EBER
Entrepreneurial Business and Economics Review
ISSN 2353-883X eISSN 2353-8821 2014, Vol. 2, No. 2

Globalisation of Economies and Industries

edited by
Radosław Rybkowski
Krzysztof Wach

Centre for Strategic and International Entrepreneurship
Faculty of Economics and International Relations
Cracow University of Economics

EBER

Entrepreneurial Business and Economics Review

ISSN 2353-883X eISSN 2353-8821 2014, Vol. 2, No. 2

Globalisation of Economies and Industries

edited by
Radosław Rybkowski
Krzysztof Wach

Centre for Strategic and International Entrepreneurship
Faculty of Economics and International Relations
Cracow University of Economics

Abstracting/Indexing:

All articles are double-blinded peer-reviewed and their summaries are abstracting in international databases, including BazEkon, Google Scholar, IC Master Journals List.

Original Version

The printed journal is the primary and reference version.
Both printed and online versions are original and identical.

ISSN 2353-883X (printed version)
eISSN 2353-8821 (online version)
ISBN 978-83-939576-5-1 (book)

Publisher

Cracow University of Economics
Faculty of Economics and International Relations
Centre for Strategic and International Entrepreneurship
ul. Rakowicka 27, 31-510 Kraków, Poland
phone +48 12 293 5376, -5327, fax +48 12 293 5042
e-mail: eber@uek.krakow.pl
www.eber.uek.krakow.pl

Printing and Bounding

Drukarnia K&K Kraków
www.kandk.com.pl

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

Thematic Issue Published also as the Monograph

Globalisation of Economies and Industries
edited by
Radosław Rybkowski & **Krzysztof Wach**

Table of Contents

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

Editorial: Globalisation of Economies and Industries

Globalisation as the widespread political, economic and cultural process has become a highly popular research topic since the end of the 20th century. The advancement of international regulations, the emergence of such institutions as the World Trade Organization (WTO) and the improvements in transportation as well as information and communication technologies (ICTs) have made states (with their political regimes, economies and cultures) interdependent to a scale never heard before. Therefore, we might think that we live in a unique and special moment.

On the other hand, however, we should remember that our post-World War II history has been founded on the principle of interdependency and international collaboration. The Preamble to the Charter of the United Nations signed in San Francisco stated that some of the ultimate goals of the organization were: "to promote social progress and better standards of life in larger freedom" and "to employ international machinery for the promotion of the economic and social advancement of all peoples". Of course, in 1945 no one could have considered signing the Charter as the beginning of the process of globalisation, but it is worth to remember that investigating economy always calls for broader perspective.

At the beginning of the 21st century we also experience some drawbacks of globalisation. Yes, it "promotes economic and social advancement", but the progress is not evenly distributes and not "all peoples" enjoy the benefits of globalisation. Growing interdependency has also brought greater competition, this time reaching much further that just neighbouring countries. "Competing with everyone from everywhere for everything", as says the title of the book published quite recently, cannot be beneficial for all nations and all people (Sirkin, Hemerling & Bhattacharya, 2008). After joining the European Union, the economies of Central and Eastern Europe have become even more exposed to the economic and market challenges of global scale (Klich, 2013; Szarucki, 2013). Therefore, we decided to focus this issue of our journal on exploring the **Globalisation of Economies and Industries**.

Martin Gjelsvik in the article, *Capabilities for innovation in a globalizing world: from nearby or at a distance?*, investigates innovation capabilities of Norwegian firms in the context of their global and/or local activity. While employing the concept of clusters, the author comes to rather astonishing conclusions: regional clusters sometimes might slow down technological advancement of businesses.

Robert Włodarczyk in the article, *Is there a global currency war?*, focuses on the issue that might define both positive and negative outcomes of globalisation. States with powerful economies, thanks to their national banks, can use exchange rates of national

currencies as an efficient means of securing and promoting economic growth. Such actions have a tremendous impact on weaker economies that do not have enough resources to react to hostile actions of the powers.

Eduard Nežinský and Elena Fifeková in their paper of simple and promising title, *The V4: A Decade after the EU entry*, explore that impact of EU enlargement and regulations adjustments on the technological change and economic catch-up of the Visegrad group countries. The authors suggest, employ, and test interesting tools for assessing and evaluating the pace of economic progress of the V4 states.

Implementation of international standards for environmental management in Visegrad countries: a Comparative analysis by Maria Urbaniec focuses on the issue already mentioned in Nežinský and Fifeková's text: ecoeffciency of enterprises in V4 states. Environmental management is a special field of investigations because it combines global influence of International Organization for Standardization (with famous ISO 14000 standards) and EU voluntary regulations. The author compares the impact both solutions have on V4 companies and managerial approach.

Monika Płaziak and Anna Irena Szymańska present *Construction sector in the Czech Republic and Poland—Focus on the housing segment in selected regions*. As the authors rightly point out, the global 2008 crisis had a tremendous impact on construction sector in the Czech Republic and Poland. However, both countries performed in a bit different way during post-2008 period, therefore the analysis of Płaziak and Szymańska looks for the explanation of the difference.

Alternative approaches in evaluating the EU SME policy: Answers to the Question of Impact and Legitimization by Robert K. Gruenwald explores one of the key components of EU economic policies. While small and medium enterprises have become an important issue in the context of globalisation, it is still not resolved how to evaluate the effects of adopted policies. The answer to such a question is vital for assessing and adjusting the economic policy.

We do hope that the articles presented in this issue will inspire further research. Moreover, we would be happy to publish the results of future studies in the upcoming issues of our Journal.

Radosław Rybkowski
Krzysztof Wach
Issue Editors

REFERENCES

Klich, J. (2013). Editorial: Modern Challenges for International Business in Europe. *Entrepreneurial Business and Economics Review, 1*(2), 5-6.

Sirkin, H., Hemerling, J. & Bhattacharya A., (2008), *Globality: Competing with Everyone from Everywhere for Everything.* New York NY: The Boston Consulting Group Inc.

Szarucki, M. (2013). Editorial: Modern Challenges for Business and Economy in CEE Countries. *Entrepreneurial Business and Economics Review, 1*(4), 5-6.

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

Capabilities for Innovation in a Globalizing World: from Nearby or at a Distance?

Martin Gjelsvik

A B S T R A C T

Objective: This paper addresses the question of how clustering affects firms' capabilities to innovate.

Research Design & Methods: This paper uses a specifically tailored survey carried out in 2013 of the geographical distance and scope of collaboration for innovation of 2002 firms located in the four largest Norwegian city-regions with the rest of the country as a separate category.

Findings: We find that a majority of firms are located in regional clusters. However, the number of international relations increases the capacity to innovate. An international business environment stimulates the capability to innovate more than being part of a regional cluster.

Implications & Recommendations: Firms that successfully develop global pipelines to knowledge sources in distant locations often sidestep the risk of lock-in, associated with relying solely on local sources of information (Malecki, 2010; Fitjar & Rodríguez-Pose, 2011).

Contribution & Value Added: Our findings suggest that caution should be exercised when invoking the concept of regional clusters to explain or define regional competitiveness. The cluster model obviously assigns too much importance to the regional business context, and to local interaction and externalities. These findings suggest that policies to advance the capabilities to innovate in Norwegian firms and regions may need to be revised.

Article type: original research paper
Keywords: Innovation; globalization; clusters; Norway
JEL codes: O31, O32; Q55

Received: 7 February 2014 Revised: 1 May 2014 Accepted: 15 May 2014

The author acknowledges financial support from the Research Council of Norway.

Suggested citation:
Gjelsvik, M. (2014). Capabilities for Innovation in a Globalizing World: from Nearby or at a Distance?. *Entrepreneurial Business and Economics Review, 2*(2), 7-19.

INTRODUCTION

In economic geography the traditional view has been that physical proximity within city-regions and being part of an industrial cluster are keys for the innovative capacity of firms. This view is echoed in the management literature which holds a strong belief in the concept of regional clusters. Clusters have been defined as "geographical concentrations of interconnected companies and institutions in a particular field" (Porter, 1998). According to Porter, being localized in a cluster improves competitiveness by reducing transaction costs and increasing the flow of information, allowing firms easier access to specialized suppliers and employees; and by increasing firms' capacity for innovation and productivity growth. However, in a globalizing world the superiority of local clusters should be questioned. In line with this, the literature on global pipelines has been stressing the importance of establishing communication channels to the outside world (Bathelt *et al.*, 2004). This paper addresses the question of how clustering effect firms' capabilities to innovate.

OECD advocates local clusters, arguing that "clusters create an environment conducive to productivity gain, which are a factor of growth, and so form a structure that helps enterprises meet the challenges of international competition" (OECD, 2009). However, extensive overlaps of knowledge among partners may constrain the potential for innovation, especially in small and homogeneous regions (Fitjar & Rodríguez-Pose, 2011). Moreover, local sources of knowledge may not be fully updated, and distance related disadvantages may be mitigated through temporary proximity such as conferences and exhibitions. In other words, the superiority of regional clusters may be questioned in a globalizing economy. From the reasoning above, we question whether empirical innovation studies have kept pace with the fast changing economy, in this case the globalization of knowledge, value chains and labor markets. Have the ways to organize innovation processes changed in line with the way the economy and society has evolved? How do regional, national and international flows of knowledge affect the capacity of firms to innovate? These are vital issues in the discussion of Norway's future beyond oil and for the rest of Europe's efforts to cut loose from the recession.

LITERATURE REVIEW

Economists, sociologists, economic geographers, management researchers and policy makers have all taken a renewed and increased interest in the study of clusters since the 1990s. Evidence is abundant both in books and articles (Porter, 1990, 1998; Krugman, 1991; Saxenian, 1994; Baptista & Swann, 1998) and publications of international organizations (World Bank, 2000; OECD, 2009). In the literature the work of Marshall (1920) is recognized as the point of departure for the discussions on the impact of clusters. He argued that a concentration of small businesses of a similar character in particular localities ("industrial districts") generates external economies of scale. These economies are external to the firm but internal to the localization, and increase the efficiency of each individual firm. He further proposed that externalities could take several forms: economies of specialization arising from inter-firm division of labor in complementary activities; economies of labor supply arising from the local pool of

specialized labor; and the promotion of innovation and innovation diffusions arising from the mutual knowledge and trust through frequent interchange among the actors in the area (Marshall, 1920; Rocha, 2004). Marshall linked his macro-analysis of growth to his micro analysis of increasing returns to firms due to the external economies created within the district.

Piore and Sabel (1984) advanced the term "flexible specialization" to argue that small innovative firms are an alternative to the mass production model and its dependence on large corporations. In other words, they associate their flexible specialization model to the vertically disintegrated smaller firm in industrial districts. Their contribution to the evolution of the cluster concept is that the industrial district is an important spatial manifestation of the flexible specialization model. The benefits of inter-firm collaboration and trust gives rise to the spatial agglomeration (Rocha, 2004).

About the same time another perspective emerged: the transaction cost view of clustering. The theory of transaction costs was originally advanced by Oliver E. Williamson (1975, 1985) to predict the relative merits of firms, markets and relational contracts. This perspective was introduced to studies of the industrial geography of Southern California and The Bay Area (Storper & Scott, 1989). The argument is that uncertainty is mitigated by outsourcing activities leading to a vertical disintegration of production chains. However, this disintegration does not come without costs, as it leads to increased transaction costs among the specialized firms. To minimize these inter-firm transaction costs, firms cluster geographically (Scott, 1988; Storper, 1997).

In the two recent decades, two historical features may have extended the importance of the cluster perspective: the globalization processes, including the emergent economies; and radical and fast technological advances. At first glance, this extensive interest in cluster formation seems counter intuitive in the context of globalization which reduces transportation and communication costs. To solve the paradox, it is useful to distinguish between traditional and modern theories of trade. The influential traditional model of Heckscher–Ohlin (1991) builds on David Ricardo's theory of comparative advantage by predicting patterns of commerce and production based on the factor endowments of a trading region. The model essentially says that countries will export products that use their abundant and cheap factor(s) of production. The principle of comparative advantage states that countries, or regions, with dissimilar resource endowments will exchange dissimilar goods. In other words, head-on competition is limited. Later theories take as a vantage point that countries actually exchange very similar products (Storper *et al.*, 2002) which are based on knowledge-intensive activities (Dunning, 1998). This is partly explained by consumer preferences for diversity. This development causes intensified competition which calls for innovation, quality and dynamic capabilities in firms. In other words, competitive advantage stems from the rate of learning and the capacity for innovation, rather than low cost.

Globalizing forces trigger the clustering of economic activity via the concentration of innovation, making regions a key source of advantage. In sum, this process relies on competitive advantage, external economies, increasing returns no scale and non-economic factors, rather than comparative advantage, low cost and perfect competition (Rocha, 2004). In contrast to most treatments of competitiveness, which concentrate either on macroeconomic policies or on comparative advantages, Porter takes a different

approach, arguing that the competitiveness of locations is primarily rooted in the nature of the business environment they offer firms (Martin & Sunley, 2011).

Michael Porter has developed these perspectives on competitiveness further. He proposes a framework to analyze firm productivity and innovation capability in which location is a main source of competitive advantage within the context of a globalizing economy. Porter defines clusters as "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities" (Porter, 1997, p. 199). According to Porter, being localized in a cluster improves competitiveness by reducing transaction costs and increasing the flow of information, allowing firms easier access to specialized suppliers and employees; and by increasing firms' capacity for innovation and productivity growth. Porter argues that productivity and innovativeness are outcomes strongly influenced by the quality of the business environment, which in turn is developed through the interaction and dynamism between four factors: factor conditions; demand conditions, related and supporting industries and institutions; and the context for firm strategy and rivalry. These four primary facets constitute his so-called diamond model in which they are regarded as a spatial manifestation of the diamond's interactions and are held to affect competition in three broad way: "(…) first by increasing the productivity of constituent firms or industries, second by increasing their capacity for innovation (…) and third by stimulating new business formation that supports innovation and expands the cluster" (Porter, 1998, p. 213). This dynamic interaction leads to constant improvement and upgrading, which are the main mechanisms why competitive advantage is sustained over time.

Porter's approach provided three critical innovations (Ketels, 2011). First, he stressed the benefits of the dynamic interactions between the different elements in affecting the value creation potential of a company through productivity gains and innovations. Access to better skilled employees through a local labor market or university becomes an asset when market conditions create an incentive for firms to use these capabilities. Second, he introduced demand conditions as a critical influence on the value generation capabilities of firms within a location. According to Porter, a demanding market pushes firms to develop new and better products and services. Third, he acknowledges the role of related and supporting industries and institutions that contribute to the innovative capability of a firm by offering easy access to specialized inputs.

MATERIAL AND METHODS

In order to discuss the role of regional clusters, a survey was conducted in the spring/summer of 2013 of firms located in the four largest city regions of Norway. Data collection was administered by a professional firm (Ipsos MMI), and took the form of telephone interviews with the chief executives of the firms. The respondents were asked to take part in a subsequent web-survey.

The top managers were chosen for several reasons. As reported below, most Norwegian firms are small; the median in our sample has 23 employees. This gives us reason to believe that the chief executive has the best overview of the issues and questions at hand. Furthermore, Porter's work on clusters has been unique in capturing the imagination of business managers (Ketels, 2011). Their interest is partly driven by the

fact that Porter connects his findings on clusters and competitiveness with key strategic issues that executives face. When contemplating their strategies on innovation capacity and responsiveness to globalizations, executives often invoke the concept and drivers of clusters. Globalization has changed the relevance of location for competition by exposing companies, directly or through the rivals or support organizations they face, to a much broader set of different business environments (Ketels, 2011). Companies have responded by reorganizing their geographic footprint of their value chains (Baldwin, 2006). The cluster framework provides them with a tool to think about these choices and evaluate potential locations in relation to relevant clusters. Positioning the company in relation to the competition, customers, advanced suppliers, relevant skills and research institutions is a strategic issue on which the chief executive is influential. Consequently, his or her opinion on the whereabouts of these actors may determine the location of the firm. Hence, using the chief executive as respondent is highly beneficial.

Combined, the four regions make up about half of Norway's population. We added a "rest category" of firms located outside these urban agglomerations in order to differentiate between agglomeration effects and cluster effects. The Oslo region (the capital) is by far the largest with its 1.4 million inhabitants, while Bergen, Trondheim and Stavanger are in the range between 300 000–400 000. The survey was based on a questionnaire incorporating questions from the Community Innovation Surveys (CIS), and further expanded by including questions on the location of partners (inside or outside the region) and whether or not the firm is part of a regional cluster. Firms with more than ten or more employees were randomly sampled from the Norwegian Register of Business Enterprise, which by law lists all firms in Norway. A city region comprises municipalities where ten present or more of the population commutes into one of the four cities. The data set includes 2002 responses.

Norway is an interesting case in the discussion of the geography of partners and clusters. Innovation has become an increasingly important driver of competition, especially in a high cost and high income country such as Norway. For a small and open country, the cluster framework provides a natural context in which to think about how to engage with open systems of innovations (Chesbrough, 2003).

Norwegian firms tend to pursue collaborative innovation strategies, investing less in intramural R&D and interacting more with external partners than firms in most other European countries (Fagerberg *et al.*, 2009). A recent trend has been to pursue regional innovation policies, including the establishment of several instruments aimed at promoting regional growth through regional clusters (Hanssen *et al.*, 2011). In addition, local governments in many regions have established joint development agencies to promote innovation and growth within the city-regions (Farsund & Leknes, 2010). These agencies have prioritized cluster-based policies to foster innovation and competitiveness.

All the four city regions have one or more universities that are expected to contribute to regional development in their respective regions through research and education as well as direct collaboration with businesses. Each region also hosts one or more research institutions that conduct applied research, often on contracts for private companies. These institutions fill an important function in the Norwegian innovation system both in their own right and as a bridge between industries and universities (Hatakenaka *et al.*, 2009).

In addition to these policy initiatives from both central and local governments, Norway has a trust-based business culture, an efficient basis for the transfer of tacit knowledge, a vital asset for regional clusters. On the other hand, Norway is a small country with small regions and an open economy, which caters for building firms' innovative capacity from external interaction.

Table 1 offers the descriptive data for the firms in the sample, including industrial sector, ownership, size, education level and location.

Table 1. Descriptive data on the firms included in the sample

Sector	Number of firms	% of sample
Mining/quarrying	32	1.6
Manufacturing	339	17.4
Elec./gas & water supply	56	2.9
Construction	341	17.5
Wholesale/retail trade	402	20.6
Transport and storage	115	5.9
Food service and accommodation	153	7.8
Information and communication	122	6.3
Financial services	80	4.1
Other services	312	16.0

Dependence (capital group)	Number of firms	% of sample
Parent	59	1.6
Subsidiary	352	17.6
Independent	1591	79.5

Ownership	Number of firms	% of sample
Norwegian	1666	83.2
Partly foreign	71	3.5
Fully foreign	265	13.2

City region	Number of firms	% of sample
Oslo	501	25.0
Bergen	308	15.4
Trondheim	234	11.7
Stavanger	351	17.5
Rest of Norway	608	30.4

Variables	Mean	Median	Standard deviation
Number of employees	71.8	23	333.5
% university educated	28.9	15	30.2
% R&D expenditure	3.4	1	8.5

Source: own study (n = 2013).

In accordance with the well-established CIS questionnaire on capturing the innovative capacity of firms, respondents were asked whether their firms had introduced any new and/or significantly improved products during the last three years. They were also asked if these products were new to the market, in which case they are classified as radical product innovations; or new to the firm. The latter is usually regarded as more incremental. Similarly the measure of innovation process was based on a question about

whether the firm had introduced any new and/or significantly improved methods or processes for production or delivery of products during the last three years. If these new processes were new to the industry, they were classified as radical process innovations. Table 2 presents the share of firms surveyed which reported innovation within the respective categories.

The table shows some differences between the city regions. The capital Oslo and the "oil capital" Stavanger host the most innovative firms, with Bergen as a close third. Firms residing outside the four urban agglomerations tend to innovate somewhat less than firms in the city region.

Table 2. The share of firms having introduced innovations (in %)

Regions	Product Innovations		Process Innovation		Number of firms
	Total	Radical	Total	Radical	
Oslo	56.5	33.3	41.9	15.4	501
Bergen	53.6	26.6	45.5	16.9	308
Stavanger	56.7	33.3	46.2	16.5	351
Trondheim	46.2	28.6	47.0	17.9	234
Rest of Norway	47.5	21.7	41.0	12.2	608
Total	52.2	28.2	43.5	15.1	2 002

Source: own study (*n* = 2013).

The concept of clusters is operationalized and measured based on Porter's so-called diamond model (Porter, 1990). In this model Porter identifies four sets of determinants of national or regional advantage: (a) factor conditions, (b) demand conditions, (c) relating and supporting industries and institutions, and (d) firm strategy, structure and rivalry. Factor conditions refer to the availability of resources and skills necessary for competitive advantage. The quality and the relevance to the firm of the regional labor market are vital in this respect. Related and supporting industries and institutions concern the presence in the region of suppliers that are internationally competitive and institutions such as financial institutions, universities and research institutions. These may aid firms in their innovative efforts by helping firms perceive new methods and opportunities. In the case where the most advanced and demanding customers are located in the region, the firms meet a pressure to improve and innovate, especially when combined with a vigorous domestic rivalry.

Table 3. The extent of regional clusters – the regional share of six factors (in %)

Variables	Oslo	Bergen	Stavanger	Trondheim	Rest of Norway
Demanding customers	57.9	64.9	74.4	73.5	60.0
Advanced suppliers	35.9	49.1	47.4	51.1	31.0
Toughest competitors	66.6	59.7	58.8	63.3	53.6
Most qualified employees	76.8	70.9	71.4	79.6	79.0
Most relevant research institutions	48.9	38.2	42.9	73.5	18.6
Access to capital	65.9	66.7	66.7	67.4	67.2
Average	58.7	58.3	60.3	68.1	51.6

Source: own study (*n* = 2013).

The issue is whether or not the focal firm is located within a regional cluster. In accordance with Porter's theory, we asked the managers where (region, nation, international) the following actors are located: the most demanding customers, the most advanced suppliers, the toughest competitors, the most qualified employees, the most relevant research institutions, and where they access capital. In other words, six items are used to capture the existence of clusters as experienced by the managers of the firms. Table 3 shows to which extent (the share of) these six factors are located regionally.

The table indicates that a share between 58% and 68% of the firms based in the four respective regions report positively being part of a regional cluster, measured by the six items derived from Porter's diamond model. Qualified employees are most often found locally, advanced suppliers to a lesser extent. Not surprisingly, firms outside the urban agglomerations report to a lesser extent the existence of a local cluster. There are only minor differences between the city regions, with the exception of Trondheim. Trondheim hosts a polytechnic university and the largest research institution in Norway; hence the firms located there benefit both from local research and qualified employees.

RESULTS AND DISCUSSION

Having established the prevalence of regional clusters, we next move to the main concern of this paper: do regional clusters promote innovation more efficiently in firms? We approach the issue by presenting some descriptive statistics first. The table 4 shows the share of firms having introduced new or significantly improved products and where the cluster factors are located.

Table 4. The effect of clusters on product innovation: share of firms having introduced new or significantly improved products (in %)

Variables	Regional	National	International
Demanding customers	55.4	65.7	73.0
Advanced suppliers	46.1	62.2	77.8
Toughest competitors	51.6	69.0	80.0
Most qualified employees	56.9	75.0	55.9
Most relevant research institutions	52.8	63.8	75.5
Access to capital	55.5	64.9	75.9
Average (un-weighted)	53.1	66.8	73.0

Source: own study (n = 2013).

The results indicate that being located in a regional cluster does not enhance the innovation capabilities of firms. On the contrary, firms facing their most demanding customers, the most advanced suppliers and toughest competitors, are international; seem to have a greater innovation capacity. Related support institutions for research and financial capital also grant improved innovation capacity when located internationally. On average, 53.1% of firms belonging to a regional cluster have developed new products in the past three years, as compared to 73% for firms relating to an international business environment.

Table 4 shows the effect on innovation of each of the six items in the cluster index. The strength of a cluster is argued to be the dynamic interaction between the elements.

Hence, we have grouped the elements together. A firm is located in a regional cluster if all or most items related to a particular firm are located regionally. If none or very few elements are located regionally, the firm does not belong to a regional cluster. A firm belongs to a regional cluster if 4-6 elements are reported to be located regionally (Table 4). Firms reporting that 0-2 elements are located in the region do not belong to a regional cluster. This group is called a non-regional cluster below, as the different partners or competitors are located outside the region, either in Norway or the rest of the world. The numbers show the share of companies having introduced innovations.

Table 5. The effect of regional clusters on innovation: the share of companies having introduced innovations (in %)

Variables	Non-regional cluster	Regional cluster	Average
New or significantly improved products	70.2	49.1	59.7
New to market product innovation	46.6	22.2	32.6
New or significantly improved processes	46.6	44.4	47.8
New to market process innovation	17.6	14.8	16.9

Source: own study (n = 2013).

For product or service innovations, being located in a regional cluster is less efficient than being part of a national or international business environment. About half of the firms belonging to a regional cluster have introduced new products and services, compared to 70% of firms in a non-regional business environment. The relative difference is even more profound for radical product or service innovations, where the capacity to launch new products is twice as large as in regional clusters. However, for process innovations of both the incremental and radical kind the difference is almost negligible. The category non-regional cluster includes both the national and international business environment.

Are the differences we find really explained by the location of the firms and their association with either regional clusters or an international business environments? In a multivariate analysis we have controlled for some relevant other explanations such as the size of the firm, its ownership; in particular whether or not the ownership is foreign, the amount of R&D expenditure, industrial sector and the manager's education level. In the analysis, firms' location in a regional cluster is used as a base line.

Table 6: The effect of clusters on product innovation: a multivariate analysis

Variables	New or significantly improved products	Products new to the market
Scope		
National cluster	0.23***	0.09
International cluster	0.20	0.35***
Controls[a]		
Size (log employees)	0.11	0.20
Manager's education level	0.35***	0.16
Foreign ownership	0.50	0.29
R&D expenditure	0.48***	0.56***

*** $p < 0.01$

[a] Controls also include industrial sectors.

Source: own study (n = 2013).

Being located in a national cluster or an international business environment enhances the capacity to innovate significantly; even controlled for other relevant factors. An international business environment is most beneficial for more radical innovations. These innovations typically build on original ideas and require more and more varied knowledge. This variety is more prevalent when relating to an international industry business climate. For products and services where the element of newness is less, more incremental innovations, being part of a national cluster is preferable. Given that regional clusters are least efficient, these results seem logical. For incremental innovations it suffices to broaden the scope from the regional to the national level. For more radical innovations, where the requirements for originality are more prevalent, the innovative firm has to widen their lenses to the international business environment.

CONCLUSIONS

The underlying assumption of the cluster model is that regional clustering enhances innovation. Studies of clusters have tended to be case studies of innovative regional clusters, typically successful ones, such as Silicon Valley and Route 128 in Boston (Saxenian, 1994). Our first contribution is the attempt to compare the performance of firms located inside clusters with those located outside clusters. Few studies have done that before (Martin & Sunley, 2011). Malmberg and Maskell (2002) sum it up: “Whereas economic geographers and others have devoted considerable efforts in documenting the existence of spatial clustering, not many attempts have been made in terms of showing differences in firm performance between those located inside and outside localized clusters” (p. 435). This study has measured performance as the degree of innovation. The results resemble a study from Sweden, in which Erikson and Lindgren (2009) report that localized concentrations of similar and related firms do not explain any substantial part of variations in firm competitiveness.

In the Norwegian context, it is as though the logic of the argument in favor of cluster benefits has been so self-evident that its empirical interrogation has been unnecessary. Recently, however, research has surfaced indicating that the extension to international collaboration for innovation is more advantageous than regional partnerships (Fitjar & Rodríguez-Pose, 2011). They did not study clusters explicitly, however. Our second contribution is thus the explicit measurement of clusters, not only partnerships.

Thirdly, most prior studies have been limited to certain sectors, unable to ascertain the generalizability of their conclusions. Other studies have used patents as a measure of innovation, whereas the present study capture a much broader array of innovations. Using a survey yields greater opportunities than case studies to generalize the findings. Clusters have been measured in many ways (Rocha, 2004). In this paper we have made use of Porter’s original and highly wiedespread definition of the concept, his so-called diamond model.

There are several reasons that the benefits of regional clusters have been exaggerated. Innovations are made of novel combinations (Schumpeter, 1934), capabilities, skills and resources (Fagerberg, 2005). It logically follows that the greater the variety of these inputs, the greater the scope for them to be combined in new ways, producing more advanced and sophisticated solutions. This study indicates that an

international environment, not a regional cluster, is more beneficial not only for product innovations in general, but in particular those products and services new to the market. Historically, innovation is often the result of synthesizing or bridging ideas and knowledge from different domains (Hargadon, 2003). Similarly, Granovetter (1992) concludes that "the actor whose network reaches into the largest number of relevant institutional realms have an enormous advantage".

Moreover, in his seminal article, Granovetter (1973) theorized that weak ties, characterized by distant and more infrequent interaction, tended to supply novel information, whereas strong ties, with close and frequent interaction, may yield information that is already known. Excessive embeddedness can reduce the adaptive capacity of firms (Uzzi, 1996). In regional clusters firms may search for solutions too narrowly, what Levinthal and March called myopic learning (1993). Economists claim that clusters can suffer from adverse location selection as innovative firms try to avoid unwanted spillovers and other outward leakages. Firms that possess superior technologies, human capital, and suppliers have an incentive to locate away from other firms so that their knowledge advantages and awareness of opportinties do not leak out to neighboring firms (Shaver & Flyer, 2000).

Table 6 demonstrates the strong influence of R&D on firms' innovation capacity. It has been argued that clustering per se has a negative impact on firms' propensity to invest in R&D. Firms in regional clusters with high technological capabilities are more likely to suffer from detrimental knowledge spillovers, reducing their incentive to invest in R&D. In addition, clustered firms that are exclusively reliant on local networks may well be more likely to suffer from technological convergence and lock-in (Martin & Sunley, 2011).

Our findings suggest that caution should be exercised when invoking the concept of regional clusters to explain or define regional competitiveness. The cluster model obviously assigns too much importance to the regionl business context, and to local interaction and externalities. These findings suggest that policies to advance the capabilities to innovate in Norwegian firms and regions may need to be revised.

REFERENCES

Baldwin, R. (2006). *Globalization: The great unbundling(s). Prepared for the Finnsish EU Presidency*. Helsinki: Prime Minister's Office.

Baptista, R., & Swann P. (1998). Do firms in clusters innovate more?. *Research Policy, 27*, 525-540.

Chesbrough, H. (2003). *Open Innovation: The New imperative for Creating and Profiting from Technology*. Boston, MA: Harvard Business School Press.

Dunning, J.H. (1998). *Regions, Globalization and the Knowledge Economy*. Oxford: Oxford University Press.

Eriksson, R., & Lindgren U. (2009). Localized mobility clusters: Impacts of labour market externalities on firm performance. *Journal of Economic Geography, 9*(1), 33-53.

Fagerberg, J. (2005). Innovation: A guide to the literature. In J. Fagerberg, D. C. Mowery, and R. R. Nelson (Eds.), *The Oxford Handbook of Innovation*. Oxford: Oxford University Press.

Fagerberg, J. & Mowery, D.C. *et al.* (2009). The evolution of Norway's national innovation system. *Science and Public Policy, 36*, 431-444.

Farsund, A. A., & Leknes, E. (2010). *Norske byregioner: Utviklingstrekk og styringsutfordringer*. Kristiansand: Høyskoleforlaget.

Fitjar, R. D., & Rodríguez-Pose, A. (2011). When local interaction does not suffice: Sources of firm innovation in urban Norway. *Environment and Planning A, 43*(6), 1248-1267.

Granovetter, M. (1992). Economic Institutions as Social Constructions: a Framework for Analysis. *Acta Sociologica, 35*(1), 3-11.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology, 78*, 1360-1380.

Hanssen, G.S., Nergaard, E*., Skaalholt, A., & Pierre. J.* (2011). Multi-level governance of regional economic development in Norwy ans Sweden: too much or too little top-down control?, *Urban Research and Practice,* 4, 38-57.

Hargadon, A. (2003). *How Breaktroughs Happen*. Boston, MA: Harvard Business School Press.

Hatakenaka, S., Westnes, P. *et al.* (2009). The regional dynamics of innovation: A comparative study of oil and gas industry development in Stavanger and Aberdeen. *International Journal of Innovation and Regional Development*.

Ketels, C. H. M. (2011). *Clusters and Competitiveness: Ports's contribution. Competition, Competitive Advantage and Clusters: The Ideas of Michael Porter*. Oxford: Oxford University Press.

Krugman, P. (1991). *Trade and Geography*. Cambridge, MA: MIT Press.

Levinthal, D. A., & March, J.G. (1993). The myopia of learning. *Strategic Management Journal,* 14, 95-112.

Malmberg, A., & Maskell, P. (2002). The elusive concept of localization economies: toward a knowledge-based theory of regional specialization. *Environment and Planning A*, *34*, 429-449.

Marshall, A. (1920). *Principles of Economics*. London: Macmillan.

Martin, R., & Sunley, P. (2011). Regional competitiveness: clusters or dynamic comparative advantage. In: R. Huggins & H. Izushi (Eds.), *Competition, Competitive Advantage and Clusters*. Oxford: Oxford University Press.

OECD (2009). *Clusters, Innovation and Entrepreneurship*. J. Potter & G. Miranda (Eds.). Paris: OECD.

Onsager, K., & Aslesen, H. *et al.* (2010). *City Regions, Advantages and Innovation*. Oslo: Norsk institutt for by- og regionforskning.

Piore, M.J., & Sabel, C.F. (1984). *The Second Industrial Divide: Possibilities for Prosperity*. New York: Basic Books.

Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York: Free Press.

Porter, M.E. (1998). *On Competition*. Cambridge, MA: Harvard Business Review Books.

Reve, T., & Jakobsen, E.W. (2001). *Et verdiskapende Norge*. Oslo: Universitetsforlaget.

Rocha, H.O. (2004). Entrepreneurship and development: the role of clusters. *Small Business Economics, 23*, 363-400.

Saxenian, A. (1994). *Regional Advantage: Culture and Cimpetition in Silicon Valley and Route 128*. Cambridge, MA: Harvard University Press.

Schumpeter, J.A. (1934). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.

Scott, A. (1988). *New Industrial Spaces: Flexible Production Organization and Regional Development in North America and Western Europe*. London: Pion Press.

Shaver, J.M., & Flyer, F. (2000). Agglomeration economies, firm heterogeneity, and foreign direct investment in the United States. *Strategic Management Journal, 21*(2), 1175-1193.

Storper, M. (1997). *The Regional World*. New York, NY: Guilford.

Storper, M., & Chen, Y.C. *et al.* (2002). Trade and the location of industries in the OECD and European Union. *Journal of Economic Geography, 2*(1), 73-107.

Storper, M., & Scott, A.J. (1989). The Geographical Foundations and Social Regulation of Flexible Production Complexes. In: J. Wolch & M. E. Dear (Eds.), *The power of Geography: How territory Shapes Social Life*. London – New York, NY: Routledge, pp. 25-43.

Uzzi, B. (1996). The Sources and consequences of embeddedness for the economic performance of organizations: The Network Effect. *American Sociological Review, 61*(4): 674-698.

Williamson, O.E. (1975). *Markets and Hierarchies*. New York, NY: Free Press.

Williamson, O.E. (1985). *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York, NY: The Free Press.

WorldBank (2000). Electronic Conference on Clusters.

Author

Martin Gjelsvik

PhD in economics (Dr oecon). Research Manager at the International Research Institute of Stavanger IRISI (Norway). Professor II at Stavanger Innovation Center (Norway).

Correspondence to:

Prof. Martin Gjelsvik, PhD
International Research Institute of Stavanger IRIS
P.O. Box 8046, N-4068 Stavanger, Norway
phone (+47) 51 87 50 52, fax (+47) +47 51 87 52 00
Martin.Gjelsvik@iris.no

Published by Centre for Strategic and International Entrepreneurship – Krakow, Poland

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

Is There a Global Currency War?

Robert W. Włodarczyk

A B S T R A C T

Objective: The main aim of this article is to identify factors influencing the direction of change in exchange rates and to assess whether it is justifiable to use the term "currency wars" to describe such activities. The main forms of such "currency wars" in contemporary global economy have been characterized and their impact on financial markets and national economies has been analyzed.

Research Design & Methods: The method chosen for verification of the hypothesis is the critical analysis of existing literature regarding currency wars. The article also takes advantage of the experiences connected with exchange rate fluctuations in several developed and developing countries in the years 2000-2014. The cases subjected to analysis include changes in currency markets in the USA, Eurozone, Great Britain, Switzerland, Japan, and China.

Findings: Both parts of the hypothesis have been confirmed. In the conditions of free capital flow, emerging markets and their financial markets are especially vulnerable to the introduction and removal of tools in the framework of a currency war. It is difficult not to notice that China, the biggest trade partner and the regional competitor to Japan, did not protest publicly against the policy of weakening the yen. On the other hand, one should underline that one should not expect protests from the country which pursues a similar strategy, albeit by means of other instruments and tools.

Implications & Recommendations: Only the biggest central banks can afford to participate in a currency war, which might provide transient advantages, whereas emerging markets are on the losing side, both in the period of implementation of currency war tools and in the period of their removal.

Contribution & Value Added: The paper adds to the literature by combining concepts and presenting them as one multidimensional problem.

Article type: conceptual paper

Keywords: currency wars; financial markets; depreciation

JEL codes: E520, F310, F330, F420

Received: 7 April 2014 Revised: 4 May 2014 Accepted: 15 May 2014

Suggested citation:

Włodarczyk, R.W. (2014). Is There a Global Currency War?. *Entrepreneurial Business and Economics Review, 2*(2), 21-30.

INTRODUCTION

Modern world economy, together with existing economic relations, has become a vast space for free competition. One may, therefore, accept the reality of an intensified international competition, enhanced by changes that have been in operation for decades, connected with globalization, liberalization of capital flow, development of international financial markets and progress in information and communication technology. What is particularly striking is the wide-ranging character of this competition, in which both political and economic factors play their roles.

Among the latter, a particular attention should be paid to foreign currency market. One should point out the fact that the inclusion of foreign currency market into international competition is not exclusively related to conducting unconventional monetary policy in many developed countries, but also to using certain system solutions, which blatantly and permanently affect economic interests of other countries.

In theory, currency devaluations work. Historically, countries like Italy, Spain and Greece used periodic devaluations to pump up their otherwise uncompetitive economies. Currency wars, the term that dominated international financial markets early last year, threatens to make a comeback at the beginning of 2015. Many economists are wondering now if we are facing a global currency war. While analyzing the literature, one may come across arguments both for and against such an occurrence. This question is frequently posed nowadays, as currency wars are not unambiguous and new mechanisms and activities occur on everyday basis. The issues connected with interference determinants in contemporary currency markets are equally important, as well as whether it is a globally coordinated process of anti-crisis measures by means of soft monetary policy, or an attempt to gain trade advantages thanks to cheaper money on international currency markets. Policy makers fear any huge and sudden changes in the value of their currencies. In recent years developing countries like India and Brazil complained that the United States, Eurozone, Japan and other industrialized countries were waging a “currency war” against them by artificially driving down the value of dollar, euro and yen. A rapid appreciation makes their country’s exports less competitive on the world market, while a fast depreciation raises the cost of imported products and makes it harder for governments to repay loans they took out in foreign currencies.

The article tries to provide an answer to the recurring question among economists whether we are witnessing a global currency war; what are the reasons underlying such activities, as well as what are the consequences of this state of affairs for developing and developed countries and the global economy.

MATERIAL AND METHODS

The issues discussed in the article are of paramount importance in ensuring economic stability on a national and international scale, as well as for creating a beneficial macro-economic environment and its predictability, which is crucial for economic activity.

The main aim of this article is to identify factors influencing the direction of change in exchange rates and to assess whether it is justifiable to use the term "currency wars" to describe such activities. The main forms of such "currency wars" in contemporary global economy have been characterized and their impact on financial markets and national economies has been analyzed.

The analyzed literature in the subject and the presented aim of the article led to the formulation of two research hypotheses:

1. Current changes in exchange rates in developed world economies confirm the existence of a certain form of "currency wars", but this phenomenon should not be described as "a global currency war".
2. "Currency wars" destabilize international and local financial markets and increase fluctuations in balances of payments.

In order to achieve goals set for this article and to verify the assumed hypotheses the method of critical analysis of subject literature and the case analysis have been adopted.

The article also takes advantage of the experiences connected with exchange rate fluctuations in several developed and developing countries in the years 2000-2014. The cases subjected to analysis include changes in currency markets in the USA, Eurozone, Great Britain, Switzerland, Japan, and China.

LITERATURE REVIEW

While dealing with the issue of "currency wars" it is worthwhile to begin with the explanation of the notion itself. The term has been present for some time in newspaper headlines and books on economy and has become the subject for discussion in academic circles (Angeloni *et al.*, 2011; Bergsten, 2013). Currency wars have a global range and take place in all important financial centers in the world simultaneously, 24 hours a day (Rickards, 2012). One should mention here that the term is controversial both among politicians, experts and scientists. Among many attempts to define the notion one should pay attention to several of them. According to the simplest approach these are activities of central banks or some governments whose aim is to satisfy their national interests through currency market. Another view treats it as an intentional devaluation of one's own currency in order to stimulate export and home economy and detrimentally affect importers, directly slowing economies of foreign partners (so-called 'beggar-thy-neighbour' effect). Some treat currency wars as activities of monetary or government authorities of one country aiming at depreciation (or devaluation) of the national currency as a reaction to similar activities of another country – an important trade partner. The term can also be understood as burdening the partner with the costs of coming out of recession by competitive devaluations (depreciations). A. Korinek (2012) finds that in a benchmark case in which national regulators can optimally control domestic externalities, coordination is not indicated. By contrast, J. Bengui (2011) studies the role for coordination between national regulators in a multi-country framework of banking regulation. He shows that liquidity in the global interbank market is a global public good. In the presence of such global externalities, there exists a case for global coordination of liquidity requirements (Korinek, 2012). Persson and Tabellini (1995) show

that coordination of national fiscal and/or monetary policies is desirable if countries have incentives to employ such policies to exert monopoly power over international prices. The most extreme approach in explaining the issue is treating currency wars as the first stage of a series of events leading to a military conflict: currency wars ⇨ overt protectionism ⇨ trade wars ⇨ military conflict.

The term "currency war" was coined by Brazilian Finance Minister Guido Mantega in September 2010 in response to quantitative easing (QE) in the United States. Mantega's implied criticism was that the unconventional monetary policies of the Federal Reserve to ward off deflation and stimulate a depressed economy were "beggar-thy-neighbour" (Eichengreen, 2013).

The most important battlefields are the Pacific Ocean basin, in which American dollar and Chinese renminbi compete, the Atlantic Ocean basin where American dollar and euro confront each other and the Euro-Asian continent pitting euro and Chinese renminbi against each other. The above-mentioned battles are real and do not exclusively take place in the designated geographical locations but also in existing international financial markets (Rickards, 2012).

In many cases, currency war was not associated with a depreciation of the domestic currency but the prevention of appreciation. Normally, the currency of a country with growing productivity would appreciate, reflecting falling production costs in export markets. This situation enables the country to enjoy more imported goods at lower prices. China is the best example of a country that has resisted normal currency appreciation (Darvas & Piasni-Ferry, 2010; Portes, 2012; Gagnon, 2013).

The literature in the subject emphasizes the following factors, among others, which affect the development of currency wars (Brahmbhatt *et al.*, 2010):

- pro-export policy and quickening pace of the development of China,
- the problem of imbalance of payments in many countries (USA; Greece; Ireland; Portugal),
- the elimination of the effects of financial crisis in the years 2007-2009,
- excessive distortion of consumption-production structure on a global scale (China produces and the USA and Western Europe consume),
- the rise in fluctuations of prices of raw materials (oil, copper) on international markets and the resulting change in the distribution structure of capital surplus.

DISCUSSION

Close observation and analysis of contemporary currency wars allows identifying the common mechanism of their origin. It is the result of the occurrence of specific economic relations, based on the globalization and capital flow. The entire mechanism boils down to the fact that the weakening of one's own currency brings the country – in the short term— trade benefits on international markets. The opinion is similar to that voiced almost 90 years ago by J.M. Keynes in exchange of opinions with W. Churchill about the policy towards the pound, with a view to making Britain a global international economic power. J.M. Keynes claimed that the strong currency would lead to economic crisis, thus, in order to steer the country out of recession one should reject the policy of appreciation of the national currency. J.M. Keynes presented his reasoning in the categories of

contemporary currency wars. W. Churchill, in turn was the proponent of the co-existence between a strong currency and strong economy, which, as it later turned out, was an astute move.

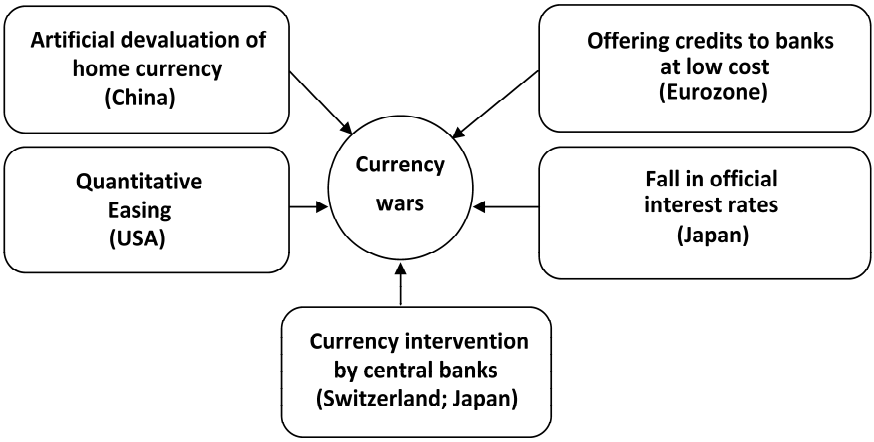

Figure 1. Currency wars mechanisms
Source: own study.

What is called currency wars is thus really a zero-sum game for the world's export markets, a continuation of monetary policy by other means. In the long run the winners may be those who do not try to fight the markets and resist the strength of their currencies even if this may mean a painful adjustment in their export sector in the short run (Gros, 2010).

In the modern global economy, governments and central banks apply different mechanisms, which decide about the essence of currency wars. Among them, one should pay attention to intentional depreciation of home currency, the application of soft monetary policy, giving preferential credits to commercial banks by central banks, intervention of central banks in the form of printing one's own currency (Figure 1).

Since the beginning of the 21st century one may have observed many examples of phenomena on currency markets which are, to a lesser or greater extent, the symptoms of currency wars. The case in point is the activity of the People's Bank of China, which, for several years, has maintained a stable exchange rate of renminbi to USD at the level of depreciation of the home currency reaching 50%. Similarly, American FED has been conducting the policy of quantitative easing since 2007 (till September 2012–2100 milliard USD, and then 85 milliard a month, and 35 milliard USD a month since June 2014). Also, the Bank of England, had bought obligations of the value of 375 milliard pounds by autumn 2012. Similar activities have been implemented by the Bank of Japan since April 2013, which executes the plan of pumping in 7000 milliard yens. The essential aim in this case is to double the money supply in Japanese economy within two years. Similarly, in the Eurozone EBC had given commercial banks 500 milliard euros of loans with low interest rates by December 2011, and since February 2012 further 400 milliard euros. The National Bank of Switzerland, in turn, in September 2011 made a decision of unlimited purchase of foreign currencies at maximum rate of EUR/CHF 1.2 with the

market rate EUR/CHF 1.1. One of the examples of such chain of events, which provide the basis for a currency war, is presented in Figure 2.

The evaluation of the effects of currency wars on particular countries and the global economy constitutes an important component of the scientific debate. The development of currency wars is particularly threatening for emerging markets. It stems from the fact that at the beginning of quantitative easing they had a problem with excessively strong home currencies, whereas now, when the dynamics of quantitative easing has slowed down, they face the problem of sudden depreciation of the national currency. If currency wars are to continue, emerging markets (e.g. Brazil, India) threaten to introduce an import duty as a retaliatory measure.

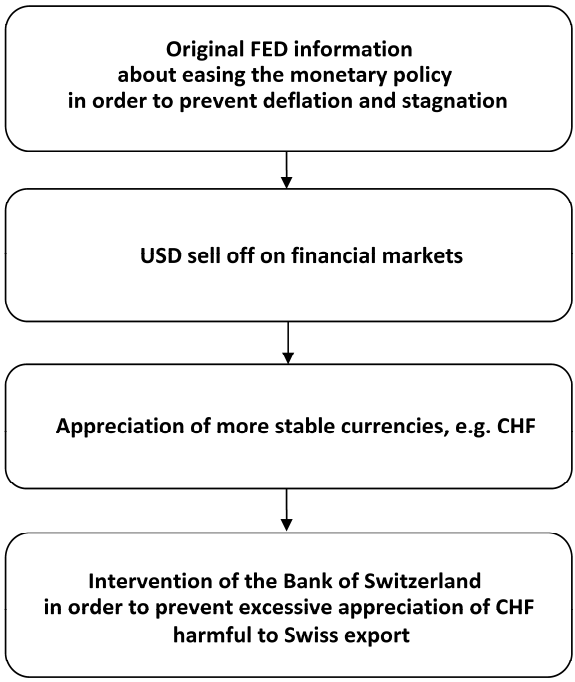

Figure 2. Example of chain of events in a currency war
Source: own study.

The evaluation of the process of evolution of currency wars can generally allow to differentiate both positive and negative effects (Figure 3). The positive effects are as follows:

– Firstly, providing bank systems with additional money, which is especially needed in periods of decrease in solvency, growing pessimism, worsening economic situation, which requires greater activity on the part of commercial banks. One needs to bear in mind that the mechanism of such wars assumes weakening of home currency, so the result is its greater supply.

– Secondly, sometimes it is necessary to have surplus cash at one's disposal in order to distribute it at a relatively lower capital cost. In practice it means a cheaper credit and an opportunity for credit expansion and stimulation of global demand.
– Thirdly, weakening of home currency as a result of currency wars results in the improvement of competitiveness of firms exporting their own products or the ability to lower their prices without diminishing the profit.
– Fourthly, depreciation of the national currency slows down the development of importers, as it means that an importer must pay a larger amount of money or is compelled to raise the price of imported products on the national market, losing the competitive edge; or decides to limit import.

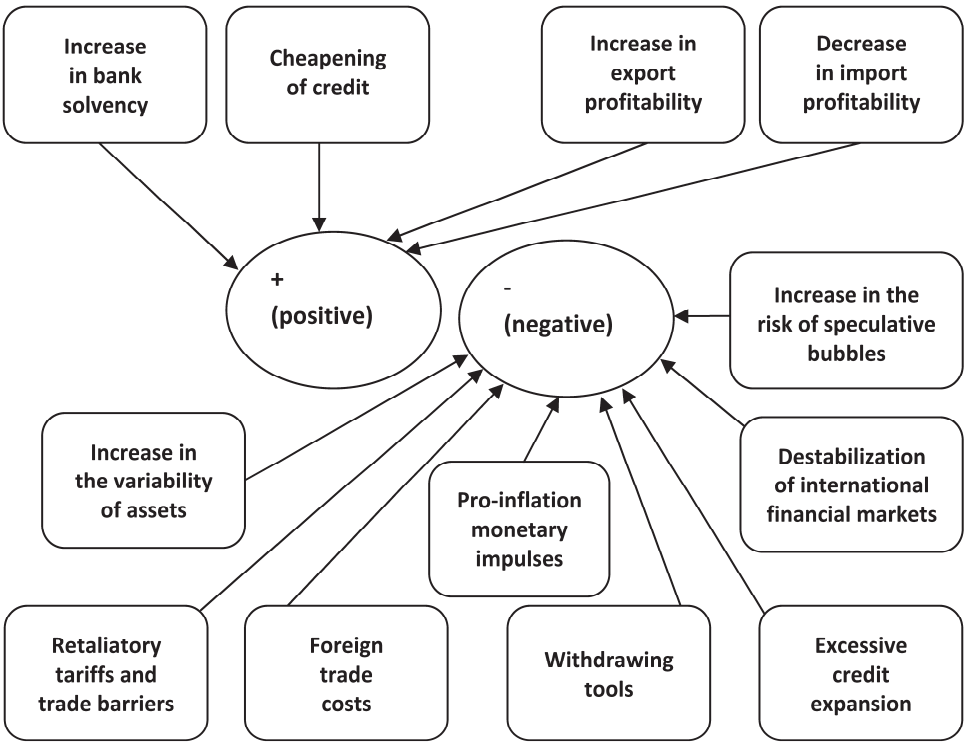

Figure 3. Positive and negative effects of a currency wars
Source: own study.

Apart from the advantages from the activities undertaken within the framework of currency wars, the literature on the subject points at numerous negative effects, such as the increase in fluctuation of asset prices resulting in greater instability on international markets, the increase in the risk of speculative bubbles on various asset markets, the intensification of monetary and credit expansion and thus, increased risk of the occurrence of monetary impulses, slow-down in the development of foreign trade as a result of the risk of introduction of numerous trade limits, such as duties.

CONCLUSIONS

Contemporary forms of currency attacks are becoming more and more frequent and concern mainly so-called emerging markets. Recently, it was Thailand that has been hit, whose currency, bhat, has become inordinately strong. Earlier, Brazil and India faced a similar problem. Such phenomena constitute grave problems for entrepreneurs who target at foreign markets, as the appreciation of the home currency results in the decrease in the competitiveness of exporters, and also the entire economy.

According to some scientists, economists and experts, currency wars have become a fact of life, and currencies of lesser international stature, including PLN, will undoubtedly suffer harmful effects. Doubtless to say, the negative element is the fact that emerging markets do not have much influence on those devaluation or revaluation process. Only economically powerful countries such as China or Japan are able to create the value of their currencies, artificially regulating the competitiveness. According to economists, it is because nowadays, practically everything is manufactured in the Middle Kingdom.

There are also contrary opinions, which claim that there is no hard evidence that something unusual is happening on currency markets. According to this interpretation the risk of genuine currency war is rather low, as the latest currency conflicts have been rhetorical and are not essentially different from earlier events from the period of domination of changeable currency rates. Those currency movements can therefore be justified by a coordinated effort to counteract the financial crisis and the resulting recession, which is accompanied by a strong synchronization of soft monetary policy in main world economies. This approach can be explained by the fact that economically important countries understandably want their currencies to support the economic growth. Moreover, it must be noted that rate fluctuations do not always yield expected results. In spite of the damage to Japan's economy, the ever-higher yen was unable to correct the chronic trade imbalance between the US and Japan. A chronic trade surplus and deflation, together with Japan's low external debt ratio, made the yen a safe-harbor currency during the 2008 crisis (Qiao, 2007; McKinnon & Liu, 2013). Some of the currencies, including the most important ones, sometimes moved in the wrong direction. When the USA was struggling from the aftermath of subprime mortgage crisis, and the Eurozone suffering unprecedented sovereign debt and banking crises, the Japanese yen, together with the Swiss franc and gold, become the safe haven for international capital inflows (Ranaldo & Söderlind, 2010).

Some of these opinions, however, are contrary to facts. It is difficult not to notice that China, the biggest trade partner and the regional competitor to Japan, did not protest publicly against the policy of weakening the yen. On the other hand, one should underline that one should not expect protests from the country which pursues a similar strategy, albeit by means of other instruments and tools.

The analysis of the literature, opinions from experts and politicians show that in contemporary global economy there are characteristics of a currency war. These activities do not exhibit features of a typical military conflict and none of the countries using such tools confirm such actions officially, citing pretexts, such as the

protection of one's own economy against deflation, recession budget deficit or excessive unemployment.

Contemporary currency wars, apart from central banks and politicians, also involve bankers, traders, automatic systems, global financial institutions, hedging funds, corporations and multimillionaires. The present form of a currency war, especially when USD is excessively weakened, wreaks havoc to raw resources markets (oil, copper, gold), and this, in turn, affects financial markets. Depreciation, so favored in currency wars, being a remedy for economic problems in one country, might harm the economies of other countries, bringing about feedback reactions. In the conditions of free capital flow, emerging markets and their financial markets are especially vulnerable to the introduction and removal of tools in the framework of a currency war.

Only the biggest central banks can afford to participate in a currency war, which might provide transient advantages, whereas emerging markets are on the losing side, both in the period of implementation of currency war tools (influx of speculative capital, strong appreciation and a temporary loss of competitiveness) and in the period of their removal (outflow of speculative capital, strong depreciation of currency and a fall in asset prices).

The debate in the newspapers seems to re-emerge in 2014 and 2015, because Europe, China and others join Japan in actively weakening their currency.

REFERENCES

Angeloni, I., Benassy-Quere, A., Carton, B., Darvas, Z., Destais, Ch., Pisani-Ferry, J., Sapir, A., & Vallee, S. (2011). *Global currencies for tomorrow: a European perspective*, Bruegel Blueprint Series/CEPII Research Reports, Volume XIII, Paris.

Bengui, J. (2011). *Macro-prudential policy coordination and global regulatory spillovers*, Manuscript, University of Maryland.

Bergsten, C.F. (2013). *Currency Wars, The Economy of The United States and Reform of The International Monetary System*, Stavros Niarchos Foundation Lecture, May 16.

Brahmbhatt, M., Canuto, O., & Ghosh, S. (2010). *Currency Wars Yesterday and Today*. World Bank, Washington, DC. World Bank. https://openknowledge.worldbank.org/handle/10986/ 10116.

Darvas, Z., & Piasni-Ferry, J. (2010). *The threat of "currency wars": A European perspective.* Working Paper. BCE Matematikai Közgazdaságtan és Gazdaságelemzés tanszék, Budapest.

Eichengreen, B. (2013). *Currency War or International Policy Coordination?*, University of California, Berkeley.

Gagnon, J.E. (2013). Currency Wars. *The Milken Institute Review, 15*(1), 47-55.

Gros, D. (2010). Currency Wars?. *Intereconomics*, *6*, 338-339.

Jach, K. (2013). The concept of currency wars in the global economy. Observations of the renminbi, american dollar and euro. *Horyzonty Polityki,* 4(7), 175-191.

Korinek, A. (2012). *Capital Controls and Currency Wars*, Manuscript, University of Maryland.

McKinnon, R., & Liu, Z. (2013). *Modern Currency Wars: The United States versus Japan*, ADBI Working Paper Series, No. 437, October, Asian Development Bank Institute.

Persson, T., & Tabellini, G. (1995). *Double-edged incentives: Institutions and policy coordination*, Handbook of Development Economics. Elsevier.

Portes, R. (2012). Monetary policies and exchange rates at the zero lower bound. *Journal of Money, Credit and Banking*, *44*, 157–163.

Qiao, H. (2007). Exchange rate changes and trade balances under the dollar standard, *Journal of Policy Modeling*, *29*, 765-82.

Ranaldo, A., & Söderlind, P. (2010). Safe haven currencies. *Review of Finance*, *14*(3), 385-407.

Rickards, J. (2012). *Wojny walutowe. Nadejście kolejnego globalnego kryzysu.* Gliwice: Wydawnictwo Helion.

Włodarczyk, R.W. (2012). *Rynek pracy a szoki asymetryczne w unii monetarnej na przykładzie Unii Gospodarczej i Walutowej.* Kraków: Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie.

Author

Robert W. Włodarczyk

Associate professor at the Department of Theory of Economics, Cracow University of Economics. Master's degree in economics from Cracow University of Economics) in 1999; PhD in economics from Cracow University of Economics in 2006; Dr hab. in economics from Cracow University of Economics in 2014.

Correspondence to:
Dr hab. Robert W. Włodarczyk, PhD
Cracow University of Economics
Faculty of Economics and International Relations
Department of Theory of Economics
ul. Rakowicka 27, 31-510 Kraków, Poland
robert.wlodarczyk@uek.krakow.pl

Published by Centre for Strategic and International Entrepreneurship – Krakow, Poland

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

The V4: a Decade after the EU Entry

Eduard Nežinský, Elena Fifeková

A B S T R A C T

Objective: The objective of the paper is to give a picture of the sources of economic growth in the V4 countries during the decade following their EU entry and to cross-check the results obtained by parametric and non-parametric approaches. Growth accounting technique is used to depict dynamics of the V4 countries evolution since 1995 up to 2013. The poor post-crisis performance reflected in TFP indicator is in line with the result of the absence of technological progress obtained by data envelopment analysis.

Research Design & Methods: Sources of the economic growth are identified by growth accounting based on Solow-Swan model. Non-parametrical part employs an SBM measure of efficiency in Data envelopment analysis as an application of linear programming optimization.

Findings: Main findings include determining faster-than-average economic growth of the V4 followed by a considerable decline both in total factor productivity and in catching-up rate in the after-crisis period. DEA approach reveals excessive use of labor in all of the V4 countries and finds almost negligible technological change.

Implications & Recommendations: The main concern for economic policy in the V4 as well as the entire EU continues to be tackling unemployment and facilitating factors´ productivity by structural reforms.

Contribution & Value Added: The paper makes use of parametric and non-parametric approaches with a view to cross-checking the results obtained on the technological change within the EU at large and across the V4 countries in particular.

Article type:	original research paper
Keywords:	growth accounting; catching-up rate; data envelopment analysis; Malmquist productivity index
JEL codes:	E23, C61, O47

Received: 2 February 2014 Revised: 22 March 2014 Accepted: 15 May 2014

The paper was prepared within projects VEGA 1/0906/12 "Technological change, catch-up and ecoefficiency: growth and convergence in EU countries" and VEGA 1/0795/12 "The extended Leontief model with structural decomposition with the application on Slovak economy".

Suggested citation:

Nežinský, E., & Fifeková, E. (2014). The V4: a Decade after the EU Entry. *Entrepreneurial Business and Economics Review, 2*(2), 31-46.

INTRODUCTION

The economies of the Visegrad Four (V4) and the Baltic states belonged in the past ten years to those fastest growing within the EU, reaching their highest real economic growth rate in the time term between their EU accession and the outbreak of the crisis, i.e., in the years 2004-2008. During that time span, the V4 average real growth rate was higher than that of the EU15 by over 1 percentage point.

One of the main factors contributing to the high economic growth in the V4 was increase in foreign investments as the region had become an attractive destination for foreign capital. Liberalization of the capital and financial accounts heightened the financial integration of the aforementioned countries, and the fulfilment of the real convergence criteria following the EU entry further increased the attractiveness of the region for foreign investors, along with their confidence in the Group´s sound economic development. Thus, room was created for technological and innovation catching-up processes with the "old" EU members, which, in turn, accelerated economic growth and facilitated narrowing of the performance gap.

Besides showing the role of the foreign direct investment in the capital stock growth, growth accounting based on the Solow-Swan model may be applied in order to identify the sources of economic growth in V4 as well as across other European Union member states.

The parametrical way is though challengeable where it comes to the assumed form of the production function that describes transformation of inputs into the output. While another assumption—of returns to scale—lends itself well to incorporation into the basic Solow model, the Cobb-Douglas form remains untouchable. The question begs itself whether giving up the explicit form of the transformation function would make a qualitative difference to the results produced by the parametric approach. In order to carry out such type of analysis, an approximation of the production possibility set is constructed as linear combinations of *best practice* – efficient – units under examination. A piecewise boundary line that represents technology is called empirical frontier since it is formed from observed units though at the expense of not treating possible statistical noise in data. To assess a change in performance over time, two frontier lines relating to different time periods can be constructed and compared. Given the Cobb-Douglas function was a good representation of the transformation function, the results produced by the two approaches should be qualitatively comparable in such an intertemporal setting.

LITERATURE REVIEW

Classical approach to productivity analysis, which dates back to the seminal work of Solow (1957), provides a powerful analytical tool for determining sources of economic growth. Growth accounting has been then used in a massive body of studies, e.g. Romer (1990) and Barro (1996), to mention well-known macro analyses. The method is being used in contemporary studies of the European Commission (2008; 2009; and 2012), OECD, International Monetary Fund (Schadler *et al.*, 2006), ECB (Proietti & Musso, 2007), World Bank, or the U.S. Bureau of Labor Statistics.

FDI inflow has been identified as an important determinant of growth in the new EU member states (NMS) in a number of studies including investigating the characteristics and relationship of FDI in Central and Eastern European countries by Witkowska (2007) and in V4 countries in particular in Babunek (2012).

Productivity analysis that employs non-parametric approach is traceable back to Farrell´s work (1957) which presented the first empirical application of the entirely conceptual approaches to efficiency by Pareto and Koopmans. The modern version of data envelopment analysis (DEA) originated in Charnes *et al.* (1978), where the first model, lately named CCR, was introduced. The later theoretical developments addressing the problem of weak efficiency were closely related to Tone´s works introducing slack-based measure of efficiency (Tone, 2001) with the most recent application in evaluating economic and environmental efficiency in Chang *et al.* (2014). Intertemporal analysis utilizing distance functions and Malmquist index in a multi-output setting was introduced by Fare *et al.* (1996). In Yörüka & Zaimb (2005) the productivity of OECD countries was explored employing intertemporal DEA model, Eslami & Khoveyni (2014) use Malmquist index to assess units in banking sector.

MATERIAL AND METHODS

Growth Accounting and Catch-up

The standard analytical tool is based on the Cobb-Douglas production function

$$Y = AK^{\alpha}L^{1-\alpha} \tag{1}$$

where:

Y – total output (GDP, value added),
K – capital,
L – labor,
α – capital´s share of income,
$1 - \alpha$ – labor´s share of income.

Production function enables to decompose growth rate of the total output into contributions attributable to capital, labor, and technological change (total factor productivity, A)

$$Y = AF(L, K) \tag{2}$$

Rearranging, taking logs and derivatives with respect to time yields

$$g(Y) = g(A) + \frac{\frac{AF_K K}{Y}}{g(K)} + \frac{\frac{AF_L}{Y}}{L} \tag{3}$$

$$g(Y) = g(A) + \frac{\frac{AF_K K}{Y}}{g(K)} + \frac{\frac{AF_L L}{Y}}{g(L)} \tag{4}$$

where:

$AF_K K/Y$ – capital´s share of total income, α_t
AF_L/Y – capital´s share of total income, $1 - \alpha_t$

Total factor productivity growth rate g(A) can be expressed as:

$$g(A) = gY - \alpha_t g(K) - (1 - \alpha_t) g(L) \quad (5)$$

It follows from (5) that total factor productivity growth rate presents a difference between the output growth rate and the weighted sum of growth rates of capital and labor, weights being capital and labor elasticities of output.

Following the European Commission (2008), we define the catch-up rate as the average percentage change of the performance gap among particular countries.

$$M = 100 \frac{\Delta(Y_{it} - Y_t^*)}{(Y_{it-1} - Y_{t-1}^*)} \quad (6)$$

where:

M – catch-up rate,

Y_t^* – average Y_t value for EU15,

Δ – the absolute variation between t and t-1, where Y_t^* is weighted average of EU15,

Y_{it} – the level of index of GDP per capita in PPS terms for country i at time t,

Negative catch-up rate means that the performance gap between the catching-up country and the EU15 average is narrowing, while a positive catch-up rate means widening of the gap.

DEA Models

The neoclassical approach finds itself competed by non-parametric frontier analysis. This approach represented by DEA (data envelopment analysis) is a general-purpose quantitative method for assessing performance applicable to units of assessment such as retails outlets, hospitals, bank branches on the micro level or as economies as whole constituting individual units of assessment.

In formal analysis, each unit under evaluation is called DMU – Decision Making Unit, the total number of DMUs being n. DMU is assumed to transform m inputs into generally s outputs. Unlike in the case of production function approach, DMUs are not assumed to perform at their best, thus one can evaluate efficiency of transforming inputs into outputs and form a production possibility set frontier from efficient units. Organizing inputs and outputs data in matrices, one obtains input matrix $\boldsymbol{X}$ and output matrix $\boldsymbol{Y}$, element x_{ij} meaning amount of input i used by DMU j and element y_{rj} meaning amount of output r used by DMU j.

$$X = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \cdot & \cdot & \dots & \cdot \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix}, \quad Y = \begin{bmatrix} y_{11} & y_{12} & \dots & y_{1n} \\ y_{21} & y_{22} & \dots & y_{2n} \\ \cdot & \cdot & \dots & \cdot \\ y_{m1} & y_{m2} & \dots & y_{mn} \end{bmatrix}$$

In DEA model, an optimization problem is solved by each DMU, constraints describing the production possibility set and objective function measuring distance from the frontier. In our analysis, we use SBM measure of efficiency (Tone, 2001) defined by the following fractional program:

$$\min_{\lambda,s^+,s^-} \rho = \frac{1-\frac{1}{m}\sum_{i=1}^{m} s_i^-/x_{i0}}{1+\frac{1}{s}\sum_{r=1}^{s} s_r^+/y_{r0}} \tag{7}$$

$$\text{s.t.} \quad x_0 = X\lambda + s^-$$
$$y_0 = Y\lambda - s^+$$
$$\lambda \geq 0,\ s^- \geq 0,\ s^+ \geq 0$$

The program (7) can be linearized and solved yielding optimal solutions for s^+, s^-, and λ. In order to give the model input orientation, penalization for non-zero slack variables in the denominator shall be dropped off, taking the following form.

$$min\,\rho = 1 - \frac{1}{m}\sum_{i=1}^{m} s_i^-/x_{i0} \tag{8}$$

$$\text{s.t.} \quad x_0 = X\lambda + s^-$$
$$y_0 = Y\lambda - s^+$$
$$\lambda \geq 0,\ s^- \geq 0,\ s^+ \geq 0$$

Non-zero optimal solutions for λ determine set of indexes which correspond to efficient DMUs forming efficiency frontier (with a zero distance from the boundary) for which $\rho = 1$ holds as well as $s^+ = 0$ and $s^- = 0$.

The term $\frac{1}{m}\sum_{i=1}^{m} s_i^-/x_{i0}$ in the objective function in (8) can be viewed as a penalization bringing the efficiency measure ρ down beneath the unit. Thus can be slacks relative to the actual inputs s_i^-/x_{i0} interpreted as relative contributions of corresponding inputs to overall penalty. This way can relative importance of inputs in terms of efficiency be determined. Intertemporal analysis can be carried out employing Malmquist index (Färe *et al.*, 1994)

$$MI = C \times F = \frac{d_i^2(x_0,y_0)^2}{d_i^1(x_0,y_0)^1}\left[\frac{d_i^1(x_0,y_0)^1}{d_i^2(x_0,y_0)^1} \times \frac{d_i^1(x_0,y_0)^2}{d_i^2(x_0,y_0)^2}\right]^{1/2} \tag{9}$$

where:

indexes 1, 2 correspond to periods 1 and 2,

d_i – efficiency measure (obtained by DEA program, i stands for input orientation),

x_0, y_0, – activity of the DMU_0 under consideration.

The two components, C and F, can be assigned to catch-up effect meaning change of individual performance and F standing for frontier-shift effect describing change of technology.

We consider European economies as DMUs transforming inputs–capital and labor– into the output (GDP), one can therefore be interested in the efficiency measure of such a transformation process. Three SBM input oriented DEA models have been computed – two static models for endpoint years 2000 and 2013 and intertemporal model using both 2000 and 2013 data assuming constant returns to scale in all three models.

Data

In the analysis, 26 European countries are included (27 EU member states as of 2013 less Luxembourg which has been excluded due to the outlying data). We use annual data on standard technical output proxied by gross domestic product (Y) and inputs – capital (K) and labor (L). GDP at constant 2005 prices come from the Eurostat database as well as most of the data on labor force in the economy. Some missing data were supplemented from GDCC. UNCTAD database was used to collect data on FDI flows. Time series of estimated data on capital stock at 2005 prices come from AMECO EU database.

For growth accounting calculations, data span is 2000 through 2013. For data envelopment analysis we use endpoint 2000 and 2013 data.

RESULTS AND DISCUSSION

Sources of the Growth of V4 Countries

Rapid growth of the Visegrad Four can be illustrated by growth rates of the V4 countries compared to growth rates of EU27 and EU15. Table 1 depicts real growth rates.

Table 1. *GDP growth rate* in the years 1996-2015 (in %, at 2005 prices, 2013-2015 estimations)

Country	1996-2015	1996-2003	2004-2008	2009-2015
EU27	1.55	2.13	1.81	0.93
EU15	1.46	2.08	1.64	0.87
V4	3.08	3.15	4.05	1.83
Czech Republic	2.22	2.02	4.49	0.87
Hungary	1.84	2.97	1.76	0.79
Poland	3.76	3.71	4.32	2.42
Slovakia	3.59	3.31	6.19	2.15

Source: own calculations based on data of Eurostat.

One of the main factors contributing to the high economic growth in the V4 was increase in foreign investments as the region had become an attractive destination for foreign capital. Liberalization of the capital and financial accounts heightened the financial integration of the aforementioned countries, and the fulfillment of the real convergence criteria following the EU entry further increased the attractiveness of the region for foreign investors, along with their confidence in the Group´s sound economic development. Thus, room was created for technological and innovation catching up processes with the "old" EU members, which, in turn, accelerated economic growth and facilitated the narrowing of the performance gap. Table 2 illustrates the catch up rate of the V4 with the EU15.

The year 2009 marked the end of the catch up process in the Czech Republic and Slovakia, simultaneously revealing the low ability of the V4 countries to maintain the growth dynamics of the previous period. Only in Poland and Hungary, the pre-crisis levels of catching up managed to get picked up. As for Slovakia, even though the country still belongs to those striving to narrow the performance gap with the current levels of catching up, the dynamics of this process is now significantly weaker than in the pre-crisis time period. The slowdown of European growth, understandably, tends to undermine the earlier optimism about a reasonably quick catching up on behalf of the V4

countries. The claim seems particularly relevant in the case of Slovakia where, given that the EU15 is Slovakia´s main export market, the deceleration of the growth dynamics across the EU15 may result in Slovak exports decrease, bringing about, in the wake, a rapid drop in the country´s economic growth as a whole.

Table 2. The catch up rate of the V4 with the EU15 in the years 1996-2012

Country	1996-2012	1996-1998	1999-2003	2004-2008	2009-2012
V4	-2.45	-1.67	-1.28	-3.12	-3.68
Czech Republic	-1.07	3.13	-2.42	-3.59	0.61
Hungary	-1.86	-1.28	-3.41	-1.14	-1.27
Poland	-2.64	-2.40	-0.58	-2.90	-5.09
Slovakia	-3.54	-2.36	-1.37	-7.50	-2.17

Source: own calculations based on data of Eurostat.

The standard method of growth accounting (Solow, 1957) enables examination of particular sources of growth (labor, capital, technology). Foreign direct investment (FDI) is generally considered to play an important role with regard to the impact of individual factors on economic performance. The need for extensive restructuring, with a view to boosting the competitiveness of individual segments across the V4 countries, entailed the fact that the investment requirements of the economies at issue highly exceeded their domestic savings opportunities, creating, thus, pressure to attract foreign funds. (FDI gradually became the principal source of financing current account deficits.) Consequently, not only did FDI influence the capital stock (through the gross fixed capital formation – see Table 3), but also favorably impacted the technological preparedness and productivity growth of the V4 economies.

Table 3. *FDI inflow to V4 countries* (percentage of gross fixed capital formation), 2000-2011

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
EU27	40.1	22.3	17.1	12.8	8.8	18.2	19.2	23.8	14.1	11.6	12.6	13.5
Czech Republic	29.4	30.8	39.1	8.2	16.8	34.6	14.3	21.3	10.6	6.0	12.6	4.5
Hungary	24.5	31.6	19.3	11.4	18.4	30.7	27.9	13.3	18.9	7.6	9.2	23.2
Poland	23.2	14.5	11.1	11.6	28.1	18.6	29.2	25.7	12.6	14.2	14.9	18.1
Slovakia	51.5	37.6	87.1	36.0	39.7	24.4	39.1	20.4	20.8	0.0	9.1	9.9

Source: UNCTADstat 2013.

Further, total net capital stock within the V4 countries was growing much faster than in the "old" member states, while Poland and Hungary experiencing the highest growth in the capital stock. Following 2008, however, the capital growth within the Group, except for Poland, slowed down. As for Slovakia and Hungary, during the crisis and post-crisis periods, the capital growth nearly ceased, in response to the decline in investment activities (Figure 1).

The relative FDI stock (FDI as a percentage of GDP) in the EU8[1] currently exceeds that of the "old" member states by 10.5 percentage point and in the V4 countries by 11 percentage points (Figure 2). Relative to GDP, FDI stock is the highest in Estonia (86.2%) and Hungary (81.7%). In Slovakia the FDI stock reaches 60.85% GDP.

[1] Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.

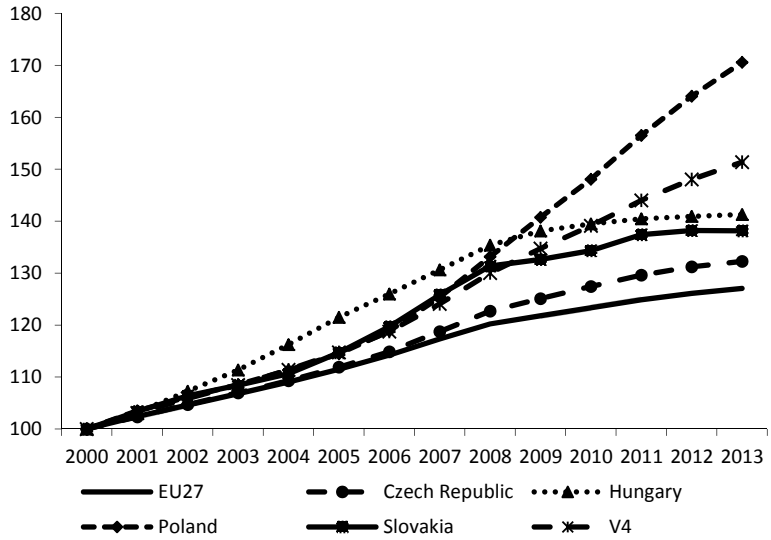

Figure 1. *Net capital stock* in the years 200-2013 (year 2000 = 100%, at 2005 prices)
Source: own calculations based on European Commission (Ameco).

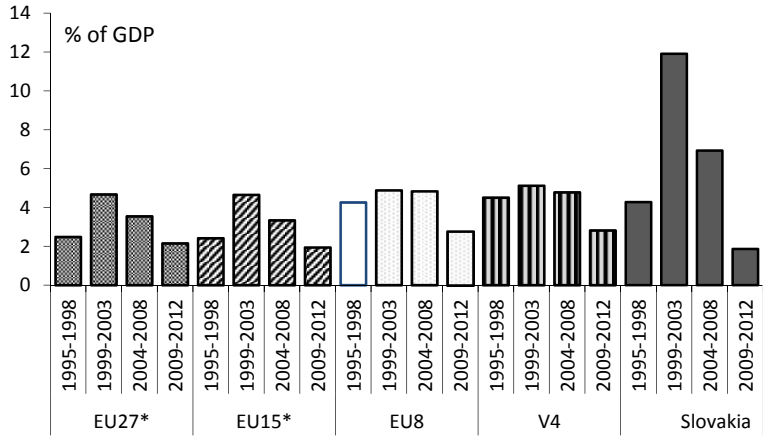

Figure 2. Foreign direct investment inflow in the years 1995-2010 (in % of GDP)
*excluding Luxembourg
Source: own calculations based on UNCTAD.

Alongside FDIs, employment is closely related to economic growth, while being a matter of a broader social concern at the same time. The employment in the V4 countries (Figure 3) had already displayed a rather sluggish upward trend in the pre-crisis years, but currently, again with the exception of Poland, it even fails to reach the modest pre-crisis figures. Relative to other sources of growth, the employment growth rate across all the countries examined least affected the real GDP growth, but following the crisis, the employment rate influenced the GDP growth negatively.

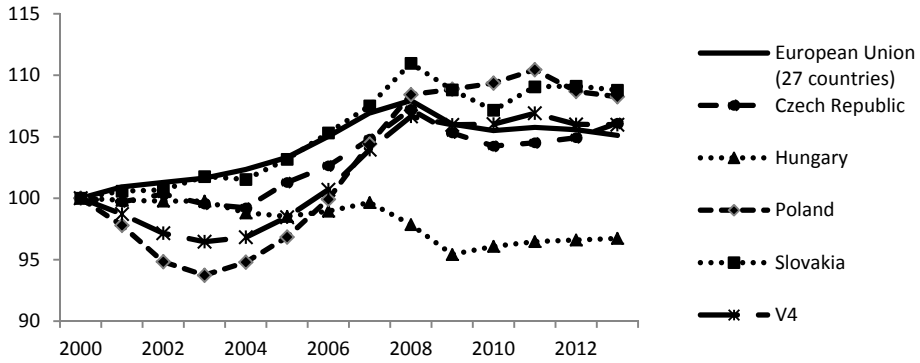

Figure 3. Employment rate dynamics in the years 2000-2012 (year 2000=100%)
Source: own calculations based on Eurostat.

The slow rate of employment growth was across all the countries offset by the reasonably high rate of labor productivity growth, which stemmed from significant labor productivity gap with the "old" member states and from steady decrease in the technological backwardness of the V4 countries. Quite importantly in this respect, labor productivity experienced a hike, above all in Poland and Slovakia.

As far as long-term economic growth is concerned, it is particularly vital to monitor the effect of total factor productivity (TFP) on growth for it brings long-term growth effects, represents a permanent change in the rate of accumulation and, thus, permanent change in the rate of economic growth.

Table 3. Contribution of production factors to growth in the years 2000-2013 (average annual percentage change in constant prices)

Country	2000-2013				2000-2003			
	GDP	capital factor	labor factor	TFP	GDP	capital factor	labor factor	TFP
EU27	**1.36**	**0.65**	**0.31**	**0.4**	**2.16**	**0.76**	**0.53**	**0.87**
EU15	**1.24**	**0.64**	**0.36**	**0.24**	**2.09**	**0.78**	**0.78**	**0.53**
Czech Republic	2.73	0.98	0.21	1.54	3.3	1.06	-0.17	2.41
Hungary	1.78	1.04	-0.10	0.84	4.07	1.32	0.11	2.64
Poland	3.65	1.89	0.21	1.55	2.69	1.26	-1.26	2.70
Slovakia	3.98	1.29	0.22	2.46	3.55	1.31	-0.03	2.27
V4 countries	**3.16**	**1.05**	**0.19**	**1.93**	**3.14**	**1.13**	**-0.69**	**2.71**
Country	2004-2008				2009-2013			
	GDP	capital factor	labor factor	TFP	GDP	capital factor	labor factor	TFP
EU27	**2.33**	**0.84**	**0.78**	**0.71**	**-0.24**	**0.38**	**-0.35**	**-0.28**
EU15	**2.13**	**0.82**	**0.73**	**0.58**	**-0.32**	**0.35**	**-0.34**	**-0.33**
Czech Republic	5.47	1.24	0.83	3.39	-0.46	0.65	-0.10	-1.00
Hungary	2.73	1.52	-0.24	1.45	-1.01	0.34	-0.14	-1.21
Poland	5.42	1.90	1.61	1.90	2.65	2.37	-0.01	0.29
Slovakia	7.26	2.05	0.83	4.37	1.03	0.51	-0.19	0.71
V4 countries	**5.09**	**1.51**	**1.16**	**2.43**	**1.25**	**0.52**	**-0.07**	**0.81**

Capital, labor - weighted rate of growth, where the weights are labor and capital product elasticity.
Source: own calculations based on European Commission (Ameco).

As can be seen from Table 3, total factor productivity was a significant long-term pro-growth factor. Its impact was the strongest in the Czech Republic and Slovakia, whereas less pronounced in Poland and Hungary. As with other factors, however, the influence of TFP on GDP growth varied in different time periods. The highest growth of total factor productivity was reached in 2004-2008, while in the post-crisis period the TFP growth rate started to cause a negative effect on GDP, especially in the Czech Republic and Hungary.

The economic crisis and its aftermath have inhibited the GDP growth as well as that of its factors. The European Commission projections assume that it is necessary to revise the potential product estimate downwards (averagely, for 2009 – 2060, the potential GDP growth of 1.4% is expected).

SBM efficiency measures

The DEA approach was employed two ways – static analysis to identify sources of inefficiency and intertemporal analysis using Malmquist index. The computations consisted of solving 26 (number of DMUs) optimization problems in each model.

Table 4. SBM-I (2013) scores, inefficiencies and slacks

DMU	Score	Inefficiency			Slack		
		K	L	Y	K	L	Y
Belgium	0.926	0.053	0.021	0	92.0	190.1	0
Bulgaria	0.453	0.171	0.376	0	25.0	2561.8	0
Czech Republic	0.522	0.131	0.347	0	101.0	3569.3	0
Denmark	1	0	0	0	0.0	0.0	0
Germany	0.799	0.094	0.107	0	1374.3	8931.9	0
Estonia	0.527	0.112	0.360	0	8.9	441.0	0
Ireland	1	0	0	0	0.0	0.0	0
Greece	0.537	0.236	0.227	0	343.3	1788.1	0
Spain	0.648	0.208	0.144	0	1558.3	4951.4	0
France	0.808	0.140	0.052	0	1682.2	2782.7	0
Italy	0.720	0.153	0.127	0	1435.0	6167.2	0
Cyprus	0.675	0.087	0.238	0	6.9	165.4	0
Latvia	0.715	0.032	0.252	0	1.7	449.6	0
Lithuania	0.774	0	0.226	0	0.0	585.0	0
Hungary	0.687	0	0.313	0	0.0	2561.7	0
Malta	1	0	0	0	0.0	0.0	0
Netherlands	0.834	0.084	0.083	0	259.9	1420.9	0
Austria	0.780	0.149	0.071	0	276.5	598.7	0
Poland	0.722	0	0.278	0	0.0	8751.0	0
Portugal	0.616	0.105	0.279	0	93.9	2501.2	0
Romania	0.579	0.079	0.342	0	31.6	6349.4	0
Slovenia	0.669	0.048	0.282	0	7.7	515.2	0
Slovakia	0.818	0	0.182	0	0	800.8	0
Finland	0.884	0.056	0.060	0	50.2	301.5	0
Sweden	0.873	0.110	0.017	0	227.1	159.6	0
United Kingdom	0.869	0.066	0.065	0	702.8	3875.4	0

Source: own calculations based on European Commission (Ameco) and Eurostat.

Optimization problem formulated by (3.7) captures all sources of inefficiency of DMU under consideration. While we are interested in use of inputs, it may be useful to

give the model input orientation to concentrate only on input use. Output slacks thus don´t enter the objective function in (3.8) keeping nevertheless acting in the constraints. The results of the static SBM-I model are shown in the Table 4.

In the second column labeled "score", SBM measures of efficiency are presented. It is clear that there are three efficient DMUs (economies) – Denmark, Ireland, and Malta all achieving measures of efficiency equal unit. The three DMUs constitute efficiency (technology) frontier and define the empirical *best practice* of technical transformation. The other DMUs are performing under the frontier which is materialized in positive slack variables that define deviations from the potential. Recalling input orientation of the model, inefficiencies related to output should be zero. According to interpretation stated in the previous section, inefficiencies reported in the third and fourth columns (K and L) present penalties for non-zero slacks in corresponding inputs, thus the higher the value the more inefficiency is related to corresponding input. Having a look at V4 countries, it is obvious that labor use is excessive in all the four DMUs, in the Czech Republic in a less pronounced way since capital contributes to inefficiency as well. In general, SBM-I scores can be obtained by deducting sum of inefficiencies from unit, for example the Poland´s score of 0.722 is equal 0.278 (labor inefficiency) subtracted from 1. Slacks variables represent potential improvement in absolute values to reach the efficiency frontier, for Slovakia it would imply increase in number of employees by around 800.8 thousand (36.3%). High relative labor slacks can be found for all the new member states of the EU.

Intertemporal analysis was carried out based on the theoretical foundations given in the previous section and the results are given in Table 5. Taking a look at the SBM-I efficiency scores for 2000 (labeled as E1 in the second column), a comparison to 2013 scores reveals efficiency change over time defining thus catch-up term (C) of Malmquist index $\frac{d_i^2(x_0,y_0)^2}{d_i^1(x_0,y_0)^1}$ from (9).

As can be seen, SBM-I scores from Table 4 are acting as efficiency scores in the period 2 and are labeled E2 in Table 5. The catch-up is given by the ratio E2/E1 with the meaning of improvement (if bigger than unit) or worsening (C < 1) of individual performance of the country with respect to contemporary frontier. As for the catch-up in V4 countries, Slovakia improved its performance by 40% (in terms of SBM-I efficiency), less distinct was the improvement of Poland and the Czech Republic (10.2 and 16.8% respectively) and Hungary kept its score at an almost the same level of about 0.7. Malmquist index itself (M) is according to (3.9) given by a product of C and frontier-shift effect F reported in the fifth column. Efficiency change C provides information on individual change of the "distance" to the new frontier of DMU performing now at the new level of input use and output production. It is clear that the efficiency frontier was in 2000 constituted by one more DMU (Latvia) which, however, did not achieved the unit score in the next period, nor did any other DMU except Denmark, Ireland, and Malta. Index F affecting overall productivity index appears to be lower than unit with the exception of Belgium, Ireland, and Sweden which implies no tangible improvement of technology over the period analyzed. For V4 the frontier-shift effect is quite near the unit which could be interpreted as keeping in touch with the prevailing technology.

Figure 2 depicts technological frontiers of the years 2000 and 2013. Since we assume constant returns to scale it is possible to plot capital and output per employee in two dimensional graph. The piecewise lines represent approximations of production

Table 5. SBM-I (2000, 2013) scores, catch-up, frontier-shift and Malmquist index

DMU	2000	2013	2000-2013		
	E1	E2	C	F	M
Belgium	0.912	0.926	1.015	1	1.015
Bulgaria	0.462	0.453	0.981	0.966	0.947
Czech Republic	0.447	0.522	1.168	0.960	1.121
Denmark	1	1	1	0.984	0.984
Germany	0.759	0.799	1.053	0.991	1.043
Estonia	0.596	0.527	0.885	0.966	0.855
Ireland	1	1	1	1.031	1.031
Greece	0.560	0.537	0.959	0.989	0.949
Spain	0.679	0.648	0.955	0.994	0.949
France	0.819	0.808	0.987	0.998	0.985
Italy	0.800	0.720	0.899	0.994	0.894
Cyprus	0.776	0.675	0.870	0.941	0.818
Latvia	1	0.715	0.715	0.973	0.696
Lithuania	0.648	0.774	1.194	0.787	0.939
Hungary	0.695	0.687	0.989	0.951	0.941
Malta	1	1	1	0.978	0.978
Netherlands	0.831	0.834	1.003	0.991	0.994
Austria	0.764	0.780	1.020	0.999	1.019
Poland	0.655	0.722	1.102	0.958	1.055
Portugal	0.650	0.616	0.948	0.967	0.917
Romania	0.514	0.579	1.125	0.965	1.086
Slovenia	0.732	0.669	0.914	0.951	0.869
Slovakia	0.583	0.818	1.403	0.956	1.341
Finland	0.843	0.884	1.049	0.991	1.039
Sweden	0.777	0.873	1.123	1.004	1.128
United Kingdom	0.842	0.869	1.032	0.990	1.022

Source: own calculations based on European Commission (Ameco) and Eurostat.

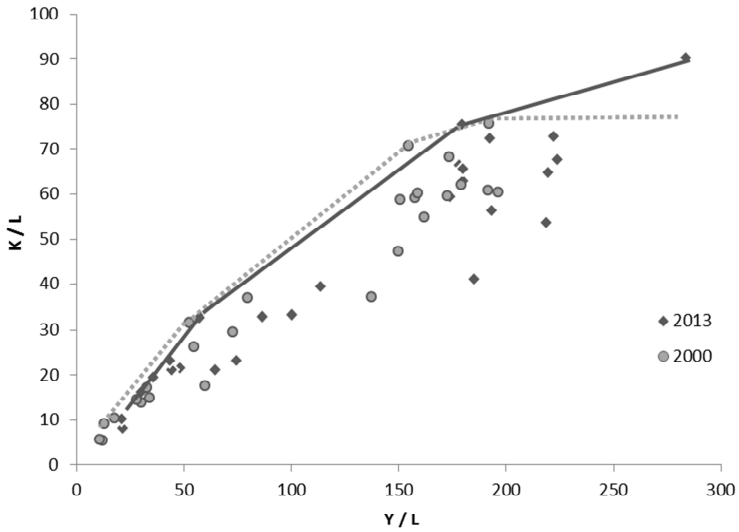

Figure 2. Empirical technological frontiers

Source: own calculations based on European Commission (Ameco) and Eurostat.

possibilities sets corresponding to different periods. Activities of DMUs in 2000 and 2013 are distinguished. One can see four DMUs making up the frontier of 2000 and three of them constituting 2013 frontier. It is also apparent that there is no clear-cut shift of the frontier as has been deducted from the F close to unit. The frontier lines can be viewed as sets of benchmarks for inefficient units and can be therefore be interpreted as representing the best achievable technology of transforming inputs into outputs.

CONCLUSIONS

Applied to the Visegrad Four countries, productivity analysis can assist in answering the query whether the V4 still constitutes the most dynamic part of the EU as the Group has been believed to do over the whole decade following its EU entry. Based on Cobb-Douglas production function, an exercise on growth accounting reveals roles played by capital, labor, and technology change in the course of the Visegrad Group´s economic development from 2000 onwards. The crisis slowed down FDI inflow as a main factor contributing to high economic growth which has reflected in lower catch-up rates. A decline has been also observed in all production factors growth as well as in total factor productivity.

The alternative non-parametric approach maintained the former results mainly in identifying no pronounced shift in empirical technology frontier constituted by EU countries. The main source of technical inefficiency in V4 was labor which is in line with findings regarding contributions to growth obtained by growth accounting. Qualitatively the poor TFP growth rates match with lower Malmquist indexes. Summarizing differences between V4 countries, despite the common drop in TFP in the after-crisis period, only Poland and Slovakia maintain its positive value. In Poland though, contribution of capital accounts for almost all of the growth. On the other hand, overly use of production factor labor identified by DEA, is a common feature of the group contributing to lower efficiency scores than in most developed European economies.

For decision-making, a more detailed results of calculations may be provided. For individual inefficient units, not only projections onto the frontier can be informative, it is also possible to determine a “peer group” consisting of efficient countries which make up a benchmark for the DMU under examination. Thus a closer attention may be drawn to examining successful policies of the best-practice countries identified.

At large, the results can be viewed as an empirical evidence of dynamics of the V4 economies within the European Union and the effect of the global crisis on European countries economic performance as well as a theoretical background for decision-making.

REFERENCES

Babunek, O. (2012). Foreign direct investment in visegrad four and the main trading partners. *Statistika*, *49*(2), 14-26.

Barro, R.J. (1996). Determinants of economic growth: A cross-country empirical study. *NBER Working Paper 5698WP 5698,* National Bureau of Economic Research. National Bureau of Economic Research, 1996. Retrieved on March 15, 2014, from http://www.iedm.org/uploaded/pdf/robertjbarro.pdf.

Bijsterbosch, M., & Kolasa, M. (2009). ´DI and productivity convergence in Central and Eastern Europe. An industry level investigation. *European Central Bank Working Paper Series*, No. 992 / January 2009.

Chang, Y.-T., Hyo-soo, P., Jeong, J., & Lee, J. (2014). Evaluating economic and environmental efficiency of global airlines: A SBM-DEA approach. *Transportation Research Part D Transport and Environment, 27*, 46–50.

Charnes, A., Cooper, W.W. & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research* vol. *2*, 429-444.

European Commission (2009). *Five years of an enlarged EU. Economic achievements and challenges*. Retrieved on March 15, 2014, from http://ec.europa.eu/economy_finance/ publications/publication 14078_en.pdf.

European Commission (2008). *Catching up, Growth and Convergence of the new Member States*. Retrieved on March 15, 2014, from: <http://ec.europa.eu/economy_finance/publications/ publication7718_en .pdf.

European Commission (2009). *Five years of an enlarged EU. Economic achievements and challenges*. Available from http://ec.europa.eu/economy_finance/publications/publication 14078_en.pdf.

European Commission (2012). *The 2012 Ageing Report. Economic and budgetary projections for the 27 EU Member States (2010-2060).* Retrieved on March 15, 2014, from http://ec .europa.eu/economy_finance/publications/european_economy/2012/pdf/ee-2012-2_ en.pdf.

Eslami, R., & Khoveyni M. (2014). Malmquist productivity index in several time periods. *International Journal of Applied Operational Research*, 4(1), 81-91.

Färe, R., Grosskopf, S., Norris, M., & Zhang, Z. (1994). Productivity growth, technical progress, and efficiency change in industrialized countries. *American Economic Review*, *84*, 66-83.

Farrell, M.J. (1957). The measurement of productive efficiency. *Journal of Royal Statistical Society*, III(120), 253-281.

Proietti, T., & Musso, A. (2007). Growth accounting for the Euro area. A structural Approach. *ECB Working Paper Series*, No. 804, August 2007.

Romer, P. (1990). Endogenous technical change. *Journal of Political Economy*, *98*, 71–102.

Schadler, S., Mody, A., Abiad, A., & Leigh, D. (2006). *Growth in the Central and Eastern European Countries of the European Union*, IMF, Retrieved on March 15, 2014, from http://relooney .fatcow.com/ 00_New_1735.pdf.

Solow, R.M. (1957). Technical Change and the Aggregate Production Function. *Review of Economics and Statistics*, *39*(3), 312-320

Tone, K. (2001). A slack-based measure of efficiency in data envelopment analysis. *European Journal of Operational Research*, *130*, 498–509.

Tone, K. (2004). Malmquist Productivity Index: Efficiency Change Over Time. In W. Cooper, Seiford, L., & Zhu, J. (Eds.), *Handbook on Data Envelopment Analysis*. Norwell, MA: Kluwer Academic Publishers.

Yörüka, B., & Zaimb, O. (2005). Productivity growth in OECD countries: A comparison with Malmquist indices. *Journal of Comparative Economics*, *33*(2), 401–420.

Witkowska, J. (2007). Direct investment in the changing business environment of the european union's new member states. *Global Economy Journal*, *7*(4).

Authors

Eduard Nežinský
Assistant professor at the Department of Applied Informatics and Computing Technology at the University of Economics in Bratislava (Slovakia).

Elena Fifeková
Assistant professor at the Department of Economic Policy at the University of Economics in Bratislava (Slovakia).

Correspondence to:
Ing. Eduard Nežinský, PhD
University of Economics in Bratislava
Faculty of National Economy
Department of Economic Policy
Dolnozemská cesta 1, 85325 Bratislava, Slovakia,
eduard.nezinsky@euba.sk

Published by Centre for Strategic and International Entrepreneurship – Krakow, Poland

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

Construction Sector in the Czech Republic and Poland: Focus on the Housing Segment in Selected Regions

Monika Płaziak, Anna Irena Szymańska

A B S T R A C T

Objective: The paper presents a comparative analysis of the construction sector in the Czech Republic and Poland, with a particular focus on the housing segment in selected regions. The authors compared the size and growth of the housing segment.

Research Design & Methods: To achieve the purpose, spatial and dynamic analyses of the construction sector indicators were conducted, with a particular emphasis on the housing segment (i.e. growth of construction sector production, completed dwellings per 1000 inhabitants).

Findings: In global economic crisis, the construction production fluctuation displayed a similar trend for both countries, with the worst indicators reported in 2010 and 2011. The main analysis focused on the dwelling segment. The Czech Republic reported a negative growth (-2.4%) in the number of completed dwellings in the period, while Poland reported a positive growth of 32.6%.

Implications & Recommendations: Analysed countries differ regarding the construction industry output, which depends on the different population potential and uneven distribution of construction projects, particularly in the housing segment. Nonetheless, a common tendency was observed in the housing segment showing an intensified growth in the output in the areas that had seen fewer investment projects.

Contribution & Value Added: Comparison of the construction sector status and development in selected regions of the Czech Republic and Poland can be helpful to entrepreneurs, investors and employees from both countries in recognizing a potential demand for dwellings.

Article type: research paper

Keywords: construction sector; housing segment; Czech Republic; Poland

JEL codes: R1, R3

Received: 15 March 2014 Revised: 17 April 2014 Accepted: 15 May 2014

Suggested citation:

Płaziak, M., & Szymańska, A.I. (2014). Construction Sector in the Czech Republic and Poland: Focus on the Housing Segment in Selected Regions. *Entrepreneurial Business and Economics Review, 2*(2), 47-63.

INTRODUCTION

Transformations occurring in the today's world economy, related to the transition from the industrial towards the information-based phase in the development of civilisation, are also reflected in the economic development of small-scale spatial patterns, namely regional or even local patterns (Rachwał, 2011, p. 1; Zioło, 2008, pp. 11-22; Zioło, 2001, pp. 9-20; Borowiec & Dorocki, 2011, pp. 215-216). The evolving business environment creates a growing disparity in the development of specific areas within a country. One of the reasons is evolving employment structure in economic sectors or the growth of entrepreneurial activity of people who are a labour resource, as well as changing location factors which apply to enterprises (Płaziak & Szymańska, 2014, p. 374; Szymańska & Płaziak, 2014, p. 381). The construction industry is one of the sectors considerably affecting the development of Polish and Czech economy (*Information on the Polish construction industry for the years 2012-2013,* p.10).

MATERIAL AND METHODS

The key purpose of the paper is to define a growth of the construction sector in the Czech Republic and Poland and in some regions of both countries in the period between 2006 and 2012 – shortly before and during the world crisis. Therefore, spatial and dynamic analyses of the construction sector indicators were conducted, with a particular focus on the housing segment. The increase in the number of dwellings is accompanied by today's suburbanisation processes, related to metropolisation, visible increasingly in central Europe. The demand for new dwellings is related to the socio-economic development and growing human needs, which make it an important metric of the level and quality of life (Płaziak, 2004a, pp. 108-110; Płaziak, 2004b, pp. 121-122; Zborowski, 2005, p. 241; Zuzańska-Żyśko, 2014, p. 375).

The analysis is based on official statistics (The Czech Statistical Office, The Central Statistical Office of Poland), brokerage reports (Dom Maklerski BDM S.A., *Budownictwo*) and real estate market reports (KPB, 2012), which were used to describe the general state of construction sector in the Czech Republic as well as Poland in the time of the global economic crisis. The paper identifies the broad trends of change in the sector and what is more, the detailed analysis of dwelling segment is presented and discussed.

The paper compares the size and growth of dwelling segment in the Czech Republic and in Poland, focusing on selected regions: Moravia Silesia, Olomouc, South Moravia, Zlín in the eastern part of the Czech Republic and the Małopolska Region in Poland. To realize the purpose, we applied the indicator of completed dwellings per 1000 inhabitants and its dynamics and regional diversity (on the basis of the Czech Statistical Office and the Central Statistical Office). The analysis covers the period between 2006 and 2012 – the time shortly before the world economic crisis and during the crisis.

RESULTS AND DISCUSSION

The Condition of the Czech Construction Sector

The analysis of the GDP growth in the Czech economy in the period from 2006 to 2010 shows a considerable diversification of economic development. Although the rate of the GDP growth in 2008 year-on-year (3.1%) was lower than the change between 2007 and 2006 (5.7%), the indicator confirmed the economic growth in the Czech Republic. Unfortunately, in the late 2008, the country's economy began deteriorating rapidly. At the time, the global crisis could be clearly noticed in Central and Eastern Europe. In 2008, the Czech economy continued growing; however, the GDP growth (3.1% YOY) was not as high as in 2007 (5.7% YOY). In 2009 (the peak of the crisis), the GDP growth dropped by nearly 5 percentage points. Two consecutive years (2010 and 2011) saw a slight recovering trend (a positive GDP); however, the reported GDP growth remained significantly lower than in 2007-2008 (KPB, 2012, p. 22).

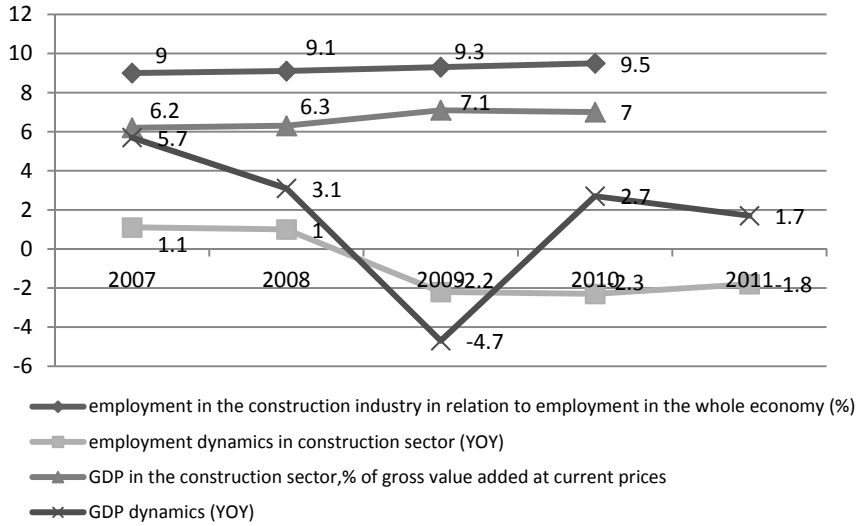

Figure 1. Indicators describing the condition of the Czech construction sector
Source: based on KPB (2012, p. 21); ASM – Centrum Badań i Analiz Rynku, after: EUROSTAT, UNECE data.

The employment in the construction sector is relatively high when compared to the entire Czech economy. Employment in the construction sector accounts for 9% of the Czech labour market. The analysis of the employment volume 2007-2010 shows a continuous growth (from 9% in 2007 to 9.5% in 2010). The data show that the 2008 crisis did not have any impact on the ratio. However, an analysis of the employment growth in the construction sector shows something entirely different. Starting from 2009, the number of persons employed in the construction industry was dropping by approx. 2% (YOY) each year, which may be the outcome of the 2008 crisis. Given the growing percentage of people employed in the sector, which is contradictory to the above-mentioned trend, one may conclude that the downward trend in employment was more

visible in other sectors of the economy. On the other hand, the GDP in the construction sector in the period 2009-2010 was, on average, higher by approx. 1% than the same in the period 2007-2008 (Figure 1).

An analysis of the Czech housing segment in 2007-2011 shows a downward trend, confirmed by such indicators as the number of building permits issued for dwellings, the number of completed dwellings and the number of dwellings under construction in the analysed years. On a positive note, the number of building permits for dwellings mildly increased in 2011, which may be then reflected in the larger number of new dwellings under construction and of completed dwellings[1] in the coming years (Table 1).

Table 1. Indicators illustrating the Czech housing construction market, 2007-2011

Year	Building permits (for dwellings)	Completed dwellings	Dwellings under construction
2007	-	41.6	43.8
2008	122.2	38.4	43.5
2009	112.7	38.5	37.3
2010	105.7	36.4	28.1
2011	107.2	28.6	27.5

Source: based on KPB (2012, p. 23); ASM – Centrum Badań i Analiz Rynku, after: the Czech Statistical Office.

Considerable regional differences in demand are observed in the Czech Republic. The highest demand is reported in the central part of the Czech Republic, Moravia-Silesia (Ostrava), Olomouc, Southern Moravia, and in the western part of the country.

The Czech construction market is highly competitive due to, inter alia, very few or hardly any new investment projects coupled with a dropping demand. The demand for construction services as well as project budgets are shrinking. It is likely that the fierce competition on the market is a consequence of its small size (a small target group).

Construction Sector in Poland

The construction industry is an important sector of the Polish economy. The data of the Central Statistical Office (GUS) reported a growth of 6.4% in 2010 and a growth approaching 12% in 2011 (Figure 2). The Polish construction market reached its peak in 2011, which came as a direct consequence of implementing infrastructural investment projects financed under the OP I&E (Operational Programme Infrastructure and Environment 2007-2013, approved by the European Commission on 7th December 2007) and of the organisation of EuroCup 2012.

The analysis of the value of construction output in Poland, 1993-2011, confirms that the Polish construction sector did not experience any recession since the period 2000-2003. The construction output has been continuously growing since 2004 (Figure 3). Since 2005, the share of public contracts in the construction sector in the total number and value of public contracts were growing steadily (Kozik & Starzyk, 2011).

[1] In 2010, an average (typical) flat in multi-family residential buildings was comprised of two rooms and a kitchen, with the total floor area of 55 m^2. The average price of such a flat was 2.6 million CZK (approx. EUR 106 thousand). Residential premises in single-family buildings were much larger - their average floor area equalled 95m^2, and they were comprised of five rooms and a kitchen. The average price in this case was CZK 3.2 M (approx. EUR 130 thousand) (Source: http://praha.trade.gov.pl/pl).

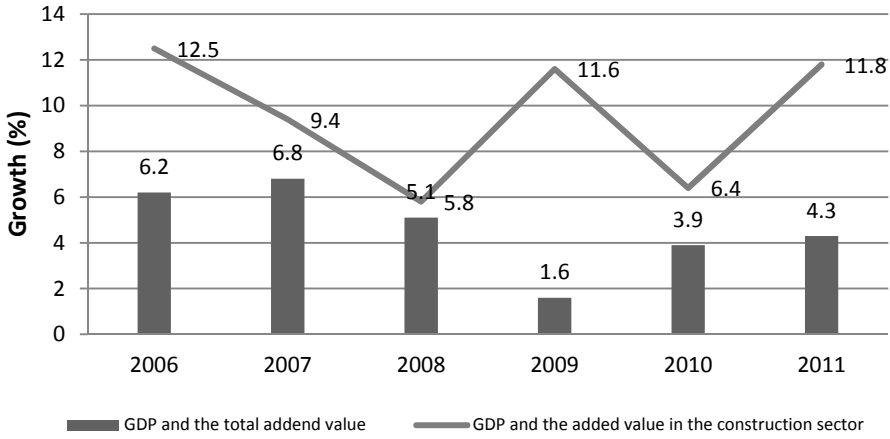

Figure 2. Annual GDP and gross added value growth rate in Polish industry and construction sector in the years 2006-2011

Source: based on GUS data*; Informacja o sytuacji społeczno-gospodarczej kraju rok 2011,* 2012*;* BAA (2011).

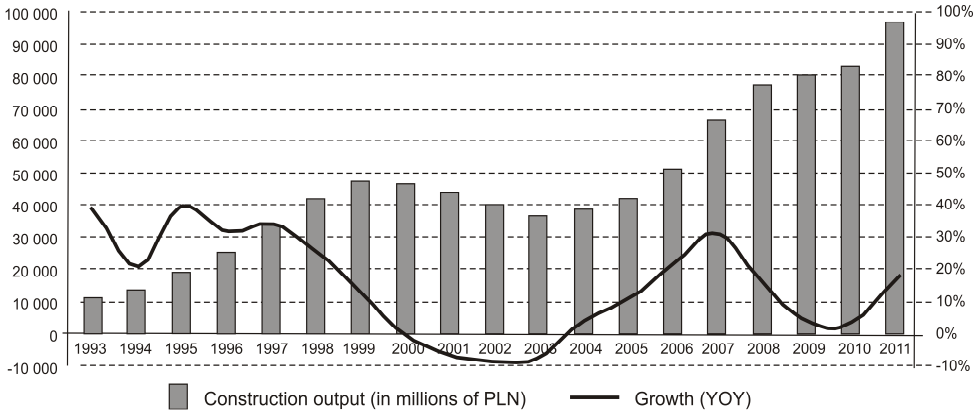

Figure 3. Value of the Construction Output in Poland in the years 1993-2011

Source: BDM (2014, p. 13).

The value of the civil engineering sector output in Poland in 2010 reached PLN 82.6 milliard (for entities employing 9+ staff), and its growth has reached and maintained a double-digit values since November 2010. This mainly resulted from a growth in expenditures on civil engineering projects (the peak of the public investments made through the General Directorate for National Roads and Motorways (GDDKiA) and investment projects related to Euro 2012) (Figure 4).

Approx. 60% of construction output in Poland in 2010 was generated by the construction of non-enclosed structures, mainly roads, bridges and railways (these segments jointly accounted for 34% of the construction output in Poland in 2010). The investment projects were mainly financed from the state budget and EU funds, with concession sections of motorway as the only exception. On the other hand, the planned

reduction in investment in roads and motorways affected the value of the Polish construction market in subsequent years.

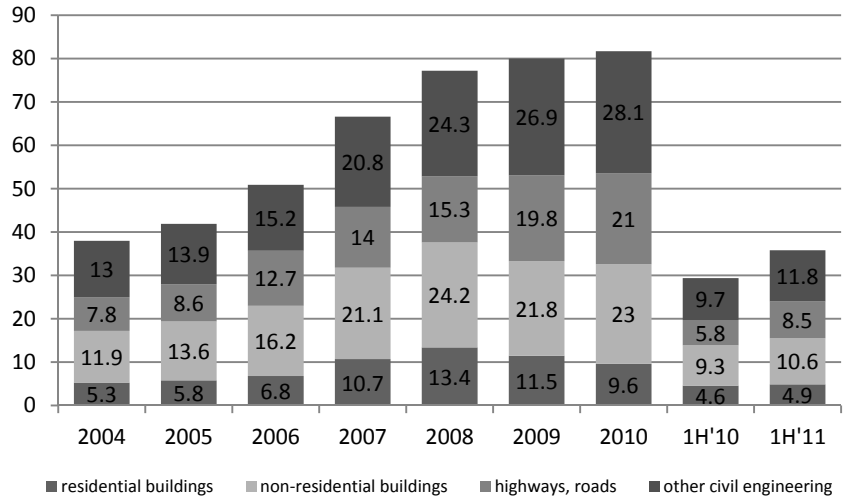

Figure 4. Structure of civil engineering output (in PLN milliard)
Source: BDM (2014, p. 20).

Table 2. Structure of the Polish construction sector, 2005-2011

Buildings and structures	2005	2006	2007	2008	2009	2010	1H'10	1H'11
The structure of the construction market in Poland (in milliard PLN)								
Total	42.0	50.8	66.7	77.2	80.0	81.7	29.4	35.7
Cubic construction total	19.5	23.0	31.9	37.6	33.3	32.6	13.9	15.4
Residential buildings	5.8	6.8	10.7	13.4	11.5	9.6	4.6	4.9
Civil and water engineering structures	22.5	27.8	34.8	39.6	46.6	49.1	15.5	20.3
Change (YOY, in %)								
Total	-	21	31	16	4	2	-	21
Cubic construction total	-	18	38	18	-11	-2	-	11
Residential buildings	-	17	58	25	-14	-17	-	6
Civil and water engineering structures	-	24	25	14	18	5	-	31
Structure (in %)								
Total	100	100	100	100	100	100	100	100
Cubic construction structures	46	45	48	49	42	40	47	43
Residential buildings	14	13	16	17	14	12	16	14
Civil and water engineering structures	54	55	52	51	58	60	53	57

Source: adapted from (BDM, 2014, p. 23).

In 2011, the housing sector accounted for 11-12% of the construction market in Poland. From construction companies' perspective, the market is highly competitive, dominated by smaller entities. A considerable drop in the value of investment projects was observed in 2009 and 2010, while 2011 saw a recovery. In the period between the third quarter of 2010 and the second quarter of 2011, 37 000 new dwellings were offered on the market. It was 5,000 more than in in the entire 2008, when an abrupt

growth had been observed in this segment. However, note that the housing standard in Poland expressed, for instance, as the number of dwellings per 1000 inhabitants is relatively low. The above-mentioned indicator for Poland is 348 against 500 in the majority of Western European countries. Polish dwellings are smaller in size and overcrowded. It is estimated that over 50% of the Poles live in overcrowded dwellings – as for the EU-27, Poland came only before Hungary and Romania, with the EU average at nearly 18% (*Housing Europe Review* 2011, pp. 13-16).

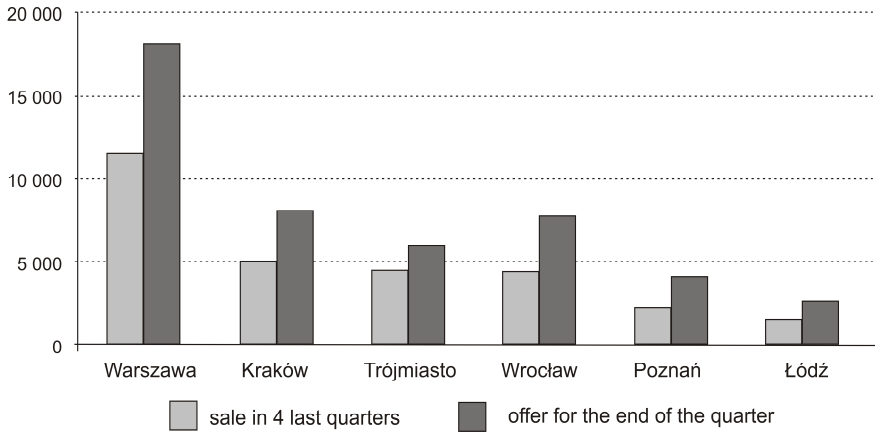

Figure 5. Key markets in the housing segment of the construction sector, 2Q-2011
Source: own study based on BDM (2014, p. 20).

In 2012, the Polish construction market cherished a rather positive outlook due to prolongation or postponement of the implementation of public contracts, but 2013-2015 outlook is bleak, mainly because of a gap resulting from the lower value of contracts offered under tender procedures in 2011-2012 (both, the decrease of public financing as well as suspension of commercial projects).

Factors having particular adverse effect on the condition of the Polish construction sector include: fierce competition, poor condition of public finance, a planned significant reduction of investment into transport infrastructure, deteriorating economic condition, uncertainty as to available financing of infrastructural projects in the next EU budget and payment gridlocks.

The above analyses may be supplemented and supported with the findings of the surveys conducted by CEEC Research in collaboration with KPMG in Poland and with a data collection company Norstat Polska (BDM, 2014, pp. 5-10). The surveys were conducted among managing directors and members of management boards of construction companies with a view to evaluating the condition of the construction industry in Poland compared with other countries of the Visegrad Group. The surveys show moods and expectations concerning the condition of the construction sector (Table 3).

The findings suggest continuation of a downward trend in the output of the Polish construction sector. According to forecasts, the drop may be the largest among all V4 countries and may even reach 11%. Similar are the forecasts concerning the sales

planned in 2013. According to more than a half of the respondents (59%), the sales will fall by 6.1%. For comparison, in the Czech Republic a small increase in sale is expected (+0.6%). Only 38% Polish companies expect to improve their market position in 2013. The surveys show clearly that the level of optimism among Polish construction sector companies is rather low – the lowest of all Visegrad Group countries.

Table 3. Situation in the construction sector in Visegrad Group countries (in %)

Selected factors describing situation in the construction sector	Czech Republic survey Feb. 2013	Slovakia survey Mar. 2013	Hungary survey Jun. 2012	Poland Survey Mar-Apr. 2013
Construction sector growth, 2013 (own forecast of the sector)	-4.4	-4.6	-2.2	-11.0
Change in sales 2013 (managers' forecast)	+0.6	-3.3	-2.3	-6.1
Companies anticipating improvement of their market standing in 2013	59.0	46.0	51.0	38.0
Average use of production capacities	65.0	63.0	59.0	60.0

Source: adapted from BDM (2014, pp. 5-10).

Analysis of the Housing Segment in Czech Republic, Poland and in Selected Regions

The authors prepared the analysis of the present situation and of the growth of the both countries and selected regions. In Czech Republic these regions were: Moravia Silesia, Olomouc, Southern Moravia, Zlín; while in Poland – the Małopolska Region. The analysis covered the years 2006-2012 – the time before the economic crisis and during the crisis. The size of the housing segment in Poland and in Czech Republic as well as in individual regions was determined on the basis of completed new dwellings per 1000 inhabitants. The choice of the regions in Czech Republic and in Poland was not accidental. The authors support it by claiming their familiarity with the areas and certain similarities of the areas – the four regions selected in the Czech Republic have similar population potential to the Małopolska Region, higher than average population density, they are situated far from their respective capital cities and are borderland regions (MRD, 2005; UMWM, 2012). Both countries and all analysed regions differ in terms of saturation with dwellings, expressed as the number of dwellings per 1000 inhabitants or usable floor area per person (Table 4).

In the analysed period, Poland's condition in the housing segment measured by new dwellings completed per 1000 persons was better than in the Czech Republic both in the year 2006 – at the beginning of the analysed period – as well as in 2012 closing the period, showing an upward trend. In 2006 and 2012, the indicator for Poland reached: 3.0 and 4.0 completed dwellings per 1,000 inhabitants, respectively; while in the Czech Republic it was 2.9 and 2.8, respectively. For the four analysed Czech regions, the ratio was: 2.3. and 2.5 respectively; however, the values above the country's average were recorded only in the Southern Moravia Region (3.5 and 3.2 respectively). As regards the Małopolska Region, the recorded values were significantly above the country's average – 3.8 and 4.6, respectively. In terms of growth in the period 2006-2012, the number of new dwellings completed in Czech Republic was sloping (-2.4%), while in Poland, in the same

period, it was soaring (32.6%). In the same time, a high positive growth was reported in Poland (nearly 33%), with a fairly good result in the Małopolska Region (23%); still below the country's average (Table 5 and 6).

Table 4. Population potential and housing segment in selected regions of the Czech Republic and Poland in 2012

Country/region	Population	Population density (persons/1km^2)	Dwellings per 1,000 inhabitants	Usable floor area in m^2 per person
1. Czech Republic	*10 516 125*	*133*	*452*	*25.5*
2. Moravia-Silesia Region	1 226 602	226	434	.
3. Olomouc Region	637 609	121	438	32.2
4. South Moravia Region	1 168 650	162	431	31.4
5. Zlín Region	587 693	148	429	31.4
2+3+4+5	**3 620 554**	**164**	**433**	**.**
6. Poland	*38 125 479*	*123*	*356*	*25.9*
7. The Małopolska Region	**2 524 651**	**221**	**329**	**24.9**

Source: own study based on the data of the Czech Statistical Office, Central Statistical Office.

Table 5. Growth of completed dwellings in the Czech Republic, 2006-2012

Region	Completed dwellings 2006	Completed dwellings 2012	Completed dwellings per 1000 inhabitants 2006	Completed dwellings per 1000 inhabitants 2012	Completed dwellings growth 2006-2012 (in %)
Central Bohemia	5957	5900	5.1	4.6	-1.0
Hradec Králové	1218	1384	2.2	2.5	13.6
Karlovy Vary	638	543	2.1	1.8	-14.9
Liberec	1024	1252	2.4	2.9	22.3
Moravia-Silesia	**1632**	**2698**	**1.3**	**2.2**	**65.3**
Olomouc	**1307**	**1490**	**2.0**	**2.3**	**14.0**
Pardubice	1515	1295	3.0	2.5	-14.5
Plzeň	2067	1444	3.7	2.5	-30.1
Prague	5186	4024	4.4	3.2	-22.4
South Bohemia	1909	1983	3.0	3.1	3.9
South Moravia	**3985**	**3770**	**3.5**	**3.2**	**-5.4**
Ústi	1119	1271	1.4	1.5	13.6
Vysočina	1495	1276	2.9	2.5	-14.6
Zlín	**1138**	**1137**	**1.9**	**1.9**	**-0.1**
Czech Republic	30190	29467	2.9	2.8	-2.4

Source: own study based on the data of Czech Statistical Office.

While the growth reported between 2006 and 2012 in both countries differs, being negative in Czech Republic and positive in Poland, the year on year trend was similar for both of them, demonstrated a delayed impact of the economic crisis when compared to other economy sectors. In the construction industry, including the housing segment, both in the Czech Republic and in Poland a decrease in the output measured as the number of completed dwellings was recorded in 2009, with the worst results were in 2010 and 2011. In 2012, the number of new completed dwellings went up (Figure 6 and 7).

Table 6. Growth in the number of completed dwellings in Poland in the years 2006-2012

Region	Completed dwellings 2006	Completed dwellings 2012	Completed dwellings per 1000 inhabitants 2006	Completed dwellings per 1000 inhabitants 2012	Completed dwellings growth 2006-2012 (in %)
Dolnośląskie	9167	15028	3.2	5.2	63.9
Kujawsko-pomorskie	5006	6358	2.4	3.0	27.0
Lubelskie	4780	7190	2.2	3.3	50.4
Lubuskie	2918	3169	2.9	3.1	8.6
Łódzkie	4868	8019	1.9	3.2	64.7
Małopolskie	**12405**	**15294**	**3.8**	**4.6**	**23.3**
Mazowieckie	27090	30554	5.2	5.8	12.8
Opolskie	1338	1820	1.3	1.8	36.0
Podkarpackie	4652	6526	2.2	3.1	40.3
Podlaskie	3036	4525	2.5	3.8	49.0
Pomorskie	10018	14194	4.5	6.2	41.7
Śląskie	8325	9744	1.8	2.1	17.0
Świętokrzyskie	1614	3097	1.3	2.4	91.9
Warmińsko-mazurskie	4469	5496	3.1	3.8	23.0
Wielkopolskie	10549	14811	3.1	4.3	40.4
Zachodniopomorskie	5118	7079	3.0	4.1	38.3
Poland	115353	152904	3.0	4.0	32.6

Source: own study based on the data of the Central Statistical Office of Poland.

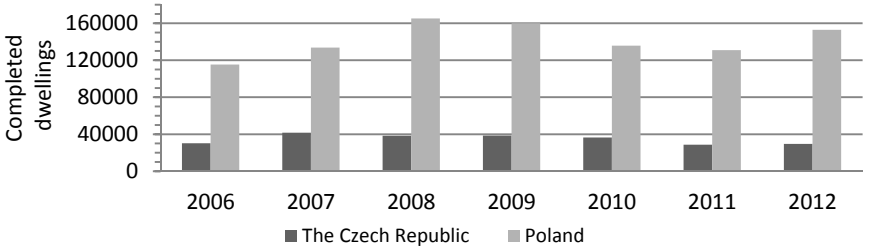

Figure 6. Dwellings completed in the Czech Republic and in Poland, 2006-2012
Source: own study based on the Czech Statistical Office, Central Statistical Office of Poland.

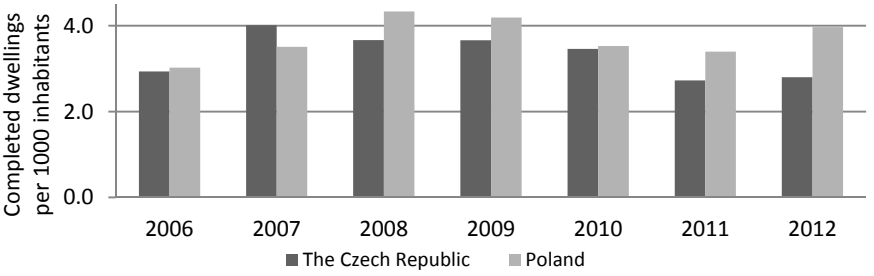

Figure 7. Dwellings completed per 1000 inhabitants in the Czech Republic and Poland in 2006-2012
Source: own study based on Czech Statistical Office, Central Statistical Office of Poland.

The negative growth in the number of dwellings completed in Czech Republic did not translate directly into the growth in the analysed regions. Two such regions reported a significant positive growth: the Moravia-Silesia Region (growth in excess of 65%) and the Olomouc Region (14%). On the other hand, two other regions reported a negative growth. The Zlín Region's growth was slightly in the red (-0.1%), while the South Moravia Region's growth (-5.4%) was rather pessimistic (Figure 8).

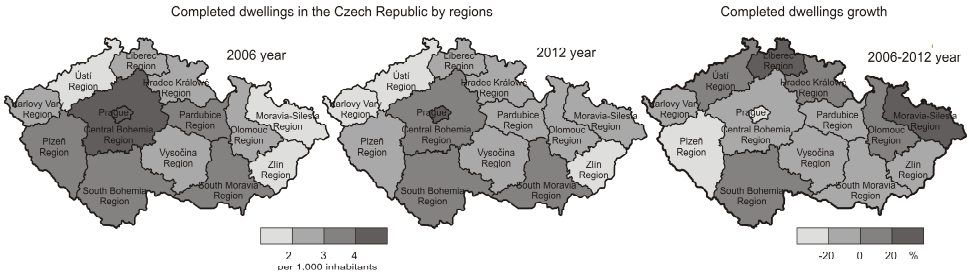

Figure 8. Growth of the dwelling segment in the Czech Republic, 2006-2012
Source: own study based on the Czech Statistical Office.

Note that both Poland and Czech Republic reported a higher growth in the number of completed dwellings in the regions generating relatively low number of dwellings completed per 1000 inhabitants in the first year of the analysed period (Table 5 and 6, Figure 8 and 9).

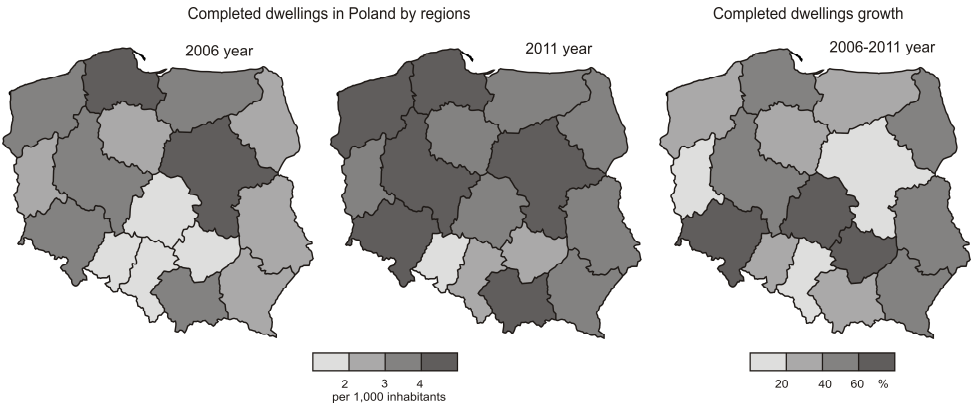

Figure 9. Growth of the dwelling segment in Poland, 2006-2012
Source: own study based on the Central Statistical Office of Poland.

In case of the Czech Republic, the above-discussed Moravia-Silesia Region or Ústi Region may serve as examples of regions with the lowest number of dwellings completed per 1000 inhabitants indicator in 2006, hand in hand with the above-mentioned Olomouc Region and Liberec Region. On the other hand, regions reporting significantly higher values of the indicator in 2006 showed a negative growth, including: the capital region of Prague reporting -22% of the growth and the region surrounding the city of Prague. What is interesting, the Central Bohemia Region around Prague also suffered

from a slight negative growth (-1%) while it reported 5.1 dwellings completed per 1000 inhabitants back in 2006. Apart from Prague, a significant decrease of the indicator was reported by the Plzeň Region (-30%) (Figure 8).

No such negative growth was reported for Poland in regional comparisons, as mentioned above, the highest negative growth was reported for the regions showing the lowest initial values of the indicator, including: the Opolskie and Łódzkie Regions as well as the region along the eastern border of Poland, including: the Świętokrzyskie, Podlaskie, Lubelskie and Podkarpackie Regions, with the initial indicator in the range from 1.3 to 2.5 and the growth from 40% to 50%, including the Świętokrzyskie Region growing at the rate in excess of 90%. While the capital Mazowieckie Region reported a positive growth, contrary to the capital region of the Czech Republic, note that the growth ranked among the lowest (slightly below 13%) when compared to the highest value of the indicator (5.2%) among all regions in Poland (Figure 9).

Inside regions, the above-described regularity consisting in compensating a shortage on the housing segment with an increased growth in areas reporting the lowest growth in the number of completed dwellings per 1000 inhabitants in the initial year 2006 becomes even clearer for smaller territorial units – districts in the Czech Republic and poviats in Poland.

Table 7. Growth in dwellings completed in some Czech regions, 2006-2012

Region	District	Completed dwellings 2006	Completed 0dwellings 2012	Completed dwellings per 1000 inhabitants 2006	Completed dwellings per 1000 inhabitants 2012	Completed dwellings growth 2006-2012 %
South Moravia Region	Blansko	574	319	5.3	3.0	-44.4
	Znojmo	404	290	3.5	2.6	-28.2
	Vyškov	312	273	3.6	3.0	-12.5
	Brno-město	1 443	1 342	3.9	3.5	-7.0
	Brno-venkov	808	903	4.6	4.3	11.8
	Hodonín	244	331	1.6	2.1	35.7
	Břeclav	200	312	1.6	2.7	56.0
Moravia-Silesia	Bruntál	136	133	1.4	1.4	-2.2
	Nový Jičín	293	304	1.8	2.0	3.8
	Opava	304	469	1.7	2.6	54.3
	Frýdek-Místek	431	730	1.9	3.4	69.4
	Karviná	204	414	0.7	1.6	102.9
	Ostrava-město	264	648	0.9	2.0	145.5
Olomouc	Prostějov	373	287	3.4	2.6	-23.1
	Jeseník	109	112	2.6	2.8	2.8
	Olomouc	588	708	2.6	3.0	20.4
	Šumperk	114	175	0.9	1.4	53.5
	Přerov	123	208	0.9	1.6	69.1
Zlín	Zlín	384	282	2.0	1.5	-26.6
	Vsetín	326	345	2.2	2.4	5.8
	Uherské Hradiště	306	362	2.1	2.5	18.3
	Kroměříž	122	148	1.1	1.4	21.3
Total		8 062	9 095	2,7	2.5	12.8

Source: own study based on the Czech Statistical Office.

Therefore, in two Czech regions reporting an overall positive growth (Moravia-Silesia and Olomouc), districts reporting the highest growth (even in excess of 100 and 140%) reported the initial values of the indicator below 1.0. The lowest growth of -44% was reported by Blansko district in the South Moravia Region, which had reported the highest value of 5.3 of the indicator in 2006 of all the analysed districts (Table 7, Figure 10).

Similarly, in the case of the Małopolska Region, poviats reporting low initial indicators reported high growths. On the one hand, these were typical rural poviats or poviats located far from large urban areas, e.g. poviats reporting the highest growth in the region: Miechowski (nearly 327%), Nowosądecki (176%), Bocheński (107%), Dąbrowski (nearly 94%), as well as poviats in the vicinity of the main city in the region, Kraków, in particular Wielicki Poviat which has been rapidly growing (107%) (Table 8, Figure 11) (compare: Szymańska & Płaziak, 2014, p. 387).

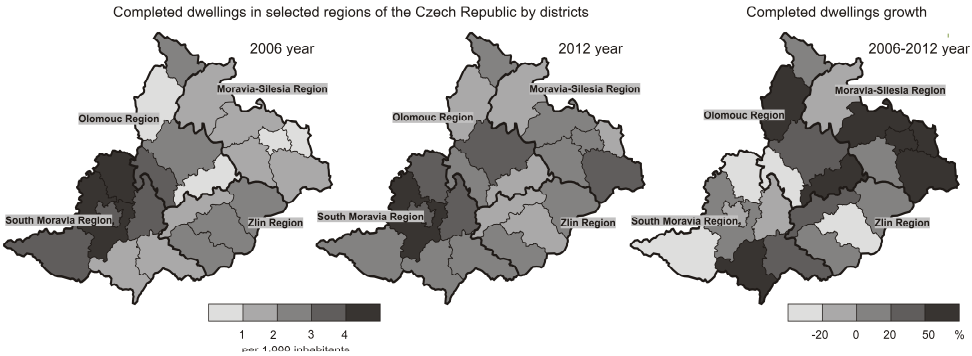

Figure 10. Growth of the dwelling segment in some Czech regions, 2006-2012
Source: own study based on the Czech Statistical Office.

Summarising the above-presented analysis, the authors conclude that the above-presented comparison shows a significantly higher growth of the dwelling segment in Poland. Note that no region in Poland reported a negative growth in the analysed period. A direct cause of such development may be higher saturation of the Czech dwelling segment, expressed by the number of dwellings per 1000 inhabitants' indicator and by the usable floor space of dwellings per 1 inhabitant.

Typically, positive growth was reported for entities (in regions, districts or poviats) with the lowest dwelling (or usable dwelling floor space) saturation in 2006. And vice-versa: a negative or low growth of the market was reported by entities with the highest initial values, including the city of Prague and its surrounding districts.

In the context of regions and their districts/poviats, there was a trend on the dwelling segment consisting in the housing segment moving to the outskirts which so far had not been highly saturated in terms of demand for dwelling. On the other hand, the Małopolska Region continues to demonstrate a growing demand for new dwellings in the vicinity of Krakow, as remarkably demonstrated by Wielicki Poviat (Raźniak & Brzosko-Sermak, 2014; Raźniak & Winiarczyk-Raźniak, 2014).

Table 8. Growth in dwellings completed in the Małopolska Region, 2006-2012

Poviat	Completed dwellings 2006	Completed dwellings 2012	Completed dwellings per 1000 inhabitants 2006	Completed dwellings per 1000 inhabitants 2012	Completed dwellings growth 2006-2012 %
Chrzanowski	192	197	1.5	1.5	2.6
Oświęcimski	370	380	2.4	2.5	2.7
Kraków	6 612	6 824	8.7	9.0	3.2
Wadowicki	365	397	2.4	2.5	8.8
Gorlicki	222	262	2.1	2.4	18.0
Tatrzański	235	278	3.6	4.1	18.3
Nowotarski	395	488	2.2	2.6	23.5
Olkuski	207	267	1.8	2.3	29.0
Suski	265	351	3.2	4.2	32.5
Brzeski	201	268	2.2	2.9	33.3
Tarnów	333	449	2.8	4.0	34.8
Krakowski	895	1 231	3.6	4.7	37.5
Proszowicki	53	73	1.2	1.7	37.7
Nowy Sącz	246	341	2.9	4.1	38.6
Limanowski	207	315	1.7	2.5	52.2
Myślenicki	290	448	2.5	3.6	54.5
Tarnowski	417	681	2.2	3.4	63.3
Dąbrowski	78	151	1.3	2.5	93.6
Bocheński	196	406	1.9	3.9	107.1
Wielicki	384	796	3.6	6.8	107.3
Nowosądecki	227	627	1.1	3.0	176.2
Miechowski	15	64	0.3	1.3	326.7
Total	12 405	15 294	3.8	4.6	23.3

Source: own study based on: the Central Statistical Office of Poland.

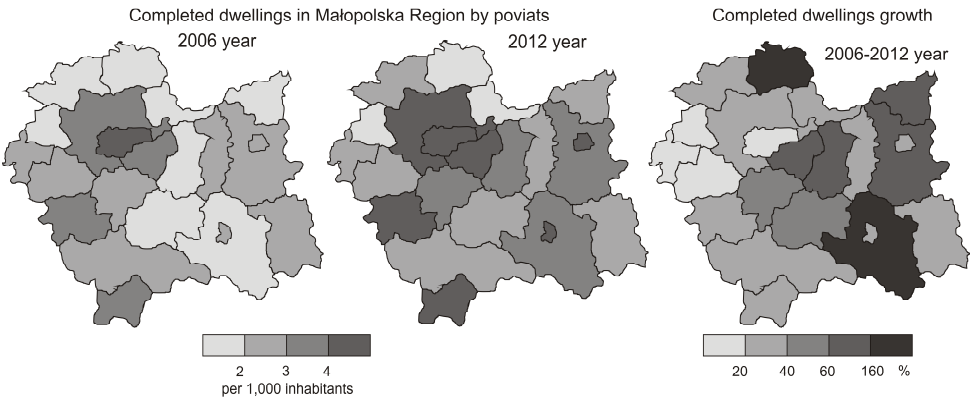

Figure 11. Growth of the dwelling segment in the Małopolska Region, 2006-2012
Source: own study based on the Central Statistical Office of Poland.

CONCLUSIONS

The construction sector forms an important part of both Czech and Polish economy. It is also very sensitive to the economic condition. On the other hand, the construction market shows delays in its reactions to changing market conditions. The

observed delayed reaction to the most recent global crisis (Rachwał, 2011, pp. 99-113) was related to the specificity of the sector with numerous long-term investment projects, often initiated in the period before the crisis hit.

In the condition of the global economic crisis, the construction production fluctuation trend for both countries was similar, reporting the least favourable indicators in 2010 and 2011. In their analysis of the construction sector, the authors focused on the dwelling segment. While the above-mentioned trends were similar for both countries during the crisis, Czech Republic reported a negative growth (-2.4%) in the number of completed dwellings in the period while Poland reported a positive growth of 32.6%. The discrepancies can be explained by differences in the demographic potential of both countries (the Czech market is markedly smaller because of significantly smaller population of Czech Republic) and reports higher saturation of the dwelling segment.

When comparing regions and local trends, similarities were reported such as intensified housing investment in areas where such investment projects had been scarce or non-existent. In case of Czech Republic, these were: Moravia-Silesia and Olomouc, in Poland – regions along the eastern border of Poland. Furthermore, dwelling investment projects shrank in regions reporting the highest indicators in 2006, including the region of Prague and its surrounding Central Bohemia Region. Furthermore, the trend is more distinctive for Czech Republic than for Poland.

As indicated above, the construction sector is sensitive to fluctuations and changes in the economic condition (Gorzelak, 2009). It is also sensitive to other conditions, even such as an insufficient demand mentioned in the paper, as well as the weather conditions, inadequate and insufficient labour force, high labour costs, red tape, competition, etc. One cannot underestimate politics which may inhibit or facilitate development of the sector. In case of the construction sector and the housing construction sector in particular, in the future the policy of the EU accompanied by the energy requirements for newly built houses and guidelines in this respect may slow down the growth. By 2020, in the EU states, the construction sector must comply with low-energy standards in the housing sector. This requirement is certain to generate much higher construction costs (Płaziak, 2013a, pp. 173-188; 2013b, pp. 214-226).

REFERENCES

BAA (2011). *Sektor budowlany w czasie i przestrzeni. Ocena standingu adaptacyjności sektora.* Grupa Doradców Biznesowych BAA Polska.

BDB (2014). *Budownictwo*, Dom Maklerski BDM S.A. Retrieved on January 11, 2014, from http://www.bdm.com.pl/

Borowiec, M. & Dorocki, S., (2011). Rola kapitału ludzkiego w procesie kształtowania innowacyjności układów regionalnych Francji. In B. Namyślak (ed.), *Przekształcenia regionalnych struktur funkcjonalno-przestrzennych.* Wrocław: Instytut Geografii i Rozwoju Regionalnego Uniwersytetu Wrocławskiego, pp. 215-230.

Budownictwo mieszkaniowe w Republice Czeskiej. Retrieved on January 11, 2014, from http://praha.trade.gov.pl/pl/aktualnosci/article/y,2011,m,6,a,17220,Budownictwo_mieszkaniowe_w_Republice_Czeskiej.html

Czech Statistical Office, Retrieved on January 11, 2014, from http://www.czso.cz/eng/redakce.nsf/i/construction_ekon

Gorzelak, G. (2009). *Geografia polskiego kryzysu. Kryzys peryferii czy peryferia kryzysu?* Regional Studies Association – Sekcja Polska, Warszawa.

Housing Europe Review, The Nuts and Bolts of European Social Housing Systems (2012). CECODHAS Housing Europe's Observatory, Brussels.

Informacja o sytuacji społeczno-gospodarczej kraju rok 2011 (2012). Warszawa: Central Statistical Office.

Information on the Polish construction industry for the years 2012-2013, Retrieved on January 11, 2014, from http://www.polskie-budownictwo.pl

Kozik, R., & Starzyk, E. (2011). Wpływ światowego kryzysu gospodarczego na polski rynek zamówień publicznych na roboty budowlane, *Budownictwo i inżynieria środowiska*, 2.

KPB (2012). *Rynek budownictwa w Polsce oraz analiza rynków zagranicznych w zakresie możliwości eksportowych polskiej branży budowlanej*. Łódź: Konsorcjum Polskie Budownictwo.

MRD (2005). *Czech Republic. Portraits of Regions* 2005. Prague: Ministry for Regional Development of the Czech Republic.

Płaziak, M., & Szymańska, A.I. (2014). Importance of personal factor in decisions on locating enterprises. *Procedia – Social and Behavioral Sciences*, *110*, 373-380.

Płaziak, M. (2004a). The spatial distribution of living standards in the małopolskie province. *Prace Geograficzne, 114*, 107-116.

Płaziak, M. (2004b). Poziom życia ludności miast województwa małopolskiego, ze szczególnym uwzględnieniem miast małych i najmniejszych. In I. Jażdżewska (Ed.), *Zróżnicowanie warunków życia ludności w mieście (pp. 121-129). XVII Konwersatorium Wiedzy o Mieście, Łódź*, pp. 121-129.

Płaziak, M. (2013a). Domy energooszczędne i pasywne jako nieunikniona przyszłość budownictwa w Polsce. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego*, *21*, 173-188.

Płaziak, M. (2013b). Technologia tanich domów energooszczędnych jako odpowiedź na kryzys w budownictwie mieszkaniowym. *Przedsiębiorczość – Edukacja*, *9*, 214-226.

Rachwał, T. (2011). Industrial restructuring in Poland and other European Union states in the era of economic globalization. *Procedia – Social and Behavioral Sciences, 19*, 1-10.

Rachwał, T. (2011). Wpływ kryzysu na zmiany produkcji przemysłowej w Polsce. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego, 17*, 99-113.

Raźniak, P., & Brzosko-Sermak, A. (2014). Zmiany zasobów mieszkaniowych w regionie miejskim Krakowa. In E. Kaczmarska, & P. Raźniak (Eds.), *Społeczno-ekonomiczne i przestrzenne przemiany struktur regionalnych*. Kraków: Oficyna Wydawnicza AFM.

Raźniak, P., & Winiarczyk-Raźniak, A. (2014). Housing Conditions in selected metropolitan areas in Poland. *Annales Universitatis Paedagogicae Cracoviensis Studia Geographica*.

Szymańska, A.I., & Płaziak, M. (2014). Factors considered in location of construction enterprises in the Małopolska Region. *Procedia – Social and Behavioral Sciences*, *110*, 381-389.

UMWM, (2012). *Województwo małopolskie 2012*. Kraków: Urząd Marszałkowski Województwa Małopolskiego.

Zborowski, A. (2005). Przemiany struktury społeczno-przestrzennej regionu miejskiego w okresie realnego socjalizmu i transformacji ustrojowej (na przykładzie Krakowa), Kraków.

Zioło, Z. (2001). Współczesne tendencje rozwoju przemysłu i ich problematyka badawcza. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego*, *2*, 9-20.

Zioło, Z. (2008). Procesy transformacji przemysłowych układów przestrzennych na tle zmieniającego się otoczenia. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego, 10*, 11-22.

Zuzańska-Żyśko, E. (2014). The real estate market in the Upper-Silesian metropolitan area. *Procedia – Social and Behavioral Sciences*, *120*, 374-385.

Authors

Monika Płaziak

PhD degree in economic geography, assistant professor in the Department of Entrepreneurship and Spatial Management, Institute of Geography, Pedagogical University of Cracow. Author's research interests concern issues of the spatial development in the context of the sustainable development – social balanced towns and energy-efficient towns, and also process of industrial and construction enterprises locations. As well as, research works refer to issues of the cooperation of scientific and research-developmental organizations with the SME sector, especially in the matter of the implementing new technologies and materials concerning the energy-efficient and passive building. Additionally, the author analyses issues of the level and quality of life, with particular reference to small and medium-sized towns in Poland.

Anna Irena Szymańska

PhD degree in economic sciences in the field of management sciences (Chair of Market Analysis and Marketing Research – Cracow University of Economics), assistant professor in the Department of Entrepreneurship and Spatial Management, Institute of Geography, Pedagogical University of Cracow. Her research interests are related to the issue of consumer needs, preferences and market behaviour as well as issues in the area of entrepreneurship and innovation with particular emphasis on the SME sector.

Correspondence to:
Monika Płaziak, PhD
Pedagogical University of Cracow
Institute of Geography
Department of Entrepreneurship and Spatial Management
ul. Podchorążych 2, 30-084 Kraków, Poland
mplaziak@up.krakow.pl

Published by Centre for Strategic and International Entrepreneurship – Krakow, Poland

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

Implementation of International Standards for Environmental Management in Visegrad Countries: a Comparative Analysis

Maria Urbaniec

A B S T R A C T

Objective: The paper aims at identifying the importance and relevant practices related to international standards for environmental management system (EMS) in the countries of the Visegrad Group (including Slovakia, the Czech Republic, Poland and Hungary).

Research Design & Methods: A review of mainstream literature on EMS will be conducted followed by document-based research as well as statistics database used as the methodological approach. Data will be gathered through the evaluation of Eurostat database and ISO Surveys.

Findings: The international comparison facilitates the evaluation of current implementation of EMS as well as contributes to the identification of the main possibilities and limitations for its development. The implementation of EMS according to the ISO 14000 and EMAS can help companies to find solutions that support processes of environmental changes with the purpose to improve corporate innovativeness and competitiveness.

Implications & Recommendations: This work is limited to the evaluation of statistical data. Further, the detailed empirical research based on case study approach and in-depth semi-structured interviews is needed to explain the difficulties experienced and benefits accrued during implementation of EMS.

Contribution & Value Added: This article contributes to existing literature on corporate sustainable development by applying environmental management systems to the practices of entrepreneurs that have a goal of environmental sustainability.

Article type:	research paper
Keywords:	sustainable development; international standards; environmental management systems; environmental performance; Visegrad Four
JEL codes:	L15, L21, Q56

Received: 17 February 2014 Revised: 19 March 2014 Accepted: 15 May 2014

Suggested citation:

Urbaniec, M. (2014). Implementation of International Standards for Environmental Management in Visegrad Countries: a Comparative Analysis. *Entrepreneurial Business and Economics Review, 2*(2), 65-76.

INTRODUCTION

Numerous initiatives have been undertaken, new organizations have been created, and innovative projects promoting environmental protection have been carried out at both international and European levels. The strategy "Europe 2020", adopted in 2010 by the European Commission, includes three interrelated priorities. In addition to the development of smart (based on knowledge and innovation) and inclusive growth (by the promotion of the economy with high employment,delivering social and territorial cohesion), sustainable development also plays a key role, which according to the European Commission aims at supporting a more resource efficient and more competitive economy (European Commission, 2010).

In this context, an important role plays primarily companies because they are the direct users (consumers) of raw materials (Valentine, 2010). Many companies, especially large ones, already undertake a number of different actions for sustainable development (Jenkis, 2009). To reduce the uncertainty regarding the decisions concerning the development and business efficiency, companies should strive to implement action in accordance with the market trends, social and legislative initiatives, including the issues of sustainable development. In practice, different reasons may lead businesses to adopt more sustainable solutions. They may be related to improving the image of the company or the benefits of eco-innovation. Also, more and more environmentally conscious consumers have affected environmentally friendly and social activities of companies (Peattie, 2001).

The implementation of mechanisms for sustainable development allows primarily the identification of areas for achieving a competitive advantage by exploiting the opportunities and reducing the risk. The environment is becoming a part of the corporate management strategy, while business entities see their relations with the environment as a strategic resource whereas the environment protection serves as a potential source of competitive edge (Wagner, 2009). The use of systems and management standards in the areas of sustainable development may be due to both internal and external conditions, such as customer demands, competitive pressures, the need to improve internal processes, willingness to apply the proven tools or the requirements of business partners, mainly large companies (Chen, 2008).

In this context, the paper aims at identifying the importance and relevant practices related to international standards for environmental management systems (EMS) in Visegrad countries. The main research questions are (1) what is the state of EMS implementation in Visegrad countries? and (2) what are the differences between these countries? The paper highlights the differences regarding the implementation level in these countries. The international comparison facilitates the evaluation of current implementation of EMS as well as contributes to the identification of the limitations for its development.

This article contributes to existing literature on corporate sustainable development by applying environmental management systems to the practices of entrepreneurs that have a goal of environmental sustainability. For this purpose, the meaning of corporate environmental management as well as environmental management systems will be

presented first. In Section 3, the data used in the analysis will be described and the methodological approach will be introduced, while Section 4 and 5 presents the results. Section 6 concludes the paper with a discussion of the findings.

LITERATURE REVIEW

In times of global competition, many companies, both large, small and medium-sized enterprises are looking for opportunities to maintain or increase their market share. Implementation of various solutions that support corporate sustainability contributes not only to change the corporate image on a more 'organic' and reduce production costs, but it also can mean new activities. On the one hand, for entrepreneurs these actions can mean new business opportunities in response to the growing demand for "green" products, on the other hand, they also testify their greater responsibility. This kind of incentives leads to responsible and at the same time economically efficient activities undertaken by enterprises that can contribute to sustainable development through the innovative environmentally friendly solutions (Urbaniec, 2008).

Greening business management can be implemented at operational, strategic and normative level. It must be stressed that there are the following differentiated conditions for businesses (Brauweiler, 2010, p. 280):

- the normative level: ensuring social acceptance and legitimacy as a result of the implementation of the corporate culture and philosophy aiming at activities related to environmental protection and sustainable development,
- the strategic level: winning new markets and customers by implementing offensive strategy of environmental management,
- the operational level: implementation of environmental management through the integration with functional areas of the company (e.g. procurement, production, sales, human resources, organization, accounting and controlling).

In the broader sense, environmentally friendly business management can be analyzed both functionally, as well as institutionally (Delmas & Toffel, 2004). In the functional terms (i.e. in relation to the tasks and activities) environmentally friendly business management means:

- the systematically planned, implemented and controlled environmentally friendly behavior,
- in all functional areas of the company,
- outside the business in the context of vertical and horizontal co-operation,
- demonstrating the proactive, and thus the long-term and strategic actions, as well as
- directly related to the strategy of sustainable development.

In order to implement these comprehensive issues by various stakeholders (Urbaniec & Kramer, 2003), from the mid-1990s the importance of concepts of environmental management, such as internationally and formally recognized environmental management systems, which support the environmentally friendly business management in terms of institutionally (i.e. regard to the organization), has

grown. Among the most widespread international environmental management systems should be mentioned:

- the standard ISO 14001 - in force worldwide, that enables certification,
- EMAS (Environmental Management and Audit Scheme - in force in the European Union (EU), which enables validation.

According to the International Organization for Standardization, international standards relating to environmental management are intended to provide organizations with the elements of effective environmental management system that can be integrated with other management requirements and can help organizations achieve environmental and economic objectives (Whitelaw, 2004).

Environmental management systems are used for implementation (based on standard guidelines) normative, strategic and operational activities in the field of environmental protection and management. A commonly used definition of the EMS is based on ISO 14001 and describes EMS as part of the general management system in the organization, which includes organizational structure, planning, responsibilities, practices, procedures, processes and resources for developing and implementing, improving and maintaining the environmental policy (International Organization for Standardization, 2009). The definition of EMS according to ISO 14001 also applies to the environmental management system according to EMAS.

Both standards are aimed at a voluntary commitment in compliance with the three fundamental rules on which the concept of environmental management system is based, i.e. (European Commission, 2011):

- maintaining compliance with the requirements of the law on environmental protection,
- pollution prevention,
- continuous improvement.

The basis of any management system is the Deming cycle, also called the cycle of Plan-Do-Check-Act (PDCA). This formal approach provides for the continuous improvement of environmental performance, achieved by the organization (International Organization for Standardization, 2009, pp. 8-10). The main assumptions of the EMS according to ISO 14001 can be distinguished on the basis of the different phases of the Deming cycle (Brauweiler, 2010, pp. 284-285):

- Plan (policy planning): the ways to fulfill the environmental policy (objectives and target, environmental aspects, legal and relevant requirements, Environmental Management Programs).
- Do (implementation): implementation and operation to achieve policy, objectives, and targets (structure, resource, duty/responsibility, capability, training, communications, documentation, preparation and Action Plan when Emergency).
- Check (review): monitoring, measurement, compliance, record management, internal audit and evaluation of environmental performance.
- Act (management review): review of policy, performance progress, and corrective action.

Due to the constant repetition of these steps organizations shall be directed to continuous improvement of the EMS effectiveness.

In summary, the continuous improvement of environmental performance is based on the process approach in order to improve measurable results of the environmental management system, associated with significant environmental aspects, in accordance with environmental policy, objectives and targets (Whitelaw, 2004).

MATERIAL AND METHODS

As part of the article the analysis exemplified by Visegrad Group countries, namely the Czech Republic, Hungary, Republic of Poland and Republic of Slovakia, will be carried out. These four countries have been EU Member States since 2004. Apart from many commonalities, these countries differ from one another, first of all, in terms of the size of the country, and thus, the amount of companies that can implement EMS. The standardized environmental management systems are becoming important means for promoting environmental protection in companies not only worldwide but also in the Visegrad countries. The implementation of environmental management systems according to the ISO 14000 and EMAS can help companies to find solutions that support processes of environmental changes with the purpose to improve corporate innovativeness and competitiveness.

In this context, the main objective of this paper is to identify the importance of relevant practices related to international standards for EMS in Visegrad countries. The main research questions are what is the state of EMS implementation in Visegrad countries and what are the differences regarding the implementation level of ISO 14001 standard and EMAS system in these countries?

For empirical research, the qualitative and quantitative methods will be used. As part of the methodological approach, a review of mainstream literature on EMS will be conducted, followed by document-based research as well as the use of statistics database when applicable. Data base is made up of secondary data, which were taken from the database of the European Statistical Office (Eurostat) and from ISO Survey 2013. The data analysis covers the reference period between 2005 and 2012.

On this basis, the comparative analysis of the implementation of the most common environmental management systems at the international level (ISO 14001) and at the European level (EMAS) will be conducted. The choice of the comparative analysis for the evaluation of the EMS implementation in Visegrad countries was motivated by the desirability and appropriateness of the research objectives. The analysis will allow comparing the EMS implementation according to the ISO 14000 and EMAS in four countries of Central and Eastern Europe.

RESULTS AND DISCUSSION

International Environmental Management System according to ISO 14001

ISO 14001 is a standard developed by the International Organization for Standardization, which sets out requirements for an environmental management system. Preparatory

work for standard for environmental management was launched in 1993, but only in 1996 the international standard ISO 14001 "Environmental management systems – Requirements with guidance for use" was introduced. This standard underwent a process of verification in the review period 2000-2004. In November 2004, a new version of ISO 14001 was introduced (International Organization for Standardization, 2009).

The ISO 14001 standard is a part of the ISO 14000 series of standards, which also includes standards for instruments to support environmental management, e.g. Environmental assessment of sites and organizations (ISO 14015), Environmental Performance Evaluation (ISO 14031) or Life Cycle Assessment (14040).

ISO 14001 is a worldwide applicable standard for organizations across all sectors and economic areas (Brauweiler, 2010, p. 283). It can be implemented by any type of organization, regardless of the size, country or other conditions. Environmental standards according to ISO 14001 are becoming more and more popular in companies, first of all because of tightening the legal requirements for environmental protection and cost reduction opportunities. An important incentive for companies is also the increase in their awareness of the threats to the environment resulting from the business operation.

Enterprises, implementing an environmental management system, achieved many benefits that directly or indirectly influence the performance improvements. The most frequently mentioned benefits of EMS implementation are (Fura, 2013, p. 1712; Matuszak-Flejszman, 2009):

- reduction of operating costs through proper management of natural and other resources,
- compliance with legal requirements.

Many of these and other benefits contribute to the fact that more and more companies decide to implement the EMS: the ISO 14001 standard is the second most prevalent worldwide. The total number of companies in the world that have implemented the system according to ISO 14001 was 285 844 in 2012, occupying the second position in terms of implemented standards of the ISO, with a significant difference in the quality management system according to ISO 9001 (1 101 272 certified organizations in 2012). In the EU, most of certificates have companies in countries such as Italy (19 705), Spain (19 470), United Kingdom (15 884), France (7 975) and Germany (7 034), (International Organization for Standardization, 2012). The number of ISO 14001 certificates in Visegrad Group countries is shown in the following table.

Table 1. The number of ISO 14001 certificates in Visegrad countries between 2005 and 2012

Country	2005	2006	2007	2008	2009	2010	2011	2012	Growth in 2012 since 2005 (%)
Czech Republic	2122	2211	2731	3318	4684	6629	4451	4215	98
Hungary	993	1140	1537	1834	1659	1822	1580	1718	73
Poland	948	837	1089	1544	1500	1793	1900	2014	112
Slovakia	222	305	437	672	746	1102	1152	1426	542

Source: Own calculation based on International Organization for Standardization (2012).

On this basis, it can be stated that between 2005 and 2012 most of the ISO 14001 standards were implemented in the Czech Republic (4215 organizations in 2012). It should be emphasized that this is over 100% more than in much larger Poland. The least ISO 14001 certificates were recorded in Slovakia. Nevertheless, among the four Visegrad countries only Slovakia points out a systematic growth of implemented systems between 2005 and 2012. In contrast to Slovakia, in the Czech Republic, Poland and Hungary there was a significant decrease particularly in 2009 and 2011, which may be related to the economic crisis.

However, observing the growth rate of implemented systems in 2012 compared to 2005 it can be clearly seen that strongly high growth during that period is noted in Slovakia (542%) while in Poland it was only 112%, in the Czech Republic of 98%, and in Hungary of 73 %. This implies that, despite some fluctuations in all these countries, it is generally noted a positive trend, while the main application relates to the fact that the size of the country does not affect the number of implemented ISO 14001 standards, which is confirmed by the Czech Republic.

In conclusion, it should be noted that the environmental management system according to ISO 14001 is gaining importance in these countries, but compared to other EU countries it is needed to take appropriate action for its promoting and supporting. In addition to the EMS conforming to ISO 14001, a bit less prevalent system is the standard compatible with the EMAS Regulation, which is described in the next section.

European Environmental Management System according to EMAS

Eco-Management and Audit Scheme (EMAS) is another voluntary environmental management system, established by the European "Council Regulation (EEC) No. 1836/93 allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme". Coming into force in April 1995, the EMAS scheme was open for voluntary participation by organizations. Participation was initially restricted to industrial activities. The EMAS scheme had to be reviewed no more than 5 years after its entry into force. Subsequently, in 2001, the legislation was revised with the adoption of Regulation (EC) No. 761/2001 of the European Parliament and of the Council of 19 March 2001 (EMAS II). Key revisions include an extension of the scope of EMAS to all economic sectors, including local authorities. After five years, it was verified as EMAS II, mainly in terms of harmonizing the system with global standard of ISO 14001. The latest revision of EMAS came into effect on 11 January 2010 (EMAS III) based on Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC. With the recent modifications, EMAS system is available to all companies and institutions (hereinafter organizations), both public and private sectors (manufacturing and service companies, government, municipal enterprises, hospitals, schools, etc.) that seek to take action to successfully reduce the negative impact on the environment. Participation in the scheme is voluntary.

The primary objective of EMAS, as in the case of ISO 14001, is to promote the continuous improvement of the environmental performance of organizations through (DG Environment of the European Commission 2009, pp. 92-94):

- increasing environmental protection and minimizing impacts,
- greater management control, improving efficiency and financial savings,
- improving corporate environmental performance,
- improving communication between registered organizations and their stakeholders,
- increased staff awareness and environmental commitment.

EMAS is not only a system fully compliant with the international ISO 14001 standard, but also includes additional criteria (European Commission, 2011). An organization that wants to register under EMAS—in addition to the implementation of an environmental management system—must also publish environmental statement reviewed by environmental verifiers, actively join employees in the process of environmental management and comply with environmental law (European Commission, 2011). In addition, EMAS provides a clear pattern of operation, which supports assigning tasks, monitoring them and the exchange of information between stakeholders, which is a significant difference in relation to ISO 14001.

Smoothly operating environmental management system enables the delivery of measurable benefits both economic and financial. The most frequently mentioned benefits of registration of organizations under EMAS are listed below (DG Environment of the European Commission, 2009, pp. 10-14):

- reduced costs for resources and waste management,
- regulatory relief,
- risk minimisation,
- improved relations with internal stakeholders,
- improved relations with external stakeholders,
- competitive advantage,
- achieving regulatory compliance.

The cost for implementing EMAS vary with the size and the sector of the organization and can be divided into external costs and internal costs (DG Environment of the European Commission, 2009, pp. 15-16; Brauweiler, 2010, p. 291):

- external costs: the costs of EMAS registration (registration fees), costs for the external reviewer, and any additional external support from consultants for the initial review, auditing, training and ongoing implementation.
- internal costs: the implementation costs and maintenance costs.

Strong interest in this system shows the number of registered entities in the EMAS, amounting to 4452 organizations (8580 sites) in the whole European Union (27 countries) in 2012. Most organizations and sites with EMAS registration are located in countries such as Spain (1261 organizations and 1561 sites), Germany (1212 organizations and 1834 sites), Italy (1151 organizations and 1875 sites) (EU Commission, 2014). However, taking into account the number of organizations registered under EMAS in Visegrad countries, as it was demonstrated in Table 2, in 2012 majority of registrations

were in Poland (39 organizations and 106 sites), taking the 12th place among the EU Member States (Table 2).

EMAS is less popular than the ISO 14001. The greatest interest can be traced in Poland between 2005 and 2012 (growth of registered organizations by 3800%), but in 2005 the number of registered organizations was the highest in the Czech Republic (18 organizations).

With the exception of Poland, in all other Visegrad countries a decline of interest in this system is noted, particularly in 2010-2011. In the Czech Republic, a significant decrease is noted: from 31 organizations in 2009 to 21 organizations in 2011 (decline by 32%), and in Hungary the number of organizations that have implemented this system decreased from 20 in 2010 to 19 organizations in 2011 (5.3%). However, the largest decrease of interest in this system is noted in Slovakia: from 6 organizations in 2009 to 2 organizations in 2012 (200%) and in 2012 it achieved the level of the year 2005. It should also be emphasized that in the Czech Republic, despite the increase of registered organizations by 24% in 2011-2012, there is a decline in registered sites from 65 to 62 (5%).

Table 2. Total number of Organization and Sites with EMAS Registration between 2005 and 2012

Country	Czech Republic		Hungary		Poland		Slovakia	
	Organization	Sites	Organization	Sites	Organization	Sites	Organization	Sites
2005	18	20	2	2	1	1	2	2
2006	21	22	8	11	2	2	3	3
2007	28	30	13	16	7	7	5	5
2008	33	35	17	20	12	12	6	7
2009	31	33	20	23	19	26	6	7
2010	25	50	20	23	22	32	5	6
2011	21	65	19	22	25	32	2	2
2012	26	62	29	32	39	106	2	2
Growth in 2012 since 2005 (%)	44	210	1 350	1 500	3 800	10 500	0	0

Source: own calculation based on (European Commission, 2014).

On the basis of the above, it can be concluded that, compared to other EU countries, the organizations in Visegrad Gropupe countries have a weak interest in EMAS. There can be many reasons for this. Among the potential barriers of the EMAS implementation there should be mentioned among others costs of registration and implementation, lack of incentives (financial incentives), the benefits of EMAS which are not clear or unsufficient (DG Environment of the European Commission, 2009, pp. 45-46). It is therefore appropriate to promote best practice and continuous access to information directly in Visegrad countries more intensely than so far.

CONCLUSIONS

The implementation of EMS, as an integral part of the corporate sustainability, strongly supports good practices and solutions in the field of environment management. Moreover, it helps to control any undesirable changes in environment which may appear

as consequences of implementation of new projects. Strategic approach of EMS supports practical implementation to achieve efficient results on a long term basis. The implementation of environmental management systems according to the ISO 14001 and EMAS can help companies to find solutions that support processes of environmental changes with the purpose to improve corporate performance. Therefore, the EMS provides a competitive advantage for companies.

The main objective of this paper was to investigate the implementation state of EMS in Visegrad Group countries that are members of the EU (Slovakia, the Czech Republic, Poland and Hungary). The international comparison facilitates the evaluation of current implementation of EMS and highlights the differences regarding the implementation level in these countries.

This study shows greater importance and popularity of the environmental standards according to ISO 14001, first of all in the Czech Republic. On the other hand, the EMAS system was the most widespread in Poland (39 organizations) and Hungary (29 organizations) in 2012, although in 2005 most of EMAS registrations were in the Czech Republic (18 organizations). Detailed analysis also showed that in Slovakia, the smallest country of Visegrad Group, it is observed the largest increase in organizations that have implemented ISO 14001 between 2005 and 2012 (an increase by 542%), but the relative number of of organisation and sites with EMAS registration was the lowest among these countries.

The analysis showed that the development state of EMS implementation in Visegrad countries is noticeable, but their interest in implementing these systems is very different and independent of the size of the country. The main differences regarding the implementation level of EMS in these countries firstly indicate greater interest in the ISO 14000 standard than EMAS system, and secondly, the smaller countries (e.g. the Czech Republic) are more active in the implementation of the ISO 14000 standard than larger countries (such as Poland).

These differences can have many possible causes. For example, it can relate to national differences in legal environments that may make firms more or less willing to volunteer standards of behaviour against which third parties may assess their actions. Moreover, in the OECD survey of 2003 it was indicated that companies domiciled in countries with particularly high legal requirements have limited incentives to volunteer to exceed these, whereas internationally active companies from countries with relatively low legal standards will find it easier. In some cases companies feel under a certain pressure to operate under above mentioned requirements (OECD, p. 7). According to the findings of Nawrocka and Parker (2009), a successful EMS can be attributed to many internal and external factors in an organisation, such as its characteristics, management attitude, culture, policies and stakeholder participation.

Summing up the importance of EMS, it can be concluded that more and more companies in Visegrad countries are convinced of benefits of the environmental management system according to international standard ISO 14000, which as an innovative tool allows continuous reducing of environmental impacts while optimizing the utilization resources. In general, it should also be emphasized that the four Visegrad countries are characterized by a low level of development in this regard in comparison to the countries of “old” EU. Especially, EMAS system should be continuously promoted

among the key actors with the involvement of the companies and public bodies in order to increase its importance in the Visegrad countries. In order to meet the challenges of shaping the future and continuously react to the rapidly growing markets, scientific progress, environmental requirements and societal changes, Visegrad countries must continue to act in favor of sustainable development. Therefore, there is a challenge for politics, industry and science in order to strive for eco-innovative solutions and develop new products or technologies, taking into account economic, environmental and social goals.

On this basis it should be noted that the international comparison contributes to the identification of the use of EMS best practices and constraints for its development in Visegrad countries. This work is limited to an evaluation of statistical data and document-based research. Further, the detailed empirical research based on case study approach and in-depth semi-structured interviews is needed to explain the difficulties experienced and benefits accrued during implementation of EMS. It could also explain the reasons for the low interest in EMAS system in comparison to the leading EU countries.

REFERENCES

Brauweiler, J. (2010). Umweltmanagementsysteme nach ISO 14001 und EMAS. In M. Kramer (Ed.), *Integratives Umweltmanagement (pp. 279-299). Wiesbaden: Gabler.*

Chen, Y.-S. (2008). The driver of green innovation and green image – green core competence. *Journal of Business Ethics, 81*(3), 531-543.

DG Environment of the European Commission (2009). *Study on the Costs and Benefits of EMAS to Registered Organisations*, Final Report Study Contract No. 07.0307/2008/517800/ETU/G.2, Milieu Ltd and Risk and Policy Analysis Ltd, Brussels.

Delmas, M., & Toffel, M.W. (2004). Stakeholder and environmental management practices: an institutional framework. *Business Strategy and the Environment*, *13*, 209-222.

European Commission (2010). *Europe 2020: A strategy for smart, sustainable and inclusive growth, Communication from the Commission*, COM(2010) 2020 final, Brussels.

European Commission (2011). *EMAS and ISO 14001: complementarities and differences*, European Commission, Brussels.

European Commission (2012). *2012 Environmental Statement - 2011 Results*, Brussels.

European Commission (2014). Organisations and sites with EMAS registration, DG Environment (online data code: tsdpc410). Retrieved on March 11, 2014, from *http://epp.eurostat.ec .europa.eu/portal/ page/portal/environment/data/main_tables*.

Fura, B. (2013). Improving ISO 14001 Environmental management systems. *Polish Journal of Environmental Studies*, *22*(6), 1711-1721.

International Organization for Standardization (2009). *Environmental management: The ISO 14000 family of International Standards*, ISO Central Secretariat, Geneve.

International Organization for Standardization (2012). *The ISO Survey of Management System Standard Certifications – 2012*, Geneve. Retrieved on March 11, 2014, from <http://www.iso.org/ iso/home/ standards/certification/iso-survey.htm> [15 January 2014].

Jenkis, H. (2009). A business opportunity model of corporate social responsibility for small- and medium-sized enterprises. *Business Ethics: A European Review*, *18*(1), 21-36.

Matuszak-Flejszman, A. (2009). Benefits of environmental management system in polish companies compliant with ISO 14001. *Polish Journal of Environmental Studies, 18*(3), 411-419.

Nawrocka, D. & Parker, T. (2009). Finding the connection: Environmental management systems and environmental performance. *Journal of Cleaner Production*, *17*, 601-607.

OECD (2014). *An Overview of Corporate Environmental Management Practices,* Joint Study by the OECD Secretariat and EIRIS, Retrieved on January 15, 2014, from http://www.oecd.org/daf/inv/corporateresponsibility/18269204.pdf.

Peattie, K. (2001). Golden goose or wild goose? The hunt for the green consumer. *Business Strategy and the Environment*, *10*(4), 187-199.

Regulation EC No. 761/2001 of the European Parliament and of the Council of 19 March 2001.

Regulation EC No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC.

Urbaniec, M. (2008). *Umweltinnovationen durch Kooperationen - am Beispiel einer freiwilligen Branchenvereinbarung.* Wiesbaden: Gabler Verlag.

Urbaniec, M. & Kramer, M. (2003). Rolle strategischer Anspruchsgruppen für eine umweltorientierte Unternehmensführung. In M. Kramer, M. Urbaniec & L. Möller (Eds.), *Internationales Umweltmanagement, Band I: Interdisziplinäre Rahmenbedingungen einer Unternehmensführung* (pp. 97-114). Wiesbaden: Gabler Verlag.

Valentine, S.V. (2010). The green onion: a corporate environmental strategy framework. *Corporate Social Responsibility and Environmental Management, 17*(5), 284-298.

Wagner, M. (2009). Innovation and competitive advantages from the integration of strategic aspects with social and environmental management in European firms. *Business Strategy and the Environment*, *18*(5), 291-306.

Whitelaw, K. (2003). *ISO 14001 Environmental Systems Handbook*. 2nd ed., Amsterdam: Elsevier.

Author

Maria Urbaniec

PhD in economics, assistant professor in the Department of Entrepreneurship and Innovation at Cracow University of Economics (Poland).

Correspondence to:

Maria Urbaniec, PhD
Cracow University of Economics
Faculty of Economics and International Relations
Department of Entrepreneurship and Innovation
ul. Rakowicka 27, 31-510 Krakow, Poland
tel. +48 12 293 5328, fax +48 12 293 5042
maria.urbaniec@uek.krakow.pl

Published by Centre for Strategic and International Entrepreneurship – Krakow, Poland

Entrepreneurial Business and Economics Review

2014, Vol. 2, No. 2

Alternative Approaches in Evaluating the EU SME Policy: Answers to the Question of Impact and Legitimization

Robert K. Gruenwald

A B S T R A C T

Objective: The objective of the paper is the determination and criticism of existing EU SME Policy evaluation standards and of existing alternatives enabling the discussion of improvements.

Research Design & Methods: The paper uses a comparison of different evaluation methods applied by the OECD, the EU and Sweden and of funding programmes provided by KfW and the German Ministry of Economics; therefore, the paper is an explorative case study.

Findings: OECD and EU evaluations do not determine causal relationships between funding allocation and effects. The evaluations of the KfW and the German Ministry of Economics use an empirical quantitative approach and determine direct causal relations.

Implications & Recommendations: In order to fulfil the requirements of legitimizing functions for the SME policy, it is recommended to further develop the EU funding policy and evaluation according to the "German model" both in terms of the institutional framework and in terms of the evaluation of impacts through funding policy measures.

Contribution & Value Added: Definition of minimum requirements and alternative possibilities for EU SME policy evaluation in order to close the legitimisation gap between the allocation of tax money and impact proof (cost-benefit ratio).

Article type:	conceptual paper
Keywords:	evaluation; SME policy; EU entrepreneurship; economic policy; cost-benefit ratio
JEL codes:	H5

Received: 16 April 2014 Revised: 12 May 2014 Accepted: 15 May 2014

Suggested citation:

Gruenwald, R.K. (2014). Alternative Approaches in Evaluating the EU SME Policy: Answers to the Question of Impact and Legitimization. *Entrepreneurial Business and Economics Review, 2*(2), 77-88.

INTRODUCTION

Evaluation is a "process that seeks to determine as systematically and objectively as possible the relevance, efficiency and effectiveness of an activity" (Papaconstantinou & Polst, 1997, p. 9). Performance and result orientation is among the central goals of public sector modernisation guided by the New Public Management (Schedler & Proeller, 2000). Neglecting the effect of cost-benefit-optimisation is becoming increasingly problematic in the face of a growing public attention. The success and efficiency of economic development programmes should be more transparent through result-oriented controlling and evaluation. The allocation of scarce resources could thus be optimised and better legitimised. The OECD (2007, p. 10) postulates the application of evaluation and controlling in order to:

- optimise the impact of policies and programmes,
- make informed decisions about the allocation of funds, and
- achieve continued improvements in the design of programmes.

The traditional reasons for the legitimacy of government actions such as the principle of democracy and the rule of law have been increasingly supplemented in recent decades by a further legitimation requirement: the performance principle (Schedler & Proeller, 2000, p. 61). Therefore, services and activities of the state must be increasingly legitimised due to their effects: evaluation and controlling is at least necessary for showing taxpayers and the business community that a funding programme is cost-effective (OECD, 2007, p. 10); therefore, evaluation should also be an integral part of the SME policy process.

Even though evaluation is often an integral part of many countries' policy development life cycle (Crowe, 2012, p. 245), researchers in this field note that SME policy-making is "often more ad-hoc and subjective than many people realize; it is not necessarily objective or rational" (Blackburn & Schaper, 2012 p. 9). Evaluations are an instrument for legitimisation only if they describe and measure effects and results of programmes methodically (Schedler & Proeller, 2000, p. 63).

However, it should be noted that relatively little literature on the subject is available. Academic research determines a lack of discussion about evaluation practices and methods concerning the economic impact of SME funding programmes (e. g. Curran, 2000; Pack & Saggi, 2006; Greene & Storey, 2007, chap. 12; Greene, 2009; Crowe, 2012; Wach, 2012, chap. 4). Essentially, available studies and models come from institutions such as the OECD and the EU Commission (OECD, 2004b; OECD, 2007; EIM Business & Policy Research, 2004; EU, 2012a; EU, 2012b; OECD, & EU, 2012; Paconstantinou & Polt, 1997; Stockmann, 2000; Tödtling-Schönhofer *et al.*, 2011; Wach, 2013; European Commission, 2002; Ramboll Management Consulting, 2011). The OECD notes that only very non-specific, general literature exists on the topic of evaluation, but none exists on economic policy evaluation standards or on common approaches (OECD, 2011, p. 114). Crowe (2012 p. 253) states that evaluation methods and procedures for fine-tuning SME policy programmes and measures have remained a postulation to academic research until today.

The objective of the paper is thus to identify and then to constructively assess the existing EU SME policy evaluation standards compared to existing alternatives. The main research methods applied are a literature review (why and how should SME policy be measured), an explorative case study (what is measured in practice), and constructive criticism (what should be measured).

LITERATURE REVIEW

SME policy is a subcategory of economic policy. Economic policy means the practice of political actors in the economy and the scientific study of this practice (Acocella, 2000). Practical economic policy is based on two assumptions: the desirability and legitimacy of political action in the field of economy and the effectiveness of intervention in a market economy.

The first definition of economic policy takes place on the level of social and political objectives (i.e. on the level of desirability or determination of higher-level goals such as the promoting of prosperity). Below this general level the economic policy postulates the following operationalised goals (Peter, 2000, p. 82):

- What can be achieved?
- What should be achieved within the framework of achievable goals?
- What instruments are used respectively which goals are achieved?
- How can achieved objectives be determined?

On this level, economic policy can be defined as the allocation of scarce resources, guided by collective goal decisions with the assumption that the market is inefficient in certain areas (OECD & EU, 2012, p. 35). If a specific market is efficient, then no political intervention is necessary or legitimised. Thus, the following economic policy target system can be defined for market economies with increasing operationalisability (Tuchtfeld, 1988, p. 183; Kevenhörster, 2006, p. 101):

1. general public welfare,
2. social policy: freedom, justice, security, peace,
3. promotion of national prosperity,
4. operationalised economic policy objectives: stability and growth,
5. stability and balanced structure: full employment, price stability, balance of payments equilibrium, balance of regional development, efficient market structure, competitive export industry, distributive justice, and sustainable development.

The general problem with such a target system is its empty formula character. Most of these goals are difficult or impossible to operationalise. In general, it can be said that the deeper one goes into this target system, the sooner goals can be operationalised. This level would be, for example, the EU SME policy as the operational level of general social and economic goals. The current EU general economic objectives are defined by the Council of the European Union in the “Europe 2020 Strategy”. Four priority objectives were defined for 2020 (EU High Level Group, 2004, p. 6):

1. sustained economic growth,
2. more and better jobs,

3. greater social cohesion,
4. introduction of sustainability.

The European Union Support Programmes for SMEs (2012) as the central document on the EU SME policy is only a budgeting document and does not provide any benchmarks or targets. Therefore, experts criticise that the achievement of objectives cannot be ascertained or controlled (Tödtling-Schönhofer *et al.*, 2011, pp. 77, 81). The EU economic policy in general, and in particular the EU SME policy, provides only declaratory objectives and budgets; therefore, a study of the Directorate General for Internal Policies, commissioned by the EU parliament, reaches the conclusion that there is only "weak evidence on the effectiveness" of EU SME policy measures (Tödtling-Schönhofer *et al.*, 2011, p. 102).

Declaratory objectives are statements of intent without the definition of a target state and are a frequent political practice. Declaratory targets do not fulfil any of the following functions (Stockmann, 2000, p. 14).

1. Cognitive Function: decision-relevant data are collected in order to reach controlled decisions.
2. Control Function: The analysis of possible shortcomings of programmes needs quantitative data and target setting in order to compare differences between activities and targets for legitimisation.
3. Dialog Function: The results of an evaluation are the basis of a successful cooperation between different stakeholders (Najda & Wach, 2005).
4. Legitimizing Function: It is possible to prove the correctness of the use of funds on the basis of data obtained.

Due to the fact that the EU SME policy provides no targets, apart from budgets, a target-performance comparison is not possible. Thus, the measurement of effectiveness in the allocation of common goods is not possible. Effectiveness can be described as the ratio of targets and goal achievement. A determination of the degree of goal achievement is impossible with qualitative goals (Schedler & Proeller, 2000, p. 63). Objectives in economic policy can be distinguished by their target quality as follows (Fatás, Mihov, & Rose, 2006, pp. 5, 30; Rosenblatt & Kinder, 2006, p. 62):

1. Qualitative Targets: Usually inaccurately defined goals such as job security, reliable monetary policy and low government debt.
2. Comparative Targets: A comparison of the specification of a variable in the actual target comparison such as the temporal change of a size – for example the increase in exports by *x* % and the reduction of unemployment by *y* %. Comparative objectives are therefore more accurate than qualitative goals.
3. Quantitative Targets: Accurate quantitative targets in absolute or relative numbers or as a target range.

Therefore, evaluation of SME policies first needs quantitative targets, not declarative targets (Wach, 2012).

MATERIAL AND METHODS

The paper compares and assesses existing SME policy evaluation approaches and is as such an exploratory case study. Firstly, the objective is to find evaluation approaches from institutions, research groups, academic journals, conferences, organizations, and, secondly, to assess their usability for evaluation practice, because some studies only have a theoretical model character.

Only a few studies exist concerning the topic and only four applied evaluation approaches were found, mostly from major international organizations such as the OECD and the European Commission (EC) or from public policy consultant agencies. Different evaluation methods and metrics were used. The level of evaluations reaches from the analyses on a macro-economic level to a statistical analysis of a sample of companies based on financial metrics related to sustained SME subsidies.

In contrast to this, academic research focuses more on causal-logical models, not on metrics, mostly with the purpose of providing a framework for policy making (e. g. Hart, 2007; Wren, 2007; Lynch *et al.*, 2009; Gruenwald, 2013; Gruenwald, 2014). Frequently, the problem is that only additional complexity is built up, but the question of how to impact remains unanswered. It is thus still criticised that academic research is only of limited use for the practice of SME policy evaluation. Even researchers conclude that "consistently authors use terms such as 'net economic benefit' and 'business performance' [...] but there is no real discussion as to what this means or how it could be measured" (Lenihan, 2011, p. 327). Therefore, it may be plausible to investigate the problem of SME policy impact measurement from the perspective of practitioners as it is pursued in the following exploratory case study.

The cases are selected according to their depth of documentation and availability. Case 1 analyses the SME Policy Index developed by the EU and the OECD. Case 2 reviews an alternative approach developed by the Swedish Agency for Growth Policy Analysis. Case 3 examines an approach developed by the EU commission service "DG Enterprise" which can be regarded as a suspended precursor of the SME Policy Index. Case 4 presents a best practice approach developed by Ramboll, a non-profit policy consultancy applied in German SME programmes.

In addition to the cases selected here, there are, of course, other approaches. The selected cases, however, are well documented and pursue opposite approaches in that they define different measurement levels: whereas the SME Policy Index (case 1) uses only macro data (mainly on a macro-economic level) and can thus only indirectly determine the success of specific SME policy measures, the other cases are graded according to their increasing use of micro data. Thus, case 4 represents an approach mainly tracking the impact of measures on a company level and provides a best practice example for measuring, not only estimating the impact.

The selected approaches are analysed in order to answer the following questions: What is measured? How is the evaluation purpose operationalised? How is it measured? Are appropriate metrics used and what are their limits? Are they clearly defined? Do the metrics measure what is claimed to be measured?

SME Policy Evaluation Case 1: SME Policy Index

The European Union started a project called "SME Policy Index" in order to develop a systematic evaluation methodology for all programmes in 2004 (EIM Business & Policy Research, 2004). In the field of economic development, the main result of this initiative seems to be the SME Policy Index established to measure the realisation of the so-called "Small Business Act for Europe" (SBA) adopted in 2008.

The SME Policy Index, developed by the OECD in collaboration with the EU (OECD, 2004a), determined to not only measure, but also provide guidance on how to improve SME policy (OECD & EU, 2012, p. 68). As such, the index is part of the "Small Business Act" monitoring process (OECD & EC, 2012, p. 68) for the enterprise policy performance assessment (OECD, 2012, p. 1). The SME Policy Index is based on an initiative by the OECD in 2007. Until today, the European Commission (EC) has used this instrument only for the assessment of the SME policies of Turkey, the Western Balkans, and the Eastern Partners, which are all not members of the EU (European Commission, 2012a, 2012b). It is striking that in these EC assessments only a few instruments of the OECD toolset were used. The toolset was reduced to ten SBA dimensions such as entrepreneurial learning, operation environment, public procurement, entrepreneurial skills etc. The SME Policy Index provides only an undefined best-practice level, which presumably seems based on OECD data in order to benchmark SME activities in dedicated countries. Further problems are:

1. The SME Policy Index does not deliver transparent results, as best-practice levels are not defined and the calculations are not documented,
2. The EC does not apply the SME Policy Index on its member countries and,
3. Any type of measures concerning a cost-efficiency ratio is non-existent. This is even more remarkable as the OECD principally recommends efficiency ratios as a key requirement for the evaluation of SME policies (e.g. OECD, 2007, p. 10) and for the final report "Review of methods to measure the effectiveness of state aid to SMEs" commissioned by the European Commission (EIM Business & Policy Research, 2004, p. 39).

While the EU's investing of around 324 milliard EUR for SME promotion between 2007 and 2013 it does not measure the success of its SME support programmes, national SME policy evaluation approaches such as in Denmark, Sweden, and the United Kingdom exist – at least in some EU countries (OECD, 2011, p. 115).

SME Policy Evaluation Case 2: IPREG-2

The Swedish Agency for Growth Policy Analysis initiated the so-called IPREG[1]-2 project in 2010. Its objective was "to map the politics towards entrepreneurship and Small and Medium-sized Enterprises in Europe" (Swedish Agency for Growth Policy Analysis, 2011a, p. 6). The project executes "research leading to a better understanding of how entrepreneurship, innovation and small businesses can create sustainable economic growth in Europe and its constituent regions" (Swedish Agency for Growth Policy

[1] The abbreviation IPREG stands for "Innovative Policy Research for Economic Growth".

Analysis, 2011a, p. 3). IPREG is a European network comprising researchers, policy makers and representatives from business organisations interested in Entrepreneurship and SME policy. In the frame of this network, the Swedish Agency for Growth Policy Analysis currently coordinates collaborative projects in Sweden, Austria, Poland, Belgium, and Spain. Its objective is to estimate the full costs and impact of entrepreneurship and SME policy (Swedish Agency for Growth Policy Analysis, 2011a, p. 3).

In 2011, the agency presented its first evaluation report on SME policies in the mentioned countries. The IPREG does not use a unified evaluation methodology. Only in the case of Poland and Flanders (Belgium) the agency does define an explicit evaluation methodology based on a cost analysis of public funding and the agency provides a „decision tree [...] to help civil servants in coping with the definition of costs" (Swedish Agency for Growth Policy Analysis, 2011b, p. 54). The result is, for example, a comparison of allocated money by categories (financing, innovation, etc.) and by policy areas (entrepreneurship, education and training, etc.) due to the fact that „Flanders and Belgium have lacked a quantification of costs for entrepreneurship and SMEs" (Swedish Agency for Growth Policy Analysis, 2011b, p. 77). The conclusion concerning the Flanders case is the following: the administration should focus on impact evaluation. The IPREG-2 does not provide a model for impact assessment in its evaluation, nor does it outline a way in which to execute an evaluation in order to measure the ratio of targets and goal achievement or a cost-efficiency ratio.

SME Policy Evaluation Case 3: EU Commission Service

The EU commission service "DG Enterprise" started an initiative in 2000 to establish evaluation standards for measuring the efficiency and effectiveness of the EU SME policy. After three evaluation reports no further reports were published.

Similar to the SME Policy Index, access to finance, regulatory and administrative environment, taxes and duties, the openness of markets, entrepreneurship, human capital development, the innovation rate, etc. were studied (European Commission Directorate General for Enterprise and Industry, 2004, p. 9). A total of nine main indicators were determined such as: (1) market capitalisation as a percentage of the GDP, (2) risk capital as a percentage of the GDP, (3) the number of business angel networks, (4) the amount of direct investment abroad, (5) state aid as a percentage of the GDP, (6) net changes in the stock of enterprises.

This selection of indicators already shows that the data were highly aggregated and should be regarded more as a national economic account. There was neither (1) is a link established between individual SME programmes and these indicators, nor (2) any statistical correlation calculated, nor (3) any synoptic overview of measures and budgets in certain areas provided, nor (4) any relationships between the development of indicators and policy measures assumed. Additionally, the data were retrieved from sources such as PriceWaterhouseCoopers, European Venture Capital Association, etc. (European Commission Directorate General for Enterprise and Industry, 2004, p. 25). Therefore, the data were highly aggregated on a macro-economic level, retrieved from secondary sources and were not collected within the framework of funding projects. One of the best examples was a UK entrepreneurship programme measuring funding impact

with new VAT registrations as a proxy for a more entrepreneurial society (Cowie, 2012, p. 252).

However, the difference to the SME Policy Index is that this evaluation approach is transparent, in particular because it compares the characteristic values between the member countries on the basis of quantitative data and not, as in the case of the SME policy, with a benchmark of which the calculation remains unclear. Furthermore, this valuation provides "relevant quantitative targets" although they are not justified by theoretical models or derived from best practice cases. Mostly, the proposed targets are a list of policy targets of various EU member countries – or it seems they are a heuristic average of them. Thus, for example, it is defined the "self-employment rate" as "relevant quantitative target" with the objective of "increasing the number of self-employment rate of 353 400 in the year 2002 to 380 000 in the year 2006" (European Commission Directorate General for Enterprise and Industry, 2004, p. 66). Therefore, this evaluation approach provides at least an overview of possible target settings and allows benchmarking with other member countries without using an "imagery" benchmark, as in the case of the SME Policy Index. Yet, even here, it should be noted that no direct relationship between causes and effects are determined between SME policy measures and economic impact.

SME Policy Evaluation Case 4: ERP Evaluation

The German ERP innovation programme serves the long-term financing of market-oriented research and development (R&D) for new products, processes or services. The cooperation of the SME sector with research institutions has funding priority. The ERP is handled by so-called "special credit institutions". In Germany, long-term state aid in the context of SME funding is awarded only by these "state" banks. The ERP programme is part of the services of the KfW[2]. The KfW is, with total assets of 495 milliard EUR (2011), the third largest German bank. The banking group covers over 90 % of its borrowing needs in the capital markets. The KfW offers financing for entrepreneurship, enterprise development and innovation and covers the entire CLC (Touché, 2013, pp. 7, 8, 10, 13).

The ERP programme was evaluated in 2011, commissioned by the Federal Ministry of Economics and Technology and executed by Ramboll Management Consulting, a consulting company for contracting authorities in Germany. Questions of the evaluation, referred to as "impact analysis", were (Ramboll, 2011, p. 2): (1) Were ERP programme objectives to be achieved? (2) Can differences between assisted and non-assisted firms be identified?

The methodological basis for the evaluation is a survey of 1 600 companies participating in the ERP programme and a survey of 500 non-participating firms, as well as a survey of nearly 200 financial advisors from corporate banks (Ramboll, 2011, p. 2). In addition to this, the KfW SME panel was included. The database of the KfW can be seen as "rich data" for research. In 2004, the KfW started a data analysis in combination with a survey. The sample includes financial data of more than 10 000 companies and

[2] The KfW is a German government-owned development bank based in Frankfurt.

additionally, interviews with 2 000 CEOs of the companies from the financial data set (Bindewald, 2004, p. 50).

Based on this comprehensive set of financial data from companies participating in the ERP programme and non-participating companies, the evaluation provides indicators such as “sales development” and “expected sales trend”, “profit performance” and “expected profit improvement”, “profit ratio to total loans”, etc. With the help of this, precise measurement of the grant funding impact on the company's success and of the impact on employment is possible. Furthermore, the financial and employment effects of various grants can be measured (Ramboll, 2011, pp. 79, 81, 84).

The evaluation thus provides indicators such as (1) the average ERP loan amount per job created and workplace secured (in this case: 67 674 EUR funding costs per job created and 15 741 EUR per job protected; Ramboll, 2011, p. 86), (2) the degree of target achievement against quantitative objectives for each individual indicator (Ramboll, 2011, p. 93) and (3) the quantification of dead-weight effects (inefficiency of granted funds) (Ramboll, 2011, p. 94).

IMPLICATIONS AND RECOMMENDATIONS

From the four evaluation approaches presented in this paper, the following conclusions can be drawn.

1. The use of macro data is simply pointless. It does not allow linking funding allocation with effects.
2. The use of micro data is usefull. Although collection is a more extensive process (compiling of surveys and financial data), micro data allow the determination of correlations between funding allocation and the micro level impact.
3. The use of micro data for an evaluation requires that only a few institutions are charged with funding allocation. These should be banks, not administrations, because the allocation of financial resources is the core competency of banks. Additionally, this includes the extensive collection and analysis of financial data in the daily business process and the expertise in using them.

Thus, efficiency and effectiveness in terms of cost-benefit relations can be measured and used to establish target systems with precise quantitative targets instead of declaratory objectives which do not allow the determination of degrees of target achievement and the return on funding. Therefore, it seems evident that the Ramboll approach provides a best practice example for the SME policy evaluation which delivers a precise measurement of impact generated with the tax payer’s money and can thus legitimise state interventions in favour of SMEs in market societies.

CONCLUSIONS

As mentioned in the introduction, research and literature on the subject are not extensive, at least in terms of publicly accessible findings, models, and studies. Nevertheless, based on the literature presented here, it can be determined that:

1. in order to legitimise SME policy, it is necessary to collect comprehensive data on the micro level (company level),
2. in order to ensure this, the circle of institutions must be limited to only a few funding donors. This is especially true for the diverse regional EU funding channels. It is advisable to follow the German model and to establish one or two special funding banks in every member state.

Based on this, a quantitative target system can be developed not only on "weak" benchmarks at the country macro-economic level, but on a precise SME policy evaluation standard that measures actual – and not only assumed – effects on employment rate, corporate success, and cost-efficiency ratios on an empirical bases. Thus, SME policy can fulfil legitimisation and controlling requirements as well as provide the basis for an informed stakeholder dialogue.

REFERENCES

Acocella, N. (2000). *The Foundations of Economic Policy: Values and Techniques*. Cambridge: Cambridge University Press.

Bindewald, A. (2004). Was können gescheiterte von erfolgreichen Unternehmen lernen: Ergebnisse einer explorativen Datenanalyse von DtA-finanzierten Unternehmen. In KfW Bankengruppe (Ed.), *Was erfolgreiche Unternehmen ausmacht: Erkenntnisse aus Wissenschaft und Praxis* (pp. 49-88). Heidelberg: Physica.

Blackburn, R. A., & Shaper M. T. (2012). Introduction. In Government, SMEs and Entrepreneurship Development: Policy, Practice and Challenges. In R. A. Blackburn, & M. T. Schaper (Eds.), *Government, SMEs and Entrepreneurship Development: Policy, Practice and Challenges* (pp. 7-16). Farnham: Gower Publishing.

Corew, P. (2012). SME Policy Evaluation: Current Issues and Future Challenges. In R. A. Blackburn, & M. T. Schaper (Eds.), *Government, SMEs and Entrepreneurship Development: Policy, Practice and Challenges* (pp. 243-256). Farnham: Gower Publishing.

Curran, J. (2000). What is small business policy in the UK for? Evaluation and assessing small business policies. *International Small Business Journal*, *18*(3), 36-50.

Daszkiewicz, N., & Wach, K. (2012). *Internationalization of SMEs: Context, Models and Implementation*. Gdańsk: Gdańsk University of Technology Publishers.

EIM Business & Policy Research. (2004). *Review of methods to measure the effectiveness of state aid to SMEs: Final report to the European Commission*, EIM White Paper, Retrieved on January 13, 2014, from: http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=415

EU High Level Group (2004). *Facing the Challenge: The Lisbon Strategy for growth and Employment*. Brussels: European Communities Publication.

European Commission (2002). *Qualitative Ziele der Unternehmenspolitik: Schritte zur Verwirklichung der Ziele von Lissabon* (COM (2002)610 final). Brussels: EU Publishing.

European Commission (2012a). *SME Policy Index: Eastern Partner Countries 2012*. Paris: OECD Publishing.

European Commission (2012b). *SME Policy Index: Western Balkans and Turkey 2012*. Paris: OECD Publishing.

European Commission Directorate General for Enterprise and Industry (2004). *Benchmarking der Unternehmenspolitik* (Arbeitsdokument der Kommissionsdienststellen SEK (2004) 1427). Brussels: EU Publishing.

Fatás, A., Mihov I., & Rose A.K. (2006*). Quantitative Goals for Monetary Policies* (Working Papers Series Nr. 615, April 2006). Frankfurt: European Central Bank.

Greene, F. J. (2009). Assessing the impact of policy interventions: the influence of evaluation methodology. *Environment and Planning C: Government and Policy*, *27*(2), 216-229.

Greene, F. J., & Storey, D. J. (2007). Issues in evaluation: The case of Shell Livewire. In D.B. Audretsch, I. Grilo, & A. R. Thurik (Eds.), *Handbook of research on entrepreneurship policy*. Cheltenham: Edward Elgar Publisher.

Gruenwald, R.K. (2013). Entrepreneurship Challenges in High-Growth Companies and Consequences for SME Policy. *Entrepreneurial Business and Economics Review*, *1*(1), 41-54.

Gruenwald, R.K. (2014). Shaping policy supporting high-growth entrepreneurship: reflections on EU SME Policy. *Horyzonty Polityki, 5*(10), 105-126.

Lenihan, L. (2011). Enterprise policy evaluation: Is there a 'new' way of doing it?. *Evaluation and Program Planning*, *34*, 323-332.

Hart, M. (2007). Evaluating EU Regional Policy: how might we understand the causal connections between interventions and outcomes more effectively*?. Policy Studies*, *28*(4), 295-308.

Kevenhörster, P. (2006). *Politikwissenschaft: Band 2 Ergebnisse und Wirkungen der Politik*. Wiesbaden: VS Verlag/GWU.

Klump, R. (2011). *Wirtschaftspolitik: Instrumente, Ziele, Institutionen*. Munich: Pearson.

Lynch, N., Lenihan, H., & Hart, M. (2009). Developing a framework to evaluate business networks: the case of Ireland's industry-led network initiative. *Policy Studies*, *30*(2), 163-180

Najda, M., & Wach, K. (2005). Impact of integrated European business environment on SMEs cooperation strategies. *Ekonomia*, *17*, 123-139.

OECD (2004a), *Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards a More Responsible and Inclusive Globalisation*. Paris: OECD Publishing.

OECD (2004b). *Evaluation of SME Policies and Programmes*. Paris: OECD Publishing.

OECD (2007). *OECD Framework for the Evaluation of SME and Entrepreneurship Policies and Programmes*. Paris: OECD.

OECD (2011). *OECD Studies on SMEs and Entrepreneurship: Thailand.* Paris: OECD Publishing.

OECD (2012). *SME Policy Index: Eastern Partner Countries*. Paris: OECD Project Factsheet.

OECD, & EC (2012). *SME Policy Index: Eastern Partner Countries 2012: Progress in the Implementation of the Small Business Act for Europe*. Paris: OECD Publishing.

Pack, H., & Saggi, K. (2006). Is there a case for industrial policy? A critical survey. *The World Bank Research Observer*, *21*(2), 267-297.

Paconstantinou, G., & Polt, W. (1997). Policy evaluation in innovation and technology: an overview. In OECD (Ed.). *Policy Evaluation in Innovation and Technology: Towards Best Practices* (p. 9-14). OECD Publishing: Paris.

Peter, H. (2000). Wirtschaftspolitik. Oldenbourg: Munic.

Ramboll Management Consulting (2011). *Evaluierung der ERP-Programme: Endbericht* (Studie im Auftrag des Bundesministeriums für Wirtschaft und Technologie), Retrieved on February 12, 2014, from http://www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/evaluierung-erp-programme,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf

Rosenblatt, M., & Kinder, J. (2006). Canadian and UK Innovation Policies: A Comparative Analysis. In Doern, G. (Ed.). *Innovation, Science, Environment: Canadian Policies and Performance 2006-2007* (pp. 59-81). Montreal: McGill-Queen's University Press.

Schedler, K., & Proeller, I. (2000). *New Public Management*. Bern: UTB.

Stockmann, R. (2000). Evaluation in Deutschland. In Stockmann, R. (Ed.), *Evaluationsforschung: Grundlagen und ausgewählte Forschungsfelder* (pp. 11-40). Opladen: Waxmann.

Swedish Agency for Growth Policy Analysis (2011a). *Entrepreneurship and SME Policies across Europe: Estimating the Costs of Entrepreneurship and SME Policies in Sweden* (Implementation Report, Working Paper 2011:21), Retrieved on February 11, 2014, from http://www.tillvaxtanalys.se/download/18.56ef093c139bf3ef8902a0b/1349864227474/WP_2011_21.pdf

Swedish Agency for Growth Policy Analysis (2011b). *Entrepreneurship and SME Policies across Europe: The Cases of Sweden, Flanders, Austria, and Poland* (Working Paper 2011:03), Retrieved on February 11, 2014, from http://www.tillvaxtanalys.se/download/18.56ef093c139 bf3ef89029bb/1349864032808/ Rapport_2011_03.pdf

Tödtling-Schönhofer, J., Hamza Ch., Resch A., Polverari, L., & Bachtler J. (2011). *Impact and Effectiveness of Structural Funds and EU Policies Aimed at SMEs in the Region* (European Parliament Policy Department Structural and Cohesion Policies). Brussels: European Parliament Publishing.

Touché, B. (2013). *Aktuelle Entwicklungen der KfW Förderung*, KfW Präsentation auf dem b.b.h. Bundeskongress. Bonn: KfW.

Tuchtfeld, E. (1988). Wirtschaftspolitik. In *Handwörterbuch der Wirtschaftswissenschaft* (Vol. 9, pp. 178-206). Stuttgart: UTB.

Wach, K. (2012). *Europeizacja małych i średnich przedsiębiorstw: rozwój przez umiędzynarodowienie.* Warszawa: PWN.

Wach, K. (2013). An empirical investigation into the EU policy in favour of business succession among Polish family firms. *Horyzonty Polityki*, *4*(9), 107-133.

Wren, C. (2007). Reconciling practice with theory in the micro-evaluation of regional policy. *International Review of Applied Economics*, *21*(3), 321-337.

Author

Robert K. Gruenwald

Bachelor in Business Administration from the FOM University for Economics and Management (Fachhochschule für Oekonomie und Management, FOM) in Essen (Germany), Master in Accounting and Finance from the FOM University of Economics and Management in Essen (Germany); currently PhD student in Entrepreneurship (Cracow University of Economics, Poland); CEO of eCollect AG (Switzerland), Financial Technology & Services.

Correspondence to:
Robert K. Gruenwald, B.A., M.A.
PhD Student at the Cracow University of Economics
gruenwald@gmx.ch

Published by Centre for Strategic and International Entrepreneurship – Krakow, Poland

Call for Papers – Guidelines for Authors

Submission of the Manuscripts

We accept articles proposals if they fit the aim and scope of our journal. The articles must be between 20 000 and 40 000 characters (including spaces as well as all necessary tables, figures, graphs and illustrations, the list of used references and any appendixes if needed). The articles must be prepared with accordance to our technical requirements and taking our academic ethics rules into account.

For submission instructions, including *guidelines for authors,* and all other information visit our website at: www.eber.uek.krakow.pl

All submissions should be sent either to the issue editor / the guest editor (e-mail is provided in the call for papers to all thematic and/or special issues) or to the editorial board at eber@uek.krakow.pl

Aim and Scope

'Entrepreneurial Business and Economics Review' (EBER), as multi-disciplinary and multi-contextual journal, is dedicated to serve as a broad and unified platform for revealing and spreading economics and management research focused on entrepreneurship, individual entrepreneurs as well as particular entrepreneurial aspects of business. It attempts to link theory and practice in different sections of economics and management by publishing various types of articles, including research papers, conceptual papers and literature reviews. The Journal accepts the articles from the following fields:

- **Entrepreneurship and Human Capital** (in particular entrepreneurship and innovation, strategic entrepreneurship, corporate entrepreneurship, entrepreneurship methodology, new trends in HRM and HRD as well as organizational behaviour),
- **Management and Business Studies** (in particular entrepreneurial management, entrepreneurial business, management methodology, modern trends in business studies and organization theory),
- **International Business and International Economics** (especially international entrepreneurship, European business, and new trends in international economics including the economics of the European Union and emerging markets, as well as Europeanization),
- **Applied Economics and Statistics** (in particular the role of entrepreneurship and the entrepreneur in economics – microeconomics and macroeconomics, new trends in economics, economics methodology, current research in statistics and demography),
- **Public Policies and Business Education** (in particular policies promoting entrepreneurship, innovation, R&D and SMEs, education for entrepreneurship, new trends in social sciences).

Previous Issues of EBER

Vol. 1, No. 1	Global Opportunities and Local Business
Vol. 1, No. 2	Modern Challenges for International Business in Europe
Vol. 1, No. 3	Contemporary Issues in International Economics
Vol. 1, No. 4	Modern Challenges for Business and Economy in CEE Countries
Vol. 2, No. 1	Global Entrepreneurship from the European Perspective

Forthcoming Issues of EBER

Vol. 2, No. 3	FDI in Central Europe
Vol. 2, No. 4	New Developments in International Business in the region of CEE
Vol. 3, No. 1	Social Entrepreneurship and Socio–Economic Development
Vol. 3, No. 2	Statistical Analysis of Transition Processes in CEECs

Visit us at **www.eber.uek.krakow.pl**

Entrepreneurial Business and Economics Review

CRACOW UNIVERSITY OF ECONOMICS

ISSN 2353-883X

eISSN 2353-8821

ISBN 978-83-939576-5-1