends the tax inspectorate. If there are no such things, I think there is cooperation..."*

This case analysis has shown that the business development model employed by the company corresponds to the principles of the cluster formation, although the company itself does not identify it as a formation of a cluster network. This shows that the cluster formation is closer neither to the natural nor to the forced process.

4.2 Second Company as an indicator of the evolution of the market clustering phenomenon

In the meantime Second Company has taken a direction of the corporate development. It is a well-informed company occupying relatively advantageous strategic positions in the food industry sector. Chosen corporate way of development make this company exceptional among others performing similar activity. The proof is the fact, that the grain processing company also owns several poultry farms.

This company has previously been included into the clusterization study as a respondent. Therefore, this time it is being included not as an unfamiliar unit but as an indicator helping to see possible changes in the market that determine the declined relevance of the corporate development and the increased interest in the cluster formation. The study results show that this company still maintains its preferred direction and no marked changes indicating the need for the clusterization has been identified so far.

4.3 The Third Company, as corporate and cluster development models coordination phenomenon in company's development process

The performed case analysis has shown that Third Company is balancing at the boundary of the corporate development and cluster formation. The assessment of the interview results revealed two alternative company development directions. One of them is the direction of corporate development. It is evidenced by the fact that the company is searching for new activities and making investments into their development. In spite of this the company sometimes considers the possibility to develop in accordance with the cluster model. It was difficult to determine whether the company is tending to operate according the cluster's philosophy, because such a model would be more suitable to further development, or this company just simulates the clustering.

Balancing on the bound appeared, when was compared the results of different groups of questions. According to the research results, questions that show indirect relationship with clustering phenomenon indicated the organization's declaratory position to develop according to the principles of corporate activity. When the representative start answering to the questions that have a direct link to the clustering phenomenon, company's position has changed to work according to the cluster approach. The issue was, perhaps the company is using a combination of development model, where in some markets company operate according to the logic of corporate development, while in others according to the cluster development. After a deeper analysis of facts revealed during the interview it has been determined that the basic model that the company follows is based on the logic of corporate development, while the presumptions about the clusterization could only be made because of the competence demonstrated during the interview. This proposition justifies the assertion, that the company with respect to the co-operative relations has been inclined to choose the intermediary concept, but not a partner. Finally, the Dialectic Hermeneutic analysis helped to identify possible preconditions for the clusterization. These could include the realization of the company's reliance on the emerging cluster networks. It's a perception that company depends from the emerging cluster networks. The company can be treated as an integrated part of some cluster as it, e.g. supplies materials or provides services for a cluster, although the development of the company itself is not based on the cluster model: *"...I think that the clusters and that they should find out, where we are trying something new added value to create, to create an "exportable" product, that's it..."*. Such intention demonstrate that this company tend to use the value created by a cluster, but do not try to create a value for a cluster. Based on the results of this study is difficult to say how many such companies are in supposed cluster, but one thing is clear, that such companies do not accelerate clustering process and do not guarantee clusters' longevity. Moreover, re-thinking of the results allowed to raise several questions: how much should be extended value chain between companies to name it as a cluster, and the circumstances, in which the cluster operate like a strategic business unit and with external companies maintain only customary commercial relations?

Third Company like other participants in the grain market prefer cooperation in the flour industry, but *"compete in almost all other fields..."*. Some kind of passive

dependence to future clusters can be seen from the fact that the company already supplies products under the trademarks of other companies: *"...our cooperation with the trading networks is more obvious as we provide them with the supply of production that is marked with their trademarks..."*. The evidence for the horizontal cooperation is provided by the following statements: *"... we cooperate with suppliers of raw materials as I mentioned above, grain resellers, we are somewhat cooperate, as I said, with other areas of grain-processing companies,..., for whom we bought raw material and say we prepare it, clean it, dry it and we sell it to rapeseed oil manufacturers ...", "... we cooperate ... where we bought malted barley ... we are prepare them, we dry and clean it so that it could be used in the production of beer, ..., so, such co-operation takes place, this is where the grain-processing enterprises, which do not have any competition with the same products. In such place the co-operation is going ..."*

The analysis of case showed that in the Lithuanian grain processing sector is one more notable clustering phenomenon - some enterprises in the cluster more the attendants, than genuine members of the cluster.

4.4 Phenomenal clusterization features of Fourth Company

It has been determined that in general Fourth Company is already been functioning according to the clusterization model although it has some features of corporate development. This case has proved the potential of the Lithuanian companies to transform into relatively innovative business structures.

Company's knowledge about the market and its partnership also tells about its dependence to the cluster, but the company, its relationship with the environment and disposable network do not name as a cluster. Like in the previous example it shows the company's possible natural transformation into the cluster.

During the interview emerged the company's positive attitude into the co-operation. In particular, it has been clearly formulated in response to the last question (see tab. 1, 20th question). Representative of the company mentioned the *"...Together with the partners... The scope is too large, other thing specific markets, where we work... impossible to physically bypass for only one ... this requires ... partners and or either us with them ... Together we have invested even ... "*

The representative speaking on one of the main phenomenological features of the cluster, company's relationships with its partners, shared values, a sense of community, relationships based on trust and collective knowledge and competence also testify the fact that company operate on the basis of cluster philosophy. *"Our relationships are certainly based on confidence. We work in cooperation. Sometimes we lend something to each other. This happens when we run short of raw material for example. There was a case when the dock workers went on strike in Germany and couldn't load the vessel and our partners had to produce fodder and there was no way out for them – it had to be produced because the animals had to be fed. Neither holidays nor strikes can be brought as an excuse*

– the feed has to be given on time and that's it. So such things happen and we help each other. We share our experience, we lend raw material..."

The company's functioning based on cluster philosophy reinforces the fact, that organizational behaviour is not only based on sole partnership or only competition. At the same time competition and cooperation with one and the same company are two simultaneous processes. Rationality, which is also one of the principle elements of a cluster phenomenon, was also found in company's thinking. This can best be illustrated by the answer to the question in what fields the companies performing similar activities tend to cooperate, and in what fields they tend to compete: *"In some fields such as aviculture the companies tend to cooperate. But of course they compete ... Sometimes we buy the raw material in cooperation with our competitors ... It is natural ... as large quantity makes up a single shipment which is delivered on a single vessel and you don't have to order smaller quantities that would be delivered in separate containers ... Hence the costs are smaller, both companies are offered a more favourable price and this is acceptable. But then these companies compete in the internal market ..."*

The initial company's cluster development stage shows its cooperation not only in such areas as raw material acquisition or joint logistics, but also in such as training. The organization sends its employees to study abroad or to the other companies' facilities in the EU: *"...trainings are being organized in various companies of the European Union. So the employees have a chance to gain practical experience in more advanced companies in order to deepen their knowledge and acquire better qualification..."*

The company's development in accordance with the cluster model is also shows the fact that the company has business partners creating new products. The advantage of such partnership has been explained in the following way: *"... we use the resources of the veterinary academy, of the various institutes, of German institutes, we use the European Union scientific basis not only the German, but the Holland also, in some areas we use their experience, and of course what we find attractive we try to take. The cons we are trying to figure out, and in our praxis we try not to apply them..."* Here needs to note that the phrase *"...the cons we are trying to figure out, and in our praxis we try not to apply them..."*, no matter the previous facts, shows that company possibly only takes care about itself and do not mention backward communication, which is very important for genuine clusters.

One more important cluster phenomenological feature of this company is the fact that it has several business partners manufacturing analogous products, which could be sold as the production of the company itself, in case it would be necessary. As an advantage it can be seen in situations that occur *"...if we cannot do something in time then we can buy what we need and compensate the demand"* although there is some disadvantage as well which is related to *"our concerns about the quality, the uncertainty whether the production will be as qualitative as ours..."*. It is important to emphasize that the identification of risks associated with the cooperation indicates the company's realization of advantages and disadvantages associated with the business model it employs; this definitely can be identified as one of the cluster phenomenal features. On other hand, open no-confidence in the relations demonstrates the company's orientation

to self-organisation. It means, that company still more oriented into corporative development than into behaviour under the cluster philosophy.

Company's as a cluster growth can be visible thru company's orientation to refuse some activities, which, in principle, is useless, but representative points out that not all of them, they are able to refuse.

This tendency became clear from the answer provided to the 2nd question (see tab.1): "...advantages may be such that we becoming large, as far as possible ... in the grain sector, main disadvantage would be, our inability to fully give up the out-dated structure, when was normal to own everything ... : and services and the maintenance units and various service departments. ... however now we trying to limit our activities to those that are in direct relations with the production and leave all the service and maintenance works for other companies that could act on contractual basis..."

Conclusion

To sum up, the Fourth Company is the most progressive out of the all four companies, if to assess from the point of view of cluster development. The business model it employs has most features that are characteristic to the clustering phenomenon. Besides, its business model has all the principle features of an international cluster. The clustering model of the First Company slightly fall behind, as it still preserve some features of corporate development, although some evidence of clusterization process are visible. Third Company is a valuable example from the phenomenological viewpoint as its case show that the inclusion into a cluster is also possible for the company that take up a direction of the corporate development. This case require more profound considerations as no research or complex studies of such a phenomenon has been provided so far.

The question arises whether corporate company correspond to the cluster principles and is fully capable to represent a cluster. On the one hand the company that perform its activities in a professional way is a desirable partner within a cluster. But on the other hand the company employing the model of corporate development can have claims to strengthen its positions on account of the cluster and accept the value the cluster provides, and rather would limit owns activities to the supply of production and provision of services without any intentions to share other kind of value. Such companies' act in cluster raises a question about purpose of clustering. If earlier cluster was the phenomenon which described a type of companies' partnership, then now some of the clusters can be named as purposive groups of autonomous corporate companies, which try to raise their bargaining power temporarily acting under the network development model. If it so, then there is a risk that such clusters in some markets can become some kind of masked monopoly or oligopoly. The negative side of it is that such formations are difficult to control because of their informal nature, so this is a negative feature of cluster phenomenon.

Explored facts leads to the understanding that clustering regarding its conditional fetishism in the market can become the transitory activity of group of companies, which

leads to the reinforcement of companies positions in the market up to the time when companies will be able to act independently. Based on research findings, network of Lithuanian companies can be at least grouped: into genuine clusters, into groups of companies which temporally behave as a cluster and into groups of companies which simulate clustering process.

In order to confirm or reject any of these considerations a more detailed study of this phenomenon is required as it will help to identify the precise type of the companies' network and their relationship with the clusters.

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Global Trends on the Labor Market and the Methodology of Their Research

Abstract

This study deals with the analysis of global trends within the labor market, which are relevant for the economic development especially in the developed Western European countries. It focuses on defining the criteria, based on which it is decided, whether the given phenomenon on the labor market can be considered to be global by the expert community or scientific publications. In addition it attends to the economic recession, caused by the global financial crisis, and to the reasoning, why the nature and the impact of this crisis on the labor market can be considered a relevant criterion. That means that it could be used to decide whether it is a global trend on the labor market. This analysis and assessment of the global trends on the labor market includes such long-term effects as high unemployment rate even in the conditions of proven economic growth in the developed Western European countries, which can be observed since 1970s; flexible forms of employing, which were the reaction to the need of manufacturing companies to reduce the amount of used labor force and the growing unemployment rate. In this case it is impossible not to include the deepening differentiation of requirements and criteria on the expert qualification and personal qualities of the labor force. Furthermore, based on the listed aspects, this study looks into and reviews the way, how the relation between proven economic growth and stagnating unemployment rate is evaluated within the macroeconomic reflections and theoretic analyses; from which methodological positions the implementation of flexible forms of employing – as a way to foster employment and solving of unemployment problem or of the economic problems of manufacturing companies - is being reviewed.

Key Words

global trends, labor market, economic growth, unemployment, flexibility of employing

JEL Classification: B40, B41, E20, E24

Introduction

The results of observation of certain socio-economical phenomena and processes are usually expressed by mass media reports, expert communication within the management of economic production, politicians, theoretic reflections and by the scientific generalizations. Relevant differences, as a rule, exist neither in the facts of presence of certain phenomena and processes nor in the way of their statements. However, when it comes to the interpreting their reasons, foreseeing their development or defining their impacts on social and economic sphere of society, it is very difficult to find a common thinking, conclusions and positions, from whose point of view the socio-

economical phenomena and processes are being judged and evaluated. Therefore it is assumed that there also exist relevant differences in the observed global phenomena and processes and in their theoretic interpretation.

In order to confirm this assumption, we have chosen particular relevant global trends on the labor market and their interpretation and evaluation in the macroeconomic findings, in the results of economic theories and in methodology and methods of looking into economic phenomena and processes to be the subject of this study's analysis. Corresponding with this, it has been decided that the subject of this analysis would be such important global trends on the labor market as stagnating high unemployment rate even in the conditions of proven economic growth and growing flexibility within the labor market and employing of workers. Therefore **the main goal** of this study is to determine to which extent the global trends on the labor market are mirrored in the macroeconomic findings, theoretic analysis and the methodology and methods of looking into economic phenomena and processes. To reach this goal following tasks have been defined:

- find out how the relation between proven economic growth and stagnating unemployment rate is being examined and judged in the macroeconomic reflections and theoretic analyses;
- define the unison between identified expert and scientific analyses and classic macroeconomic findings;
- define the methodological positions, from which the implementation of flexible forms of employing – as a way of employment increase and solving of the unemployment problem or as a way to solve the economic problems of manufacturing companies – are judged.

Research methods used in this study are: statistic methods of analysis of economic growth indicators, unemployment rate, flexible forms of employing; theoretic analysis and comparison of macroeconomic processes within economic development and trends in the unemployment rate and in the implementation of flexible forms of employing; evaluation and judging of macroeconomic reflections and results of theoretic analyses.

Scientific originality of the article is:

- definition of current correlation between economic growth and unemployment rate in the conditions of present economic development;
- reasoning of stagnation of relatively high unemployment rate in the conditions of proven economic growth and evaluation of its analysis in the economic theory and methodology;
- definition of significance of flexible forms of employing for manufacturing companies, employees and state, and determining of the adequacy of this phenomenon's reflection in the theoretic analyses and methodology used by looking into this trend on the labor market.

Practical significance of the article is:

- scientific results of given study have significance for the development of adequate methodological approaches in the studying of current macroeconomic phenomena and processes;
- results of research create basis for the development and implementation of specific principles and measures implanted into state economic policy
- findings are the background for planning and implementing of effective measures within the employment policy.

1. Material and Methods

1.1 Global trends in the economic development and employment

Above all, we will look into above mentioned trends on the Slovak labor market, which to certain extent copy global situation on the labor market of not only Central European but also Western European countries. Significant economic drop in Slovakia, which lasted from 1997 until 2000, and its impact on the employment resembled the one which can be observed nowadays. The fall of economic production, which followed the crisis with approximately one year delay, lessened the employment rate, and caused growth of unemployment. This negative tendency reached its peak, when the unemployment rate hit the level of 20 %, which was a historic maximum. The ensuing economic development in the years from 2001 until 2007 was associated predominantly with the inflow of foreign investments, solving of negative credit portfolio of commercial banks and debts of manufacturing concerns. Changes on the labor market included improvement of its institutional aspects and labor legislative, creating of flexible mechanisms, which are able to react to economic changes, application of flexible forms of employing etc.

The tight direct correlation between GDP growth and the employment and at the same time quite tight indirect correlation between GDP growth and unemployment rate were typical for the whole period of this economic growth. During this period of time (2001 – 2007) an average rate, by which grew the number of employed persons in economy, reached 1.7 %. Unemployment rate sank by 8.8 % a year according to methodology of selected finding of labor force and by 13.1 % according to methodology of filed unemployment [27]. This movement in employment or unemployment development set in the period of 2001 - 2004, when the economic development expressed by GDP growth shifted from 3.4 % to 5.2 % and the unemployment rate fell from 19.8 % to 14.6 % [25]. Prior to this phase in spite of growth of economic efficiency the employment rate was falling, and the unemployment rate was rising. However within above mentioned period the development of the employment rate was quite the opposite.

Exactly these positive trends in economic and employment development invoke optimistic expectations and influence the evaluation of present economic processes

caused by world financial crisis and ensuing economic recession. Primarily the end of economic downfall and the beginning of the following period of growth is expected. Then, after expiration of certain amount of time, a period of employment growth will come – just as it happened during characterized period. Therefore “in terms of further development it is necessary to point out that this relation will apply in the following years as well. It means that growth (fall) of economic efficiency will be connected with growth (fall) of employment rate and with the fall (growth) of unemployment rate “[8, p.14].

This state of development of economic production and employing corresponds with state statistical data and some other macroeconomic indicators. GDP growth in 2010 reached 7.5 percentage points while showing moderate indirect correlation with unemployment rate decrease (0.4 percentage point). Also the indicators of GDP growth confirm that the industry in 2010 exceeded the expectations and the industrial production swiftly resumed its pre-crisis state. Slovak industry benefited particularly from quick recovery of German economy, which is the most important business partner [15; 19].

In this context it is necessary to accentuate that mild negative correlation between the economic growth indicators and the unemployment rate indicators observed during given period is valid also for the economic development of Central European and Western European countries. Moreover, this trend, when we can observe that the correlation between GDP growth and unemployment rate decrease is continually getting weaker, is becoming a global characteristic, which is valid in the most of economically developed countries, and which is relatively long-term since it was firstly observed in the late 1960s [10] and it applies until present days. Global financial crisis and following economic recession did not change its direction; it merely more significantly polarized the differences in the trends of economic growth and unemployment rate [11].

1.2 Flexible forms of employing

The implementation of flexible working relationships into employment strategies of Western European companies took place in the late 1960s and early 1970s in most of economically developed countries in Western Europe. Successful post-war development of Western European economies during this period demanded improvement of labor quality in all economic spheres – in new products, technologies, marketing conceptions, methods of communication with customers, new organizational structures and management styles. Structural changes in the economic development were also happening during this period, so called industrial type of economy and society fell into decline and the economic and social processes were accelerating. Tensing of the competition could be witnessed in this dynamically changing environment, what caused that whatever difficulties company was facing threatened its survival on the market. Companies tried to find a way out of economic difficulties (like for instance drop of sales, loss of market segment, increase in costs and so on) by implementation of flexible working relationships and therefore the risk of the survival on the market was partially transferred to the employees as well.

The first and most common form of above mentioned flexible measures was reduction of working time. In most cases the capacity of weekly working time was in question. After negotiations with unions about tariff standards it was decided that the companies would apply their requirements on flexibility in the form of so called time quota. Their implementation quickly spread mainly in the 70s. For instance, since 1975 until 1991 the implementation of flexible working relationships grew by 3 to 26 % (statistics differ from country to country) in the European Union. More than 20 % companies imposed time quotas or reduced working time in 1991 in the countries like Netherlands, Great Britain or Denmark. In Germany and Great Britain it is a bit lower than in the other countries – only at the level of 7 and 9 % [2, p. 114].

Different forms of shortened working time are very demanding when it comes to the labor organization and to their acceptance by the employees. For example, research conducted in 1998 with 252,895 respondents employed in different branches of Western European economies (industry and services) states that reduced working time got also positive response from employees [7, p.78]. Despite this fact implementation of shortened forms of work often deals with the problem of their approval from employees. As above mentioned research states, the main disadvantage of reduced working time from the employees' point of view is above all the financial loss (44.2 % of respondents' answers), followed by forced flexibility, what workplace, activities and colleagues concerns (26.1%), shortened vacation (8.6%), bad image (4.7%), absenting possibilities of professional growth (3.6%), negative influence on the free time and its utilization, family relationships and so on (2.8%) [28, p. 51-55].

Another research was conducted in 2008 within the scientific project supported by German academic agency DAAD. This research looked into use of flexible forms of employing in the Slovak and German car factories, and the results it came up with were not so different from the results of the research conducted more than 10 years ago. Different forms of flexible working relationships gain significance in the studied companies even in the conditions of noticeable economic growth. High unemployment and absence of free working positions force people to use every possibility for employment. This research indicates that in these conditions people tend to more appreciate the fact that they have a job, and therefore they are willing to accept the requirements of employers and give up their claims, when it comes to the working conditions. Simultaneously we can observe increase in number of people willing to work abroad.

2. Results and Discussion

Macroeconomic patterns relating to production factors within the economic theory have been formed mainly in the conditions of so called dominantly extensive development of industrial production. Under these conditions a direct correlation between the indicators of economic growth and the amount of used production factors has been recognized. The connection between economic growth and the unemployment rate was no exception. Even during present expert discussions it is reasoned, that there is direct arithmetic connection between the height of GDP and the pace of the unemployment

rate growth. For instance, it is believed that economic growth expressed through the growth or fall of GDP is the major macroeconomic indicator of increasing or decreasing of economic activities on the commodity and services market. Above mentioned economic activities adequately raise or lower unemployment rate. These changes have substantial influence on the situation on the labor market and determine the development of the unemployment rate [8]. This relation is even being justified on the level of proportional statistic indicators of the GDP and unemployment rate growth or fall. For example, it is emphasized that decrease of the real GDP by 1 % causes the drop in the demand for new workers in the height of 20% [1].

It is known that the structure of economic production changes in the process of technological development and labor productivity growth mainly in the industrial production, where it causes laying off unnecessary workers. This redundant labor power in the conditions of extensive development of industrial and agricultural production was absorbed by the growing need within developing tertiary sector. However, in the second half of 20th century the industry shifted into the phase of intensive production (followed by agriculture and services at the end of century), in which the added value growth is seen as a result of higher labor productivity and reduction of input factors including labor power [13]. The advancement of knowledge economy, which is based on human intellectual capital and does not require vast amount of financial resources, raw material and man-power, has changed the situation.

In these conditions the direct linear correlation between the economic growth results and the input production factors can no longer be applied. Especially these dependences have been complicated by the economic recession caused by the world financial crisis. Nevertheless the crisis itself did not influence nor caused the non-linear correlation. It has merely revealed the problems caused by previous period of economic growth. That is why the world financial crisis followed by economic recession has become some sort of milestone not only in the economic development but in the economics as well.

Even before the crisis some economists expressed doubts about the ability of modern economic order to ensure the stability of economic system and to solve the existing problems with its development [22]. This author emphasizes that the belief in the power of neoliberalism was not consistent enough. While there was strong rhetorical enthusiasm about free market, the government's support (particularly subsidies for agriculture in developed countries) often resulted in negative effects on economic development.

In their responses to the world financial crisis most economists not only in its beginning [5; 6; 14; 18; 24] but afterwards as well [17; 20; 21; 26] voiced their opinions on the incapability of economic neoliberalism to solve existing economic problems. As stressed out by Joseph E. Stiglitz, the Great depression undermined the belief in macroeconomy – the ability to retain full employment, stable prices and sustainable growth. Present financial crisis stroke a blow to the belief in microeconomy – the ability of markets and companies to effectively distribute labor force and capital. This was a result of “so many catastrophic cases of incorrect distribution of financial resources and inability to adjust

to the risk factors that private sector was forced to ask for help from government in order to prevent the collapse of the entire system” [23].

Unlike theoretical reflections of above mentioned authors, most of Slovak economists, entrepreneurs and politicians follow traditional macroeconomic relations between results of economic growth and input production factors when evaluating the course of economic recession and relations in economic growth tendencies, employment and unemployment rate. Even though quite realistic and even skeptic perspective on the course of economic recession and its impact on social and economic development prevails, the solution of the unemployment problem is expected to be in agreement with the proportional growth of GDP.

Flexible forms of employing are judged and presented within the expert and scientific communication with similar discrepancy. In the time of their creation and mass implementation they were seen as a way to solve economic problems of manufacturing companies. But after some time the euphoria connected with their versatility, with which they were able to solve the economic problems of manufacturing companies, passed, and rhetoric used to evaluate and present them became less specific and more universal. This means that the attention is being concentrated on the ability of flexible forms of employing to solve not only economic, but more importantly social problem – unemployment, as well. The existence of redundant labor force is not a problem for manufacturing companies – quite the opposite – problem might be created by its absence.

In order to preserve employment, minimal wages and other social achievements connected with employment, people are usually forced to accept so called “derivatives” of employment. Most of flexible employment relationships are related with the salary reduction and other labor costs. To evaluate them fully as an instrument of employment level increase would mean simplifying the problem at least.

Acceptance of reduced working time and salary cuts is not a simple matter. This was demonstrated by the unique experience of German car factory Volkswagen (VW) in 1994. Following certain economic problems they have decided against mass layoffs, and shortened working time for 35,000 employees from 35 to 28.8 hours a week. In addition to this measure they also took other precautions, like for instance improvement of labor organization and management, redundant work forces were laid off, production costs were reduced and indicators of work efficiency increased. None measures were taken which would cause reduction of economic production. That meant that lower number of employees (basically the same number of employees but with shortened working time) performed same amount of planned work. Expert and entrepreneur community named the measures as “28.8 hour week”, “VW week” and “efficient tool of crisis management” [3, p. 99].

Even though these measures were recognized as efficient, their publicity among expert and business community did not reach adequate level. Firstly, economic difficulties of VW were not overcome exclusively because of the implementation of flexible working relationships. It is difficult to exactly determine how big role they played among other

precautions, which were taken as well. Secondly, these measures were in their nature different and in some way even counterproductive. While other actions taken within this model belonged to those aiming at intensification of work, organizational structure, and methods of management, the reduction of working time itself was basically connected with the quantitative utilization of one of the most important production factors – labor force. If the mechanical lowering of number of employees is not accompanied by introduction of more productive technological equipment and machinery or innovative organizational and managerial approaches, it is difficult to count it among innovative economic measures.

Similarly, in the conditions of current global crisis, the important part of a way out of the economic difficulties leads through reduction of labor costs. And that is why management sees layoffs and implementation of flexible working relationships as an important part of solution of economic problems caused by present economic recession. Despite this fact, expert and scientific publications consider flexible forms of employing to be predominantly a tool of solving the unemployment problems. Their economic efficiency from the company's point of view – as a solution of redundant labor force – is less accepted [16; 9; 12; 4].

Conclusion

As the results of this analysis point out, such global trends on the labor market as stagnating high unemployment rate in the conditions of proven economic growth (demonstrated by GDP growth indicators) or implementation of flexible forms of employment indicate the existence of certain amount of redundant labor force. Economic growth, as macroeconomics emphasizes, does not automatically solve the unemployment problem. The macroeconomic soundness that economic growth is a result of utilization of bigger amount of input production factors (including labor force) ceases to be valid in the conditions of present economic development. Present type of so called knowledge economy, which was being formed in the end of last century, does not match the theory of neoliberal economy, since it is based on entirely different input and output production factors.

Despite this fact the expert communication at the level of manufacturing companies, state economic policy and theoretical analyses dealing with this topic approach it from the point of view of classic macroeconomic dependence between indicators of economic growth and unemployment rate. Most of economists, entrepreneurs and politicians work with classic macroeconomical coherence between results of economic growth and unemployment. Therefore the solution of the unemployment problem is expected to correspond with adequate GDP growth even in the conditions of present economic recession, when the skepticism about its course prevails. Only prominent world economists begin to question settled neoliberal economic order and its ability to solve not only the unemployment problem but the current economic and social problems as well.

The positions, from which the implementation of flexible forms of employment is studied, are equally inadequate. These forms were created in order to solve economic problems of manufacturing companies, and not the current social problem of unemployment. Flexible forms of employing solve predominantly economic problems of manufacturing companies and by doing so, they create so called employment derivatives - virtual, pseudo-jobs, which only tone down, but do not solve the problem of redundant labor force, expressed by unemployment rate indicators. Management of Western European companies acknowledges that in present conditions the success of any kind of organization is determined by the mobility of labor force, and readiness of companies to accept and flexibly react on the requirements of labor market by conducting changes within the organization of labor and working relationships. And it is a government's task, not manufacturing companies', to solve unemployment problems in the neoliberal model of economy.

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Security and Disturbances in e-Commerce Systems

Abstract

E-commerce systems evolved into standard tools of business support among sellers (or suppliers and manufactures) and customers (consumers). Every component of e-commerce system can be influenced by many disturbances originating in internal and external environment and by hostile attacks which can be considered as a special type of such disturbances. Disturbances and attacks usually cause negative effects on e-commerce system usability, stability, performance, security, availability, functionality and operability. Internet and other computer networks implemented either separately or as a part of CRM (Customer Relationship Management) can be regarded as basic communication means of such systems. From the safety point of view, web server is one of the critical elements of the whole e-commerce system and may be affected by many disturbances and attacks that can have negative impact on its functionality. E-commerce systems generally, e-shops particularly, are based on client/server architecture. Hence, the safe data transfer between client and server is necessary for both customers and sellers. The web server should meet the web design and application standards, its architecture, semantic web approaches and other options have to ensure the appropriate, intuitive and safe functionality of the e-commerce system. Generally, if we want to ensure the stable functioning of the whole system, we need to identify possible disturbances and attacks, determine their metrics and define regulatory interventions to minimize or eliminate their negative effects. This paper presents web server and web sites security categorization, focused on possible disturbances and attacks that can affect Web servers and Web sites in operations.

Key Words

e-commerce system, web sites, security, disturbances, attacks, demilitarized zone, web server, protection

JEL Classification: C63, C69, O33, O39

Introduction

E-commerce systems are fundamental aids of online shopping. According to [8] e-commerce is defined as an attempt to increase transactional efficiency and effectiveness in all aspects of the design, production, marketing and sales of products or services for existing and developing marketplaces through the utilization of current and emerging electronic technologies. Some authors consider as an e-commerce system only a web server containing all necessary functionality (for example [4]). Main model of e-commerce system based on process-oriented approach is shown for example in [5]. This model can be extended and then we can define main components of e-commerce systems such as customers, internet, web server (web interface), CRM (Customer Relationship Management), ERP (Enterprise Resource Planning), LAN (Local Network

Area), payment system, delivery of goods, after-delivery (after-sales) services, information systems of cooperating suppliers and customers. Generally seen, e-commerce system is an information system. The greatest emphasis should be put on the functionality of an information system from its performance point of view. [2] Every component of e-commerce system can be influenced by many disturbances originated in internal and external environment and by attacks. Disturbances and attacks may have a significant negative impact on requested efficiency of the whole system as they are. Usually causes of negative effects on e-commerce usability, stability, performance, security, availability, functionality and operability. This article focuses exclusively on security of web servers and web sites representing basic communication interface of e-commerce systems. Authors systematize possible attacks and disturbances that can affect Web servers and Web sites. Approaches used in this article are based on research in terms of project OP VK No. CZ.1.07/2.3.00/09.0197.

1. Disturbances and attacks

In every physical system many disturbances can be met. Disturbance can be considered on the one hand as the reason of system instability caused by: [7]

- a technical defect;
- an improper or incorrect use;
- an active or passive attack (for example by hacker).

On the other hand, disturbance can be looked upon as a cause of system instability such as e.g.:

- wrong definition of input values;
- untimely designed system architecture;
- selection of inappropriate technologies;
- economic crisis;
- lack of guaranteed security;
- law changes;
- change of current state of the market in the market sector;
- etc.

Attacks are considered as a subset of possible disturbances. In terms of monitoring disturbances and their consequences, we have two possibilities how to identify them:

- we can identify disturbances that are real, identifiable and expectable at the moment in the view of a current status of internal and external system environment (these disturbances are known in advance);
- we can identify faults that arose unexpectedly (these disturbances are known as posterior).

The different types of disturbances can be divided into:

- directly identifiable disturbances;
- disturbances of stochastic type (chance quantity);
- disturbances, which are not in terms of decisions clearly quantified, but we can estimate the degree of their influence (we call it here as a fuzzy disorders).

Any disturbance affecting e-commerce system means a risk for its operator. Risk management offers a systematic approach to determine risks and reduce them to acceptable level. Following basic steps comprise risk management:

- identification of risks;
- determine their significance (analysis);
- economic analysis of potential impacts of risks.

It can be concluded that disturbances are the causes of risks.

2. Systemization of web server disturbances

Web server serves as a communication interface between users (customers) and seller's information system. Web server disturbances can be categorized to the next groups:

- **Hardware** - damaged hard drive, RAM failure, backup failure, disturbances of communication interface, network failure, insufficient server capacity, etc.;
- **Software** - incorrect programming, using of outdated versions of programming standards, computer viruses, etc.;
- **Functional** - nonstandard functionality of web applications, inappropriately defined interface for communication or synchronization with ERP, inappropriately or insufficiently updated SEO (Search Engine Optimization), absence of functionality for obtaining feedback from users etc.;
- **Content** - inappropriate content of websites in the context of the focus of e-commerce system;
- **Security** - an active attack on a web server - for example rewriting content, passive attack - such as reading personal information about customers from orders, etc.

Input data for ERP are output data from the Web site. For detailed description it is necessary to consider possible disturbances actuating on a Web site with links to ERP. In this context, we consider the following types of disturbances:

- **Hardware** - technical trouble connection, insufficient transmission capacity;
- **Software** - inappropriately programmed communication, robustness of synchronization, traceability and repeatability of traffic between the two components;
- **Security** - monitoring of network transmission by hacker (passive attack), overwriting of transmitted data by hacker (active attack), etc., customer registration, its security and flexibility.

3. Attacks on web server and protection

If we want to prevent e-commerce system attack, we have to know ways of attacks.

- **Background** – hacker changes background of e-shop web sites;
- **SQL Injection** - is subset of the unverified/unauthorized user input vulnerability and the idea is to convince the application to run SQL code that was not intended. Hacker can gain access to protected data, user's accounts, delete data in tables etc.;
- **Price Manipulation** – hackers are able to change prices in e-shop, in order or in payment order;
- **Buffer overflows** - is an anomalous condition where a process attempts to store data beyond the boundaries of a fixed-length buffer. The result is that the extra data overwrites adjacent memory locations;
- **Cross-site scripting** - (XSS) occurs when an attacker introduces malicious scripts to a dynamic form that allows the attacker to capture the private session information;
- **Remote command execution** - command execution refers to attackers attempting to use an existing website to execute OS commands on a web server. By inserting system level commands into an HTTP request to the target web server, users may be able to execute system level commands, create system faults, or steal sensitive information from your system, if security holes exist;
- **Weak Authentication and Authorization** – hackers are able to gain access to information system and read, rewrite or delete data;
- **Viruses** – hacker sends viruses to corrupt business data;
- **Spamming** - is the abuse of electronic messaging systems to indiscriminately send unsolicited bulk messages.

There are many methods and technologies to help server and network administrators and web developers to protect systems against above-mentioned ways of attacks. Development of secure technologies is fast enough and overwhelming majority of secure technologies is ne plus ultra. At present breaking-through system probability is decreasing all time but it doesn't mean that technologies are 100 % safe. Technologies have to innovate all time.

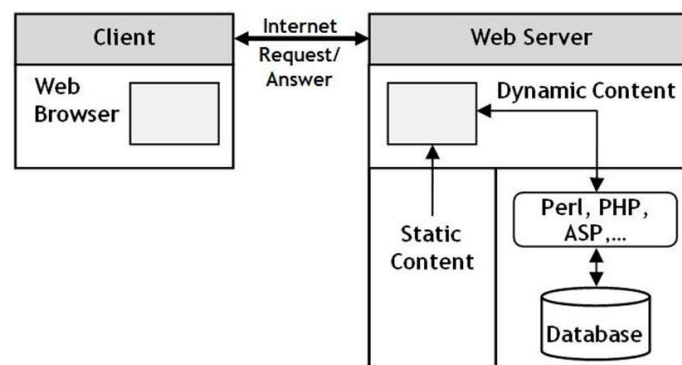


Fig. 1: Client/server architecture of e-commerce system

Source: own

E-commerce systems, especially e-shops communication technology is based on client/server architecture (Fig. 1). In client/server architecture access, resources, and data security are controlled through the server (centralization), any element can be upgraded when needed (scalability), new technology can be easily integrated into the system (flexibility) and all components (clients, network, servers) work together (interoperability).

In terms of customers doing business in e-shop there is need to ensure data transfer between client and server. Data are passwords (submitted during registration or login), name and descriptions (for example during order writing) etc. This type of data has to be ensured during data transfer on Internet network. Main question is how we are able to ensure data so that it could not be caught and abused. A secure web site uses encryption and authentication standards to protect the confidentiality of web transactions. Currently, the most commonly used protocol for web security is SSL (Secure Sockets Layer) , TLS (Transport Layer Security). [6] In addition to providing security for HTTP (web hypertext) transactions, SSL works with other TCP/IP standards such as IMAP mail and LDAP directory access. For a security standard such as SSL to work, browser and the web server must both be configured to use it.

Many SSL Certificate vendors (Verisign, GeoTrust, SSL.com, etc.) also provide a “site seal” to the owners of these web sites. Common characteristics of these site seals include:

- **High Visibility** – online customer wants to see these site seals. They want to know they have made every effort to make their site a safe shopping experience. Therefore, the site seal is usually located where the customer can easily see it;
- **Difficult to duplicate** – the site seals are designed to be difficult for thieves and scammers to duplicate. Many times the site seal will have a date and time stamp on it;
- **Verification functionality** – the site seal should have some functionality whether by clicking on the seal or by hovering mouse over the seal. The functionality should display detailed information about the web site customers are visiting.

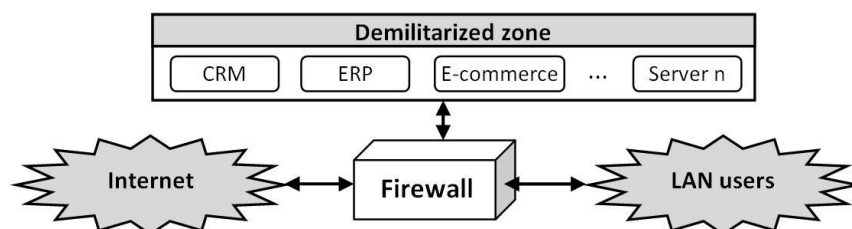


Fig. 2: Demilitarized zone of servers

Source: own

Number of server attacks and sophisticated hacker methods increase all the time. Research and statistics show, that many organizations (especially small and middle sized firms) do not monitor online activity at the web application level. This is the reason that in many cases hackers have a free path to passive and/or active attacks. Any experienced hacker can break in using only a web browser and a dose of creativity and

determination. It is very necessary to take control and filter of all custom requests. In simple systems web interface is often abused for an attack of internal information system. Main way of internal system security is good definition of system architecture and exploitation of firewall. Good defense against attacks from internal and external environment is the location of servers (database servers, servers of ERP, CRM, BI (Business Intelligence), web servers, mail servers, FTP (File Transfer Protocol) servers, VoIP (Voice over IP) servers, DNS (Domain Name System) servers. etc) in so-called demilitarized zone (DMZ) (Fig. 2). Hosts in the DMZ have limited connectivity to specific hosts in the internal network, though communication with other hosts in the DMZ and to the external network is allowed. This allows hosts in the DMZ to provide services to both the internal and external network, while an intervening firewall controls the traffic between the DMZ servers and the internal network clients. With reference to e-commerce system extensiveness, externalization, target group and last but not least pocket book there are number of system architectures ensuring smaller or higher safeguard against external and internal attacks.

Introduced architecture protects servers not only against external hackers but also against local users. In e-commerce systems we have to solve problem respecting place of web server that is main interface. Also in this case we can use system architecture with two demilitarized zones (Fig. 3). This and other modifying architectures are used in many cases in different systems, for example Microsoft Dynamics NAV.

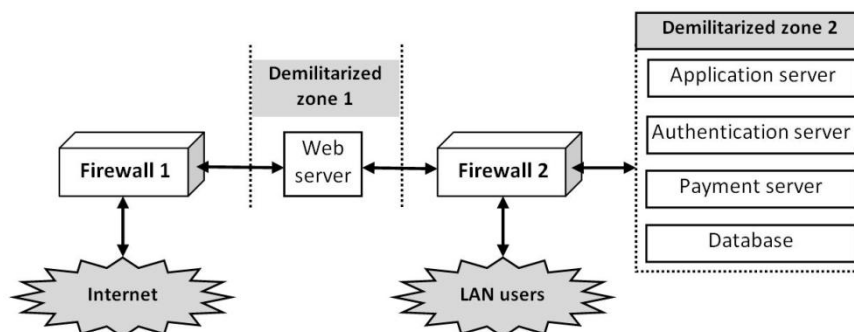


Fig. 3: Two demilitarized zones of servers

Source: own

System architecture, number of firewalls, number of servers etc. depend on required purpose, e-commerce system software, required factor of safety, financial costs etc. System architecture should come from corporate strategy because of the minimization later needs of changes. Every system modification usually results in greater system changes implied originally and heavy investment.

Methods of e-commerce system protection are the same as general methods of protection used in information systems (Table 1). Attacks can be accidental or well-considered with the aim to take away data or damage goodwill. As accidental attacks we can mark for example unknowingly program (containing virus) start by user. In many cases, attacks were done by LAN users (internal environment). This problem would deserve independent article containing detailed analysis. In this case main protection is legislature, employee motivation and their firmness. Of course architecture and all

parameters of information system should be adjusted so that each of unchartered or suspicious user's steps would be found out in time.

Tab. 1: Methods of e-commerce system protection and its description

Method	Description
Data backup	Data backup is main condition of efficient and safe information system. Data backup have to be realized so that all data have to be renewable from backup.
Antivirus and anti-spyware protection	Antivirus and anti-spyware protection have to be applied to individual computers and servers.
Important data security	All data in information system should be considered as important, but it may be defined special groups of data expected enhanced security. It is necessary to define policy of privacy keys and a large scale of security controls and countermeasures that must be provided in order to assure appropriate security level in the whole corporate information system.
Periodic audit	All the time system monitoring has to be doing and in regular time interval periodic audit ensure compliance of all fundamentals of information system work.
Anti-spam	Exploitation of acceptable software and its correct adjustment especially on the server level.
Firewall and proxy server	Main interface in the midst of firm internal and external environment.
System monitoring	Checking of unnormalized events and detection of security incidents.
User training	User training is contributing to enhancement of user knowledge and responsibility.

Source: own

Disturbances and attacks can cause different damages. From this perspective, it is necessary to conduct a detailed analysis to determine the weight and danger of disturbances and attacks exactly as described in section 1.

4. Secured e-shop web sites

E-shops are realized and presented as web sites. Security is by one of main conditions of efficient e-shops. E-shops web pages are only one point of e-commerce system. Users often mistakenly believe that a secure web pages are those that users are authenticated using the user name and password. Common internet user browsing web sites very often need to afford name and description. In many cases, if they want to get some information or buy anything in e-shops, they have to supply any name and description. Protection of name and description rests on technologies, its proper use and human element. The rule is that people should be very careful and fill name and description only on serious web sites forms (for example goods order, ticket booking, tour booking, air ticket booking etc.). If user checks in other type of non-serious web sites such as game sites, web sites with delicate content or other types of private web sites, he has to take any risks into account.

Initial and very important starting point is to define the term secured web sites. Generally, web sites are safe if they meet the principles such as authentication, authorization, confidentiality, data / message integrity, availability, accountability and non-repudiation.

There are two general indications of secured web sites:

- **Web page URL** - normally, when browsing the web, the URLs (web page addresses) begin with the letters http. However, over a secure connection the address displayed should begin with https;
- **Lock icon** - there is a de facto standard among web browsers to display a lock icon somewhere in the window of the browser.

Furthermore, e-shop web sites can be considered as secured if:

- they are not able to be changed by hackers easily;
- hackers cannot get user name and description;
- hacker cannot change price in payment system;
- hackers do not have random access into information system through e-shop web sites.

5. The monitoring and modeling of disturbances

From the presented classification of disturbances and risks it results that they do not have the same source, characteristics and the importance to managing of e-commerce. Hence, we cannot uneasily find proceeding for responding in a standard way on disturbances at company level easily. We are coping with system heterogeneity at entry level and at level of regulatory outputs. Such heterogeneous system can be realized hardly by means of standard structure proceeding. In this case a modular approach supported by local intelligence could be more efficient. This idea can be realized by using software agents.

Agent-based paradigm is based on the following ideas: [1]

- **Agent is autonomous** – it has in a measure control on own activities and in certain circumstances may take decisions to achieve defined objective.
- **Agent is a proactive** – it reacts to external impulses, it can exhibit goal-seeking behavior or develop own initiative.
- **Agent has social behavior** – it is able and need to communicate with other agents.

Communications between agents, which is one of the basic ideas of this approach is not based on remote calls (RPC-remote procedure call), but it is based on system of asynchronous messages. The principle of asynchronous messaging allows agents to communicate with other agents. It is possible without feedback of activities to the outcome of communication. This approach clearly leads to need for standardizing the

behavior of agents and their mutual communication. The best known standard in this sphere is standard of FIPA consortium (Foundation for Intelligent Physical Agents). FIPA consortium published a reference model of agent services platform in 2002. [3] This standard is based on the idea that agents communicate with each other on the principle of peer-to-peer (P2P). This principle is not optimal for our purpose. If we start from generic model of business that uses e-commerce, then we take the view of necessary hierarchy. Formulation of strict hierarchy means deflection from agent paradigm, because it disclaims the basic idea that agents can operate largely autonomously. We will consider in our approach different levels of independent operating agents of specific type (Fig. 4). The Agent – based approach makes it possible not only spread objectives of next types of agents at this level, but as necessary, it can define and simulate possible dependencies midst ones (form of asynchronous messages between agents). In the next layer there are agents which perform classification and analyze these disturbances. They prepare individual regulation equipment, which designed to agents at lower level, using goal seeking behavior. In this area it can be spread evaluative objects and their bindings. By these present may be get by fair candour of whole system. In the sphere regulating hits agents can prepare individual hits. With this hits agents can influence regulated object – company. For the principle by agent: there are equipments for this sphere, whose agents realized without engagement. The concept also can prepare a next extending action, agents and techniques that they are going to support the candour of system despite of the next development or surprisingly disturbances which would hobble the speed of their reaction on the status entourage in case relative rigid hierarchal systems with clearly defined structure.

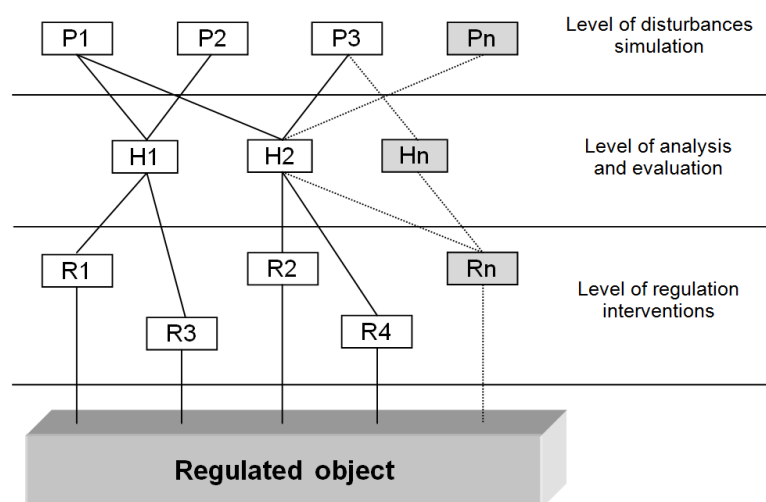


Fig. 4: A conceptual propose of system of simulation and evaluation of disturbances cause the information systems and regulation interventions

Source: own

Conclusion

Because of the web interface and global structure of internet e-commerce systems have to be secured. Security is important condition of e-commerce system effectiveness just after efficiency. Security has to be defined and analyzed in detail in corporate strategy.

E-commerce systems have to have good system architecture, use acceptable software and hardware, be efficient, have secured system of payment, protection against server attacking, protection of name of description etc. All safety codes have to be adjusted with regard to web interface (web sites). To e-commerce system would be saved, system administrator, web developers and top executives should know possible risks and methods of information system protection.

Disturbances are to be treated as a real aspect impacting all types of systems. In order to eliminate or minimize their influence it is necessary to identify the disturbances and to apply necessary counter-measures. To identify the disturbance some monitoring and categorization is needed while the weight of various categories is to be assessed. Disturbance monitoring can be achieved by various automated measuring methods or using human activities. The resources of various disturbances can differ in a wide scope; it is therefore rather difficult to define structured, static and exact methods how to eliminate their impacts. One of possible solutions of this challenge is the agent approach which can be considered as a modular design comprising various functions and services of disturbance analysis and necessary counter-measures supported by certain local intelligence.

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Who Is the Customer of a Travel Agency: A Tourist Segment Profile¹

Abstract

The recent trends in tourism industry associated with the complexity and globalization of the business environments, new technology development, a dramatic rise in competition and the intense battle for customers have increased demand on business operations and first of all on marketing activities and strategy development. One of the important factors that have been affecting changes in the tourism sector, are tourists, their life-style, preferences and needs that have been also changing significantly. Changes in consumer market and intense competition in the recent years have increased the need for travel agencies to concentrate on retaining and attracting the right customers.

The paper presents partial findings of the research focused on customer satisfaction in tourism conducted by the Department of Marketing in 2009 - 2010. The previous analyses of the findings (already published) showed that tourists are more independent and sophisticated when organizing their holidays (some of them do not use services of travel agencies), cost (price) orientated and preferring comfort and individual holiday program. These are the reasons why many of them do not use services offered by travel agencies and do not book their holidays there.

The paper discusses a customer segment profile of the travel agency that was obtained by testing the statistical significance of differences on demographic and psychographic characteristics between the customers of travel agencies and individual holiday makers.

Key Words

tourism, traveller's profile, market segment, travel agency, customer

JEL Classification: L83, M31

Introduction

Tourism has undergone a dramatic change. Increasing globalization, communication development and the knowledge-intensive trend due to IT development lead to greater economic integration that is usually associated with higher quality and lower prices. Life-style, preferences and needs of consumers have also changed and began to converge into a global norm. The globalization process has made it possible for everyone

¹ The paper presents the partial results of the research that has been undertaken at the Department of Marketing at the Faculty of Economics, Technical University of Liberec. The research project „Customer satisfaction and the methods of its measurement in the tourism services" has been supported by the internal grant competition called „Students' grant competition“.

who has health, money and time to travel almost anywhere around the world. [8] A strong trend towards the globalization of markets brings a dramatic rise in competition and the intense battle for customers. [2] Tourism is a highly competitive industry. Demanding customers have more alternatives and their retention rate can be low. They are more experienced and price sensitive. [10] They are more likely to demand cheaper holidays and have increased requirements for high standards of services. [1] The increased expectations of customers have made travel agencies to recognize the importance of customer service quality, satisfaction and loyalty. According to Rust and Zahornik, it can be five times more expensive to attract new customers than to retain existing customers. [11] Increasing retention rates bring future revenues and lower the costs of customer transactions. [4] For this reason it is more difficult for travel agencies to differentiate their product and service design according to customers' needs.

Travel agencies offer a complex service product that consists of a multitude of components – the services of other tourism organizations that participate on a holiday realization. These services represent a highly labour-intensive product that has an intangible character. Customers buying a holiday usually do not know what they are getting until they spend their holiday. [5] There is no guarantee that the holiday – a package of services offered by the travel agency will satisfy customers' needs especially when many services are out of the control of the travel agency. What is more, more and more tourists organize their holidays themselves. This is why it is important for travel agencies to identify the right market segments and tailor their services and activities to suit their customers.

The paper discusses a customer segment profile of the travel agency that was developed according to the findings of the research conducted in 2009 – 2010. The main objective of the research was to examine customer satisfaction in tourism. The previous analyses of the findings (already published) showed that tourists are more independent and sophisticated when organizing their holidays (some of them do not use services of travel agencies), cost (price) orientated and preferring comfort and individual holiday programme. These are the reasons why many of them do not use services offered by travel agencies and do not book their holidays there. Applying statistical tests of significance, differences in demographic and socio-economic characteristics between the customers of travel agencies and individual holiday makers were identified.

1. Customer segmentation

For most companies, the market is too large and heterogonous to satisfy needs of all potential customers. It is made up of customer groups with different buying needs and interests. Companies have to select their group(s) of customers – their market segment(s). They have to determine not only what needs but also whose needs they want to serve.

Market segmentation is not a new concept in marketing. Market segment analysis is a key part of marketing strategy. It is a process, in which groups of buyers with different buying needs and requirements are identified. Companies have to determine

demographic, socio-economic, geographic and psychographic characteristics of the segments that they find attractive for their business. Market segmentation divides the market into distinct customer groups. Any group can be selected as a market target to be approached with a distinct marketing mix. Market targeting consists in the company's decision which market segments to serve. [7]

In tourism, there are many variables that can be used for market segmentation. Kotler identifies four major categories of variables:

- Demographic (age, gender, education, life cycle)
- Geographic (trip origin, trip destination)
- Psychographic (personality, life-style, values, motives)
- Behavioural (user status, usage rates, tourist activities and experiences). [7, p. 262]

Tourist demographics are the most frequently used variables of market segmentation explored in research. Some studies have used demographic and some behavioural variables to segment tourists in relation to their trip destination selection. A few studies have used demographics as their clustering base or related their clustering base to significant differences in demographics. Other tourist segmentation studies have indicated geographic, psychographic and behavioural segmentation categories related to significant demographic differences. [5] The study made by Morrison, Braunlich, Cai and O'Leary used a segmentation procedure with behaviour/destination choice as the basis for the comparative groups. They attempted to describe resort visitors in terms of different resort types. Statistically significant differences were found between resort groups on demographics (age, gender, marital status, education, income, and employment), behaviour (pre-trip planning, tourist activities during stay) and psychographics (emotions, preferences, benefits sought). [9] Eugenio-Martin provided a methodological framework to analyze the relative importance of different attributes for tourists' destination choice in order to estimate the probability of visiting each kind of destination for different kind of tourists. [3]

There is some research on resort visitors and their expectations and satisfaction. Ibakaran and Jackson explored the visitors' views on resort selection, resort satisfaction, resort opinion and resort preferences focusing on visitors' profiles based on their age, gender, level of education, occupation, life-style category, residency, nationality, postcode, years of patronization, intimate selection choices and willingness to recommend their experiences. [5] Bowie and Chang attempted to identify the variables that were related to customer satisfaction during a guided package tour service encounter. [1] Loyalty based segmentation was also discussed in the customer development process where detailed knowledge of customer motivations, purchasing styles and purchasing strategies were used to build relationships with preferred customers. [6]

2. Research methodology

The research makes an attempt to explore the profile of the travel agency customers in relation to individual holiday makers. It used demographic and socio-economic characteristics to describe the market segment of travel agencies.

The research was conducted in judgmentally selected towns in the Czech Republic in the period of November 2009 – February 2010. A non-probability sampling design using age and gender quotas was used in the research as the requirements for representative sampling were impossible to fulfill. To the authors knowledge, there is no data characterising the structure of people using service of travel agencies. To use the structure of the population in the Czech Republic for the sample representativeness would be misleading. The process of the sample design considered the generally known facts about the Czech holiday makers in terms of age and gender preferences. The representativeness of the sample by age could not be fulfilled since children and elderly people are not in the focus of the research. All respondents interviewed for the study, were men and women of different age and income levels. Data were collected by interviewer-administered questionnaires that allowed getting responses from a large number of individuals within a short period of time. Descriptive analysis was used to understand and interpret the results of the research. Non-parametric Mann-Whitney test was used to identify statistically significant differences on demographic and psychographic characteristics between the customers of travel agencies and individual holiday makers. Due to the limited length of the paper, the statistical characteristics of the Mann-Whitney tests are not presented since the paper discusses only statistically significant variables that differentiate the segment of the travel agency customers from the non-customers.

3. Demographic profile of respondents

The sample included 506 respondents, of which 36 percent were interviewed in large towns (with more than 50,000 inhabitants) and 64 percent were interviewed in small towns (fewer than 50,000 inhabitants). The sample consisted of 53 percent men and 47 percent women. Most of the respondents (71 percent) were in age of 21-50 years. About 37 percent of the respondents were single, 46 percent were married and 16 percent were divorced. Majority respondents (77 percent) lived in a household with 2 – 4 members. One person households represented about 18 percent. The respondents' total household income per month varied widely. The largest percentage of respondents (48 percent) fell in to the middle range income category with monthly household income CZK 20,000 – 40,000. The proportion of respondents in the lowest category (less than CZK 20,000) represented 22 percent and the highest income category (over CZK 40,000) 30 percent.

4. Partial results of the research

This chapter presents partial results of the research. The aim is to identify the main characteristics of those tourists who are customers of travel agencies. The paper characterises the segment of travel agency customers that were drawn by identification of significant differences between two groups of travellers – the ones who buy their holiday/tour at the travel agency or organize it with the assistance of the agency and those, who organize their trips individually. The tourists organizing their holidays individually were not included in the paper. The findings presented in the paper could help the travel agencies in targeting the right customers.

4.1 Characteristics of the groups of travellers

Two mentioned groups of travellers were analysed and statistically significant differences were identified. The key variables selected for the tourist behaviour were:

- frequency of going on holiday
- way of going on holiday – in couple, group or with family
- the process of active searching for information
- the way of booking and organizing the trip/holiday
- the way of transportation and catering.

Most of respondents (almost 46%) who organize their holidays with the assistance of a travel agency go on holiday once a year, one third of them travel twice a year and only 8% travel three times a year. Similar tendency is evident in the behaviour of people arranging their holidays/trips individually. About 37% of travellers going on holiday once and 29% of them twice a year arrange their trip individually. It was found that tourists who go on holiday less often are those who use the services of the travel agencies while arranging their holiday trips.

When comparing the habits of tourists travelling in couple, with the family or travelling in a group it was found that most respondents travelling in a group organize the holiday trip in person. Only 18% of them use the services of an agency. In contrast, over 42% of people travelling with a family book the trip via the travel agency (while 33% in person). Over 36% of those travelling in couples use services of the agencies.

Way of providing holidays corresponds to the way how tourists acquire the information. Respondents arranging the trips via the travel agency use mostly the traditional media – almost 30% study catalogues and brochures, 27% obtain information directly at the agency/office in person, only 29% use internet. On the contrary, internet is used by almost 42% of respondents, who organize their trips individually, one third of them arrange the trip on the recommendation of friends, probably because they get the most important information from them and the reservation may not to be done in the touch with the travel agency. This line follows also the way of booking the journey. Two thirds of respondents, who organize their journeys with the assistance of an agency, book their

trip directly at the same place. Only one quarter of respondents book their holiday via the internet. Internet is used by more than half of the travellers, who manage the holiday on their own way, 27% use telephone.

Another two factors that have an impact on tourists' behaviour and their way of organizing holidays are catering at the holiday destination and transportation. In both cases, respondents organizing their holidays in person, choose own catering (stated by half of the respondents) and own transfer by a car (as well as catering, 50% of respondents). Travellers, who organize the trips with the assistance of the agency prefer half board (40 %) or all inclusive (28 %). Only 20 % of them would prefer own catering. Most used mean of transport is plane (preferred by 41 % respondents) and car (28 % respondents).

4.2 Satisfaction rate

One of the important factors in travel agency selection is tourists' satisfaction with provided services. Both groups of respondents were asked to evaluate services offered by travel agencies and express their satisfaction based on the personal experience with the service quality and approach of the travel agency employees to customers. Selected characteristics were grouped into 6 categories:

- **offer of services** (accommodation, catering, holiday programme, sport and culture activities, entertainment, programme and optional tours, services related to ensuring of the holidays - insurance and visa, choice of location in the vehicle, accommodation on arrival)
- **holiday information provided by the agency** (related to local culture, monuments and history, health and other risks)
- **transportation** (ensure of the transfer, route and time planner),
- **personnel** (personnel approach and willingness, information, work of the tourist guides and delegates, care customer, way handling complaints and possible conflicts)
- **marketing activities** (presentation, promotion, pricing and its communication, discounts, advantages)
- **others** (atmosphere of sale, booking, complaints, total satisfaction).

The characteristics, which were evaluated as statistically important (level of statistical significance was lower or equal 0.05) are presented in the table 1. The scale for evaluation was set as follows: one – excellent...five – very bad. The table shows shares of respondents who evaluated the selected characteristics as excellent and good.

It is clear that in the respondents, who organize the trips via the travel agency, are more satisfied with the all services offered by the agency. The most important differences are in the field of the services offered by the agency and the staff. Whereas more than 75 % of respondents, who ensure the holidays with the assistance of the agency, are satisfied with the travel agency employees' professional approach and customer care, only 57.4%

of respondents who organize their trips on their own evaluated the same characteristics in the same way.

Dissatisfaction with the approach of the employees might be one of the reasons, why they rather choose to organize their holiday on their own. This argument is supported by the fact that only 39 % of individual travellers are satisfied with the employees' approach to complaint handling. If we take the characteristics in global, the biggest difference between the two groups of travellers is in the field of travel agencies' offer, especially accommodation and holiday programme. It is more than obvious that the program of leisure activities planned individually by the traveller is wider and can not be compared with rather limited programme organised by the travel agency. This could happen only if the agencies put great emphasis on clients' requirements.

Tab. 1: Satisfaction with the services provided by travel agencies

Characteristics rated as excellent and good	Satisfaction rate	
	Holiday organized with the assistance of the travel agency	Holiday organized individually
Accommodation	78.9%	63.1%
Holiday programme	74.2%	59.2%
Culture activities	70.4%	60.6%
Entertainment	73.6%	59.5%
Programme, optional tours	77.3%	62.8%
Choice of seat in a vehicle	65.6%	51.5%
Awareness of risks	66.7%	57.9%
Personnel of the agency	86.2%	80.1%
Tour guides at the holiday destination	78.4%	67.6%
Staff providing other services associated with the holiday	70.8%	64.8%
Individual approach to customers	71.2%	59.9%
Customer care	75.7%	57.4%
Employee approach to complaint handling	54.3%	38.8%
Method of pricing and its communication	66.2%	57.7%
Sales benefits	68.8%	50.7%
Way of booking	88.9%	78.7%
Possibility of complaints and its handling, compensation	56.7%	46.2%
Total impression, experience of dealing with the agency	76.6%	62.0%

Source: own processing

5. Customers of the travel agencies

The main features of the **travellers using the services of the travel agency** can be summarised as follows:

- Travellers using the services of the travel agencies are mostly people with higher income (over 40 percent of respondents stated the income of their household CZK 20,000 to CZK 35,000, 40 % the income over CZK 35,000.

- Major part of the travel agencies customers are married (almost 46 percent of respondents). Singles represented 41 percent.
- Almost two thirds of respondents are in age of 21-40 years.
- Services of the travel agency are used more by those, who travel once or twice a year.
- The services of the travel agencies are used by tourists who travel less often.
- Over 42% of people travelling with a family book the trip via the travel agency. Services of the agencies are used by more than 36% of those travelling in couples. *This represents a big challenge for the travel agencies' management – their offer should be focused on parents and their children through special family packages, discounts for children or special programmes for children. Another part of the offer should be aimed at young (couples without children) with huge scale of activities and optional tours, and at older couples who prefer relaxation/wellness activities, evening programme.*
- Respondents arranging their trips via the travel agency use mostly the traditional information media such as catalogues and brochures. They usually obtain information directly at the office, internet is rather seldom used. *This finding imposes requirements on high quality presentation materials placed at the place/point of sale. It, also places demand on the staff and delegates training. Despite that, travel agencies should also pay attention to continuous improvement of their web sites because their importance still rises in society nowadays.*
- Two thirds of respondents, who organize their journeys with the assistance of an agency, book the trip directly at the same place. *Favourable but also binding statement calls for improvement of the staff, emphasis on information, willingness and above all individual professional approach to the customers.*

Conclusion

Logically speaking, respondents who organize the trips via the travel agency are more satisfied with the all services offered by the agency. Services and personnel of the travel agencies were considered to be the factors where the most important differences in customers' satisfaction appeared. Dissatisfaction with the employees' approach to customers might be one of the reasons why some travellers rather prefer to organize their holidays on their own.

The findings of the research can be generalized at a level of generalization of any conducted research. Due to the non-probability sampling design the standard error cannot be computed. A standard error for a similar type of the research (e.g. elections) is estimated to be 4 - 8 %. Considering the fact that there is 51 % women and 49 % men in the Czech Republic, it can be assumed that the sampling error would lay in the mentioned limit.

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The Economic-Organizing Mechanism of Commercialization of Intellectual Assets of a High- Technology Enterprise

Abstract

The paper provides description of the world and the Russian market of intellectual assets and analyzes main forms of commercialization of intellectual assets. These forms are as follows: investments into an authorized capital stock, conclusion of a license agreement, franchising, leasing, sell of rights on intellectual assets that are objects of intellectual property, etc.

The process of commercializing intellectual assets broadens opportunities of acquisition of income from realized innovative projects for a high-technology enterprise. Results of these projects lead to formation of a system of innovations at an enterprise. Some elements of this system (e.g., technological innovations) are directly reflected in the structure of enterprise property. Thus, commercialization of these elements is relatively simple. The other elements of the innovative system of a high-technology enterprise (e.g., marketing managerial-organizing innovations) are not directly taken stock in the structure of enterprise property. The process of commercializing these elements is more complex.

Thus, a high-technology enterprise must have an appropriate economic-organizing mechanism that enables to commercialize a variety of its intellectual assets. The paper looks into the mechanism of commercializing intellectual assets of a high-technology enterprise, which is suggested by the authors. The authors regard this mechanism as a control system that consists of several subsystems. The paper researches into main subsystems which are: marketing, information, financial and economic-organizing. The paper suggests algorithms of effective functioning of these subsystems.

The economic-organizing mechanism of creating and commercializing intellectual assets as a control system must be resistant to changes in external and internal environment factors. The authors regard these changes as perturbation actions on the system of managing processes of commercialization of intellectual assets and analyze a feedback mechanism within the suggested system.

Key Words

innovations, intellectual assets, commercialization of intellectual assets, high-technology enterprise

JEL Classification: D20, D83, L10, O31

Introduction

Factors that prove effective functioning of different economic systems, including high-technology enterprises, are, firstly, growth of the fundamental (market) value of an enterprise, and, secondly, presence of an efficacious system of commercializing results of scientific and technical activities at an enterprise [1, 3, 4, 6]. Innovative processes serve as a basis of these activities, thus growth of the fundamental value of high-technology enterprises in the knowledge economy is called forth mainly by effective usage of intellectual resources. A combination of these resources with financial and material resources leads to creation of both tangible and intellectual assets at the enterprise, growth of its intellectual capital value [10].

The modern economy is global and based on use of knowledge and innovative factors of development. Thus management of intellectual components of resources, assets and capital is the basis of managing the high-technology enterprise as a sophisticated socio-economic and organizational and production system. Growth of science-intensity of goods and services provided by the high-technology enterprise is becoming the main condition for securing competitiveness of the enterprise [5, 9].

Formation of the innovative economy in Russia is characterized by a number of peculiarities. Firstly, the state in Russia finances 75% of costs on research and development, while in the industrially developed countries the share of state financing does not exceed 25% and the rest is covered by means of attracting capital of private investors [1, 6]. Secondly, in Russia R&D are carried out by research institutions that do not have necessary potential to commercialize results acquired from innovative activities. In industrially developed countries more than 70% of all innovative projects are carried out by companies that later on commercialize these projects [4, 8].

Thus it is topical for the Russian economy to attract private investors to the sphere of innovative activities and to create favorable conditions for commercializing results of intellectual activities of personnel of high-technology enterprises. While creating these conditions it is necessary to take into consideration that intellectual products, as a rule, do not have analogues. Thus the market of goods which are based on highly-qualified intellectual labor is characterized by low elasticity and the pricing policy of the high-technology enterprise does not significantly influence sales of science-intensive products. The market of science-intense products is a fast-growing market with a high level of monopolization.

1. Main forms of commercialization of intellectual assets of the high-technology enterprise

Capitalization is engaging results of intellectual activities (creative intellectual labor) into activities of the enterprise in order to achieve various tactical and strategic goals. Commercialization also requires determining areas of using intellectual assets. Capitalization or commercial turnover of intellectual assets may represent the main

areas. Besides, commercial turnover is characterized by use of intellectual assets in external environment, while capitalization mainly supposes use of intellectual assets within the high-technology enterprise, i.e., it is internal use of intellectual assets.

The high-technology enterprise may use as main forms of capitalization of intellectual assets contribution to an authorized capital stock, conclusion of a license agreement, franchising, leasing, sell of rights for intellectual assets that are objects of intellectual property, etc. [3, 6].

In industrially developed countries commercialization is done via technology transfer centers. These centers, as a rule, are formed under universities or research institutions. Commercialization centers perform such functions as: filing for patents on inventions; paying expenses for filing for patents and annual patent dues; licensing patented objects of intellectual property; collecting royalties from license holders and distributing means between a possessor of the rights and commercialization center; protecting rights for intellectual property.

In Russia the network of promoting (commercializing) technologies has not been sufficiently developed. Thus lack of an effective mechanism of commercializing intellectual assets at both the state level and at the level of individual enterprises in Russia leads to the situation when the share of companies with foreign and joint property in the scientific and technical sphere of Russia is continuously increasing.

At the moment commercialization of objects of intellectual property that cannot cover the whole range of elements of intellectual assets is carried out in Russia. Certainly, it narrows potential benefits of the high-technology enterprise in the sphere of using results of innovative activities. As a rule, commercialization is done in two ways.

The first approach suggests that the high-technology enterprise that owns objects of intellectual property sells licenses on using technologies developed by the enterprise or goods production. The high-technology enterprise receives royalty, which is divided between owners of the enterprise in proportion to their share in the authorized capital stock of the enterprise. The second approach is related to selling holding of stock of the high-technology enterprise to a strategic investor or third party that take interest in producing new goods or using new technology commercially. According to the world practice, this commercialization method is more effective.

However, the process of commercialization of intellectual assets is multifaceted. The commercialization of intellectual assets expands opportunities for the high-technology enterprise to profit from realized innovative projects. Results of these projects lead to formation of an innovations system at the enterprise. Some elements of this system (e.g., technological innovations) are directly reflected in the structure of enterprise property. Thus, commercialization of these elements is relatively simple. The other elements of the innovative system of a high-technology enterprise (e.g., marketing managerial-organizing innovations) are not directly taken stock in the structure of enterprise property. The process of commercializing these elements is more complex.

2. The economic-organizing mechanism of the process of commercializing intellectual assets of the high-technology enterprise.

The sphere of managing commercialization of intellectual assets is one of the most complex fields of enterprise management. It is related to the fact that most Russian enterprises have a low scientific and technical level, high wear of tangible assets, suffer from deficit of financial resources – especially in the field of innovative activities. Thus, the intellectual capital is the only factor mobilization of which would enable to increase efficiency of performance of the enterprise, secure transition of the enterprise to the ranks of high-technology enterprises and also strengthen its competitive position and become stable on both the Russian and the world market of science-intensive products [1, 4].

The high-technology enterprise must have an appropriate economic-organizing mechanism to make commercialization of intellectual assets is efficient. This mechanism must enable the high-technology enterprise to commercialize a wide range of created intellectual assets. Knowledge, experience and skills of Russian specialists in conditions of effective functioning of the intellectual assets commercialization system would become key factors in securing competitive advantages of the high-technology enterprise.

It is reasonable to regard the mechanism of commercialization of intellectual assets of the high-technology enterprise as a management system that consists of several subsystems. The paper researches into main subsystems which are: marketing, information, financial and economic-organizing. Then interaction of these subsystems would characterize the process of economic-organizing securing of the process of commercializing intellectual assets of the high-technology enterprise.

Therefore, commercialization, being the final stage of the process of managing intellectual assets, enables the high-technology enterprise to achieve certain advantages. First is securing entry of objects of intellectual property as contribution into the authorized capital stock without pulling real financial resources out of circulation. Second is securing additional source of income via transferring rights for using objects of intellectual property and other elements of intellectual assets (e.g., methods of market researches, human resources management, etc.). Third is optimizing taxation of the enterprise, because, according to the Russian law, expenses on creating intellectual assets and depreciation charged during use of these assets lead to reduction of the taxable basis when calculating the income tax and also to reduction of the value-added tax when closing a commercialization deal as a patent, license or author's contract [3].

The paper suggests principles of creating subsystems of the system of managing the process of commercialization of intellectual assets of the high-technology enterprise and also algorithms of efficient functioning of these subsystems, developed by the authors, are provided. Orientation towards achieving high final results, information protectability, the process approach to management, consideration of constantly

changing conjuncture on the intellectual assets market are suggested as the main principles that should be the basis of creating subsystems of the system of managing the process of commercializing intellectual assets.

The economic-organizing mechanism of creating and commercializing intellectual assets as a control system must be resistant to changes in external and internal environment factors. The authors regard these changes as perturbation actions on the system of managing processes of commercialization of intellectual assets and analyze feedback mechanisms within the suggested system. Based on the acquired results, it has been suggested to create the system of managing the process of commercializing intellectual assets as a cybernetic system with closed feedback which is controlled according to emerging deviations between input (aims of the system) and output (results that the system has achieved). The economic-organizing mechanism and the system of managing the process of commercializing intellectual assets, developed by the authors, has been tested at several Russian enterprises (e.g., the JSC "Rostov optical-mechanical plant", the JSC "Research, Development & Production Enterprise "Zvezda"" and several others). Results of the test proved high efficiency of development carried out by the authors.

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Potential of Indirect Financing of Higher Education Institutions in Terms of Global Economic Development¹

Abstract

The expansion of higher education is both necessary and desirable. But it is costly, and faces competing imperatives for public spending. Higher education finance is therefore a matter of discussions of academics, financial experts and politicians. This contribution aims to analyze one issue which seems to be very prospective for higher education institutions in the Czech Republic – tuition fees paid by foreign students. Fees give universities more resources to improve quality and, through competition, help improve the efficiency of higher education which those resources are used for. Furthermore, indirect financing becomes very important issue in a newly intended model of higher institutions funding. In order to outline the potential of foreign students a large international research was carried out to find out the incentives, barriers, preferences and other possible influences for foreign students to come to study in the Czech Republic (in terms of their self-funding). The research addressed more than thousand students in six countries.

The main goal of the above mentioned research on foreign students' willingness to study in the Czech Republic on the self funding principle (or significant tuition fee) was to identify and classify the types of such people and to outline their main characteristics important for future effective contribution to indirect financing. For that purpose different methods of classification were chosen. Two of the algorithms for classification trees – CART and CHAID were used for its evaluation from the group of supervised learning methods. Research results are given both in theoretical and practical areas. The potential financial contribution of foreign students is also demonstrated.

Key Words

classification, economic potential, indirect financing

JEL Classification: H52, I25, M30, O19

Introduction

The crucial issue for most of economies is the transfer into knowledge-based economy. That is why higher education institutions record a large expansion in last decade. On the

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other side, keeping both large and high quality educational system is very fiscally expensive and it has been unsustainable in most countries. The discussion on the most efficient education system has been developing and the need of supplementary financing has arisen. In the same time the understanding higher education to be a public good (without students' contribution) requires a revision.

The higher education belongs to the priorities in the frame of Bologna process and the Czech Republic as a signatory of the Bologna Declaration has joined the idea of creating the common European area of higher education with specified standards. The attractiveness of the European Higher Education has been increasing and has a great potential to attract students from overseas [9].

1. Research objectives

- To advocate the importance of indirect financing (as the idea of considering education to be purely public goods has been weakening)
- To outline the potential of new ways of sourcing for higher education institutions (particularly by "selling" the education programs to foreigners)
- To prove the willingness of foreign students to study in the Czech Republic (based on large international survey)

The main goal of the survey data processing is to determine the dependence of the amount of tuition fees (converted into CZK) which the student is willing to pay for his/her studies in the Czech Republic, on several drivers. The influence of certain basic identifying information, such as the student's country of origin and gender were examined. Also the other drivers influencing the acceptable tuition fee were taken under consideration, as follows:

- Who (what) influences student in deciding whether to travel abroad for the studies;
- What are the student's expectation on his/her studies abroad;
- What is perceived by student as an obstacle to study abroad;
- What are the costs while studying abroad, which the student is willing to accept.

2. Methodology

Data collection was carried out in the period of 04/2010-01/2011. Several Universities in each of the six countries (Belarus, Greece, Russia, Ukraine, Slovakia and China) were visited and questionnaires were distributed with the help of lecturers. Also many interviews were made in order to precise the attitude of foreign students to study abroad (in the Czech Republic). Only data from quantitative research were processed with the usage of statistical methods implemented in the SPSS statistic system. These issues and methods are described in details for example in [3], [4] or [7].

- ANOVA test
- Kruskal-Wallis Test
- Median Test
- Mann-Whitney Test
- Regression Analysis
- Decision Trees (algorithms CHAID, CART)

All the hypothesis tests were conducted at significance level 0.05.

3. Considering education a public good – economic consequences

Education is considered to be a public good, since it usually meets the criteria of being both non-excludable and non-rival [5]. Consensus around the ‘public good’ character of primary and secondary education is overwhelming; as public goods, they must be made equally available to all - they cannot therefore be provided for profit [1].

But this consensus breaks down at the point of higher education. According to standard economic theory, higher education does indeed result in a large surplus of positive externalities, in the sense that the educated person will benefit the society as a whole by producing better goods, providing better services, and paying more taxes [5]. Therefore, unless universal access to higher education is realized, there is a strong rationale for asserting that free higher education may be actually regressive, involving a significant transference of rents from the poor to the wealthy. Except the Scandinavian nations, countries in Europe spend in general between 0.8 and 1.5% of their GDP in subsidizing higher education, with the OECD average situated at 1.3%. Most OECD countries charge nominal fees for public higher education services, while a small number of them allow for a larger contribution from the students [6].

But there has been also another economic theory practising: in USA. In the only country where higher education has never been free, the American public argues that a higher education is a very valuable asset and wants as many people as possible to have access to it. Hart and Teeter [2] conducted a national survey in 2003, and found that public opinion is divided about the status of higher education as a basic right or as something that has to be earned.

4. International survey

This survey should outline the willingness of foreign students to study in Czech (paying tuition fee) and express the economic potential.

4.1 Data – structure of respondents

The research sample consists of 1093 students from 6 countries (Belarus, Greece, Russia, Ukraine, Slovakia, and China). The average age of students is 20.87 years. 62% of respondents are females. Structure of students according to their level of study: 30% of

respondents are represented by students of bachelor level, 56% by students of master level and 14% of respondents study at doctoral level. Also four fields of study are represented: Social studies, Technical sciences, Natural sciences and studies on Art.

4.2 Accepted level of tuition fee

First, the level of tuition fee that the student is willing to pay for studies in the Czech Republic was examined - is it similar or different amount depending on countries of origin of the student.

Amounts of acceptable tuition fee occur to be very similar. As sample the graph (Figure 1) of values stated by students from Slovakia can be presented. Fig. 2 shows the same data after logarithmic transformation. It is evident that the data records approximately the lognormal distribution.

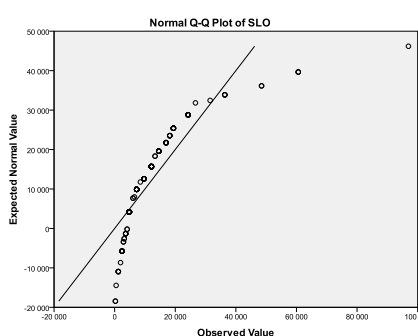


Fig. 1: Normal Q-Q Plot of Slovakia

Source: own

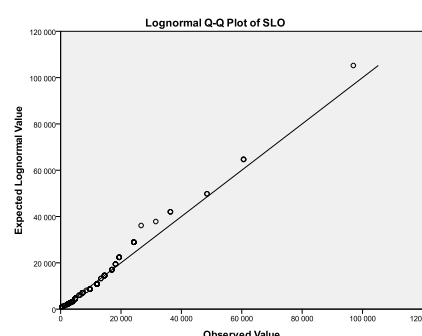


Fig. 2: Lognormal Q-Q Plot of Slovakia

Source: own

The level of variance in each group of the state of origin was not too different. Therefore, in the first phase the method ANOVA was allowed to verify the levels of tuition fee (after logarithmic transformation) in the terms of state of origin. The null hypothesis was formulated as no difference in amounts of tuition fee (willing to pay by foreign students for their studies in the Czech Republic) within each group; in other words – independence. Test results are shown in Table 1. The resulting p-values clearly prove that the null hypothesis was rejected; it means that students from different countries are willing to pay different tuition fees.

**Tab. 1: The result of ANOVA test
(searching the relationship of level of tuition fee and country of origin)**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.594E11	5	1.919E11	15.712	8.83E-15
Within Groups	9.855E12	807	1.221E10		
Total	1.081E13	812			

Source: own

Since the conditions of ANOVA test were not completely satisfied, the result was additionally verified using the Kruskal Wallis nonparametric test and also using the test

to compare medians. The null hypothesis was in both cases formulated as the values identity in different groups. Test results are given in Table 2. The resulting p-values show that the null hypotheses were rejected again; thus the previous result was confirmed.

**Tab. 2: The Kruskal Wallis and Median test results
(searching the dependence of tuition fee amount on the country of origin)**

Kruskal-Wallis Test		Median Test	
CHI	p-value	CHI	p-value
296.307	6.2318E-62	318.08	1.2959E-66

Source: own

This part of the survey results in the fact that students from different countries are willing to pay different tuition fees. The highest amount would be paid by the Chinese students, closely followed by students from Greece. On the contrary, the lowest amount would be paid by students from Slovakia and marginally more students from Ukraine.

4.3 Dependence of tuition fee on gender

Furthermore, the dependence of acceptable level of tuition fees on students' gender was examined. In this case, the Mann-Whitney test was chosen. The null hypothesis in this case was independence of willingness to pay tuition fee on the gender. Test results are shown in Table 3. The p-value demonstrates that the null hypothesis cannot be rejected.

**Tab. 3: Result of Mann-Whitney test
(searching the relation of tuition fee level and gender)**

Mann-Whitney U	133,298.500
Wilcoxon W	364,158.500
Z	-1.315
Asymp. Sig. (2-tailed)	0.189

Source: own

The result of this part of survey proves that students of both sexes do not differ in the amount of tuition fee willing to pay.

4.4 The dependence of tuition fee on other drivers

The following part of the survey was focused on statistical dependence of acceptable level of tuition fee on the other drivers (Who, or what affects the student in deciding whether to travel; What student expect from his/her study abroad; What is perceived by student as an obstacle to study abroad.) For this purpose, the Kruskal-Wallis and Median Tests were used. Results of these tests are summarized in Table 4.

The resulting p-values indicate that the decision on study abroad and on acceptable level of tuition fees depends mostly on the family and pedagogical staff influence.

Furthermore, students are in their decision making affected by the opportunity to improve their language skills, by the chance to acquire work experience (from abroad) and also by gaining the Diploma Supplement (all-Europe recognition). In negative way the acceptable level of tuition fee is interfered with the fear of separation from friends and with the language barrier.

**Tab. 4: Results of Kruskal-Wallis and Median tests
(searching the relation of acceptable tuition fee and other drivers)**

question	Kruskal-Wallis Test		Median Test	
	CHI	p-value	CHI	p-value
15-family	9.830607606	0.0434	11.00494301	0.0265
15-example	6.883056454	0.1422	10.19532294	0.0373
15-staff	15.6785413	0.0035	19.84890014	0.0005
15-media	13.54819165	0.0089	6.469089732	0.1667
16-culture	9.376714799	0.0523	13.07074678	0.0109
16-langua	15.36958979	0.004	21.65624135	0.0002
16-prestig	5.483692695	0.2412	7.01786513	0.1349
16-practice	17.96345757	0.0013	13.33873788	0.0097
16-diplom	9.93869166	0.0415	11.29288298	0.0234
16-job	3.199492824	0.5250	5.712854282	0.2216
16-live	2.409758715	0.6609	3.191380815	0.5263
17-family	2.229029992	0.6937	1.301200215	0.8611
17-friends	10.97936615	0.0268	12.41120044	0.0145
17-country	4.874616897	0.3004	2.782469038	0.5948
17-costs	4.600302626	0.3308	1.96693061	0.7418
17-language	11.711417	0.0196	11.01600837	0.0263

Source: own

In order to determine the highest deviations (on the amount they are willing to pay as a tuition fee) in terms of each driver a classification tree for the explained variable "acceptable level of tuition fees" in CZK was created.(according to [8], [10] or [11]). As the explanatory variables all the observed factors were chosen. Two ways of a decision tree creation were used (CHAID and CART). The quality of the result was better when using the CHAID, see Fig. 3. The tree structure exhibits that the highest acceptable level of tuition fees differs with regard to the possibility of passing the work experience abroad and from the viewpoint of a foreign language improvement (note: also study in English language was considered).

In the next step, we searched for the regression model in which we chose an acceptable level of tuition fee as a dependable variable i.e. the logarithm of this value (variable y). The set of variables contained a country of origin, gender, current level of education, student performance, willingness of students to study abroad, and factors having an impact on student's decision/making (e.g. family, language, promotional materials, etc). All these variables were categorical. Therefore, at first we had to make a conversion of these data on 1-0 dummy variables. To create the model we chose a stepwise regression.

At first, variable containing the linkage to Chinese origin was selected (x_1 , p -value = $1.52 \cdot 10^{-35}$, $I^2=0.17$). In the following step, the variable containing the linkage to Greece origin was added (x_2 , p -value = $3.41 \cdot 10^{-55}$, $I^2=0.26$). Then the Russia variable was added (x_3 , p -value = $6.71 \cdot 10^{-61}$, $I^2=0.29$). The fourth step meant the inclusion of a variable that identified a student with a poor performance (x_4 , p -value = $1.21 \cdot 10^{-61}$, $I^2=0.30$) and in the fifth step, a variable that identified a positive attitude toward studying abroad was added (x_5 , p -value = $8.64 \cdot 10^{-62}$, $I^2=0.31$). In the sixth step, a variable that articulates the fear of language barrier was implemented (x_6 , p -value = $1.43 \cdot 10^{-62}$, $I^2=0.32$), where in the seventh – the last step, a variable expressing a desire for experience abroad came into working (x_7 , p -value = $1.02 \cdot 10^{-62}$, $I^2=0.33$). The follow-up did not assign any other variables to improve the model – the work was completed.

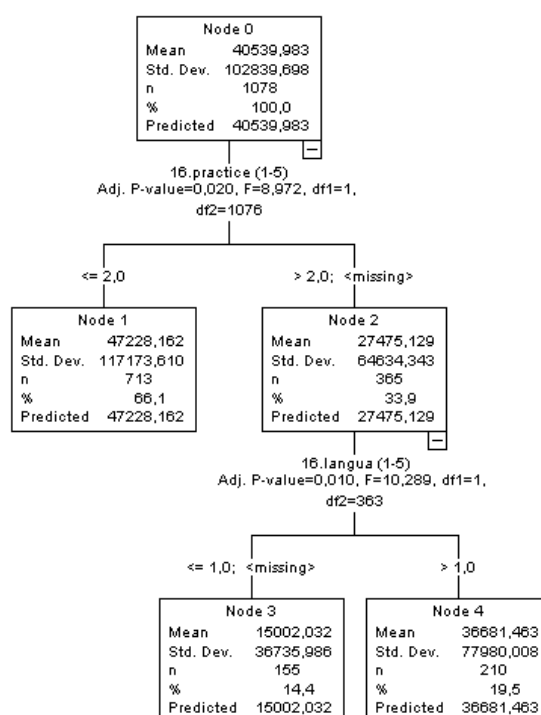


Fig. 3: Decision Tree designed by algorithm CHAID

Source: own

The outcome coefficients adjacent to the variables entering the system, together with the p -values are shown in the Table 5. The resulting model is described by the equation (1). The final values of determination index is only 0.33, it means that the model is not very good.

Tab. 5: Results of stepwise regression

variables		X_1	X_2	X_3	X_4	X_5	X_6	X_7
coefficients	9.068465	1.573944	1.770021	1.087676	-0.45096	0.206072	-0.04477	0.041739
p -value	0	1.29E-60	5.46E-28	2.08E-08	0.003004	0.016141	0.015302	0.047681

Source: own

$$y = 9,068 + 1.574x_1 + 1.770x_2 + 1.088x_3 - 0.451x_4 + 0.206x_5 - 0.045x_6 + 0.042x_7 \quad (1)$$

4.5 Dependence of annual fees on the monthly cost of living

The last part of the research was focused on exploring of relation between the acceptable level of tuition fees and monthly living costs while studying abroad, which the student is willing to take. Both of variables observed are continuous, so a regression analysis was used.

Fig. 4 and 5 presents graphs showing the relationship between these two variables (only those cases where processed where the respondent completed both of them). Table 6 contains the summary results of regression analysis. Correlation coefficient value (0.139121) demonstrates that there is no linear relationship between these variables. More different results were reached neither at polynomial models of a higher degree, nor if an exponential or logarithmic model were considered. Values of determination index ranged from 0.03 to 0.08. Based on these results it can be claimed that there are no dependency between the acceptable amount of monthly tuition fees and living costs while studying abroad.

Tab. 6: Results of linear regression

Regression Statistics	
Multiple R	0.139121
R Square	0.019355
Adjusted R Square	0.018144
Standard Error	114,623.9
Observations	812

Source: own

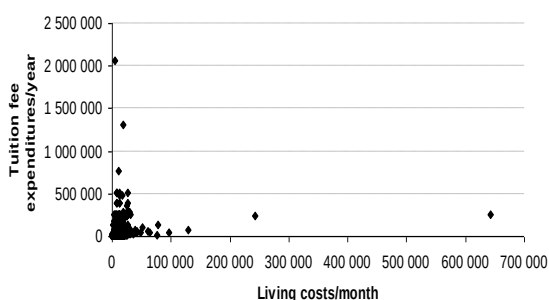


Fig. 4: Displaying data in a common scale

Source: own

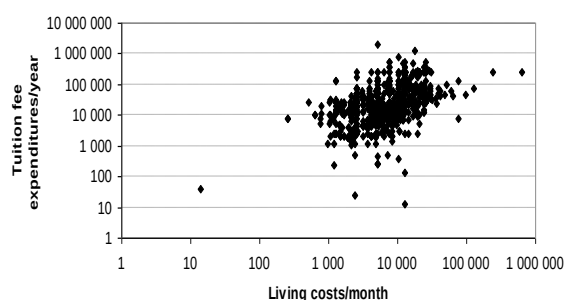


Fig. 4: Displaying data in a logarithmic scale

Source: own

5. Findings

It is necessary to distinguish higher education as the public good and the access to the right; demagogic arguing in this way might lead to the paradox idea that for example access to nutrition is also basic right, thus that it is wrong to charge for food. A brief overview demonstrates that most countries face the issues connecting with the non-sustainability of higher education only tax-financing and in order to keep large educational system the supplementary funding has become a must.

The large international survey on foreign students' willingness to study in the Czech Republic (with tuition fee) clearly proves, that:

1. Students from different countries are willing to pay different tuition fees. The highest amount would be paid by the Chinese students, closely followed by students from Greece. On the contrary, the lowest amount would be paid by students from Slovakia and marginally more students from Ukraine. It is important for the universities to choose the right segment in their marketing effort to attract foreign students;
2. Students of both sexes do not differ in the amount of tuition fee willing to pay. This finding shows that also universities having typically "gender profiled" fields of study have the equal chance to attract foreign students;
3. Student's own family and academic staff has the most important influence on student's decision-making on study abroad;
4. The highest acceptable level of tuition fees differs with regard to the possibility of passing the work experience abroad and opportunity to a foreign language improvement (note: also study in English language was considered). If the higher education institution is able to ensure a work experience for foreign students, it would significantly increase the potential of tuition fee income (paid by foreign students);
5. There is no dependency between the acceptable amount of monthly tuition fees and living costs while studying abroad;
6. The highest barrier for foreign students to come to the Czech Republic is represented by their separation from their friends and also language barrier. Universities should focus on friendly environment when presenting itself and during their acquisition activities.
7. Respondents (candidates to study abroad) would invest most of all into the study of master level; Social Sciences or Art field of study.
8. Amounts of tuition fee foreign students are willing to pay cannot be considered marginal contribution for higher universities indirect financing. For example:
 - more than 10% of all respondents would pay for one academic year of Master level more than 130 thousands CZK;
 - more than 10% of respondents from China would pay for one academic year of Master level even more than 160 thousands CZK.

Conclusion

This paper aims to controvert common attitude that tertiary education is a right and should therefore be financed only from taxation. However, the fact that something is regarded as a right does not mean that it should be solely tax-financed.

To keep both large and high quality educational system is very fiscally expensive and it has been unsustainable in most countries. Czech higher education institutions should reflect the trend of the worldwide collision between expanding tertiary education and fiscal pressures and adopt the idea that the only realistic route by which higher

education could avoid being starved of funds is to supplement public finance on a significant scale by indirect funding.

The large international survey (some results are presented in this contribution) proved the willingness of foreign students to pay the tuition fee for their studies in the Czech Republic so it is just a manner of Czech higher education institutions to take this challenge.

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Methodology of Assessment of Disparities on Municipality Level as a Part of Territorial Planning¹

Abstract

The article is concerned with the issues of quantification of disparities in social and economic development of municipalities. The objective of this article is to devise a methodology of assessment of municipalities which could be employed in the elaboration of economic pillar of territorial analytic data files. In the first part of the article, there are presented varied approaches used by agencies of state administration, Czech Statistical Office and research institutions for measuring of regional disparities. An analysis of these approaches has shown that they are concerned with assessment of larger territorial units, as a rule regions, districts and administrative territories of municipalities with extended competences. The methodology devised in this article is concentrated on the smallest territorial units – municipalities – which constitute basic building blocks of the regions. At the same time, this methodology endeavours to discover strong points and weak spots of municipalities, on which their development plans can be based. The original methodology, elaborated in 2007, was founded on factor analysis of 26 indicators which were reduced to 8 common factors. When updating the data basis of this methodology in 2010, it has been found that certain original indicators are not monitored by the Czech Statistical Office any more. Therefore, we have proceeded to a modification of original methodology in collaboration with the Czech Statistical Office. The updated methodology is based on factor analysis of 33 indicators, 10 of them original ones. The aim has been to find such indicators which do encompass the phenomena monitored originally (territory, population, employment, economic activities and civic amenities), and at the same time, no changes in the sphere of methodology and in the periodicity of monitoring are expected with respect to them in the long term. On the basis of the newly performed analysis it can be stated that the contents of individual factors have not changed in principle. Only the number of factors has been reduced by one, and some factors can be interpreted better and more definitely now.

Key Words

disparity, evaluation methodology, territorial analytic data, economic pillar, districts of municipalities with extended competence, factor analysis

JEL Classification: C38, R15, R58

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Introduction

The assessment of disparities ranges among live problems of regional policy. The disparity can be understood as inequality or dissimilarity of a certain phenomenon. According to Kutscherauer and et al., the regional disparity is a dissimilarity or inequality of features, phenomena or processes which can be defined territorially (they can be allocated in a determined territorial structure) and which occur in two entities of such territorial structure at least [3, p. 6]. Based on a realised literature search, it can be stated that a majority of authors deal with evaluation of disparities on the level of administrative regions (the territorial units NUTS2 and NUTS3 mostly, or LAU1).

On national level, the methodical tools employed for quantification of regional disparities are described in the Strategy of Regional Development which has been elaborated under the direction of the Ministry for Regional Development. According to the currently valid strategy for the years 2007-2013, the regions with concentrated support of the State (segmented into structurally affected ones, economically weak ones and regions with rate of unemployment highly above average) have been defined on the level of districts primarily (according to Eurostat classification, the level LAU1); however, in case of regions with unemployment rate highly above average, the administrative districts of municipalities with extended competences have been evaluated, too. For assessment of regions, four indicators have been employed (rate of unemployment, tax proceeds, number of entrepreneurs and purchasing power) [8, p. 102]. Another subject concerned with the quantification of regional disparities systematically is the Czech Statistical Office, which in the years 2006-2007 elaborated analyses of regional dissimilarities in demographical, social and economic development for individual regions. The assessment was realised for the period 2001-2005 on the level of individual administrative districts of municipalities with extended competences, from the points of view of four problem sectors: Demographical environment and residential structure, Social environment, Economic environment and Infrastructure, location, accessibility and living environment. For evaluation of individual sectors there were used 52 indicators in total, covering all the assessed sectors [1, p.13-14].

On the level of regions, the assessment of territorial units is contained in the respective programs of development as a rule. However, on basis of the performed analysis of regional strategic documents (for details, see [2, p. 57-63]) it is possible to state that the approaches of individual regions are incomparable both from the point of view of territorial definition (there are evaluated micro-regions, administrative districts of municipalities with extended competences, administrative districts of municipalities with commissioned municipal offices, units of the development plan) and of methodical approach (numbers of indicators, manner of aggregated evaluation).

In addition to agencies of State administration, a number of research teams are also concerned with the issues of quantification of regional disparities. For example, the solving team headed by Kutscherauer has proposed a four-level system for monitoring of regional disparities, consisting of 3 spheres, 13 problem units, 46 descriptors and 165 indicators [3, p. 56]. Nevertheless, such a system is too complicated for practical application; therefore, it has been reduced afterward to 14 integrated indicators which

have been used for defining the so-called model regions (for details, see [3, p. 80-84]). Martinčík recommends employing for evaluation of socio-economic level of regions octadekagons consisting of 3 principal areas (macroeconomic output, growth potential and the quality of life), each of them segmented into 7 indicators, with the first and last indicators being common with the neighbouring area. For a definitive comparison of regions there are computed simple averages for individual areas and the overall index for all areas [5, p. 17]. Uramová and Kožiak in their work describe a system for measuring and monitoring inter-regional disparities in Slovakia. The indicators in this system are divided into five main groups: overall characteristics of the region, economic potential of the region, human potential, technical equipment and environment [9, p. 7-8]. The team headed by Labudová proposes for the quantification of socio-economic disparities to take into account – in addition to the usual indicators (rate of unemployment, average income per person, regional GDP) – also the indicators of poverty [4, p. 6].

The above review shows the variety of opinions concerning the issues of assessment of disparities. At the same time, it is possible to state that the prevailing approach is oriented on evaluation of larger territorial units, mainly trying to specify problematic or economically weak regions, with the aim to render them support. On the other hand, the labelling “problem region” has a de-motivating effect; moreover, it can be assumed that any region has got – in addition to its weak spots – also its strong points.

Henceforth, the purpose of this article is to present a methodology of assessment of municipalities, which constitute basic building blocks of all regions (of varied types – administrative, natural, functional, special-purpose ones etc.). The methodology is based on the assumption that there exist no utterly backward municipalities, and that any municipality has its strong points and weak spots, which are to be identified.

1. Original Methodology

The pilot work on the methodology of assessment of socio-economic state of municipalities started in the frame of the project WD-30-07-1 in 2007 already, namely on the level of 216 municipalities of Liberec region. For an analysis of data and mutual relations among an elevated number of indicators, the method of exploratory factor analysis was chosen. The study showed that the level of municipalities in Liberec region can be characterised by means of five common factors, which are able to substitute the original set of 15 indicators (see [7, p. 448]). In the following phase, the analysis was amplified to all 6,240 municipalities of the Czech Republic, and they were characterised by means of 26 indicators chosen in collaboration with the Czech Statistical Office (see table 1, the column of Methodology 2007). The data came from the years 2001-2006. These 26 indicators were reduced to 8 common factors, named as follows: F1 - Unemployment, F2 – Domicile Attractiveness, F3 – Population Density, F4 – Age Structure, F5 – Civil Amenities, F6 – Branch Structure, F7 – Sustainable Development and F8 – Economic Activity. The extracted factors explained 64% of the variance approximately (see Table 2). For the rotation of factors, the Varimax method was chosen. The procedure of the analysis is described more in detail in the book [6].

Tab. 1: Comparison of Indicators used for Evaluation of Municipalities

Code 2007	Code 2011	Methodology 2007	Methodology 2011
BYT01	/	-	proportion of permanently inhabited apartments built before 1945 according to the numbers during the census of people, houses and apartments in 2001
COV05	/	-	existence of canalization with connection to wastewater treatment plants in 2005
DAN06	/	DAMP009	tax yields per 1 inhabitant in 2006
DNEZ06	/	MDNEZ09	long-term unemployment rate on 31/12/2006
EA001	/	PZAM008	proportion of economically active inhabitants to the total number of inhabitants according to the 2001 census
EST06	/	KEKST09	ecological stability coefficient in 2006
EZ06	/	IEZOB09	economic loading of inhabitants index in 2006
HUS06	/	OHUZA09	population density on 31/12/2006
IBV06	/	DBYTV09	housing development intensity in 2006
IOB06	/	-	numbers of inhabitants development index (mean value in 2006 compared to 2002)
IST06	/	ISTAR09	age index in 2006
MIG06	/	IPMPR09	migration index in 2006
NEZ06	/	MRNEZ09	registered unemployment rate in job applicants total on 31/12/2006
PIA05	/	-	availability of gas mains in municipalities in 2005
POB06	/	-	average annual increase in inhabitants during the period of 2002-2006 per 1,000 inhabitants mean value
POD06	/	SPODN09	number of entrepreneurs per 1,000 inhabitants on 31/12/2006
PP01	/	ESPOF09	number of job opportunities in 2001 (according to the census)
PR01	/	SUZEM09	proportion of employment in agriculture, forestry and fishery compared to total employment in 2001
SEK01	/	SUZPR09	proportion of employment in industry and civil engineering to the overall employment in 2001
TER01	/	SUSLI09	proportion of employment in tertiary compared to total employment in 2001
SK005	/	ZAKSK09	number of primary schools per 1,000 inhabitants in 2005
TLK06	/	MTLPM09	job pressure rate on 31/12/2006
VEK06	/	PVEK09	average age of inhabitants of municipalities in 2006
VOD05	/	-	availability of water mains in municipalities in 2005
VZD01	/	-	education index in 2001 according to the census
ZZ05	/	PRLEK09	number of medical facilities in 2005 per 1,000 inhabitants
-	/	SHUZA09	indicator not used
-	/	AMNEZ09	indicator not used
-	/	HMR0Z09	indicator not used
-	/	POMSP09	indicator not used
-	/	OPRVU09	indicator not used
-	/	PDBRD09	indicator not used
-	/	POBPL09	indicator not used
-	/	KAHUZ09	indicator not used
-	/	HOPEN09	indicator not used
-	/	AMBUL09	indicator not used
-	/	PFARM09	indicator not used
-	/	MATSK09	indicator not used
-	/	STRSK05	indicator not used
-	/	VOIBY10	indicator not used

Source: prepared by author

In the subsequent phase, the municipalities have been divided into sextiles according to the values of factor scores; the first sextile encompassed the municipalities with worst evaluation in the concerned factor, and on the contrary, the last sextile these with best evaluation. The values of factor scores have been transferred into maps by means of GIS tools; in this manner, there have been defined visually the areas with analogous assessment in the respective factor. Consequently, it is possible to state that there have been identified the areas which stand up to similar problems, or which are exceptionally successful in the concerned factor. Moreover, for each factor there has been determined the limit of low dynamic development; with the factors of minimising type, it is on the level of the last positive value in the top-down list of municipalities classified according to factor score, and to the contrary, with the factors of maximising type on the level of the last negative value of factor score. In order to visualise the ranking of a municipality in each factor, spider charts have been used. A spider chart allows pointing out strong points and weak spots upon which the municipality ought to concentrate in its program of development. In combination with cartograms, it is also possible to define problematic communities in the administrative district of a municipality with extended competences from the point of view of individual factors.

2. Updated Methodology

The objective has been to devise a methodology which will be easy to update. Henceforth, emphasis has been laid on employment of the data generally available from CSO. In 2010 we have set about updating the data base. Nevertheless, on the basis of consultations with the CSO it has been found that with a number of indicators, the methodology and periodicity of monitoring have changed since the moment of execution of the previous analysis, or that the concerned indicator is not monitored any more or the data are not accurate (it concerns the indicators COV05, PL05, VOD05). Moreover, the original methodology employed a number of indicators from population census carried out in 2001 (BYT01, EAO01, PP01, PRI01, SEK01, TER01, VZD01), which in 2010 were obsolete already, and the updated data will be known only after the population census carried out in 2011 (i.e. in the second half of 2012 at the earliest). Therefore, there have been sought alternative indicators which are monitored by CSO with shorter periodicity and which are able to characterise the monitored phenomenon, even if with a certain limitation. For example, the original indicator “proportion of employment in industry and civil engineering to the overall employment in 2001” has been substituted by the indicator “proportion of the active subjects in industry to the overall number of active economic subjects on Dec 31, 2009.” The updated data base numbers 33 indicators (see Table 1), because some additional indicators have been available, in particular from the areas of school system, public health, housing development and entrepreneurial activities. From the original methodology, 10 indicators have been left only after the updating.

For processing the data, factor analysis has been employed again. Based on an analysis of the variance, 7 factors have been extracted in 2011, explaining about 61% of the variance in original data. The eigenvalues, and consequently, the order of factors extracted in 2011 have not agreed with the results of 2007. However, to allow for clear

arrangement, the Table 2 shows the results for 2011 from the standpoint of contents of individual factors; e.g. the factor F5 encompasses approximately the same indicators in both monitored periods, but in 2011 it has explained the highest proportion of the variance, and therefore, it has been the first one to be extracted.

Tab. 2: List of Factors

Factor	Methodology 2007			Methodology 2011		
	Eigenvalues	% of Variance	Cumulative % of Variance	Eigenvalues	% of Variance	Cumulative % of Variance
F1	4.33	16.65	16.65	3.17	11.74	11.74
F2	2.76	10.60	27.25	1.91	7.09	18.83
F3	2.51	9.66	36.91	1.15	4.27	23.10
F4	1.90	7.32	44.23	1.72	6.36	29.46
F5	1.62	6.22	50.45	4.87	18.05	47.51
F6	1.23	4.71	55.16	1.22	4.53	52.04
F7	1.15	4.44	59.60	-	-	-
F8	1.06	4.08	63.68	2.36	8.73	60.77

Source: prepared by author

The factor “**unemployment**” has been filled by indicators coincident to a large degree in both monitored periods (see tab. 3). The indicator VZD01 has not been monitored in 2011 because of above mentioned reasons. On the other hand, the indicator VOLBY10 has proved to be statistically significant newly, so that it is possible to reason that the poll is related with the rate of unemployment in the municipality.

The factor “**domicile attractiveness**” encompasses similar phenomena in both periods – housing development, natural and migration increase of the population. The index of development of the number of inhabitants has not been monitored anymore; on the other hand, the indicator of average age has proved significant newly. It stands to reason that it is related with the development of the number of inhabitants. Consequently, from this point of view there is no important change in the interpretation of this factor.

In case of the factor “**population density**”, a considerable change has occurred. The original factor from 2007 encompassed – in addition to the characteristic of population density – also the employment in primary and tertiary sectors, education of the population and to a certain degree, also the equipment of the municipality with technical infrastructure. Therefore, it was conceived much more widely than the factor in new methodology, which is filled significantly with the indicators of population density only, because of leaving out the indicators based on the population census in 2001. On the other hand, the “narrower” factor can be interpreted better.

With the factor “**age structure**” two indicators have come to coincide – the index of economic loading of inhabitants and the average age. The economic activity measured by the alternative indicator PZAM008 is not included in the new factor any more. Newly there figure the indicators MATSK09 and POBPL09, which nevertheless are related with the age structure. It stands to reason that the existence of a nursery school in the municipality is related with the age structure; as concerns the dwelling area, it can be

assumed that it depends on the type of household (pensioners, families with children), and in the consequence with the age structure of population of the municipality, too.

The factor “**civil amenities**” is fed in both the cases with indicators that characterise the existence of education and health care facilities in the concerned municipality; in case of methodology 2011, a higher number of indicators have been available. The original factor from 2007 was also influenced by the equipment with technical infrastructure (gas, water, sewerage). However, no correct source of data for indicators of technical infrastructure is available at present, and therefore, they have been left out of the analysis. The new factor also encompasses the data of accommodation capacities – which can be considered a part of civil amenities – and specific density of population. Concerning the density of population, the connection with civil amenities is evident, because education and health care facilities are more concentrated in larger residential units usually.

The factor “**branch structure**” has undergone minute changes only. In the original methodology, it comprised the indicators characterising the proportion of employment in secondary and tertiary sectors. In the updated methodology, it encompasses the indicators characterising the proportion of subjects active in agriculture, forestry and in service sector to the overall number of economic subjects.

The original factor “**sustainable development**” has not been defined any more. In the original methodology, it was influenced by the indicators of ecological stability, density of population, availability of gas mains and entrepreneurial activities, i.e. indicators with impact on the living environment. However, this indicator proved to be difficult to interpret in practice, and hardly understandable for the public, for details see [10, p. 371]. In the factor analysis carried out in 2011 no analogous factor has been extracted. Instead of it, there could be extracted in the eighth position a factor composed by the indicators KAHUZ09, VOLBY10, HMROZ09 and OPRVU09, the interpretation of which is however very difficult. Because of the above reasons, the original factor will not be employed in practice any more, nor will it be replaced with a new one.

The composition of the factor “**economic activity**” has changed partly. The original factor reflected tax proceeds per inhabitant, numbers of job opportunities in the municipality and partly, the equipment with technical infrastructure, too. The newly defined factor is influenced in particular by the indicators which are connected with entrepreneurial activities in the municipality. In comparison with the original factor, its interpretation is more definite. In connection with its interpretation, it could also be called the factor of entrepreneurial activities. Nonetheless, owing to the fact that the original methodology has become common already, it has been decided to maintain the original name.

Tab. 3: Comparison of Factors Contents

Factor	Methodology 2007	Methodology 2011
F1	DNEZ06, NEZ06, TLK06, VZD01	MDNEZ09, MRNEZ09, MTLPP09, VOLBY10
F2	IBV06, IOB06, MIG06, POB06	DBYTY09, IPMPR09, PVEKC09, POBPL09
F3	COV01, HUS06, PRI01, TER01, VZD01	OHUZA09, SHUZA09
F4	EA001, EZ06, IST06, VEK06	MATSK09, PVEKC09, IEZOB09, POBPL09
F5	BYT01, COV05, HUS06, PL05, SKO05, VOD05, ZZ05	HOPEN09, PRLEK09, AMBUL09, PFARM09, MATSK09, ZAKSK09, STRSK09, SHUZA09
F6	SEK01, TER01	SUZEM09, SUSLU09
F7	EST06, HUS06, PL05, POD06	---
F8	COV05, DAN06, PP01	SPODN09, KAHUZ09, ESPOP09

Source: prepared by author

Conclusion

Based on the updating of the data base carried out in 2010 and the subsequent analysis in 2011, it is possible to state that the original methodology of assessment of socio-economic state of municipalities from 2007 has proved able to be employed in practice even in case of changes of the data base. However, the data base employed for the analysis in 2011 has been chosen already so as to facilitate an easy updating of the data. Therefore, such indicators have been chosen in collaboration with CSO with respect to which no principal changes are expected in their monitoring in the long term. On the other hand, such approach required a two-stage assessment of the state of the municipalities. In the first stage, the signal indicators are defined (in compliance with the updated methodology presented in this article), by means of which the basic state of the municipality is evaluated. These indicators are based on official data of CSO. Afterwards, this part is followed up with local complementary investigation, in the frame of which there are assessed other indicators, not available on the central level, or available with a low degree of reliability. In particular, this category of indicators comprehends the data of equipment of municipalities with technical infrastructure (water, gas, sewerage, sewage water treatment plants, electric power), of the economic subjects in the municipality (the domicile of a firm and its factual place of activities do differ often) and the catchment areas of civil amenities (commutation to schools and public health facilities situated outside the municipality, and their distance). The local complementary investigation is to be carried out in the form of field surveys in municipalities directly, e.g. in the frame of elaborating the territorial analytic data files.

A complex assessment of strong points and weak spots of a municipality can be made therefore only on the basis of confrontation of hard statistical data and soft factors, ascertained on the spot. The evaluation of social, economic and environmental pillars on municipality level then serves as departure point for an analysis of development potential of the whole territory – administrative territory of a municipality with enlarged competitions.

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