

Institutional Effectiveness Assessment Based on the Quality of Institutional Economic Structure in the Current Context

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Abstract

Institutional effectiveness is an integral condition of economic performance of any state. The article examines three clusters of countries according to the level of institutional effectiveness. Influence priorities of institutional structure quality on the level of institutional economic effectiveness are determined for each cluster. The model of institutional economic effectiveness is discussed for each cluster of countries. The model enables to differentiate institutional economic structure of countries depending on the level of institutional effectiveness. The article suggests a number of transformations aimed at increasing institutional economy.

Keywords: institutions, institutional effectiveness, economic growth, quality of institutional structure, economy, institutional theory.

1. Introduction

Within an economic system institutions change or lose their qualitative characteristics in the course of some time. Some institutions advance by more rapid leaps, transforming or generating new economic management rules, other ones lose their operational relevance. This process represents institutional amendments, resulting in formation of a definite institutional structure in the economy. Optimal institutional structure provides effectiveness of the economy. Dysfunctional institutional environment, characterized by the loss of qualitative characteristics of the institutions, determines effectiveness underperformance, provoking economic recess. Decline in the qualitative characteristics of institutional structure of the national economy may have critical consequences with regard to the sustainable performance of institutional environment.

2. Literature Review

Analysis of the results of investigations by the leading scholars indicates the level of theoretical development of institutional economic effectiveness subject. The general concept of 'effectiveness' is one of the basic definitions of the economic theory (Volchik and Oganessian, 2014). Within the paradigm of institutional theory the institutionalists connect this economic category with the concept of the institutions. An institution is understood as the rules of conduct and regulatory principles, establishing or prohibiting definite ways of proceeding in the economy (Veblen, 2011; Coase, 2001; Inshakov, 2003). In the numerous scientific papers dealing with institutional and evolutionary economy the issue of the institutional effectiveness definition is studied in detail (Dementiev and Nureev, 2011; Kozyrev, 2014; Beck and Laeven, 2006). From this viewpoint the position of M. Rotbard seems interesting; according to the scholar, it is reasonable to use the concept of justice relating to the institutional effectiveness (Rotbard, 1979). In general, the concept of effectiveness is used within the interdisciplinary approach to describe social phenomena, in particular as applicable to the institutions as well (Nureev, 2000; Pohoatã, 2015; Marin and Bjorkland, 2015; Siddiqui and Masood, 2009; Sukharev, 2007). Effectiveness of the institutions is understood as a process of production cost and transaction expenses minimization, as well as the ability to produce economic growth (North, 1997).

The Pareto principle is based on the fact that institutional effectiveness is achieved when no other additional actions fail to improve anybody's wealth without decreasing the wealth of other individuals (Zaslavskaya, 2004; Cleaver, 2015). Its shortcoming is practical inapplicability. The problem of institutional effectiveness according to Pareto was solved by the idea of effectiveness in the theory of economic mechanisms.

The principle of the Kaldor-Hicks efficiency compensation criterion (Kaldor, 1939; Hicks, 2004) consists in the fact that a public goal may be differentiated according to context of the research (Maskin, 2013; Shapkin, 2011).

Since these approaches were based on the qualitative characteristics of the institutional effectiveness assessment, institutional theory was replenished with the works relating to the quantitative assessment of the institutional performance in the economics. The concepts of welfare indicator and adaptive effectiveness of Douglas North became the most famous scientific achievement. The basis of this scientific theory is presented by the substantiation of the approach to the assessment of institutional economic effectiveness by measuring values having price nature (North, 1997).

The theory of growth became widespread in the scientific circles. In compliance with this theory the quality of the institutions predetermines the rates of economic development in the country. Numerous studies confirm this idea demonstrating that the developed democracy, efficient property rights or fair justice system are the prerequisites for the higher rates of the economic growth (Baum and Lake, 2003; Lane and Rohner, 2014; Siddiqui and Masood, 2009; Fioretos and Falletti, 2015).

Also within the institutional effectiveness theory multiple fundamental works on the non-effectiveness of the institutions were formed. Special attention is deserved by the works on the dysfunction (Sukharev, 2007).

The presented concepts have made an undisputable contribution into the theory of institutional economic effectiveness. At the same time, relying on the scientific achievements and accumulated practical experience, the conceptual aspect still retain the debatable nature of the problem solution in the issues under investigation. In particular, the issues concerning provision of institutional effectiveness based on qualitative proportions of institutional economic structure remain unsolved. The study of these issues may serve a basis for improving the theory of institutional effectiveness and the institutional theory as a whole.

3. Research Methodology

The methods of multivariate statistical analysis were applied in the course of investigation.

3.1 Cluster analysis method

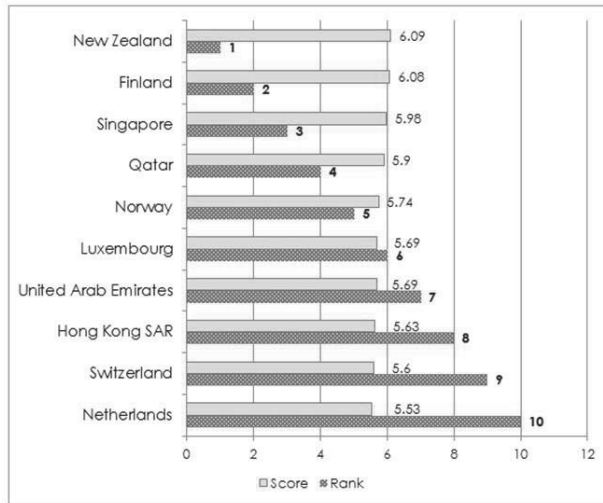
The clusters of countries were formed according to the level of institutional effectiveness by the hierarchical clustering method based on the least value of Euclidian distance. The World Economic Forum quality rating of institutional structure components of the studied 144 countries with different level of economic development became the basis of clusterization. Adequacy of the countries' clusterization results are proved by the Fisher test and the required level p-error.

3.2 Correlation and regression analysis method

Using paired correlation coefficient, there was established the density of connection between the rating of institutional economic structure quality for the clusters of countries and the general level of institutional economic effectiveness. Paired correlation coefficients served a basis for determining the priorities of influence of the institutional economic structure quality on the level of institutional effectiveness. The least square method enabled to determine the quantitative level of influence priority ranking for the institutional structure quality on the performance of institutional effectiveness. The influence priority ranking is presented as a regression model.

4. Findings

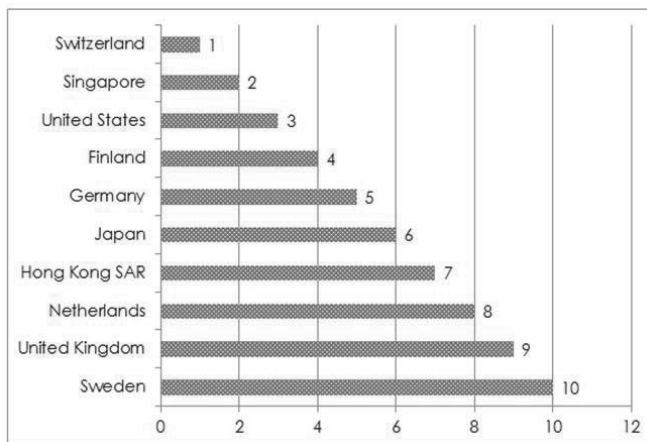
As of 2014 the World Economic Forum distinguished ten countries of 144 with the highest level of institutional effectiveness (see Figure 1). New Zealand ranks first in the rating of the world countries by the global competitiveness index in terms of the effectiveness of the economic institutions. Institutional effectiveness of the national economy, expressed in the assessment of the level of the country's property rights protection, within the World Economic Forum methodology was assessed to make 6.09 grades of 7 maximum possible ones (Schwab, 2014).



(*Compiled by the author according to (Schwab, 2014))

Figure 1. Rating of the countries with the highest level of institutional effectiveness as of 2014

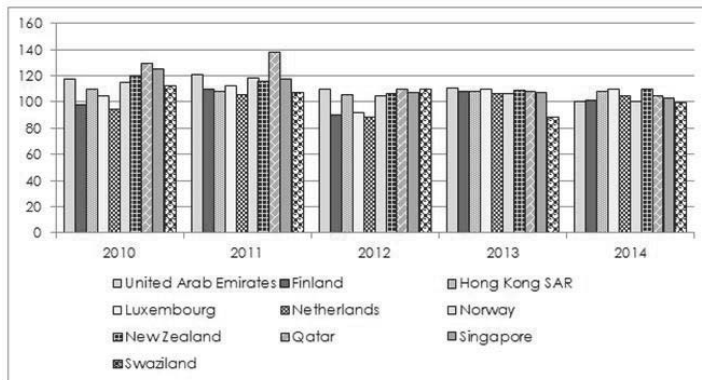
It should be noted that most countries with the highest level of institutional effectiveness are also the leaders in terms of global competitiveness criterion. National economies of such countries, as Switzerland, Hong Kong SAR, Singapore, Finland, New Zealand and Netherlands form Top 10 countries with institutional environment able to provide maximum stable rates of economic growth and their sustainability on a mid-term horizon (Figure 2).



(*Compiled by the author according to (Schwab, 2014))

Figure 2. Rating of Top 10 world countries according to global competitiveness index in 2014.

As indicated by the statistical data, over the recent five years the most competitive global economies were characterized by the fairly stable dynamics of GDP growth. Over the period under consideration the national economy growth made approximately 107% on average for ten countries with the highest level of institutional effectiveness (Figure 3).



(*Compiled by the author according to World Bank Group, 2014)

Figure 3. GDP growth rate dynamics for Top 10 countries with the highest level of institutional effectiveness, %

The institutional concept implies that institutions determine the development type and level for the social and economic system of any state (Kooij et al., 2015; Olson, 2000). The institution performance in the conditions of the market economy shall satisfy the fundamental criterion – effectiveness in the context of social and economic development programs (Yefimov, 2013). Dominance of a certain economic structure of the institutions stipulates economic liberalization and economic growth or is a factor of their rejection (Lawson, 2006; Williamson, 1992).

Within the scope of the scientific research an attempt was made to define the optimal institutional structure quality of the national economies of the global countries providing a high level of institutional effectiveness, and hence, sustainable economic development of the state.

The institutional indicator components of the Global Competitiveness Index were used as a subject of investigation (Schwab, 2014). The institutional effectiveness indicator reflects the legal and administrative structure, within which individuals, businesses and governments interact to create the conditions for the welfare growth (Kuzmenko, 2008; Schwab, 2014).

Qualitative rating figures of the Global Competitiveness Index for 144 countries of the world as of 2014 concerning the quality of institutional economic structure served as a statistical basis of the analysis, cluster and correlation-regression analysis formed the methodology of the research (Schwab, 2015). STATISTICA 8.0. package was applied to practically test the multivariate statistical analysis.

The cluster analysis technology implies formation of an aggregate of clusterization objects, minimizing the size of Euclidian distance between the cluster center and its components:

$$d_{ij} = \sqrt{\sum_k^n (x_{ik} - x_{jk})^2}, \quad (1)$$

where d_{ij} – distance from the i -th object to the j -th cluster center;

x_{ik} – k -th coordinate of the i -th object;

x_{jk} – k -th coordinate of the j -th cluster center (Artamonov, 2010).

As a result of the carried out mathematical transformations, three groups of the clusters of countries were formed according to the level of their institutional development or effective functioning of economic institutions (Table 1) (Annex 1). Average values of institutional effectiveness ratings by the clusters are given in table 4.

Adequacy and validity of the results obtained in the process countries clusterization according to the indicators of institutional effectiveness are confirmed by the dispersion analysis figures. By means of STATISTICA 8.0. software product it was determined that for each indicator intergroup dispersion exceeds the within-group variation. The value of F -criterion (F) is higher than the tabulated one (the tabulated value of the Fisher test for the degrees of freedom (df) 2; 141 with the analysis validity level 95% makes 3.06. Level of p -error does not exceed 0.05. Statistical characteristics indicate the significance and adequacy of the formed clusters according to the level of institutional effectiveness.

Table 1 – Clusters of countries with different levels of institutional economic effectiveness

Levels of institutional economic effectiveness					
high		middle		low	
No	Cluster of countries	No	Cluster of countries	No	Cluster of countries
1	Australia	1	Armenia	1	Albania
2	Austria	2	Azerbaijan	2	Algeria
3	Belgium	3	Bahrain	3	Angola
4	Canada	4	Barbados	4	Argentina
5	Chine	5	Bhutan	5	Bangladesh
6	Denmark	6	Botswana	6	Bolivia
7	Estonia	7	Cape Verde	7	Brazil
8	Finland	8	China	8	Bulgaria
9	Germany	9	Costa Rica	9	Burkina Faso
10	Hong Kong SAR	10	Cyprus	10	Burundi
11	Iceland	11	Czech Republic	11	Cambodia
12	Ireland	12	France	12	Cameroon
13	Japan	13	Gambia, The	13	Chad
14	Luxembourg	14	Georgia	14	Colombia
15	Malaysia	15	Ghana	15	Côte d'Ivoire
16	Netherlands	16	Greece	16	Croatia
17	New Zealand	17	Hungary	17	Dominican Republic
18	Norway	18	India	18	Egypt
19	Oman	19	Indonesia	19	El Salvador
20	Qatar	20	Israel	20	Ethiopia
21	Rwanda	21	Jordan	21	Gabon
22	Saudi Arabia	22	Kazakhstan	22	Guatemala
23	Singapore	23	Kenya	23	Guinea
24	Sweden	24	Korea, Rep.	24	Guyana
25	Switzerland	25	Kuwait	25	Haiti
26	Taiwan, China	26	Lao PDR	26	Honduras
27	United Arab Emirates	27	Latvia	27	Iran, Islamic Rep.
28	United Kingdom	28	Lesotho	28	Italy
29	United States	29	Lithuania	29	Jamaica
		30	Macedonia, FYR	30	Kyrgyz Republic
		31	Malawi	31	Lebanon
		32	Malta	32	Libya
		33	Mauritius	33	Madagascar
		34	Montenegro	34	Mali
		35	Morocco	35	Mauritania
		36	Namibia	36	Mexico
		37	Panama	37	Moldova
		38	Philippines	38	Mongolia
		39	Poland	39	Mozambique
		40	Puerto Rico	40	Myanmar
		41	Senegal	41	Nepal
		42	Seychelles	42	Nicaragua
		43	Slovenia	43	Nigeria
		44	South Africa	44	Pakistan
		45	Spain	45	Paraguay
		46	Sri Lanka	46	Peru
		47	Swaziland	47	Portugal
		48	Tajikistan	48	Romania
		49	Thailand	49	Russian Federation
		50	Tunisia	50	Serbia
		51	Turkey	51	Sierra Leone
		52	Uruguay	52	Slovak Republic

53	Zambia	53	Suriname
		54	Tanzania
		55	Timor-Leste
		56	Trinidad and Tobago
		57	Uganda
		58	Ukraine
		59	Venezuela
		60	Vietnam
		61	Yemen
		62	Zimbabwe

(*Compiled by the author according to (Schwab, 2014))

Based on the clusterization of countries according to the level of the institutional structure effectiveness, it is possible to state the following. The first cluster includes the countries with average ratings of institutional economic effectiveness assessed within the range of min = 4.7, max = 6.5. The second cluster is formed by the groups of countries ranging within min = 3.1, max = 4.6. In the third cluster the countries characterized by the least level effective performance of the economic institutions are grouped: min = 2.3, max = 4.5 (Table 2).

In order to determine the influence priority ranking of institutional economic structure quality by the clusters of countries using formula 2 (Artamonov, 2010) paired correlation coefficients have been calculated in the research (Annex 2).

$$r_{yx} = \frac{\bar{x}\bar{y} - \bar{x}\bar{y}}{\sigma_x \sigma_y} \tag{2}$$

where $\bar{x}\bar{y}$ – mean product of x and y attributes;

\bar{x} , \bar{y} – mean value of x and y attributes, respectively;

σ_x – mean-square deviation of x attribute (formula 3);

σ_y – mean-square deviation of y attribute (formula 4) (Artamonov, 2010);

$$\sigma_x = \sqrt{\frac{\sum(x-\bar{x})^2}{n}} \tag{3}$$

$$\sigma_y = \sqrt{\frac{\sum(y-\bar{y})^2}{n}} \tag{4}$$

Table 2. Average value of institutional economic effectiveness rating by the clusters of countries

Parameter	Cluster 1	Cluster 2	Cluster 3
	Average rating		
Property rights	5.7	4.4	3.3
Intellectual property protection	5.5	4.0	2.9
Diversion of public funds	5.5	3.6	2.5
Public trust in politicians	4.8	3.1	2.3
Irregular payments and bribes	5.9	4.3	3.1
Judicial independence	5.8	4.1	2.8
Favoritism in decisions of government officials	4.9	3.2	2.5
Wastefulness of government spending	4.9	3.3	2.5
Burden of government regulation	4.8	3.5	3.1
Effectiveness of legal framework in setting disputes	5.2	3.9	3.0
Effectiveness of legal framework in challenging regs	4.7	3.5	2.8
Transparency of government policymaking	5.1	4.1	3.5
Business costs of terrorism	5.8	4.6	4.5
Business costs of crime and violence	5.6	4.6	3.6
Organized crime	6.0	4.6	4.0
Reliability of police services	5.9	4.4	3.3
Ethical behavior of firms	5.6	4.2	3.5
Strength of auditing and reporting standards	5.7	4.6	4.0
Efficacy of corporate boards	5.4	4.6	4.1
Protection of minority shareholder's interests	5.2	4.3	3.5
Strength of investor protection	6.5	4.5	4.5

(*Compiled by the author based on the data of (Schwab, 2014))

Quality of institutional structure of the national economy in terms of priority ranking of influence on the of institutional effectiveness level for each formed cluster of countries is determined at the present stage by their significance rating for the paired correlation coefficient (Table 3) (Annex 2).

Table 3. Institutional structure quality rating grouped according to the priority ranking of the influence on the institutional economic effectiveness

Institutional structure quality rating		
Cluster 1	Cluster 2	Cluster 3
Intellectual property protection (Xint)	Efficacy of corporate boards	Irregular payments and bribes
Effectiveness of legal framework in setting disputes (Xeffd)	Intellectual property protection	Business costs of terrorism
Effectiveness of legal framework in challenging regs (Xefr)	Effectiveness of legal framework in setting disputes	Business costs of crime and violence
Property rights (Xprop)	Ethical behavior of firms	Organized crime
Wastefulness of government spending (Xmas)	Strength of auditing and reporting standards	Favoritism in decisions of government officials
Reliability of police services (Xrel)	Judicial independence	Effectiveness of legal framework in challenging regs
Diversion of public funds (Xdiv)	Protection of minority shareholder's interests	Property rights
Transparency of government policymaking (Xtran)	Property rights	Efficacy of corporate boards
Burden of government regulation (Xbar)	Strength of investor protection	Effectiveness of legal framework in setting disputes
Business costs of crime and violence (Xbcv)	Effectiveness of legal framework in challenging regs	Intellectual property protection
Public trust in politicians (Xpub)	Business costs of terrorism	Transparency of government policymaking
Strength of auditing and reporting standards (Xstr)	Organized crime	Reliability of police services
Organized crime (Xorg)	Business costs of crime and violence	Protection of minority shareholder's interests
Protection of minority shareholder's interests (Xprot)	Irregular payments and bribes	Public trust in politicians
Efficacy of corporate boards (Xjud)	Wastefulness of government spending	Judicial independence
Strength of investor protection (Xsip)	Diversion of public funds	Strength of investor protection
Ethical behavior of firms (Xeth)	Public trust in politicians	Ethical behavior of firms
Irregular payments and bribes (Xirr)	Burden of government regulation	Strength of auditing and reporting standards
Judicial independence (Xjud)	Reliability of police services	Burden of government regulation
Business costs of terrorism (Xbust)	Transparency of government policymaking	Diversion of public funds
Favoritism in decisions of government officials (Xfav)	Favoritism in decisions of government officials	Wastefulness of government spending

(*Compiled by the author based on the data of (Schwab, 2015))

5. Discussion

The quality of institutional structure predetermines institutional effectiveness of the economy and influences the level of its development in the current context. For the purposes of reasoning and identifying the main quantitative characteristics of the institutional structure quality in terms of institutional effectiveness it is advisable to develop a model of institutional effectiveness by the clusters of countries. The basis of the model is the influence ranking of the quality of the institutional structure components.

Based on the established influence priorities of individual institutions as indicators of the institutional structure quality making impact on the effectiveness of national economies of the first cluster countries within the empirical research an institutional effectiveness model has been developed in the current context:

$$\begin{aligned}
 Y(IE)1 = & 0.215754 \cdot Xint + 0.206425 \cdot Xeffd + 0.152463 \cdot Xefr + 0.147873 \cdot \\
 & Xprop + 0.035233 \cdot Xwas + 0.026423 \cdot Xrel + 0.023604 \cdot Xdiv + 0.023452 \cdot \\
 & Xtran + 0.020019 \cdot Xbar + 0.018982 \cdot Xstr + 0.018750 \cdot Xbcv + 0.018657 \cdot \\
 & Xpub + 0.014972 \cdot Xorg + 0.014247 \cdot Xprot + 0.012455 \cdot Xefb + 0.010742 \cdot \\
 & Xsip + 0.010211 \cdot Xjud + 0.009898 \cdot Xeth + 0.009364 \cdot Xirr + 0.007543 \cdot Xbust + 0.002898 \cdot Xfav \quad (5)
 \end{aligned}$$

The presented model of institutional economic effectiveness is developed on the basis of correlation-regression analysis. Adequacy of the developed model is proved by its statistical characteristics:

- multiple correlation coefficient approaches 1 (R= 0.89999981);
- determination coefficient is over 0.75 (R2= 0.80999966);
- the obtained value of the Fisher test exceeds the tabulated one (F(21, 95)=1.64).

To systematize the presented results of the model all characteristics of the institutional structure quality are grouped into four blocks according to the functional purpose: law institution quality; quality of the institution of trust in

governmental authorities; quality of the corporate relations institution and quality of the corruption and terrorism institution.

The model of institutional economic effectiveness gives grounds to state the following. The first cluster is formed of 29 countries with a high level of development, where the GDP per capita exceeds USD 17,000. At the present stage of development the institutional efficiency of the national economy is provided by the following qualitative proportions the institutional structure: 72.25% of law institution quality; 14.74% of quality of the institution of trust in governmental authorities; 7.65% of quality of the corporate relations institution and 6% of quality of the corruption and terrorism institution.

In view of the priority ranking of the quality of the economic institutions influence on the institutional effectiveness, an institutional effectiveness model in modern conditions for the countries of the second cluster:

$$\begin{aligned} Y(IE)2 = & 0.093323 \cdot Xefb + 0.073525 \cdot Xint + 0.070635 \cdot Xeffd + 0.067653 \cdot \\ & Xeth + 0.066788 \cdot Xstr + 0.064345 \cdot Xjud + 0.063884 \cdot Xprot + 0.062589 \cdot \\ & Xprop + 0.06233 \cdot Xsip + 0.050498 \cdot Xefr + 0.047361 \cdot Xbust + 0.039561 \cdot \\ & Xorg + 0.038673 \cdot Xbcv + 0.035342 \cdot Xirr + 0.028676 \cdot Xwas + 0.026776 \cdot \\ & Xdiv + 0.024639 \cdot Xpub + 0.023212 \cdot Xbar + 0.020646 \cdot Xrel + 0.019856 \cdot Xfav + 0.019657 \cdot Xtran \quad (6) \end{aligned}$$

Adequacy of the model is confirmed by its statistical characteristics:

multiple correlation coefficient approaches 1 (R=0.89999911);

determination coefficient is over 0.75 (R²= 0.80999840);

the obtained value of the Fisher test exceeds the tabulated one F(21, 191)=1.57.

The second cluster groups 53 countries with the GDP per capita level over USD 3,000, but less than USD 17,000. This institutional structure provides a middle level of institutional effectiveness. This in its turn leads to significantly lower rate of the incremental growth of the economy and the welfare of the state as opposed to the first cluster.

In the current context of economic performance the institutional effectiveness is achieved by means of: 41.83% of quality of the corporate relations institution, 25.72% of quality of the law institution; 18.08% of quality of the corruption and terrorism institution; 4.36% of quality of the institution of trust in governmental authorities.

The third cluster is represented by the countries with the low level of institutional economic effectiveness. It includes 62 countries with GDP per capita not exceeding USD 3,000. Such countries are characterized by low rates growth of personal income and volatile dynamics of the country's economy development.

This institutional effectiveness model at the current stage of economic development appears as follows:

$$\begin{aligned} Y(IE)3 = & 0.104732 \cdot Xirr + 0.094544 \cdot Xbust + 0.085235 \cdot Xbcv + 0.066326 \cdot \\ & Xorg + 0.063542 \cdot Xfav + 0.058776 \cdot Xefr + 0.050043 \cdot Xprop + 0.048763 \cdot \\ & Xefb + 0.047532 \cdot Xeffd + 0.041254 \cdot Xint + 0.040254 \cdot Xtran + 0.037678 \cdot \\ & Xrel + 0.037452 \cdot Xprot + 0.036457 \cdot Xpub + 0.036450 \cdot Xjud + 0.029836 \cdot \\ & Xsip + 0.027455 \cdot Xeth + 0.027434 \cdot Xstr + 0.024453 \cdot Xbar + 0.021231 \cdot Xdiv + 0.020594 \cdot Xwas \quad (7) \end{aligned}$$

The model is adequate, which is indicated by its statistical characteristics:

multiple correlation coefficient approaches 1 (R=0.89999817);

determination coefficient is over 0.75 (R²=0.80999671);

the obtained value of the Fisher test exceeds the tabulated one F(21, 165)=1.58.

Based on developed model it can be concluded that the institutional effectiveness predetermines the qualitative proportions of institutional structure as: 41.44% of quality of the corruption and terrorism institution; 20.74% of quality of the corporate relations institution; 19.76% of quality of the law institution and 18.07% of quality of the institution of trust in governmental authorities.

Within the third cluster Italy – a country with the developed market economy – is characterized by a low level of institutional effectiveness. This position slightly contradicts the concept of direct dependence of the economic growth and institutional economic effectiveness. As indicated by the research, in the institutional structure of the country the quality of the corruption and terrorism institution exerts the prevailing influence on the institutional economic effectiveness. The research confirmed the fact that Italy is the most corrupt country in Europe. According to the official data, its economy annually receives by 4% of GDP less than due because of the corrupt practices (Is Italy the most corrupt country?, 2014). The paradox of the economic growth amid the low institutional effectiveness is explained by the following fact. Corruption may considerably increase the growth of economy; however it means that there is no level playing field for everybody in the country. Regulation, the basis of which is formed rather by 'bargains' than by the rules, upsets establishment of proper institutions that would promote the development. And it results in the volatile growth (Siddiqui and Masood, 2009). This economic system is less stable in the long-term prospect.

6. Conclusions

1. Based on the presented models of institutional economic effectiveness it is possible to conclude that in the current context the highest level of institutional effectiveness is achieved by the quality of institutional structure in the developed countries.
2. The suggested model of institutional economic effectiveness has practical importance and allows developing a strategy of institutional transformations aimed at optimization of institutional environment as a factor providing the economic growth of any state.
3. It seems reasonable to bring the policy of institutional amendments of the countries with medium and low level of institutional effectiveness closer to these proportions of institutional economic structure quality. The quality improvement of the institution of law, providing the economic liberalization and promoting the growth of general welfare of the country should become a basis for institutional transformations of the economy.

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ANNEX 1

Table 1.1. Results of cluster 1 formation based on cluster analysis of institutional effectiveness of 114 countries of the world

Country	Australia	Austria	Belgium	Canada	Chile	Denmark
Euclidian distance	0.506063	0.6320047	0.5756703	0.5709319	0.6334435	0.5465587
Country	Estonia	Finland	Germany	Hong Kong SAR	Iceland	Ireland
Euclidian distance	0.55168	0.7611386	0.4191666	0.6931184	0.5188532	0.5057615
Country	Japan	Luxembourg	Malaysia	Netherlands	New Zealand	Norway
Euclidian distance	0.379268	0.6209186	0.7029873	0.4829844	0.9853216	0.4491105
Country	Oman	Qatar	Rwanda	Saudi Arabia	Singapore	Sweden
Euclidian distance	0.591151	0.8787646	0.5521222	0.4957808	0.9411557	0.2432159
Country	Switzerland	Taiwan, China	United Arab Emirates	United Kingdom	United States	
Euclidian distance	0.839366	0.7036927	0.7143548	0.4873518	0.9386779	

Table 1.2. Results of cluster 2 formation based on cluster analysis of institutional effectiveness of 114 countries of the world

Country	Armenia	Azerbaijan	Bahrain	Barbados	Bhutan	Botswana
Euclidian distance	0.562965	0.534672	0.788193	0.86903	0.723104	0.478378
Country	Cape Verde	China	Costa Rica	Cyprus	Czech Republic	France
Euclidian distance	0.55654	0.413888	0.712139	0.510211	0.667888	0.762034
Country	Gambia, The	Georgia	Ghana	Greece	Hungary	India
Euclidian distance	0.739187	0.721989	0.557377	0.624096	0.66972	0.54222
Country	Indonesia	Israel	Jordan	Kazakhstan	Kenya	Korea, Rep.
Euclidian distance	0.423489	0.916918	0.738775	0.411945	0.762083	0.545986
Country	Kuwait	Lao PDR	Latvia	Lesotho	Lithuania	Macedonia, FYR
Euclidian distance	0.435292	0.97292	0.407735	0.645721	0.360198	0.470718
Country	Malawi	Malta	Mauritius	Montenegro	Morocco	Namibia
Euclidian distance	0.510274	0.531267	0.764591	0.386631	0.360882	0.416186
Country	Panama	Philippines	Poland	Puerto Rico	Senegal	Seychelles
Euclidian distance	0.483356	0.463157	0.492034	1.00985	0.671018	0.30906
Country	Slovenia	South Africa	Spain	Sri Lanka	Swaziland	Tajikistan
Euclidian distance	0.896733	1.225951	0.597395	0.473847	0.335446	0.572237
Country	Thailand	Tunisia	Turkey	Uruguay	Zambia	
Euclidian distance	0.809406	0.617675	0.491726	0.828239	0.332361	

Table 1.3. Results of cluster 3 formation based on cluster analysis of institutional effectiveness of 114 countries of the world

Country	Albania	Algeria	Angola	Argentina	Bangladesh	Bolivia
Euclidian distance	0.7180458	0.4224483	0.727953	0.6549801	0.582494	0.568123
Country	Brazil	Bulgaria	Burkina Faso	Burundi	Cambodia	Cameroon
Euclidian distance	0.7019963	0.5136542	0.4709163	0.5512232	0.298526	0.470351
Country	Chad	Colombia	Côte d'Ivoire	Croatia	Dominican Republic	Egypt
Euclidian distance	0.6969108	1.013916	0.6528895	0.8774725	0.425372	0.770687
Country	El Salvador	Ethiopia	Gabon	Guatemala	Guinea	Guyana
Euclidian distance	0.7099665	0.6460583	0.6691325	0.7640371	0.697372	0.436897
Country	Haiti	Honduras	Iran, Islamic Rep.	Italy	Jamaica	Kyrgyz Republic
Euclidian distance	0.6277515	0.6951152	0.4765936	0.7898865	0.847891	0.493776
Country	Lebanon	Libya	Madagascar	Mali	Mauritania	Mexico
Euclidian distance	0.7384571	1.139253	0.3283926	0.6807414	0.772451	0.572466
Country	Moldova	Mongolia	Mozambique	Myanmar	Nepal	Nicaragua
Euclidian distance	0.5530935	0.6615899	0.3523141	0.8321666	0.292439	0.423367
Country	Nigeria	Pakistan	Paraguay	Peru	Portugal	Romania
Euclidian distance	0.5889097	0.6726218	0.6086272	0.7117378	0.660211	0.50774
Country	Russian Federation	Serbia	Sierra Leone	Slovak Republic	Suriname	Tanzania
Euclidian distance	0.3368412	0.4571476	0.5227666	0.6221736	0.851899	0.400081
Country	Timor-Leste	Trinidad and Tobago	Uganda	Ukraine	Venezuela	Vietnam
Euclidian distance	0.4515639	0.7415587	0.3985665	0.403459	1.297907	0.567251
Country	Yemen	Zimbabwe				
Euclidian distance	0.8571265	0.7474248				

ANNEX 2

Table 2.1. Values of the paired correlation coefficient of institutional structure quality rating as to the level of institutional economic effectiveness

Parameters of institutional structure quality	For cluster 1	For cluster 2	For cluster 3
Effectiveness of legal framework in settling disputes	0.88	0.67	0.39
Effectiveness of legal framework in challenging regs	0.65	0.48	0.49
Intellectual property protection	0.92	0.7	0.34
Property rights	0.63	0.6	0.42
Public trust in politicians	0.08	0.23	0.3
Transparency of government policymaking	0.1	0.19	0.33
Reliability of police services	0.11	0.2	0.31
Wastefulness of government spending	0.15	0.27	0.17
Burden of government regulation	0.09	0.22	0.2
Diversion of public funds	0.1	0.26	0.18
Judicial independence	0.04	0.61	0.3
Ethical behavior of firms	0.04	0.65	0.23
Strength of auditing and reporting standards	0.08	0.64	0.23
Efficacy of corporate boards	0.05	0.89	0.41
Protection of minority shareholder's interests	0.06	0.61	0.31
Strength of investor protection	0.05	0.59	0.25
Irregular payments and bribes	0.04	0.34	0.87
Business costs of terrorism	0.03	0.45	0.79
Favoritism in decisions of government officials	0.01	0.19	0.53
Business costs of crime and violence	0.08	0.37	0.71
Organized crime	0.06	0.38	0.55

(*Compiled by the author based on the data of (Schwab, 2014))

