The issues of the improvement of the methodology for the assessment of reforms

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Abstract—The purpose of this article is to suggest a new methodology that will give us an opportunity to create an Integral Index of Reforms (IIR) that will include seven indexes: KOF Index of Globalization, The Democracy Index, The Corruption Perception, The Human Development, Doing Business, The Global Competitiveness Index and The Index of Economic Freedom. From both scientific and empiric perspective it is supposed that the quantitive assessment of various reforms implemented in different countries based on presented indicators of seven indexes despite the new methodology that we suggest give us the opportunity to include much more indexes.

Keywords— Competitiveness, democracy, efficiency, reforms, development, economic growth, corruption.

I. INTRODUCTION

In different countries of the world various reforms are implemented objectively, which pursue the aim to improve the quality of the life, increase the rating of the country and also provide the sustainable development of the country in the future [1]. On the purpose of our research we consider more important the following indexes, as their integrity will represent the features of the social-economic development of each country. From this point of view, during the last decades there have been various indexes developed by different international organizations and non-government corporations (KOF Index of Globalization by the Economist Intelligence Unit, Human Development Index by UNO, The Corruption Perception Index by Transparency International anti-corruption organization and so on), which are used to assess the institutions of different fields. Based on the new methodology, suggested by us, we have tried to create more integral index based on the following indexes, which trend will give an opportunity to assess the comparative efficiency of various reforms for different countries (24 countries in transition, 15 developed and 10 least developed countries). We have splint the countries into 3 main groups. We have highlighted the reforms implemented in 15 developed countries: Austria, Belgium, Denmark, Finland, France, Germany, Japan, Netherlands, Norway, Portugal, Singapore, Sweden, Switzerland, United Kingdom and United States.

We have also assess the comparative efficiency in 24 countries in transition countries during post-crisis period. These countries are Albania, Armenia, Azerbaijan, Bulgaria, Cambodia, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, Ukraine, Vietnam. We have also chosen 10 least developed countries: Bangladesh, Benin, Côte d'Ivoire, Gambia, Lesotho, Mali, Nepal, Senegal, Uganda and Zambia.

The integral index consists of seven indexes for the last 4 years: KOF Index of Globalization f or 2010-2013, Democracy Index for 2008, 2010, 2011 and 2012, The Global Competitiveness Index for 2010-2011 and 2013-2014 periods by World Economic Forum, Doing Business for 2011-2014, Corruption Perception for 2010-2013, The Index of Economic Freedom for 2010-2013, The Human Development for 2009-2012.

Our new methodology is based on two regulator-parameters: the changes of the ranks and average of scores of the above mentioned indexes for two periods of time. As a result we have the Integral Index of Reforms.

II. STATISTICAL REVIEW

The integral index describes the social-economic development level and through it we assess variety of reforms for 2009-2013. On this purpose we have suggested a new methodology for the assessment of the Integral Index of Reforms based on seven different indexes.

A. *The Global Competitiveness Index (GCI)*

The Global Competitiveness Index (GCI) released by the World Economic Forum, which is a comprehensive tool, that measures the competitiveness of 148 countries, contains 3 sub-indexes: basic requirements, efficiency enhancers, innovation and sophistication factors, that are based on 12 pillars (institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, etc.) including 119 indicators[2].

B. Doing Business

Doing Business released by the World Bank and International Financial Corporation assesses business activity for 189 countries on the basis of 10 a reas of regulation (starting a business, dealing with construction permits, getting credits, paying taxes, etc.) with 36 sub-indexes considering the survey results of organizations in different sectors of economies [3].

C. The Corruption Perception Index

The Corruption Perception Index published by Transparency International anti-corruption organization measures the perceived levels of public-sector corruption for 177 countries based on different assessments and business opinion surveys [4]. The countries, included in the rank of The Corruption Perception Index, are classified on a scale of 0 to 100. The countries, that get 0 are the highly corrupt in judicial system, media, legislative, police, business, public, educational, military areas [5].

D. The Index of Economic Freedom

The Index of Economic Freedom assesses the economic freedom of countries through 10 i ndicators (Business Freedom, Trade Freedom, Fiscal Freedom, Government spending, Monetary Freedom, Investment Freedom, Financial Freedom, Property Rights, Freedom from Corruption, Labor Freedom) in 185 countries [6]. All ten indicators of the Index are scaled equally. Each of them gets 0 to 100 economic freedom grading scale; countries that get 100 are the freest economies of the world. The Index has been published by The Heritage Foundation and The Wall Street Journal since 1994 [7].

E. The Human Development Index

The Human Development Index is a summary indicator that measures a standard of living, the literacy rate, the life expectancy in order to compare and assess the human potential of different countries [8].

F. The Democracy Index

The Democracy Index, compiled by the Economist Intelligence Unit, is the classification of 167 countries by the level of the democracy. The Index includes 60 indicators grouped in five categories: electoral process and pluralism, civil liberties, functioning of government, political participation, and political culture [9].

G. KOF Index of Globalization

KOF Index of Globalization compiled by the Economist Intelligence Unit. The KOF Index of Globalization measures the three main dimensions of globalization: economic, social and political. In addition to three indices measuring these dimensions, we calculate an overall index of globalization and sub-indices referring to actual economic flows:

- economic restrictions
- data on information flows
- data on personal contact
- and data on cultural proximity.

Data are available on a yearly basis for 207 countries over the period 1970 – 2010 [10].

For all represented above indexes we can say, that they are considered to be particular assessment of social-economic development. Besides they often include such indicators, that are not assessed by statistic services and therefore they can only be estimated by experimental method, which is obviously limit wide usage opportunity of these indexes. One of the most important problems is to assess the weight of each component.

III. New Methodological Approach

Using above-mentioned indexes, we represent an integral index, that assess social-economic development level for 2009-2013 based on statistic data for seven indexes (KOF Index of Globalization, The Corruption Perception, The Global Competitiveness Index, Doing Business, The Index of Economic Freedom, The Human Development, The Democracy Index). As a result we have the integral assessment of social-economic development for chosen countries.

To create the Integral Index of Reforms we calculated the ratio of observed seven indexes. Those ratios were acquired experimentally by 56 both Armenian and foreign experts who are state and non-governmental management workers, as well as economists. In the result of the assessment of the seven indices normalized coefficients were provided and the total sum of their ratios is 1.

Those coefficients are:

α_i^j - the scale of each index,

i and j are indexes

i=1, 2,...7 - the seven indexes,

j_1=1, 2,....15 –developed countries, j_2=1, 2,....24 countries in transition, j_3=1, 2,....10 least developed countries we evaluated. For example,

α_4^j =0,12 - the scale of The Economic Freedom Index in the Integral Index of Reforms for j_2=1, 2,....24 countries in transition,

α_4^j =0,13 - the scale of The Economic Freedom Index for j_1=1, 2,....15 countries, and

α_4^j =0,16 - the scale of The Economic Freedom Index in the Integral Index of Reforms for j_3=1, 2,....10 countries:

$$\sum_{i=1}^{7} \alpha_i^j = 1,$$

$$j = \left\{ j_1, j_2, j_3 \right\}$$

With the help of our methodology we first summarized the above-mentioned 7 indexes and attained 1 general index.

$$H_{\text{int.}index}^{j} = \sum_{i=1}^{7} \alpha_i^j N_i^j ,$$

$H_{\text{int.}index}^{j}$ - the Integral Index of Reforms ,

i and j are indexes

$i = 1,2,….7 –$ the seven indexes. For example, $i = 4$ The Economic Freedom Index,

j_2=1, 2,....24 countries in transition we evaluated

j=1 - Albania, j=2 – Armenia, … j=21 - Vietnam

α_i^j - the scale of each index,

N_i^j - the rank of the j country by i index

For example, Armenia is ranked 4 among 24 countries for 2010-2013 by the Global competitiveness index (considering the change of rank and score), therefore $N_1^2 = 4$

The first stage of creating the index was the rearrangement of the indexes included in analyze. The principle of rearrangement was based on the changes of the ranks and average of scores of the above mentioned indexes for two periods of time. Then we adjusted the change with scale coefficients substantiated methodologically. Depending on the level of the social-economic development of the country and the comparative efficiency of various reforms we used scale coefficients. For example, for those countries which had more than 7 points of improvements in rank we gave 0,1 for the change of the rank and 0,9 for the average score, for those who had more than 7 points of decrease in rank we gave 0,9 for the change of the rank and 0,1 for the average score [11].

Fig. 1, 2, 3 represent the Integral Index of Reforms in reports for 2009-2013 compare with the base year (2009) in both 24 countries in transition, 15 developed and 10 least developed countries. Fig. 4, 5, 6 represent the Integral Index of Reforms by the new methodology for 2009-2013 compare with the base year (2009). Fig. 7, 8, 9 represent the Integral Index of Reforms in reports and by the new methodology in 24 countries in transition, 15 de veloped and 10 l east developed countries for 2009-2013.
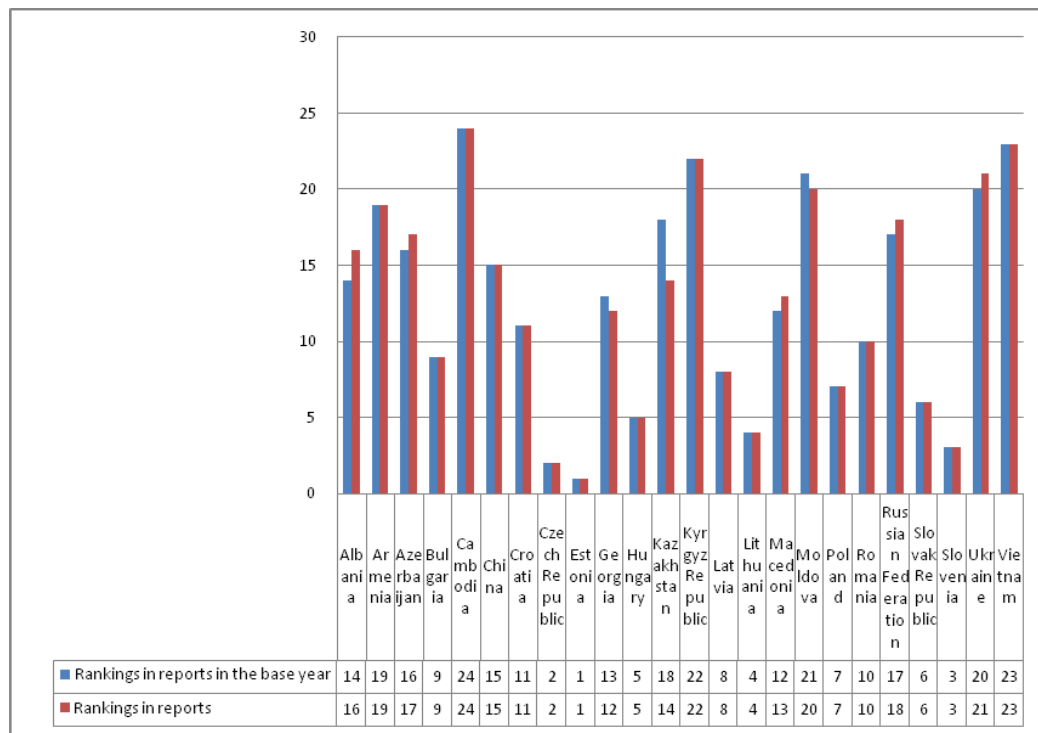
Fig. 1. The Integral Index of Reforms in reports for 2009-2013compared with the base year (2009) in in 24 countries in transition
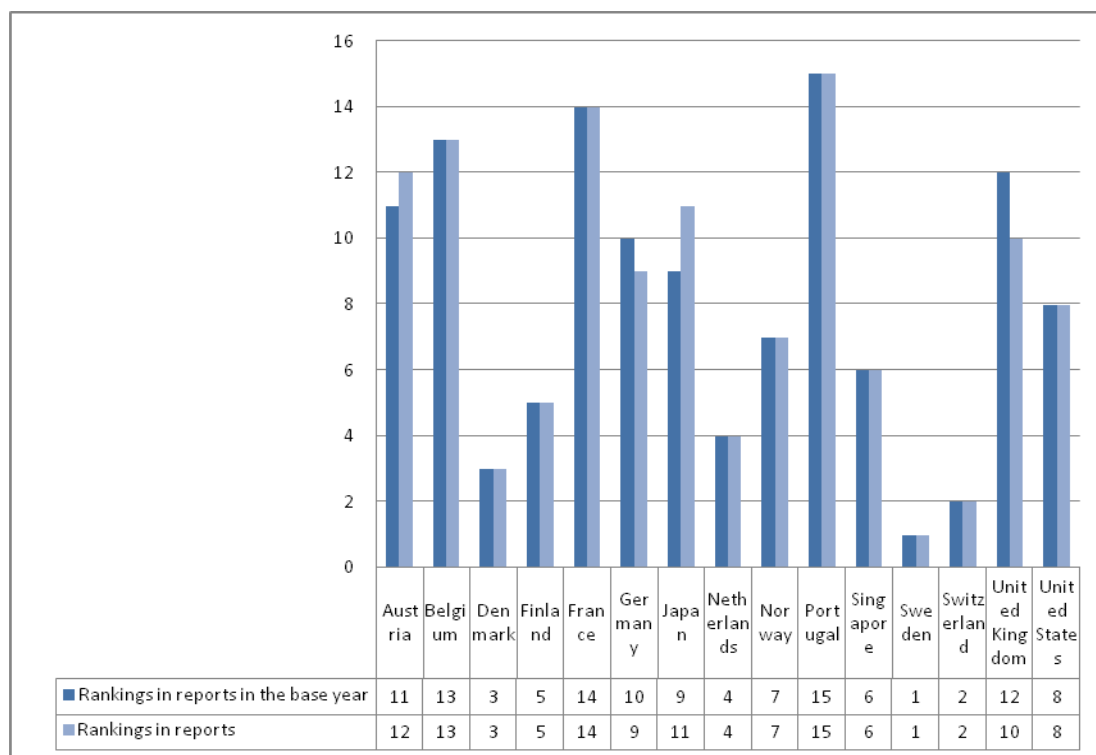

Fig. 2. The Integral Index of Reforms in reports for 2009-2013 compared with the base year (2009) in 15 developed countries

	Banglad esh	Benin	Côte d'Ivoire	Gambia	Lesotho	Mali	Nepal	Senegal	Uganda	Zambia
Rankings in reports in the base year	6	1	10	2	5	8	9	4	3	7
Rankings in reports	4	6	10	3	7	9	8	2	5	1

Fig. 3. The Integral Index of Reforms in reports for 2009-2013 compared with the base year (2009) in 10 least developed countries

	Alb ani a	Ar me nia	Aze rba ijan	Bul gari a	Ca mb odi a	Chi na	Cro atia	Cze ch Rep ubli c	Est oni a	Ge orgi a	Hu nga ry	Kaz akh sta n	Kyr gyz Rep ubli c	Lat via	Lith uan ia	Ma ced oni a	Mo ldo va	Pol and	Ro ma nia	Rus sia n Fed era tio n	Slo vak Rep ubli c	Slo ven ia	Ukr ain e	Vie tna m
Rankings with the help of the new methodology by the Integral Index of Reforms in the base year	9	11	2	12	14	20	8	6	1	5	4	16	22	13	3	17	10	18	19	15	7	24	23	21
Rankings with the help of the new methodology by the Integral Index of Reforms	19	12	5	13	14	24	8	7	2	1	9	17	22	10	4	18	16	3	20	6	11	15	21	23

Fig. 4. The Integral Index of Reforms by the new methodology for 2009-2013 compared with the base year 2009 in 24 countries in transition

	Austria	Belgium	Denmark	Finland	France	Germany	Japan	Netherlands	Norway	Portugal	Singapore	Sweden	Switzerland	United Kingdom	United States
Rankings with the help of the new methodology by the Intergral Index of Reforms in the base year	12	7	2	4	15	3	14	8	1	13	11	10	6	5	9
Rankings with the help of the new methodology by the Intergral Index of Reforms	10	12	2	9	14	5	15	7	4	13	8	6	1	3	11

Fig. 5. The Integral Index of Reforms by the new methodology for 2009-2013 compared with the base year 2009 in 15 developed countries

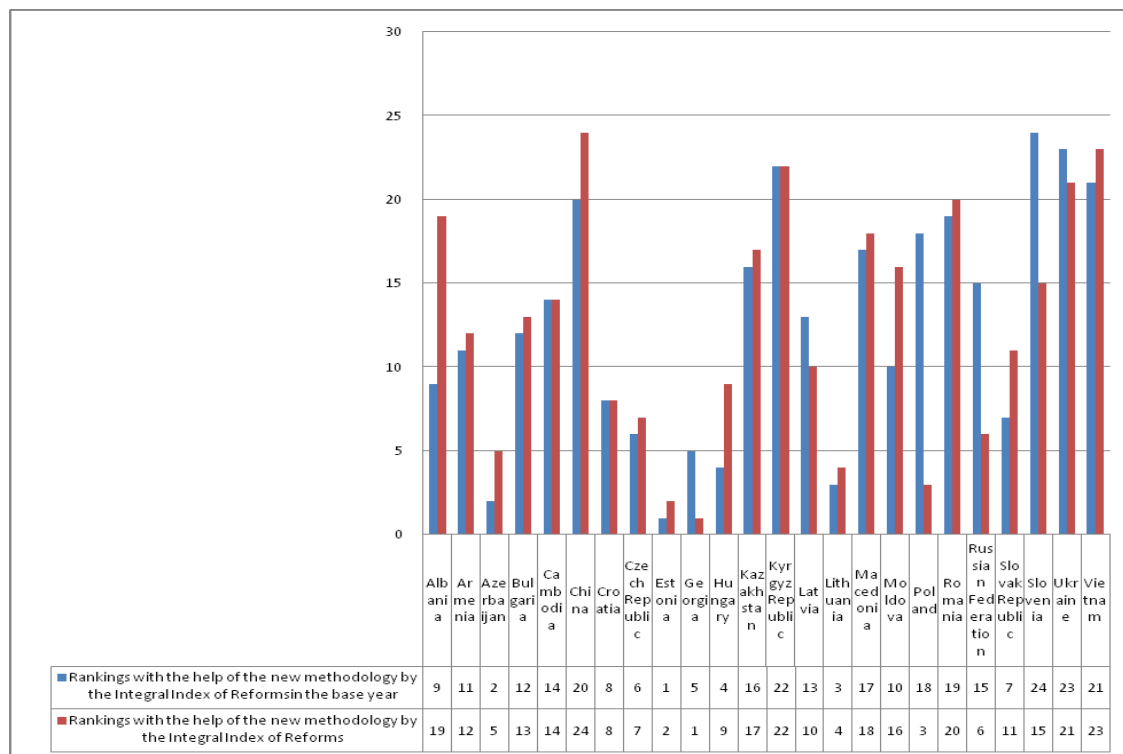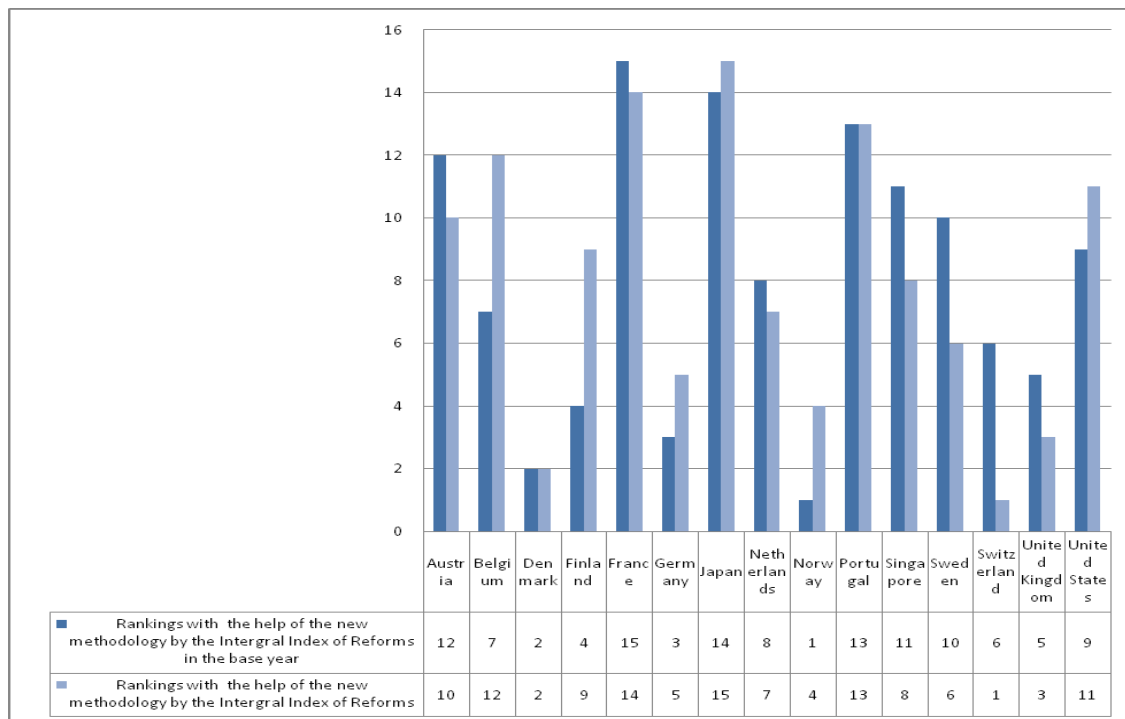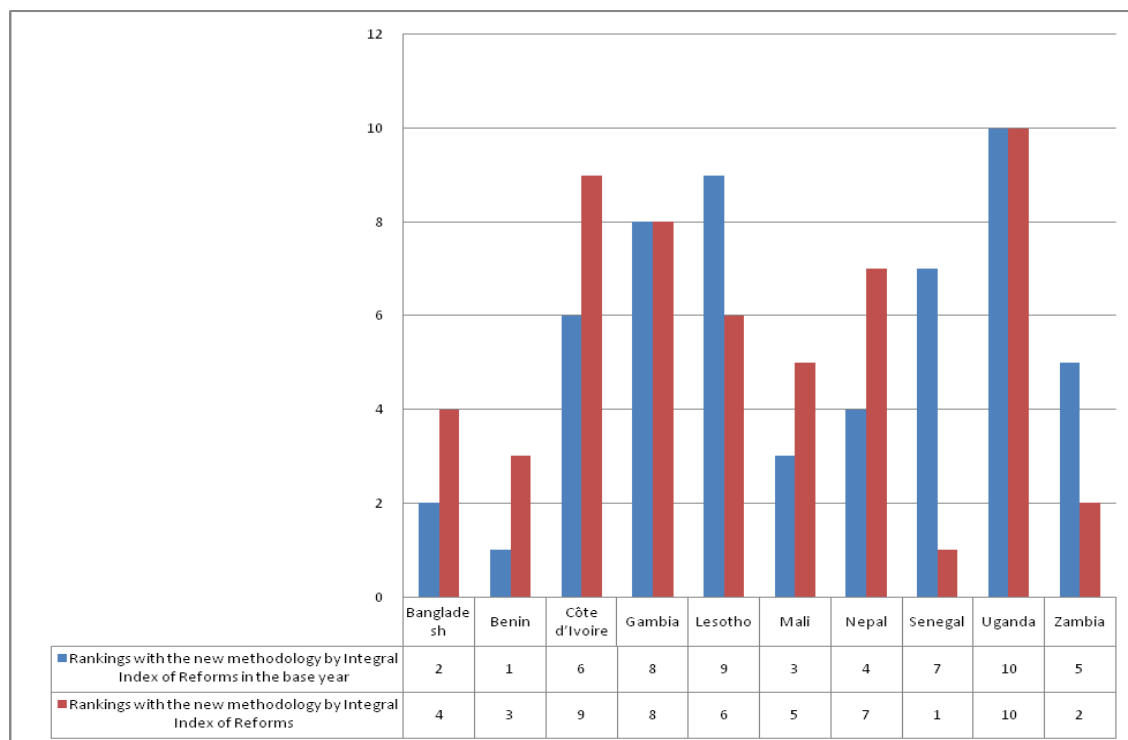|	Bangladesh	Benin	Côte d'Ivoire	Gambia	Lesotho	Mali	Nepal	Senegal	Uganda	Zambia
Rankings with the new methodology by Integral Index of Reforms in the base year	2	1	6	8	9	3	4	7	10	5
Rankings with the new methodology by Integral Index of Reforms	4	3	9	8	6	5	7	1	10	2

Fig. 6. The Integral Index of Reforms by the new methodology for 2009-2013 compared with the base year 2009 in 10 least developed countries

At the second stage countries were rearranged by the methodology mentioned above. This approach was repeated for each year combining with the previous year. As a result of the first and second stages we had a new range of countries for each index for 2009-2013.

At the third stage we gave scale coefficients to all seven indexes considering the importance and the variety of included indicators, eliminating the usage of the same indicator and

finally we had Integral Index of Reforms of each country for 2009-2013.

Putting the indicators of α_i^j and N_i^j in the equation we will have H_i^j.

$$H_{int.index}^j = \sum_{i=1}^{7} \alpha_i^j N_i^j, \text{ For } j_1 = 1, 2, \ldots 15 \text{ –developed}$$

countries, $j_2 = 1, 2, \ldots 24$ countries in transition and $j_3 = 1, 2, \ldots 10$

–least developed countries we assess the average of the summary for 4 years.

$$(H_{i_1}^j + H_{i_2}^j + H_{i_3}^j + H_{i_4}^j)/4$$

For instance, The Economic Freedom Index for Armenia will be:

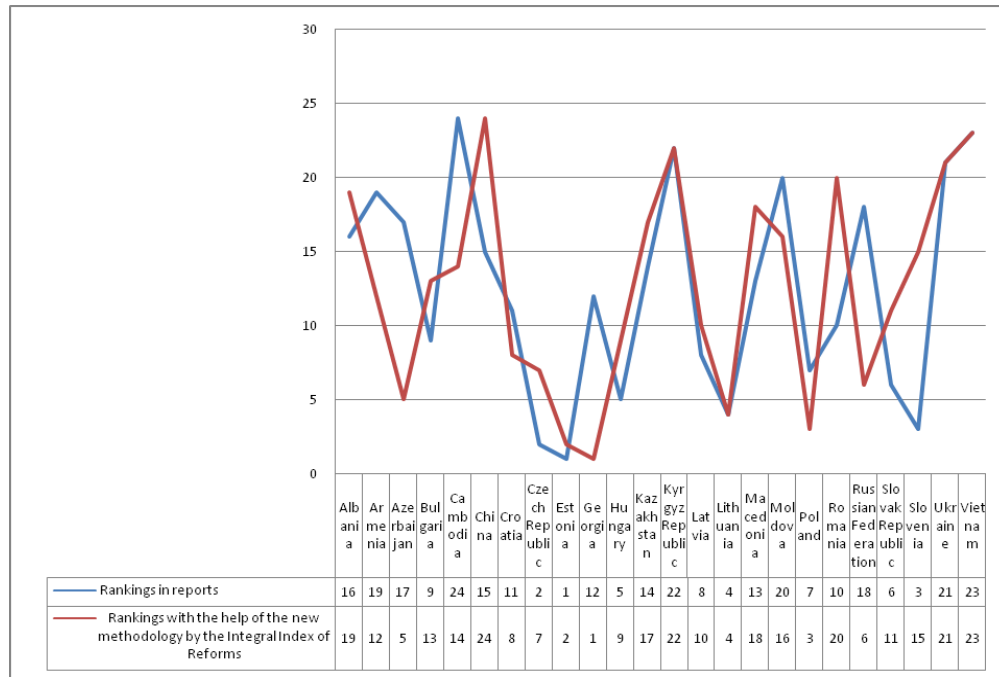$$(H_{4_1}^2 + H_{4_2}^2 + H_{4_3}^2 + H_{4_4}^2)/4$$

Fig. 7 The Integral Index of Reforms in reports and by the new methodology for 2009-2013 in 24 countries in transition
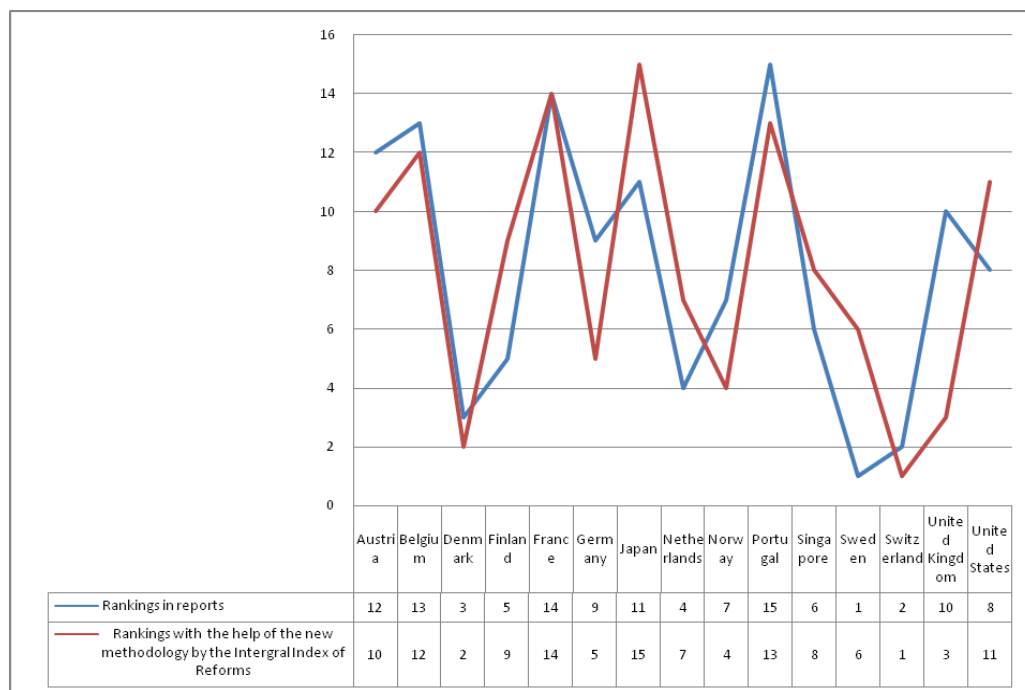
	Albania	Armenia	Azerbaijan	Bulgaria	Cambodia	China	Croatia	Czech Republic	Estonia	Georgia	Hungary	Kazakhstan	Kyrgyz Republic	Latvia	Lithuania	Macedonia	Moldova	Poland	Romania	Russian Federation	Slovak Republic	Slovenia	Ukraine	Vietnam
Rankings in reports	16	19	17	9	24	15	11	2	1	12	5	14	22	8	4	13	20	7	10	18	6	3	21	23
Rankings with the help of the new methodology by the Integral Index of Reforms	19	12	5	13	14	24	8	7	2	1	9	17	22	10	4	18	16	3	20	6	11	15	21	23

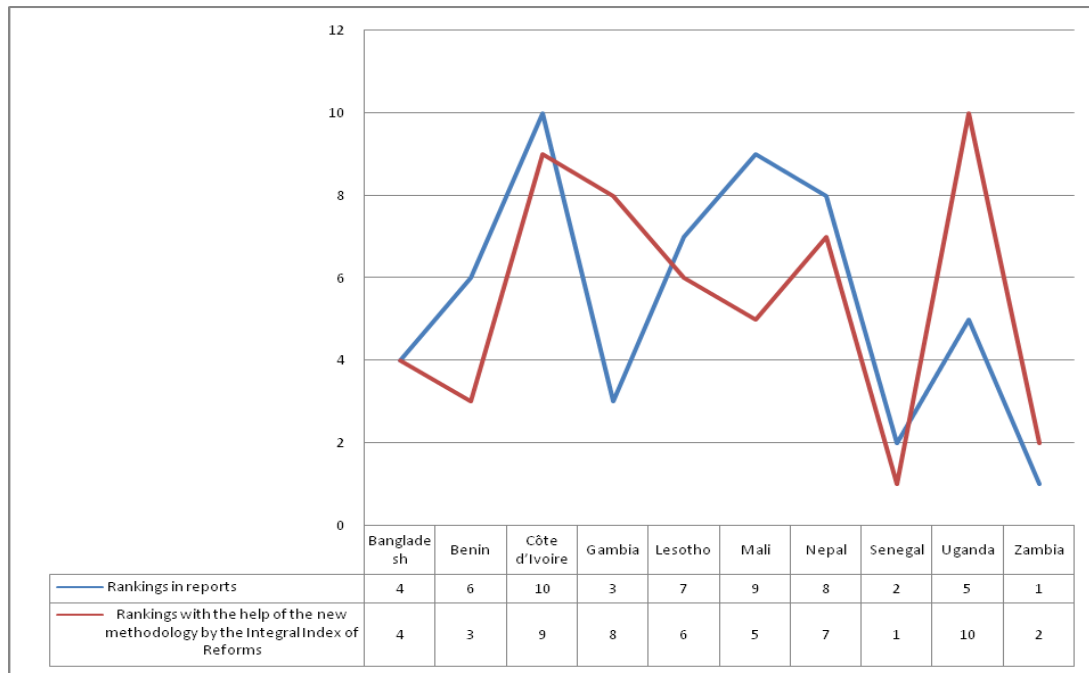Fig. 8. The Integral Index of Reforms in reports and by the new methodology in 15 developed countries for 2009-2013

	Austria	Belgium	Denmark	Finland	France	Germany	Japan	Netherlands	Norway	Portugal	Singapore	Sweden	Switzerland	United Kingdom	United States
Rankings in reports	12	13	3	5	14	9	11	4	7	15	6	1	2	10	8
Rankings with the help of the new methodology by the Intergral Index of Reforms	10	12	2	9	14	5	15	7	4	13	8	6	1	3	11

	Banglade sh	Benin	Côte d'Ivoire	Gambia	Lesotho	Mali	Nepal	Senegal	Uganda	Zambia
Rankings in reports	4	6	10	3	7	9	8	2	5	1
Rankings with the help of the new methodology by the Integral Index of Reforms	4	3	9	8	6	5	7	1	10	2

Fig. 9. The Integral Index of Reforms in reports and by the new methodology in 10 least developed countries for 2009-2013

According to the suggested methodology, we measure Integral Index of Reforms for 15 developed, 24 countries in transition and 10 least developed countries, considering the change of rank and score adjusted with scale coefficients for 2009-2013. The results witness, that the reforms for 2009-2013 have more effectively implemented in Georgia, Russia Poland, Azerbaijan, Moldova, Croatia and Armenia, but less effectively in Romania and Vietnam.

In our opinion the Integral Index of Reforms can express comparative efficiency of various reforms in each country more integrally than each of the indexes not only the ones we have included in the article, but also some indexes which are not represented in the article such as Transformation Index BTI and The index of Sustainable Economic Welfare.

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