



Adaptation of international competitiveness rankings to the regional context: Case of Kazakhstan

Adaptación de los rankings de competitividad internacional al contexto regional: caso de Kazajstán

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ABSTRACT:

The purpose of this paper is to provide recommendations for adapting the global competitiveness index in the context of Kazakhstan, based on the multiple regression equation. This research uses the methods of literature analysis and synthesis, a system approach as well as a comparative and statistical analysis. The relevance of the research consists in the fact that the authors propose that the global competitiveness index should be adjusted to the assessment of developing countries, including Kazakhstan. Based on the evaluation of statistical significance of the multiple regression equation, the authors determine an optimal set of factors to assess the global competitiveness index in relation to the regions of developing countries by the example of Kazakhstan and conclude that there is a need to adjust the index for these regions.

Key words: The global competitiveness index, GDP per capita, labor productivity, employment rate, the Gini coefficient, the intensity of energy use in the economy, CO2 emissions.

ABSTRACT:

El propósito de este documento es proporcionar recomendaciones para la adaptación del índice de competitividad global en el contexto de Kazajstán, sobre la base de la ecuación de regresión múltiple. Esta investigación utiliza los métodos de análisis de la literatura y síntesis, un enfoque de sistema, así como un análisis comparativo y estadístico. La relevancia de la investigación consiste en que los autores proponen que el índice de competitividad global se ajuste a la evaluación de los países en desarrollo, incluido Kazajstán. Sobre la base de la evaluación de la significación estadística de la ecuación de regresión múltiple, los autores determinan un conjunto óptimo de factores para evaluar el índice de competitividad global en relación con las regiones de los países en desarrollo mediante el ejemplo de Kazajstán y concluyen que es necesario ajustar la Para estas regiones. **Palabras clave:** El índice de competitividad global, el PIB per cápita, la productividad laboral, la tasa de empleo, el coeficiente de Gini, la intensidad del consumo de energía en la economía, las emisiones de CO2.

The assessment of regional competitiveness is a relevant scientific and methodological problem. A great variety of techniques as well as comprehensive competitiveness indices have been developed for assessing the individual factors of competitiveness in terms of the quality and standard of living, GDP, output, etc. At the same time, of particular interest are international competitiveness rankings calculated on the assessment of more than 100 different factors. These indices are not practically used because of the complexity of calculations and a large

volume of information base for assessment (Hryseva and Savchenko, 2016).

International competitiveness rankings are becoming increasingly important, especially in the context of current foreign policy developments, the globalization of national economies, the use of ratings in the formation of the investment policy of transnational companies, etc. In addition, under the conditions of mass informatization of all spheres of activity, the growing importance of intellectual work and with regard to other factors, the elements of calculating the index of competitiveness are being arranged towards the advantages of human capital of a country (Davletgareyev and Davletgareyeva, 2015).

The competitiveness of a country depends on the ability of businesses to innovate and produce goods and services ensuring high standards of living. With the development of scientific and technological progress as well as the state system of support and regulation, the availability of natural resources is no longer crucial. An increasing role is played by the level of education, the qualification of labor resources and the ability to quickly respond to changing global trends.

In international practice, there are various methods of calculating the indices and ratings of competitiveness, which are constantly improving. There are three main centers for the study of global competitiveness: the Institute for Strategy and Competitiveness at Harvard University, the International Institute for Management Development and the World Economic Forum. While the Institute for Strategy and Competitiveness examines competitiveness in the corporate plane, the other two make their rankings of competitiveness of countries and regions based on their own exclusive research techniques (Kvarchiya, 2016).

In order to assess the adaptation of the international rankings of countries' competitiveness to the regional level, we will analyze the specifics of calculating the Global Competitiveness Index.

Whereas the methodology for assessing the competitiveness of countries is very diverse and includes a variety of techniques, the choice of this index can be explained by the fact that the World Economic Forum (WEF) calculates two indices: the Global Competitiveness Index and the Business Competitiveness Index. However, as compared to the Global Competitiveness Index, the Business Competitiveness Index has too large differences between developed and developing countries, which is why it has not been used in this work (Knowledge Economy Index, 2017).

The Global Competitiveness Index (GCI) is measured from 1 to 7 based on 113 indicators grouped in three main positions: basic conditions, efficiency factors, innovation factors. When calculating the GCI, two types of information are used. On the one hand, it includes country-wide statistics with specific figures on the volume of exports, the state budget deficit, infant mortality, etc., and on the other hand – the results of surveys of businesses that assess the situation in the country on a scale from 1 to 7 (Matushkina et al., 2016).

In addition to socio-economic indicators, including the innovativeness of the economy, the country's readiness to conduct a networked economy and a number of other indices, the calculation of international rankings applies both environmental values and CO2 emissions.

In order to adapt the index of competitiveness assessment to the regional conditions, we will consider the example of Kazakhstan. The choice of this country is conditioned by the following factors:

- 1) The Global Competitiveness Index is based on a comprehensive assessment of both economic indicators and the standard of living in the country. In accordance with the definition of the WEF, a competitive country is able to provide a high standard of living for its citizens (The Global Competitiveness Report, 2014-2015). It means that the standard of living is also considered an indicator of competitiveness.

Many researchers (Gonin, 2016; Margaryan and Galoyan, 2015; Mujiri, 2016; Rodionova, 2015) believe that the higher the standard of living in the country, the more it is competitive in the global market. Undoubtedly, as regards the concept of the social welfare state, this point of view is prevalent, but many leading countries of competitiveness rankings do not have natural

resources, developed industry or advanced research and development, while providing high standards of living. They are classified as developed.

At the same time, developing and transitional countries have significant natural and economic potential, but medium or low standards of living.

Historically, the gap in the standard of living between countries was due to the peculiarities of their geographical location, the lower frequency of participation in armed conflicts, abundant natural resources, etc. All this has determined the number one ranking of the Scandinavian countries, Germany and France, having the highest level of industries in Europe, and Great Britain, which had a number of colonies, etc. The geographic isolation and extraordinary natural wealth also allowed the US to become the world leader.

One should note a number of countries, which have had a transition from developing to developed state at the expense of good governance and practically without any natural resources. The most striking examples are Japan and Singapore.

Japan, which was defeated in World War II and suffered greatly from the explosion of nuclear bombs, managed to bring the economy to the highest level of development. Undoubtedly, an important role is played by the peculiarities of Japan mentality and the highest level of population working capacity. Betting on the development of innovation policy and the introduction of advanced technologies has made the country one of the world leaders in terms of the standard of living (Global Innovation Index 2014, 2017).

A second similar example was Singapore. The main role is played by the country's good management which has made a bet on the fight against corruption, social development, innovative technology, a complete change of the demographic policy.

A somewhat different case is the economic development of China, where a bet was put on quantity not on quality. The main objectives included not innovative technology but massive industrial development, attracting investors from around the world at the expense of cheap and large labor force. Currently, China has withdrawn from this policy and labor force in the country is far from being cheap, but for a few decades, China has built a stable and economically developing model of the socialist-type state. Undoubtedly, an important role was also played by the value of the country's rich natural resources, a favorable geographical position, and a large population (Mironov, 2013).

2) Many transitional and developing countries have significant differences. By factors of economic development, they may be among the first 50 countries, and by the standard of living – in the middle or end of the ranking.

3) Each state has its own economic specialization. At the same time, some countries may not have their own developed industry, but be among the world leaders in terms of social and economic development, while others are focused exclusively on the tourism sector. A number of countries have a leading position both in the industry and in the socio-economic situation. Therefore, at the regional level of the country with tourist specialization, the application of the Global Competitiveness Index yields little information in the context of the entire complex of factors without adjusting their composition.

Thus, the international rankings of countries' competitiveness assessment should adapt to the specifics of economic specialization of one or another country, and only then, it is possible to adjust the index for the assessment of individual regions.

In this article, we consider the question of adapting the international rankings of countries' competitiveness assessment to the calculation at the regional level by the example of Kazakhstan, falling within the category of developing countries (according to international reports, as far as currently in a number of works Kazakhstan is mainly assessed as a transitional country). In this regard, the correlation between the Global Competitiveness Index and a number of social and economic factors taken into account in the formation of international rankings based on the multiple regression model was further calculated (Summary

Chile	4,6	23459,56	67,4	58,1	50,5	58,1	9,285
Republic of South Africa	4,4	13165,16	56,2	39,3	57,8	39,3	9,373

The suggestion about the importance of basic conditions and the insignificance of factors of efficiency and innovative development for the dynamics of the Global Competitiveness Index for developing and transitional countries is based on an analysis of the dynamics of the Global Competitiveness Index by the example of evaluating Kazakhstan's position in the ranking. It should be noted that the position of Kazakhstan in the WEF ranking is higher than, for example, that of Russia (total 50th place) (Rodionova, 2015).

A range of estimates in the ranking within the calculation of the Global Competitiveness Index is visually represented by the following aspects:

1) the competitive advantages of Kazakhstan, with improving indicators, in 2014-2015 were labor market efficiency (15th place, in 2011 - 21th) and macroeconomic environment (27th place, in 2011 - 18th). That is, by basic factors, Kazakhstan is included in the first 20-30 countries of the ranking;

2) the weakest position of Kazakhstan is in terms of "health (health care) and elementary education" (96th place - there was a deterioration of the situation), "financial market development" (98th place), "companies' competitiveness" (91th) and "innovative potential" (85th) (The Global Competitiveness Report, 2014-2015). That is, by factors of efficiency and innovative development, Kazakhstan is at the end of the first hundred countries.

In leading countries of the ranking, there are no such gaps in the components of the Global Competitiveness Index.

Thus, we do not take into account the indicators of innovative development in developing countries because, first, innovative economy is mainly typical for developed countries, and second, only a handful of developing countries are engaged in innovation at the international level.

In general, the development of innovative economy as well as the standard of living is directly dependent on the national economy and human capital of a country. In this connection, we can assume that for developing and transitional countries, the assessment of the level of global competitiveness should focus on the ranking of GDP factors, labor productivity, etc. (Sergeichev, 2011).

In order to verify these assumptions, the calculation will be held in the program Eviews 3.1.0. Construct a matrix of pair correlations. Identify the most important factor. The result is shown in Figure 1.

	CO2	EMPLOYME	ENERGY	GDP	GINI	LABOUR	GCINDEX
CO2	1.000000	0.035062	0.035062	0.299249	-0.100990	0.137267	0.306697
EMPLOYME	0.035062	1.000000	1.000000	-0.012177	-0.075739	0.893110	0.265038
ENERGY	0.035062	1.000000	1.000000	-0.012177	-0.075739	0.893110	0.265038
GDP	0.299249	-0.012177	-0.012177	1.000000	-0.267166	0.049808	0.426065
GINI	-0.100990	-0.075739	-0.075739	-0.267166	1.000000	-0.222628	0.011511
LABOUR	0.137267	0.893110	0.893110	0.049808	-0.222628	1.000000	0.166462
GCINDEX	0.306697	0.265038	0.265038	0.426065	0.011511	0.166462	1.000000

Figure 1. A matrix of pair correlations

According to this matrix, the most significant factor is the factor "GDP per capita in PPP".

Estimate the equation of pair linear regression between the dependent variable and the most significant factor. Represent the results graphically.

Equation: UNTITLED Workfile: UNTITLED				
View Procs Objects Print Name Freeze Estimate Forecast Stats Resids				
Dependent Variable: GCINDEX				
Method: Least Squares				
Date: 12/18/16 Time: 23:42				
Sample: 1 19				
Included observations: 19				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.034994	0.143053	28.20625	0.0000
GDP	1.63E-05	8.39E-06	1.941779	0.0689
R-squared	0.181532	Mean dependent var	4.289474	
Adjusted R-squared	0.133387	S.D. dependent var	0.268524	
S.E. of regression	0.249975	Akaike info criterion	0.164387	
Sum squared resid	1.062286	Schwarz criterion	0.263802	
Log likelihood	0.438321	F-statistic	3.770507	
Durbin-Watson stat	2.154714	Prob(F-statistic)	0.068923	

Figure 2. Calculation of indicators of the equation of pair linear regression between the dependent variable and the most significant factor

The Fisher coefficient value is 3.77. For the degrees of latitude of 1 and 18 as well as the significance level of 0.01, the critical criterion value will be 4.414. Since the empirical value obtained is less than the critical value, the model is considered insignificant.

Determine the statistical significance of the coefficients obtained.

Find the table value of the Student's coefficient for the level of significance $\alpha=0.05$ and a number of the degrees of freedom $\nu = n - 2 = 17$. $t_{crit} = 2.110$.

By comparing the calculated t-statistics and the table value, we find that the coefficient under the GDP variable is not statistically significant. This indicates the absence of heteroscedasticity in the model.

Assess the equation of multiple linear regression with a maximum range of significant factors. Conduct the Wald test to improve the quality of assessment.

Wald Test:
Equation: EQ01

Null Hypothesis: C(2)=0

F-statistic	1.001276	Probability	0.335264
Chi-square	1.001276	Probability	0.317002

Wald Test:
Equation: EQ01

Null Hypothesis: C(5)=0

F-statistic	0.972700	Probability	0.342009
Chi-square	0.972700	Probability	0.324008

Wald Test:
Equation: EQ01

Null Hypothesis: C(3)=0

F-statistic	2.937428	Probability	0.110276
Chi-square	2.937428	Probability	0.086548

Wald Test:
Equation: EQ01

Null Hypothesis: C(6)=0

F-statistic	2.013728	Probability	0.179412
Chi-square	2.013728	Probability	0.155882

Wald Test:
Equation: EQ01

Null Hypothesis: C(4)=0

F-statistic	0.116944	Probability	0.737838
Chi-square	0.116944	Probability	0.732373

For more accurate results, we will hold the F-test of extra variables.

The two tests show that the model includes two factors – “GDP” and “EMPLOYMENT”.

Overall, the analysis reveals that there is an average connection between the index of global competitiveness and socio-economic development for developing countries. At the same time, the main factors are GDP per capita and labor productivity. The connection depends on to which group the country is referred (top 10 or not), as proved by the analysis with the inclusion of qualitative characteristics.

Thus, in order to adapt the international rankings of competitiveness to developing and transitional countries, it is proposed that the modification of the Global Competitiveness Index be used with an intra-group graduation on basic conditions, without taking into account efficiency and innovation factors. This is because until a certain level of development on basic conditions has been achieved, these factors yield little information for this category of countries.

In the context of Kazakhstan, the Global Competitiveness Index should be applied on basic conditions without taking into account efficiency and innovation factors.

Basic conditions of the index include the quality of institutions, infrastructure, macroeconomic environment, health and elementary education.

Currently, Kazakhstan is divided into five regions, each of which has its own particular socio-economic development:

1. West region has the largest area and prospects for territorial development.
2. Central region specializes in mining, i.e. has a resource orientation.
3. North region is the basis of the country's financial and economic development and is characterized by the placement of labor force.
4. Southern Region is a leader in the development of agriculture and industry as well as in terms of human resources.
5. East region does not have a particular specialization and is small in size.

As can be seen, the regions of Kazakhstan are fundamentally different from each other by the structure of the economy, the availability of resources, etc. This further illustrates the problems of application of the Global Competitiveness Index in full with the inclusion of factors of companies' competitiveness and innovativeness. For example, Central region can significantly lag behind the others in terms of innovation, but be the leader in terms of efficiency, etc.

Thus, in order to adapt the international rankings of competitiveness assessment to the regional conditions, the gradation of regions seems optimal in the following order:

1. comparably developed – a full set of elements of the Global Competitiveness Index (in the context of Kazakhstan – Northern and Southern);
2. transitional – the basic conditions of the Global Competitiveness Index and certain indicators by efficiency factors (in the context of Kazakhstan – Central, Northern and Southern);
3. incomparably developed – only the basic conditions of the Global Competitiveness Index (in the context of Kazakhstan – Central and Eastern, Western and Northern, etc.).

Generally, in a single ranking in terms of individual regions it is preferable to use only the basic parameters, while comparing resource and technological regions – basic factors and a number of efficiency factors, and under equal other conditions – a full set of factors.

Bibliographic references

Davletgareyev, N. R., Davletgareyeva, T. B. (2015). *Analysis of the competitiveness of rural*

areas of the regions of Russia. I.E. Nikulina, L.R. Tukhvatulina, N.V. Cherepanova (eds.). In: Problems of management of the market economy. An interregional collection of scientific papers (pp. 82-88). National Research Tomsk Polytechnic University. Tomsk.

Global Innovation Index 2014. The Human Factor in Innovation. INSEAD (The Business School for the World) and the World Intellectual Property Organization (WIPO). Retrieved from http://www.wipo.int/econ_stat/en/economics/gii (accessed date: 10.01.2017).

Gonin, D. V. (2016). Human capital as a tool of government control in improving the competitiveness of the regional economy: theoretical aspects. *Management Consulting*, 12(96), 108-117.

Hryseva, A. A., Savchenko, O. A. (2016). International competitiveness rankings as an indicator of the countries' economic growth. *Eurasian Union of Scientists*, 4(25), 105-106.

Knowledge Economy Index. The World Bank Group 2012 - Knowledge for Development. Retrieved from http://info.worldbank.org/etools/kam2/KAM_page5.asp (accessed date: 10.01.2017).

Kvarchiya, O. V. (2016). The resource potential of the territory as the basis of its competitiveness. *Basic Research*, 9(2), 345-352.

Margaryan, A. Sh., Galoyan, D. R. (2015). Assessment of competitiveness of the economies of the Eurasian Economic Union countries. *Economic Science Today*, 4, 172-177.

Matushkina, Yu. N., Zagorodskikh, V. V., Kosolapov, E. V. (2016). Comparative analysis of the countries across the world in terms of the global competitiveness index. *Economy and Management: Problems and Solutions*, 2(8), 65-68.

Mironov, G. V. (2013). *Management score of area development: scientific publication* (116 p.). Ekaterinburg: UMTS UPI.

Mujiri, I. V. (2016). The role of human capital and innovation development in the global competitiveness rankings. *Economics*, 4(13), 37-40.

Rodionova, I. A. (2015). The position of Russia and Kazakhstan in the ranking of the global competitiveness index. *Basic Research*, 7(1), 187-192.

Sergeichev, N. Yu. (2011). *Strategic development management of municipal formation: theory, methodology, practice: a monograph* (100 p.). Nizhny Novgorod: Publishing House of the Volga-Vyatka Academy of State Service.

Summary Innovation Index (SII). Retrieved from https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en (accessed date: 10.01.2017).

The Global Competitiveness Report 2015-2016. Retrieved from <http://reports.weforum.org/global-competitiveness-report-2015-2016> (accessed date: 10.01.2017).

The Global Competitiveness Report, 2014-2015. World Economic Forum, 2014. Retrieved from <http://www.weforum.org/reports/global-competitiveness-report-2014-2015> (accessed date: 10.01.2017).

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