Balcerzak, Adam P.; Pietrzak, Michal Bernard

Working Paper

Are New EU Member States Improving Their Institutional Effectiveness for Global Knowledge-based Economy? TOPSIS Analysis for the Years 2000-2010

Institute of Economic Research Working Papers, No. 16/2014

Provided in Cooperation with:
Institute of Economic Research (IER), Toruń (Poland)

Suggested Citation: Balcerzak, Adam P.; Pietrzak, Michal Bernard (2014) : Are New EU Member States Improving Their Institutional Effectiveness for Global Knowledge-based Economy? TOPSIS Analysis for the Years 2000-2010, Institute of Economic Research Working Papers, No. 16/2014, Institute of Economic Research (IER), Toruń

This Version is available at:
https://hdl.handle.net/10419/219577

Institute of Economic Research Working Papers

No. 16/2014

Are New EU Member States Improving Their Institutional Effectiveness for Global Knowledge-based Economy? TOPSIS Analysis for the Years 2000-2010

Adam P. Balcerzak, Michał Bernard Pietrzak

Toruń, Poland 2014

Adam P. Balcerzak

Nicolaus Copernicus University, Faculty of Economic Sciences and Management
Department of Economics, Email: apb@umk.pl

Michał Bernard Pietrzak

Nicolaus Copernicus University, Faculty of Economic Sciences and Management
Department of Econometrics and Statistics, Email: michal.pietrzak@umk.pl

Are New EU Member States Improving Their Institutional Effectiveness for Global Knowledge-based Economy? TOPSIS Analysis for the Years 2000-2010

Abstract

The article is devoted to measuring the effectiveness of institutional systems of EU countries in terms of their relevance to the requirements of global knowledge-based economy. The main aim of the article is to evaluate the progress obtained by New Member States in the years 2000-2010. The empirical part is based on the modified TOPSIS method. Data from Fraser Institute has been used.

Keywords: institutional economics, effectiveness of institutional system, knowledge-based economy, European Union, TOPSIS method

JEL classification: *D02, O1, F6, C38*

1. Introduction

Last decades have brought many significant changes in the structure of the world economy connected to the processes of forming global knowledge-based economy (see: Balcerzak, 2011, pp. 3-23). The different economic results obtained by developed countries in utilizing the potential of globalization resulted in growing awareness of the influence of institutional factors on the growth process not only in relation to underdeveloped countries, but also in the case of developed economies (see: Scarpeta & Tressel, 2004). In this context, the paper presents the results of empirical research on institutional effectiveness for knowledge-based economy in case of EU countries, it is done for the period 2000-2010 and is based on the data from Fraser Institute data base for Economic Freedom of the World Report .

The main aim of the article is to evaluate the progress obtained by so called New Member States of the European Union in the process of regulation reforms and improving their institutional effectiveness for global knowledge-based economy in the first decade of 21st century.

2. The Determinants of Institutional System's Effectiveness In the case of Global Knowledge-based Economy

The experiences of the last three decades has proved the significant role of institutional factors in determining the economic success in a quickly changing environment in the case of developed economies. That has been seen in the case of unequal distribution of benefits of knowledge-based economy utilized by developed countries (Gust & Marquez, 2000; Denis et al., 2005).

The divergence of productivity growth in highly developed countries in the last decade of 20th century led to intense discussion. The first hypothesis was concentrated on the role of technological change, especially the importance of IT in dynamic global knowledge-based economy (Bassanini et al., 2000). However, the OECD research program proved that the institutional factors should be treated as the most important determinants of high productivity growth in some highly developed countries (Bassanini et al., 2001, Atkeson & Kohoe 2007; Eliasson et al., 2004).

The crucial role is given to the system of regulations that influence the incentives for entrepreneurship and the effectiveness of financial systems institutions that together create the framework for high supply of enterprises with high growth potential. The effectiveness of financial markets is here as important as entrepreneurship itself due to the fact that it supports quick reallocation of capital and other economic resources from the low growth potential to high growth potential enterprises (OECD, 2001).

The next crucial segments of national institutional systems make the formal and informal rules and regulations that influence the effectiveness of market mechanism. The last, but definitely not least, are the micro and macroeconomic regulations responsible for the competitive intensity of internal markets and external international competitiveness of economy. The competitive pressure increases the speed of innovation diffusion, which when reaching the critical mass leads to higher level of productivity growth. In this context also the effectiveness of labour markets should be taken into consideration. The effective labour markets should support the speed of reallocation of human capital and improvements its quality (McKinsey Global Institute, 2002).

3. Methodology of TOPSIS Analysis

Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) is used here for description and evaluation of effectiveness of institutional systems, which should be treated as a multidimensional phenomenon (Hwang & Yoon 1981, Yoon & Hwang, 1995).

In the article the modified TOPSIS method is proposed. That method can be applied when there is a possibility to extract complex economic aspects which refer to a specific feature of the object within the researched problem. In that case it is possible to evaluate the objects at two analytic levels: first in terms of distinct chosen aspects by means of synthetic subindexes, and then to make the overall evaluation of the objects by means of synthetic index in terms of development of the phenomenon under consideration.

In the research after the specification of subsets of aspects for the phenomena under research and specification of set of attributes for every aspect, the attributes are classified as benefit variables or negative variables, where in the case of benefit variables X_j^s for every two values $x_{i,j}^s, x_{k,j}^s$ that refer to objects O_i, O_k , the relation $x_{i,j}^s > x_{k,j}^s \rightarrow O_i \succ O_k$ is fulfilled, where $\succ$ means that object O_i is preferred to O_k. In the preliminary stage of the analysis the variables are normalized. In the TOPSIS method it is possible to include the weights for each variable and multiply of normalized variables with by weights. In that case for every aspect the sum of weights should be equal to 1. Then, for every aspect for the all diagnostic variables the positive and negative ideal solution is pointed. Next for every distinct aspect for every object separation measures $D_{s,i}^P$ from the the positive ideal solution and $D_{s,i}^N$ from negative ideal solution are calculated. The value of synthetic subindex R_i^s that describes every chosen aspect Y_s is obtained by combining the proximity to the positive ideal solution and the remoteness from the negative ideal solution (1).

$$R_i^s = \frac{D_{s,i}^N}{D_{s,i}^P + D_{s,i}^N} \tag{1}$$

In the last stage the value of synthetic index R_i is calculated as the weighted arithmetic mean described with the equation (2).

$$R_i = \sum_{s=1}^{l} w_s R_i^s, \tag{2}$$

where w_s means weights for every aspect Y_s .[1]

[1] The sum of weights equals to 1.

The value of synthetic index R_i describes the level of development of economic phenomena under consideration and the index is on the scale of 0-1. High value of index R_i sugests high level of development of economic phenomena for chosen object.

4. The Empirical Analysis

In the article, the TOPSIS method was applied to evaluation of institutional effectiveness of EU countries in the context of the global knowledge-based economy in the years 2000-2010, where the object of the research is a country of EU. The institutional effectiveness for the global knowledge based-economy in EU countries is economic phenomenon under consideration. 24 EU countries were included in the research, 14 countries that joined EU before 2004, and 14 countries that were admitted after 2004.[2] The synthetic subindexes R_i^s and synthetic index R_i were calculated for the year 2000, 2005 and 2010.

Based on the theoretical framework discussed in the second section, a vector of potential variables (attributes) divided into four institutional aspects was selected. The first aspect refers to formal regulations influencing entrepreneurship. The second aspect concentrates on effectiveness of juridical system in keeping low level of transaction costs and supporting effectiveness of market mechanism. The third aspect is devoted to the competitive pressure and effectiveness of labour markets. The last one, refers to financial markets institutions as a stimulator of development of enterprises with high growth potential.

For every aspect, a subset of variables was chosen. All the attributes are presented in Table 1. All the data was obtained from Fraser Institute database that is created for the Economic Freedom of the World Reports.[3] All the attributes are benefit variables and describe different institutional factors on scale of 0-10.

Table 1. The vector of potential attributes used for TOPSIS method

Formal regulations influencing entrepreneurship
X_1^1 – Administrative requirements for entrepreneurs
X_2^1 – Bureaucracy costs for entrepreneurs
X_3^1 – The cost of starting business
X_4^1 – Extra payments/bribes/favoritism
X_5^1 – Licensing restrictions

[2] Luxemburg, Malta, Cyprus and Croatia were excluded from the research. The first three countries were eliminated due to the lack of data for all the period of the planned research. Croatia was not included as it joined the EU only in 2013.

[3] http://www.freetheworld.com/reports.html (1.10.2014).

Effectiveness of juridical system in keeping low level of transaction costs and supporting effectiveness of market mechanism
X_1^2 – Tax compliance
X_2^2 – Judicial independence
X_3^2 – Impartial courts
X_4^2 – Protection of property rights
X_5^2 – Integrity of the legal system
X_6^2 – Legal enforcement of contracts
X_7^2 – Regulatory restrictions on the sale of real property
Competitive pressure and effectiveness of labour markets
X_1^3 – Revenue from trade taxes (% of trade sector)
X_2^3 – Mean tariff rate
X_3^3 – Standard deviation of tariff rates
X_4^3 – Non-tariff trade barriers
X_5^3 – Compliance costs of importing and exporting
X_6^3 – Regulatory trade barriers
X_7^3 – Foreign ownership/investment restrictions
X_8^3 – Capital controls
X_9^3 – Controls of the movement of capital and people
X_{10}^3 – Hiring regulations and minimum wage
X_{11}^3 – Hiring and firing regulations
X_{12}^3 – Centralized collective bargaining
X_{13}^3 – Hours Regulations
X_{14}^3 – Mandated cost of worker dismissal
Financial markets institutions as a stimulator of development of enterprises with high growth potential
X_1^4 – Ownership of banks
X_2^4 – Private sector credit
X_3^4 – Interest rate controls/negative real interest rates

Source: own collection.

In the preliminary stage of data analysis the ability of the variables to differentiate the objects was checked. As a reference criteria the coefficient of variation (CV) was applied. The variable with CV< 0,1 was not differentiating the objects significantly, thus it was eliminated from the research. As a result, the variables X_5^1, X_1^2, X_6^2, X_7^2, X_1^3, X_2^3, X_{13}^3, X_{14}^3, X_3^4 were eliminated from the set of final diagnostic variables.

Then the variables were normalized with the classic normalization procedure. Next, the assumption was made that for every aspect all the weights are equal. As a result the operation

of multiplying of normalized variables by weights was not necessary. Then for every separate institutional aspect the positive ideal solution based on the maximum values, and the negative ideal solution, based on the minimum values were specified for the whole period 2000-2010. This approach gave the possibility of dynamic analysis and comparing the values of synthetic index R_i in the year 2000 with its values in the year 2005 and 2010.

Next, the separation measures $D_{s,j}^{P}$ from the the positive ideal solution and $D_{s,j}^{N}$ from negative ideal solution based on the Euclidean distance were estimated. For every aspect and every object (country) similarity to the positive ideal solution R_i^s was calculated. The values of the sub-index gave the possibility to rank the countries basing on the level of development of a chosen aspect for the years 2000, 2005 and 2010. The detailed results are presented in the Tables 4 to 7 in the annex.

Finally, for every country the values of synthetic index R_i for overall institutional effectiveness was estimated. The values of synthetic index R_i were specified with the assumption that all the weights in the equation 2 are equal. Also in this case, the countries were ranked basing on the overall relative effectiveness of their institutional systems for the years 2000, 2005, 2010. The final results are presented in Table 2. Then, basing on the changes of synthetic index R_i the dynamics of institutional changes in the years 2000-2005, 2005-2010 and the whole period of analysis were evaluated. The results are presented in Table 3.

Table 2. The rating and subsets of EU member countries

2000		2005		2010	
Country	**Index**	**Country**	**Index**	**Country**	**Index**
United Kingdom	0,82	Denmark	0,84	Denmark	0,84
Netherlands	0,81	Finland	0,81	Finland	0,81
Finland	0,80	Netherlands	0,75	Sweden	0,79
Denmark	0,79	Sweden	0,74	Estonia	0,75
Belgium	0,76	Ireland	0,74	Netherlands	0,72
Sweden	0,73	United Kingdom	0,73	United Kingdom	0,70
Austria	0,71	Austria	0,70	Belgium	0,68
Ireland	0,71	Estonia	0,70	Ireland	0,65
Germany	0,70	Belgium	0,64	Austria	0,65
France	0,66	France	0,62	France	0,64
Spain	0,65	Latvia	0,59	Hungary	0,58
Estonia	0,62	Germany	0,58	Germany	0,58
Portugal	0,55	Slovak Rep	0,58	Spain	0,55
Hungary	0,55	Spain	0,58	Czech Rep.	0,53
Italy	0,53	Lithuania	0,55	Latvia	0,53

Slovenia	0,50	Czech Rep.	0,53	Romania	0,53
Czech Rep.	0,50	Slovenia	0,51	Slovak Rep	0,52
Latvia	0,49	Hungary	0,50	Bulgaria	0,52
Lithuania	0,46	Bulgaria	0,48	Lithuania	0,50
Poland	0,42	Italy	0,47	Italy	0,50
Slovak Rep	0,42	Romania	0,44	Portugal	0,48
Bulgaria	0,41	Portugal	0,43	Poland	0,47
Greece	0,41	Poland	0,42	Slovenia	0,44
Romania	0,30	Greece	0,39	Greece	0,36

Source: own estimation based on data from Fraser Institute base.

Table 3. The dynamics of synthetic index in the years 2000-2005, 2005-2010 and the whole period

Country	The value of the synthetic index			Percentage change of the value of synthetic index		
	2000	2005	2010	2000-2005	2005-2010	2000-2010
Finland	0,80	0,81	0,81	1,27%	-0,17%	1,09%
Denmark	0,79	0,84	0,84	6,33%	-0,03%	6,30%
Sweden	0,73	0,74	0,79	1,26%	6,52%	7,86%
Austria	0,71	0,70	0,65	-0,75%	-7,99%	-8,68%
Belgium	0,76	0,64	0,68	-15,03%	5,90%	-10,02%
France	0,66	0,62	0,64	-6,90%	2,93%	-4,17%
Germany	0,70	0,58	0,58	-16,63%	-1,04%	-17,49%
Netherlands	0,81	0,75	0,72	-7,21%	-4,40%	-11,30%
United Kingdom	0,82	0,73	0,70	-10,38%	-3,99%	-13,95%
Ireland	0,71	0,74	0,65	4,52%	-12,09%	-8,12%
Greece	0,41	0,39	0,36	-4,91%	-6,40%	-11,00%
Italy	0,53	0,47	0,50	-11,41%	5,75%	-6,32%
Portugal	0,55	0,43	0,48	-21,08%	10,29%	-12,96%
Spain	0,65	0,58	0,55	-11,04%	-5,20%	-15,67%
Latvia	0,49	0,59	0,53	20,50%	-10,33%	8,05%
Lithuania	0,46	0,55	0,50	20,39%	-8,08%	10,66%
Estonia	0,62	0,70	0,75	12,85%	7,07%	20,83%
Hungary	0,55	0,50	0,58	-9,03%	17,25%	6,66%
Poland	0,42	0,42	0,47	-0,35%	11,72%	11,32%
Czech Rep.	0,50	0,53	0,53	6,36%	-0,03%	6,33%
Slovak Rep	0,42	0,58	0,52	38,72%	-9,85%	25,06%
Slovenia	0,50	0,51	0,44	0,37%	-12,81%	-12,49%
Bulgaria	0,41	0,48	0,52	14,69%	8,75%	24,73%
Romania	0,30	0,44	0,53	46,18%	21,09%	77,01%

Source: own estimation based on data from Fraser Institute base.

The results presented in Table 2 show that Scandinavian countries, Great Britain and the Netherlands are the leaders of the rating throughout the whole period. It can be seen that

generally the first half of the rating consists of 'old' EU economies that were members before 2004. In the second part of the rating one can find new member states that joined the EU structure in 2004.

In the case of "old" member states in 2005 the value of its synthetic index was lower by 10,38% than in the first year of the analysis. Then when one compares the years 2005 and 2010, a negative change of 3,99% can be seen. Similar dynamics of synthetic indicator can be seen in the case of the Netherlands. In the first sub-period the country recorded the decline of the indicator equal to 7,21%, and in the years 2005-2010 its indicator decreased by 4,40%. In the years 2000-2005 the highest decline of the index was recorded by Belgium by 15,03%, but in the years 2005-2010 the country recorded increase of the relative value of the indicator by 5,90%. Denmark obtained the increase of the relative value of the index by 6,33% in 2005, whereas Finland recorded an increase by 1,27%. In the years 2000-2010 Denmark managed to improve the relative values of it institutional effectiveness by 6,30%, Finland recorded its increase by 1,09%.

In the years 2000-2005 the highest declines of their relative value of the indexes were recorded by Germany, Spain and France, by 16,63%, 11,04% and 6,90% respectively. The lower decrease was recorded in Austria, by 0,75%. Ireland managed to improve the relative value of its indicator by 4,52% in the years 2000-2005. Sweden recorded a small increase of the value of the index by 1,26% in the first sub-period and increase of index by 6,52% in the second one. In the years 2005-2010 only Sweden and France improved their relative results. Spain and Germany managed to stabilize their results in the second sub-period.

Moving to the countries in the second part of the rating one can mostly find "old" member states and such 'new' EU member countries as Portugal and Italy, which indicates their relative significant institutional ineffectiveness. Additionally, these two countries recorded decrease of the value of synthetic index for these counties in the year 2005 by 21,08% and 11,41%.

On the other hand, the classification of post-socialist countries such as Estonia or Hungary should be treated rather as an indicator of quite serious advance in the field of institutional reforms already at the beginning of the analysis. Estonia can be considered as an interesting example of very successful reforms. In the years 2000-2005 the country improved its synthetic index by 12,85%. Thus, it can be said that in the last year of the research Estonia was characterized with similar institutional effectiveness for knowledge-based economy to the most developed EU countries. In the year 2000 Hungary had close situation to Estonia. However, in the years 2000-2005 the value of synthetic index for Hungary dropped by 9,03%.

On the other hand, in the years 2005-2010 the country managed to implement reforms improving its relative position. As a result, its indicator increased by 17,25%.

In the year 2000-2005 Czech Republic increased relative value of its indicator by 6,36% and in the years 2005-2010 there was a small decrease of its indicator by 0,03%.

In the years 2000-2005 the value of indexes for Lithuania and Latvia improved by 20,39% and 20,50%. However, in the second sub-period one could see the decrease of their indicator by 8,08% and 10,33%.

In the countries with the lowest institutional effectiveness in the year 2000 one could find Poland, Slovakia, Bulgaria, Greece and Romania. Slovakia can be treated as an example of success, especially in the first sub-period. However, in the second sub-period the country could be characterised with lower intensity of reforms, which resulted in decrease of the value of the index. In the first sub-period Poland recorded a minor decrease of the relative value of its indicator by 0,35%, but in the second sub-period it managed to increase its relative position by 11,72%.

Also Bulgaria was able to improve significantly the values of its index. In the years 2000-2005 and 2005-2010 it increased the value of synthetic index by 14,69% and 8,75% respectively, which for the whole period 2000-2010 resulted in significant increase of 24,73%. In the case of Romania, the positive changes were outstanding. The country improved the relative value of its indicator by 46,18% in the first and by 21,09% in the second sub-period. As a result, in the years 2000-2010 Romania achieved the highest increase of the relative value of synthetic index by 77,01%. It should be noted that in spite of the fact that Bulgaria and Romania have been the members of the EU only since 2007, the countries have managed to outmatch Slovenia and Greece with the level of their institutional effectiveness for knowledge-based economy.

Recapitulating, Poland, Slovakia, Bulgaria and Romania are the examples of economies that during the period of a few years of EU integration managed to improve their relative positions. Among the new member states Estonia can be described as an example of especially significant improvement of institutional effectiveness for the global knowledge-based economy. At the same time, Slovenia is an example of a country that lacks reforms and loses its potential in relation to the rest of the region.

Conclusions

The main aim of the research was the evaluation of the progress of new member states of the EU in term of their improvements in forming institutional effectiveness for knowledge-based economy. In the case of Central European countries joining the EU integration process has positively influenced their institutional reforms. The Baltic Countries and Central European countries, with the exception of Slovenia, can be treated as a positive example in that field.

References

Atkeson, A. and Kohoe, P. (2007). 'Modeling the Transition to a New Economy: Lessons From Two Technological Revolutions', *American Economic Review*, 97(1).

Balcerowicz, L. (1994). 'Transition to the market economy: Poland, 1989-93 in comparative perspective', *Economic Policy*, 9, Supplement, 72-97.

Balcerzak, A.P. (2011). 'Highly Competitive Knowledge-Based Economy: Institutional Perspective', in Balcerzak A.P. (ed.), Innovative Potential in the Dynamic Knowledge-Based Economy, Warsaw, The Knowledge and Innovation Institute, 3-23.

Bassanini, A., Scarpetta, S. and Visco, I. (2000). 'Knowledge, Technology and Economic Growth: Recent Evidence from OECD Countries', OECD Economics Department Working Papers No. 259, ECO/WKP(2000)32.

Bassanini, A., Scarpetta, S. and Hemmings, P. (2001). 'Economic Growth: The Role of Policies and Institutions. Panel Data Evidence From OECD Countries', OECD Economics Department Working Papers No. 283, ECO/WKP(2001)9.

Bush, P.D. (1987). 'The Theory of Institutional Change', Journal of Economic Issues, XXI(3).

Denis, C., Mc Morrow, K., Röger, W. and Veugelers, R. (2005). 'The Lisbon Strategy and the EU's structural productivity problem', European Economy, European Commission Directorate-General for Economic and Financial Affairs, Economic Papers, N° 221 February.

Eliasson, G., Johansson, D. and Tayma, E. (2004). 'Simulating the New Economy', *Structural Change and Economic Dynamics*, 15.

Gust, M., Marquez, J. (2000). 'Productivity Developments Abroad', *Federal Reserve Bulletin*, October.

Gwartney, J., Lawson, R. and Hall, J. (2013). 'Economic Freedom of the World: 2012 Annual Report', Fraser Institute.

Hwang, C.L. and Yoon, K. (1981). '*Multiple attribute decision making: Methods and applications',* Heidelberg: Springer, http://dx.doi.org/10.1007/978-3-642-48318-9.

McKinsey Global Institute (2002), 'How IT Enables Productivity Growth. The US Experience Across Three Sectors in the 1990s', McKinsey Global Institute, High Tech Practice, Business Technology Office, San Francisco.

OECD (2001). 'The New Economy. Beyond the Hype', OECD Paris.

Scarpetta, S. and Tressel, T. (2004). 'Boosting Productivity via Innovation and Adoption of New Technologies: Any Role for Labor Market Institutions?' World Bank Policy Research, Working Paper 3273, April 2004

Yoon, K.P. andHwang, C.L. (1995). 'Multiple Attribute Decision Making: An Introduction', Thousand Oaks, CA: Sage Pub.

ANNEKS

Table 4. Ranking and classification to subsets of EU member states in terms of institutional effectiveness of formal regulations influencing entrepreneurship

2000		2005		2010	
Country	**Index**	**Country**	**Index**	**Country**	**Index**
Finland	0,76	Finland	0,89	Denmark	0,81
Belgium	0,73	Denmark	0,77	Finland	0,79
Netherlands	0,72	Ireland	0,68	Sweden	0,73
United Kingdom	0,70	Sweden	0,67	Estonia	0,71
Germany	0,70	United Kingdom	0,60	Netherlands	0,68
Sweden	0,63	Estonia	0,59	Ireland	0,66
France	0,57	Netherlands	0,58	United Kingdom	0,61
Denmark	0,57	Austria	0,56	Germany	0,60
Estonia	0,57	Belgium	0,55	France	0,57
Ireland	0,56	Germany	0,54	Belgium	0,55
Austria	0,54	France	0,53	Austria	0,54
Spain	0,54	Romania	0,50	Slovenia	0,51
Portugal	0,51	Portugal	0,49	Portugal	0,50
Czech Rep.	0,51	Latvia	0,46	Latvia	0,46
Hungary	0,50	Spain	0,44	Hungary	0,42
Lithuania	0,48	Slovak Rep	0,44	Romania	0,41
Poland	0,48	Italy	0,43	Spain	0,40
Slovenia	0,45	Hungary	0,42	Bulgaria	0,38
Slovak Rep	0,38	Lithuania	0,42	Italy	0,37
Italy	0,36	Slovenia	0,39	Lithuania	0,36
Latvia	0,31	Poland	0,38	Slovak Rep	0,35
Greece	0,31	Czech Rep.	0,37	Poland	0,34
Romania	0,30	Bulgaria	0,33	Czech Rep.	0,31
Bulgaria	0,20	Greece	0,28	Greece	0,30

Table 5. Ranking and classification to subsets of EU member states in terms of effectiveness of juridical system in keeping low level of transaction costs and supporting effectiveness of market mechanism

2000		2005		2010	
Country	**Index**	**Country**	**Index**	**Country**	**Index**
Netherlands	0,94	Denmark	0,95	Finland	0,98
Denmark	0,92	Netherlands	0,93	Sweden	0,97
Finland	0,90	Finland	0,90	Denmark	0,93
Austria	0,89	Austria	0,89	Netherlands	0,91
United Kingdom	0,88	Sweden	0,88	United Kingdom	0,87
Sweden	0,83	United Kingdom	0,88	Austria	0,85
Germany	0,83	Germany	0,85	Ireland	0,85
Ireland	0,82	Ireland	0,84	Germany	0,81
Belgium	0,71	France	0,72	France	0,76
France	0,69	Belgium	0,70	Belgium	0,71

Spain	0,63	Portugal	0,67	Estonia	0,66
Portugal	0,61	Estonia	0,62	Spain	0,59
Italy	0,57	Spain	0,57	Portugal	0,55
Hungary	0,50	Greece	0,57	Poland	0,55
Czech Rep.	0,49	Slovenia	0,55	Latvia	0,52
Poland	0,42	Hungary	0,53	Czech Rep.	0,51
Greece	0,42	Latvia	0,52	Slovenia	0,50
Slovak Rep	0,39	Czech Rep.	0,50	Hungary	0,48
Slovenia	0,35	Slovak Rep	0,45	Greece	0,47
Bulgaria	0,32	Italy	0,44	Lithuania	0,47
Latvia	0,30	Lithuania	0,43	Italy	0,46
Lithuania	0,29	Poland	0,40	Romania	0,40
Estonia	0,27	Romania	0,34	Slovak Rep	0,37
Romania	0,21	Bulgaria	0,30	Bulgaria	0,31

Table 6. Ranking and classification to subsets of EU member states in terms of institutional factors improving competitive pressure and effectiveness of labour markets

2000		**2005**		**200**	
Country	**Index**	**Country**	**Index**	**Country**	**Index**
United Kingdom	0,72	United Kingdom	0,75	United Kingdom	0,75
Denmark	0,71	Denmark	0,74	Denmark	0,74
Netherlands	0,63	Ireland	0,69	Ireland	0,69
Belgium	0,62	Slovak Rep	0,67	Slovak Rep	0,67
Finland	0,59	Estonia	0,66	Estonia	0,66
Ireland	0,57	Netherlands	0,58	Netherlands	0,58
Germany	0,57	Hungary	0,53	Hungary	0,53
Austria	0,56	Finland	0,53	Finland	0,53
Estonia	0,55	Belgium	0,51	Belgium	0,51
Czech Rep.	0,55	Austria	0,51	Latvia	0,51
France	0,54	Latvia	0,51	Czech Rep.	0,50
Portugal	0,52	Czech Rep.	0,50	Sweden	0,50
Greece	0,52	Sweden	0,50	Germany	0,48
Sweden	0,51	Germany	0,48	Austria	0,47
Italy	0,50	France	0,46	France	0,46
Spain	0,50	Portugal	0,45	Portugal	0,45
Hungary	0,48	Lithuania	0,45	Lithuania	0,45
Romania	0,44	Italy	0,43	Italy	0,43
Latvia	0,40	Romania	0,41	Romania	0,41
Slovak Rep	0,38	Slovenia	0,39	Slovenia	0,39
Lithuania	0,38	Spain	0,37	Spain	0,37
Slovenia	0,34	Bulgaria	0,35	Bulgaria	0,35
Bulgaria	0,29	Greece	0,34	Greece	0,34
Poland	0,29	Poland	0,34	Poland	0,34

Table 7. Ranking and classification to subsets of EU member states in terms of effectiveness of financial markets institutions as a stimulator of development of enterprises with high growth potential

2000		2005		2010	
Country	**Index**	**Country**	**Index**	**Country**	**Index**
Belgium	0,96	Bulgaria	0,94	Bulgaria	0,94
Denmark	0,96	Denmark	0,94	Denmark	0,94
Finland	0,96	Finland	0,94	Spain	0,94
Netherlands	0,96	Spain	0,94	Finland	0,94
Sweden	0,96	Sweden	0,94	Sweden	0,94
United Kingdom	0,96	Netherlands	0,93	Netherlands	0,93
Spain	0,94	Lithuania	0,92	Lithuania	0,92
Estonia	0,89	Austria	0,84	Belgium	0,84
France	0,86	Belgium	0,84	Slovak Rep	0,82
Austria	0,82	Slovak Rep	0,82	Czech Rep.	0,81
Latvia	0,81	Czech Rep.	0,81	France	0,81
Germany	0,76	France	0,81	Ireland	0,79
Hungary	0,76	Ireland	0,79	Slovenia	0,76
Italy	0,75	Slovenia	0,76	United Kingdom	0,76
Slovenia	0,74	United Kingdom	0,76	Austria	0,71
Portugal	0,67	Italy	0,69	Italy	0,69
Slovak Rep	0,63	Poland	0,66	Poland	0,66
Poland	0,61	Estonia	0,62	Estonia	0,62
Ireland	0,61	Latvia	0,61	Latvia	0,61
Bulgaria	0,59	Hungary	0,61	Hungary	0,61
Czech Rep.	0,58	Germany	0,58	Germany	0,58
Greece	0,55	Greece	0,53	Greece	0,53
Romania	0,41	Portugal	0,44	Portugal	0,44
Lithuania	0,39	Romania	0,43	Romania	0,43