MEASUREMENT OF SOCIO-ECONOMIC DEVELOPMENT USING THE HUMAND DEVELOPMENT INDEX EXTENDED BY AN INDICATOR OF ECONOMIC FREEDOM

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Abstract:
For nearly half of a century resonates the fact that evaluating the success of the country's development, solely on the basis of economic growth measured by the gross domestic product (and derived therefrom of economic development level) does not have sufficient explanatory power because it does not sufficiently reflect a qualitative shift of the civilization. Attention is therefore focused not only on exploring possibilities to affect the economic growth in its complexity, but also how to eliminate as much as possible the impact of negative factors on the increase, but above all, how to and according to what indicators to measure our development. We mean not only economic but also human development in terms of the interconnection of socio-economic, environmental and institutional quality. The relevant issue is the content of many documents framing planetary development and is the subject of extensive research, especially since the appropriate construction of indicators that affects the economic and human development in its complexity and allows subsequently adopting responsible economic policy decisions. The possibility of measuring the socio-economic development using the human development index extended by another summary indicator (economic freedom) is the subject of the presented contribution.

Keywords: socio-economic development, human development index, economic freedom, measurement of development

1. INTRODUCTION

At present, increasingly resonates the fact that the socio-economic development of the country depends, amongst its factorial facilities, also on the quality of the institutional environment.

Underestimation of institutional quality, lack of understanding of the importance of institutions, their development and interconnectedness of all institutional components can lead to a negative impact on the economic development of the country. Conversely, institutional complementarity makes possible to formulate and implement such economic policy measures that will ensure long-term development, as linking legal, political, economic and social institutions. In essence it covers the entire area for the effective operation of the public administration and the private sector.

This means that it reflects the quality of protection of ownership. Legal institutions are the most common type, as through governments spread into every social interactions, regardless of their level (state, public administration, private sector). They cover a wide range of institutional environment, for example protection of property ownership, quality of the legal framework, law enforcement, regulatory frameworks, the quality of the business environment, but they also reflect forms of interaction of population, social capital and social networks in society.

These areas of economic freedom are a necessary precondition for providing the conditions for economic development.

2. THE CONDITIONALITY OF SOCIO-ECONOMIC DEVELOPMENT BY INSTITUTIONAL QUALITY

Despite the fact that differences in economic development over the past decades are rationalized and justified mainly by neo-classical opinion, backed by different factor endowment and unequal pro-growth effect of individual factors (labor, capital, technological progress - Solow, 1956, Innovation - Romer, 1986 Education - Lucas 1988), in the current period, that approach appears to be limited by the disability and explanation of global and regional problems. Institutional economists warn that the neoclassical approach is not a suitable tool for analyzing and formation of policies that would have stimulate long-term development, as it deals with the functioning of markets, not how the markets are developing. It is not possible to make a policy, if the economic development is not understood. Construction of neoclassical models concentrates on the analysis of several variables, which are considered as crucial for the elimination of bottlenecks of economic development, as well as for promotion of the economic growth, which may lead to an overestimation of upward impact of examined factors (Wight 2011). During the examination, the economic development focuses on technological development and more recently on investment in human capital[1], but ignores and underestimates the structure of stimulus, an incentive structure embodied in institutions and the extent of social investments in sources of growth. In its original form, neoclassical theory provides a mathematical precision and elegance, the static model of the world without conflict. Neoclassical economic analysis of performance over time is therefore based on two erroneous assumptions; first, that the institutions does not matter, and second, that the time does not act (North, 1994).

In terms of institutional approaches neoclassical approach does not have sufficient width of tools for analyzing and shaping the rules that indicate development. One of the main drawbacks of this approach is its ignorance of the role of institutions in the socio-economic development (Jay 2009). Growth and development depend crucially on the currently valid institutions. Options how politically assert institutions supporting growth and development are limited by cultural nature of contemporary society (North, 1990).

Although the institutional environment is only one of the factors of economic performance, the theoretical approaches as well as the conclusions of empirical work shows that an increase in institutional quality creates better conditions for economic growth and development (eg. Acemoglu et al., 2004) and higher institutional quality is usually accompanied by a better-performing economy. Countries that have good institutional framework and economic system have been consistently connected with institutional quality and at present achieve higher levels of economic performance.

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[1] At present institution are incorporated into the neoclassical model of long-term economic growth as fundamental sources of growth (eg. Acemoglu, Johnson et al., 2001).

Although economic performance often correlates with high quality institutions, causations are not unidirectional, i.e. that the quality of institutions may be the result of economic growth and don´t have to be only its cause. Higher economic level may change moral values of society, make it more free, open, reliable and responsible, thus affects the development of the institutional quality. At present, there are a variety of approaches by which can be assessed the quality of the institutional equipment of each country. For assessment of institutional quality is devoted for example World Bank, World Economic Forum, OECD, UN DP, Legatum Institute, The Heritage Foundation, The Frazer Institute, EBRD, The Freedom House, Transparency International and other institutions. Their common denominator is the effort to cover as much of such institutional features that frame the growth performance of economies as possible, allow assessment of the dynamics of institutional change and the country's position in international comparison. Indicators of institutional quality are generally designed as composite indicators that combine information of several empirical findings which are based on the so-called hard and soft data[2], which may be incorporated into a measure of the subjectivism of the results.

3. ECONOMIC FREEDOM AND SOCIO-ECONOMIC DEVELOPMENT OF THE EU

The quality of a person's life is significantly determined by his political rights and civil liberties, which are the basic parameters of economic freedom. Economic freedom is an aspect of human freedom, which deals with the material autonomy of individuals in relation to the state and other organized groups. Individuals are economically free, as far they are free to control their own labor force and property (Friedman, 1993). Economic freedom is closely linked to economic performance (Berggren, 2003 Haan and Sturm, 2000).

Economic freedom is assessed in a way that covers a wide range of factors of institutional quality. It is thoroughly assessed by the Fraser Institute, Freedom House and the Heritage Foundation. Index of Economic Freedom, compiled by the Fraser Institute, assesses conditions to ensure freedom of choice of the individual. Mainly evaluates the quality of the competitive environment, quality of legislation in terms of law enforcement and protection of property rights and the quality of the regulatory framework. A positive note is that this index examines also macroeconomic stability, which incorporates space on the discretion of individual subjects. In summary, the project evaluates the quality of economic policy approaches to socio-economic, legal and cultural fields and their impact on economic growth and development. Identical mission, i.e. to examine the effect of economic freedom and the quality of institutions in developing countries, has also the economic freedom index compiled by the Heritage Foundation. It focuses on four key aspects of the economic environment – rule of law, government size, regulatory efficiency and market openness. Evaluation mentioned four aspects of economic freedom is realized via 10 components (10 components of economic freedom are: property rights, freedom from corruption, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, financial freedom). The components of economic freedom are rated on a scale from 0 to 100. Scores on these 10 components of economic freedom, which are calculated from a number of sub-variables, are equally weighted and averaged to produce an overall economic freedom score for each economy (Heritage Foundation 2015).

The purpose of the following part of this article is to assess by DEA method to what extent is the achieved degree of economic freedom in various countries reflected in their level of economic performance, respectively what is the potential for better "assessment" of economic freedom to increase their economic level.

Classical DEA assesses efficiency of *Decision Making Units* (DMUs) which are viewed as transforming m inputs into s outputs. Mathematical expression of transformation function as the production set boundary representation is not being focused. Assuming out stochastic shocks, the data are treated deterministically to construct the *best practice* frontier, deviation from which ascribed to inefficient performance. Interpreting efficiency in Pareto-Koopmans sense, an efficient DMU cannot improve its performance, e.g. increasing its output or reducing any input without employing additional input or reducing output respectively. In DEA, approximation of efficient boundary is carried out by linear

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[2] Hard data are obtained by scientific measurements, they are quantifiable, accurate, they can be tested, and create statistical or data files. They are considered as objective, serve sizeable a description of reality. Soft data have a qualitative character. They are obtained by questionnaire surveys, interviews; they describe attitudes, interests and behavior of individuals of the research.

combination of efficient units which also presents a set of benchmarks for inefficient ones. Potential improvements are represented by *slack* variables.

In the specific application of the method in this study, the approach of Tone (2001) was adopted to assess n DMUs represented by activity ($\mathbf{x_0}$, $\mathbf{y_0}$) where $\mathbf{x}$ and $\mathbf{y}$ stand for inputs and outputs vector respectively, and DMU under assessment is indexed by 0. All inputs and outputs are arranged in matrices X and Y. Slack variables can be expressed as follows.

$$\mathbf{s}^- = \mathbf{x_0} - X\lambda \qquad (1)$$

$$\mathbf{s}^+ = Y\lambda - \mathbf{y_0}$$

As proposed in Cooper, Seiford, Tone (2007), input-oriented measure of efficiency can be constructed by excluding input slacks from the objective function assessing efficiency. The resulting optimization program takes the form

$$\min \quad 1 - \frac{1}{m}\sum\nolimits_{i=1}^{m} s_i^- \big/ x_{i0} \qquad (2)$$

$$\text{s.t.} \quad \mathbf{x_0} = X\lambda + \mathbf{s}^- \qquad (3)$$

$$\mathbf{y_0} = Y\lambda - \mathbf{s}^+$$

$$\mathbf{e}^T\lambda = 1$$

$$\lambda \geq 0, \; \mathbf{s}^- \geq 0, \; \mathbf{s}^+ \geq 0$$

Variable returns to scale assumption taking account of size of economies at considerable variance is incorporated by means of the additional constraint for λ following Banker et al. (1981). The term $\frac{1}{m}\sum\nolimits_{i=1}^{m} s_i^- \big/ x_{i0}$ presents the total penalty for inefficiency represented by nonzero slacks in (2), thus relative inefficiency $s_i^- \big/ x_{i0}$ of individual i-th input can be looked at as the contribution of the input to total penalty. Comparing individual contributions may reveal relative importance of respective inputs for DMU in terms of efficiency.

Inputs to the model have been individual components which form the basic framework of economic freedom index, compiled by the Heritage Foundation. Subject of research were those countries of the world that had evaluated all components of economic freedom (174 countries). The "world" efficiency frontier has been constructed, which is formed by those countries of the world that have managed to entirely effectively transform the achieved degree of economic freedom into their economic performance. This means that countries located on the border of efficiency[3] can increase their economic performance only by increasing the degree of their economic freedom.

Given the large set of countries that were subject of our investigation, we further present only the results for European countries.

The European countries on the global efficiency frontier are Denmark, Sweden, Norway, Austria, Belgium, France, Italy, Slovenia, Greece and Belarus (Figure 1). These countries at given level of economic freedom achieve the highest possible economic performance and the increase can be achieved only by improving their economic freedom. This fact is especially evident in the case of Belarus, which GDP per capita at PPP only reaches 41% of Estonia and a half level of Latvia and Lithuania (these are comparable transition countries). At present, Belarus is located in the captivity of his economic freedom, which does not create any space for economic development. A similar assessment can be attributed to the Ukraine, which at the current level of economic freedom has only minimal space for economic development.

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[3] In accordance with the Pareto-Koopmans interpretation.

Figure 1: The efficiency of transformation of economic freedom into the economic performance of countries in Europe
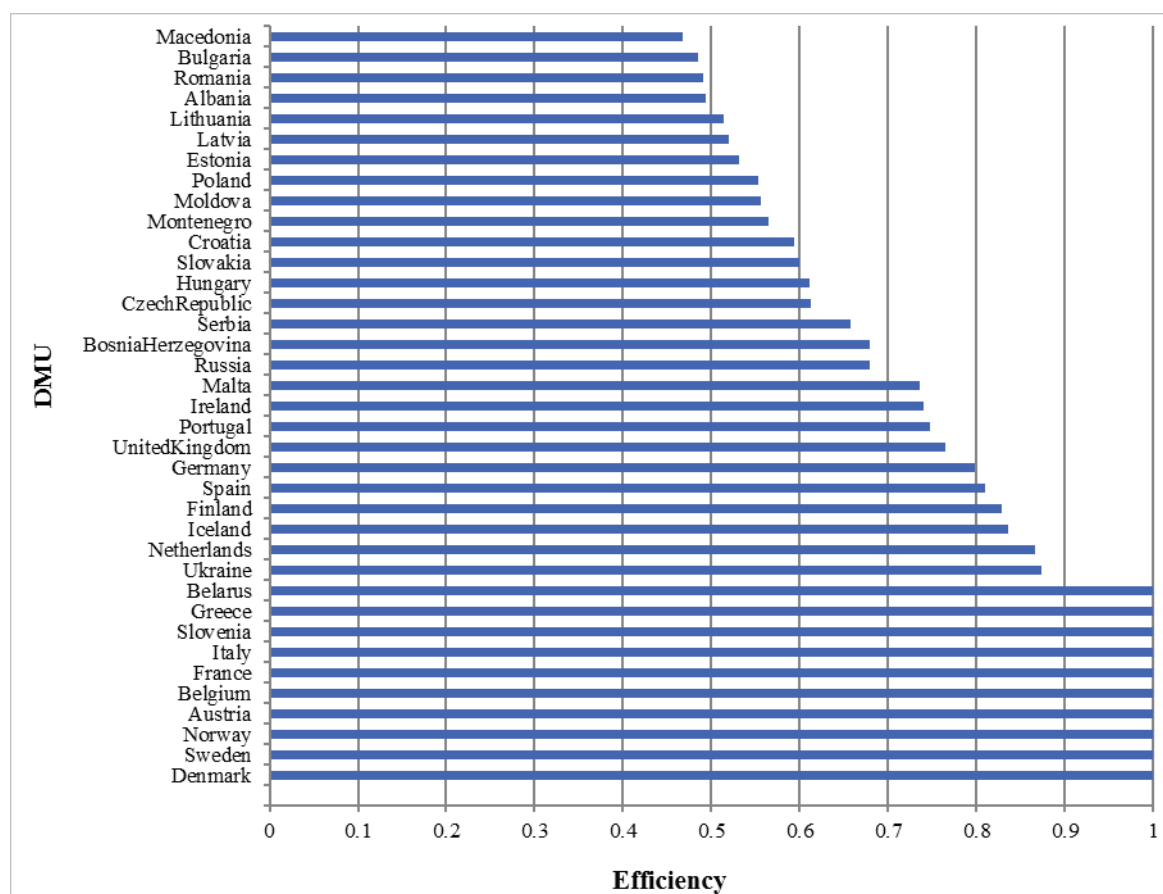
Source: Heritage Foundation, Index of Economic Freedom 2015, own calculations.

For those European countries that are below the efficiency can be identified in the economic freedom areas where improvements could enhance the performance of the country (Table 1). The individual components of economic freedom have different potential to support the improvement of the economic level. Property rights (the quality of the legal framework, protection of property rights, law enforcement, the possibility of accumulation of private property) belong to the components of the institutional environment in which potential for improvement in the European countries shows the most differences (from 1.19% in Finland, 1.59 % in the Netherlands up to 8.75% in Romania and 8.9% in Estonia).

In general, in the most economic developed European countries the property rights contribute almost entirely to economic development but in the European transition economies their quality improvement create a great potential for economic development (the largest potential is in Croatia, Bulgaria, Czech Republic, Albania, Lithuania, Latvia Poland, Moldova, Romania, Estonia). In transition economies represents a major potential for economic development the reduction of the level of corruption, similarly as other components of economic freedom. Particularly important place while minimizing the bottlenecks of development has in the case of transition countries Investment Freedom (assessed by the extent of barriers to investment capital), which contributes most to the overall inefficiency in Romania.

As can be seen from Table 1, the improvement of individual parameters of economic freedom in the transition economies has contributed significantly to their economic development. The potential for improvement in these economies varies from about 40 to 50%.

Table 1: Decomposition of inefficiencies in European countries (in %)

Rank*	DMU	Score**	Property Rights	Freedom from Corruption	Fiscal Freedom	Gov't Spending	Business Freedom	Labor Freedom	Monetary Freedom	Trade Freedom	Investment Freedom	Financial Freedom	Growth potential of economic performance
6	Switzerland	78,17	2,40	2,01	1,70	3,79	0,09	4,13	0,64	1,13	2,45	3,51	21,83
9	Estonia	53,17	8,90	7,20	0,65	4,01	5,39	4,33	0,02	3,86	6,20	6,28	46,83
10	Ireland	74,04	4,00	2,59	1,38	1,72	2,03	4,62	0,46	1,81	3,83	3,52	25,96
14	United Kingdom	76,55	4,12	2,59	0,63	2,85	1,79	2,08	0,00	0,46	3,79	5,13	23,45
16	Lithuania	51,47	8,39	6,66	1,89	4,66	5,55	4,69	0,64	3,82	5,90	6,33	48,53
17	Germany	79,87	3,67	2,63	0,00	1,58	2,19	1,84	0,21	1,54	3,50	2,96	20,13
18	Netherlands	86,64	1,59	1,39	0,00	1,95	0,24	2,55	0,23	0,32	2,46	2,64	13,36
20	Finland	82,94	1,19	2,08	2,82	3,14	1,37	2,00	0,31	0,57	2,26	1,32	17,06
24	Czech Republic	61,21	8,24	4,95	0,57	1,26	3,93	4,98	0,38	3,48	5,07	5,93	38,79
26	Iceland	83,61	3,51	2,27	1,72	0,00	1,81	1,97	0,00	0,88	1,70	2,51	16,39
35	Latvia	52,05	8,44	6,33	1,09	3,18	5,22	5,21	2,50	3,44	7,67	4,87	47,95
40	Poland	55,28	8,52	6,80	0,83	2,37	4,29	4,79	1,33	3,66	6,10	6,03	44,72
47	Spain	81,01	1,71	0,58	0,00	8,69	0,79	0,00	0,85	0,83	3,06	2,49	18,99
48	Slovakia	60,03	7,75	5,37	0,58	3,63	4,28	3,46	0,00	3,60	5,67	5,63	39,97
52	Hungary	61,09	7,78	5,70	0,92	0,00	3,74	3,40	1,79	2,56	6,39	6,62	38,91
53	Bulgaria	48,54	8,18	5,14	1,75	2,23	3,98	6,73	4,46	2,96	9,51	6,51	51,46
55	Romania	49,04	8,75	5,35	1,37	1,65	4,04	6,47	4,46	2,86	10,00	6,00	50,96
56	Malta	73,61	4,90	2,76	0,00	6,51	0,62	2,21	0,65	2,16	3,86	2,72	26,39
61	Albania	49,33	8,33	3,55	1,40	3,17	4,11	5,43	4,70	2,85	10,00	7,14	50,67
62	Portugal	74,81	4,73	3,37	0,00	1,71	3,23	0,00	2,40	1,64	4,72	3,40	25,19
64	Montenegro	56,49	7,65	4,79	2,23	0,00	3,91	5,06	3,67	2,01	8,19	6,00	43,51
79	Croatia	59,46	8,11	5,94	0,00	0,88	2,92	3,24	2,47	3,30	7,84	5,83	40,54
88	Serbia	65,76	7,29	4,10	1,50	0,00	1,30	3,31	2,35	0,94	7,45	6,00	34,24
95	Bosnia Herzegovina	67,93	3,94	4,11	1,54	0,00	0,61	2,60	3,44	1,88	7,29	6,67	32,07
109	Moldova	55,59	8,74	4,27	1,19	0,00	3,76	3,99	4,36	2,12	9,97	6,00	44,41
141	Russia	68,01	6,40	3,01	1,27	2,57	4,78	5,20	0,87	2,15	3,86	1,87	31,99
160	Ukraine	87,44	2,88	0,17	0,40	0,00	1,85	0,00	2,76	1,93	0,00	2,56	12,56

4. CONCLUSIONS

While creating conditions for economic development in the current period an important place is attributed to local institutions and the general recognition is that the development of the institutional quality creates better conditions for economic growth and development. The economic level of the country has long been linked to the quality of institutions. At the same time economic level and changes of moral values of the society make it more free, open, reliable and responsible, thus affect the development of the institutional quality.

That is why for the assessment of individual areas of quality of institutions a great deal of attention is paid to economic freedom and its impact on the economic development of the country. The DEA enabled us to assess the impact of economic freedom on the achieved level of economic performance. On the sample of 174 countries of the world we used the data obtained from the index of economic freedom, compiled by Heritage Foundation to design a border of efficiency. Efficient scale is formed by countries that achieve the level of economic performance with effective utilization of all components of economic freedom. Creating boundary of efficiency also allowed the identification of the weaknesses of development of those economies that are below the threshold. This means that in the case of improvement of the efficiency of the component of economic freedom would increase the potential of their economic development. The countries that make efficient scale can only enhance economic performance by increasing the degree of economic freedom.

In the case of European countries has been shown that the most economically developed economies transform their high level of economic freedom into a high economic level. In economically less efficient economies (Belarus, Ukraine) is a lower degree of economic freedom limiting factor for increasing economic level. In those countries that are below the efficiency, the individual components of economic freedom have different potential to promote economic growth levels. The most significant potential for economic development would be for all countries the improvement of property rights.
Transition countries of Europe have the potential to increase the economic level in all components of economic freedom; however they report the greatest inefficiencies in the investment freedom. In many transition economies represents an improvement of economic freedom the potential for economic development in the order of 50%.

As can be seen from Table 1, the improvement of individual parameters of economic freedom in the transition economies has contributed significantly to their economic development. The potential for improvement in these economies varies from about 40 to 50%.

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