

The assessment of the effectiveness of reforms in various countries by the Integral Index of Reforms and Prosperity

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Abstract: - The governments of different countries developed programs to implement reforms and try to surmount challenges related to them, but those countries implement the programs with different comparative efficiency. We suppose that the results of those reforms are expressed in various indexes by different international and non-government organizations. On the purpose for 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 (The Bertelsmann Stiftung's Transformation Index, Global Peace Index, Global Innovation index, KOF Index of Globalization, Human Development Index, The Corruption Perception Index), 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 (35 developing countries and countries in transition and 20 developed countries).

Key-Words: - Innovation, peace, global, reforms, competitiveness, freedom, prosperity, democracy, corruption, globalization.

1 Introduction

Different countries implementing various reforms both in the short-run and long-run have the purpose to provide the solution of strategic and tactical problems for the population such as the improvement of the life quality, the welfare of the population, the rank of the country in the system of the international relations, the transformation of the basis of the economy to the knowledge and innovation technologies, the solution other political, economic and social issues. It is known that the formation and main ways of the solution of above-mentioned problems are developed and implemented by the state management institutes. The trend of various reforms is assessed quantitatively by several indexes that are developed by both famous international organizations such as World Bank, UNO, IMF and non-government organizations such as the Economist Intelligence Unit, Heritage Foundation.

From both theoretical and empiric perspectives it is obvious that for equal conditions as much indexes are included in the Index of Reforms and Prosperity as more

adequately it reveals the comparable efficiency of the reforms. On this purpose we have chosen those indexes for our new integral index that more completely and

more generally reflect the entity of various reforms. Therefore, 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 (Global Peace Index by The Institute for Economics and Peace, Global Innovation index by INSEAD, 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 (35 developing countries and countries in transition and 20 developed countries). We have splint the countries into 2 main groups. We have highlighted the reforms implemented in 20 developed countries: Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Sweden,

Switzerland, United Kingdom and United States.

We have also assessed the comparative efficiency in 35 developing countries and countries in transition during post-crisis period. These countries are Albania, Armenia, Azerbaijan, Bulgaria, Bosnia and Herzegovina, Cambodia, China, Croatia, Czech Republic, Estonia, Georgia, Hungary, India, Indonesia, Jordan, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Paraguay, Peru, Philippines, Poland, Romania, Russia, South Africa, Slovak Republic, Serbia, Slovenia, Ukraine, Venezuela and Vietnam.

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 and Prosperity (IIRP).

2 Problem Formulation

Considering the fact that the indexes created by different international and non-government organizations illustrate different aspects of various reforms, our problem is to create more integral index based on above mentioned indexes that will represent various reforms implemented in different countries quantitatively and using it we will have an opportunity to assess comparative efficiency of reforms in each country. 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 and Prosperity based on seven different indexes. For all represented bellow 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. 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 IIRP based on ten different indexes.

2.1. 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[1].

2.2. Doing Business

Doing Business released by the World Bank and International Financial Corporation assesses business activity for 189 countries on the basis of 11 areas 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 [2]. The important way to improve the methodology of this index is to consider the influence of the macroeconomic factors on the business environment [3].

2.3. 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].

2.4. The Index of Economic Freedom

The Index of Economic Freedom assesses the economic freedom of countries through 10 indicators (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].

2.5. 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]. In the viewpoint it is important to mention the research which accounted and analyzed multiple criterias of the standard of life in 17 countries of Eurozone [9].

2.6. 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 [10].

2.7. 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 [11].

2.8. The Global Innovation Index (GII)

The GII project was launched by INSEAD in 2007. The core of the GII Report consists of a ranking of world economies' innovation capabilities and results. In 2013, the ranking covered 142 economies, accounting for 94.9% of the world's population and 98.7% of the world's Gross Domestic Product (in US dollars). The GII has established itself as the reference among innovation indices, and has evolved into a valuable benchmarking tool to facilitate public-private dialogue, whereby policymakers, business leaders and other stakeholders can evaluate progress on a continual basis. The GII relies on two sub-indexes: the Innovation Input Sub-Index and the Innovation Output Sub-Index, each built around pillars. Five input pillars capture elements of the national economy that enable innovative activities: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication, and (5) Business sophistication. Innovation outputs are the results of innovative activities within the economy. There are two output pillars: (6) Knowledge and technology outputs and (7) Creative outputs. The overall GII score is the simple average of the Input and Output Sub-Indices.

2.9. The Global Peace Index (GPI)

The GPI measures the relative position of nations' and regions' peacefulness. The GPI comprises 23 indicators of the existence of absence violence or fear

of violence. The indicators were originally selected with the assistance of an international panel of independent experts in 2007 and have been reviewed by the expert panel on an annual basis. All scores for each indicator are normalised on a scale of 1-5, whereby qualitative indicators are banded into five groupings and quantitative ones are either banded into ten groupings or rounded to the first decimal point. The overall composite score and index was then formulated by applying a weight of 60 percent to the measure of internal peace and 40 percent for external peace. The index includes such indicators as Number of external and internal conflicts fought, Relations with neighbouring countries, Level of perceived criminality in societ, Political instability, Military expenditure as a percentage of GDP, Financial contribution to UN peacekeeping missions, Level of violent crime, etc. [12].

2.10. The Bertelsmann Stiftung's Transformation Index (BTI)

The BTI analyzes and evaluates the quality of democracy, a market economy and political management in 129 developing and transition countries. It measures successes and setbacks on the path toward a democracy based on the rule of law and a socially responsible market economy.

In-depth country reports provide the basis for assessing the state of transformation and persistent challenges, and to evaluate the ability of policymakers to carry out consistent and targeted reforms. The BTI is the first cross-national comparative index that uses self-collected data to comprehensively measure the quality of governance during processes of transition [13].

3 Problem Solution

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. For the empiric and scientific perspectives there are essential research results in some countries of EU for 2001-2011, which is based on the analysis of macroeconomic indicators such as the life expectancy, GDP per capita (PPP), Global competitiveness index, etc [14].

Using above-mentioned indexes, we represent an integral index, that assess social-economic development level for 2009-2013 based on statistic

data for ten indexes (Global Peace Index, 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.

At the first stage, we classified the countries considering the change of the rank and the average score of the country by the index. In order to reveal various reforms in the country we adjusted the change of the rank by the value of the step of each index. For example, for Global Competitiveness Index it was measured 0,07, Democracy Index 1, etc.

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 ten indexes considering the importance and the variety of included indicators, eliminating the usage of the same indicator and finally we had IIRP of each country for 2009-2013.

With the help of our methodology we first summarized the above-mentioned 10 indexes and attained 1 general index.

$$H_{int.index}^j = \sum_{i=1}^{10} \alpha_i^j N_i^j, \quad (1)$$

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

i and j are indexes

$i = 1, 2, \dots, 10$ - ten indexes. For example, $i = 4$ The Economic Freedom Index,

$j_2 = 1, 2, \dots, 35$ developing countries and countries in transition we evaluated

$j_1 = 1$ - Albania, $j_2 = 2$ - Armenia, ... $j_3 = 35$ - 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 35 countries for 2010-2013 by the Global Competitiveness Index (considering the change of rank and score), therefore $N_1^2 = 10$

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. We also normalized the score of each index to bring them to the same interval and make them more comparable. 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 [15]. On this purpose we considered the variation of the score of the country to the average score in the group by the index. For instance, if the variation of the score of the country was measured from 20 percent up to 30 percent the scale coefficient for the change of the rank was considered 0,3 and the scale coefficient for the average score of the country 0,7. Whereas, if the score of the country increased more than by 40 percent, than we gave 0,1 scale coefficient for the change of the rank and 0,9 for the average score of the country.

Appendix 1,2 represent IIRP in reports for 2009-2013 compare with the base year (2009) in both 35 developing countries and countries in transition and 20 developed countries. Appendix 3,4 represent IIRP by the new methodology for 2009-2013 compare with the base year (2009). Appendix 5,6 represent IIRP in reports and by the new methodology in 35 developing countries and countries in transition and 20 developed countries for 2009-2013.

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

$$H_{int.index}^j = \sum_{i=1}^{10} \alpha_i^j N_i^j, \quad (2)$$

For $j_1 = 1, 2, \dots, 20$ - developed countries, $j_2 = 1, 2, \dots, 35$ developing countries and countries in transition we assess the average of the summary for 4 years.

$$(H_{i_1}^j + H_{i_2}^j + H_{i_3}^j + H_{i_4}^j) / 4 \quad (3)$$

For instance, The Economic Freedom Index for Armenia will be: $(H_{4_1}^2 + H_{4_2}^2 + H_{4_3}^2 + H_{4_4}^2) / 4$ [16].

According to the suggested methodology, we measure IIRP for 35 developing countries and countries in transition and 20 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 Estonia, Armenia, Bosnia and Herzegovina, Georgia, Latvia, Lithuania, Croatia, Czech Republic but less effectively in Ukraine, Venezuela, Vietnam.

4 Conclusion

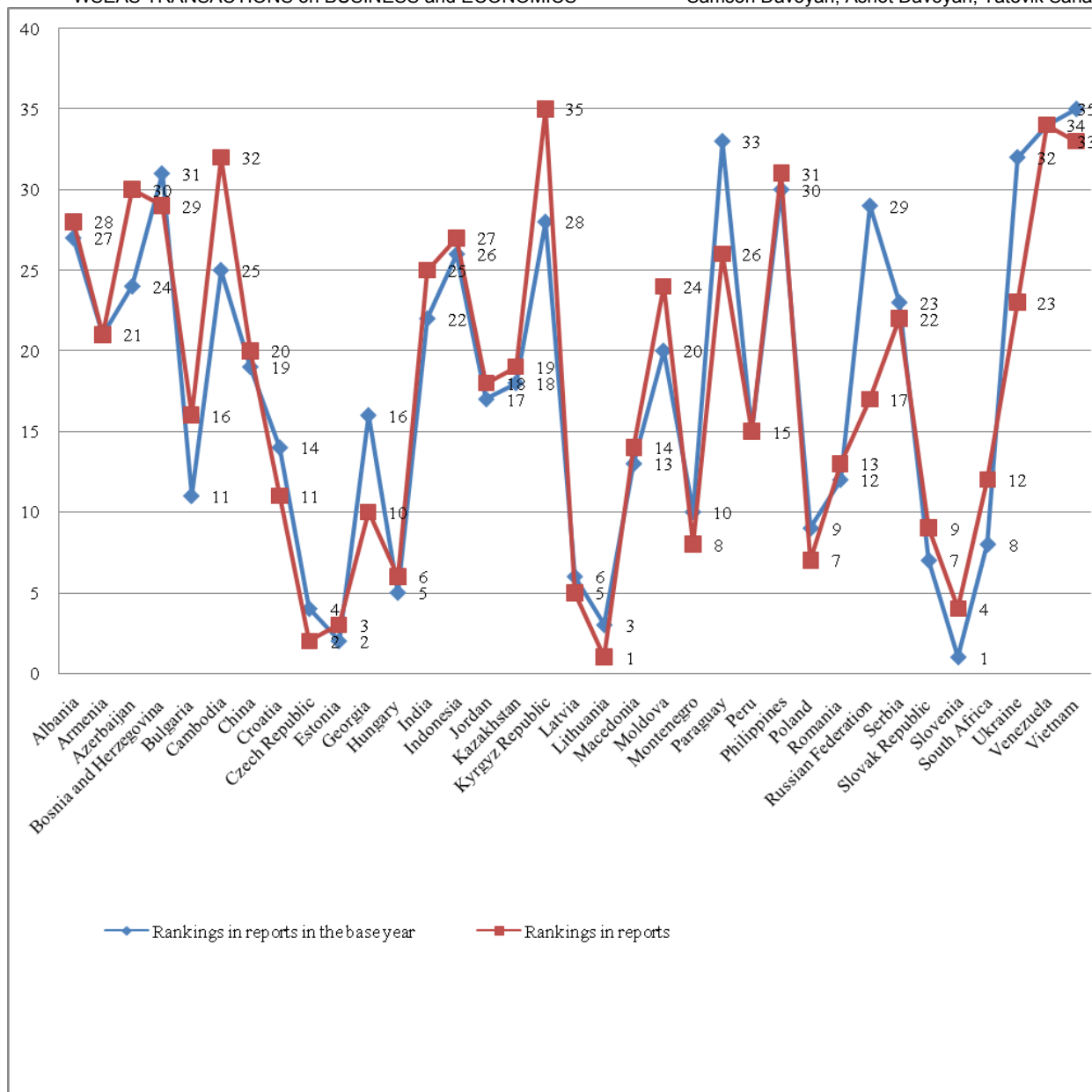
To sum up, the important feature of the Integral Index of Reforms and Prosperity points the gradient of reforms including social, economic and political

indicators for 20 developed and 35 developing countries and countries in transition by the classification of the World Bank, the comparable efficiency of each country compared to others, the directions of various reforms in which the countries led and yielded.

In our opinion, the analyze of the suggested new index may become the guide for the governments of different countries in terms of choosing the main directions and mechanisms of reforms that will help them to have efficient and well-functioning institutional systems of economies and that is the most essential to become more effective in comparison of other countries in the group.

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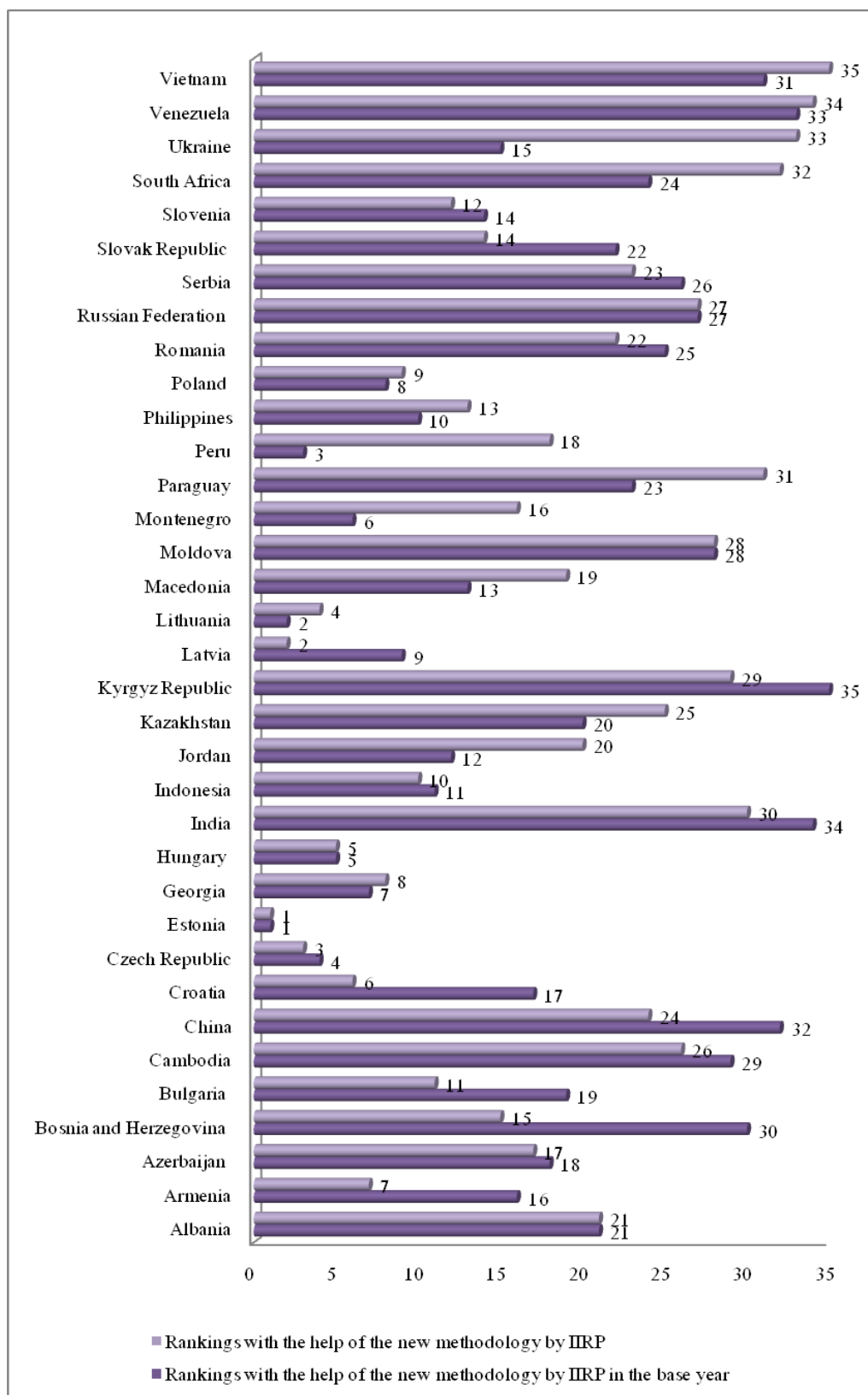


Appendix. 1. IIRP in reports for 2009-2013 compared with the base year (2009) in 35 developing countries and countries in transition

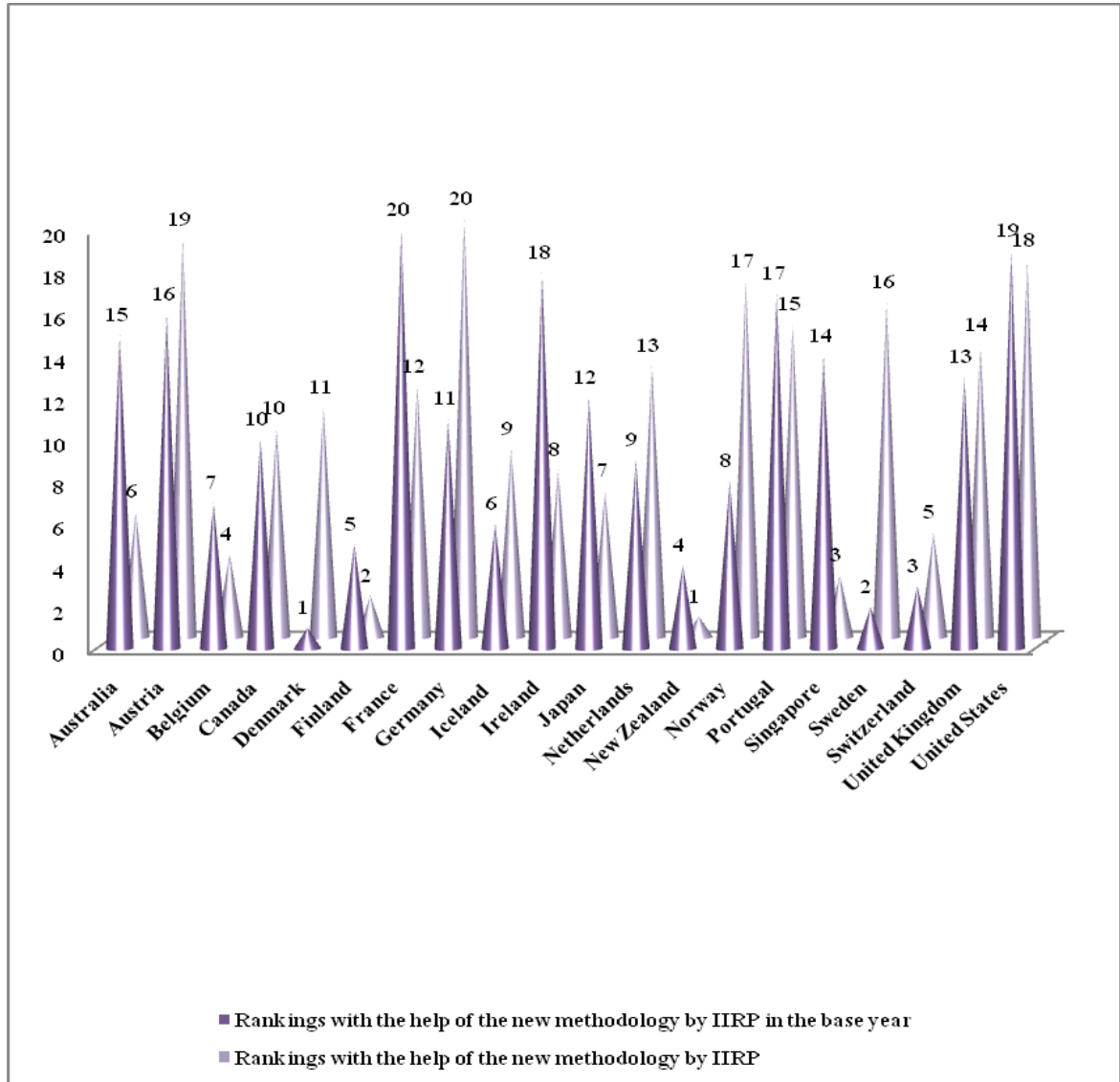
| | <i>Rankings in reports in the base year</i> | <i>Rankings in reports</i> |
|----------------|---|--------------------------------|
| Australia | 14 | 11 |
| Austria | 13 | 16 |
| Belgium | 16 | 18 |
| Canada | 4 | 7 |
| Denmark | 2 | 2 |
| Finland | 3 | 4 |
| France | 19 | 19 |
| Germany | 15 | 15 |
| Iceland | 8 | 14 |
| Ireland | 12 | 10 |
| Japan | 11 | 12 |
| Netherlands | 6 | 5 |
| New Zealand | 9 | 9 |
| Norway | 7 | 8 |
| Portugal | 20 | 20 |
| Singapore | 10 | 6 |

| | <i>Rankings in reports in the base year</i> | <i>Rankings in reports</i> |
|-------------------|---|--------------------------------|
| Sweden | 1 | 1 |
| Switzerland | 5 | 3 |
| United Kingdom | 18 | 13 |
| United States | 17 | 17 |

Appendix 2. IIRP in reports for 2009-2013 compared with the base year (2009) in 20 developed countries



Appendix 3. IIRP by the new methodology for 2009-2013 compared with the base year 2009 in 35 developing countries and countries in transition

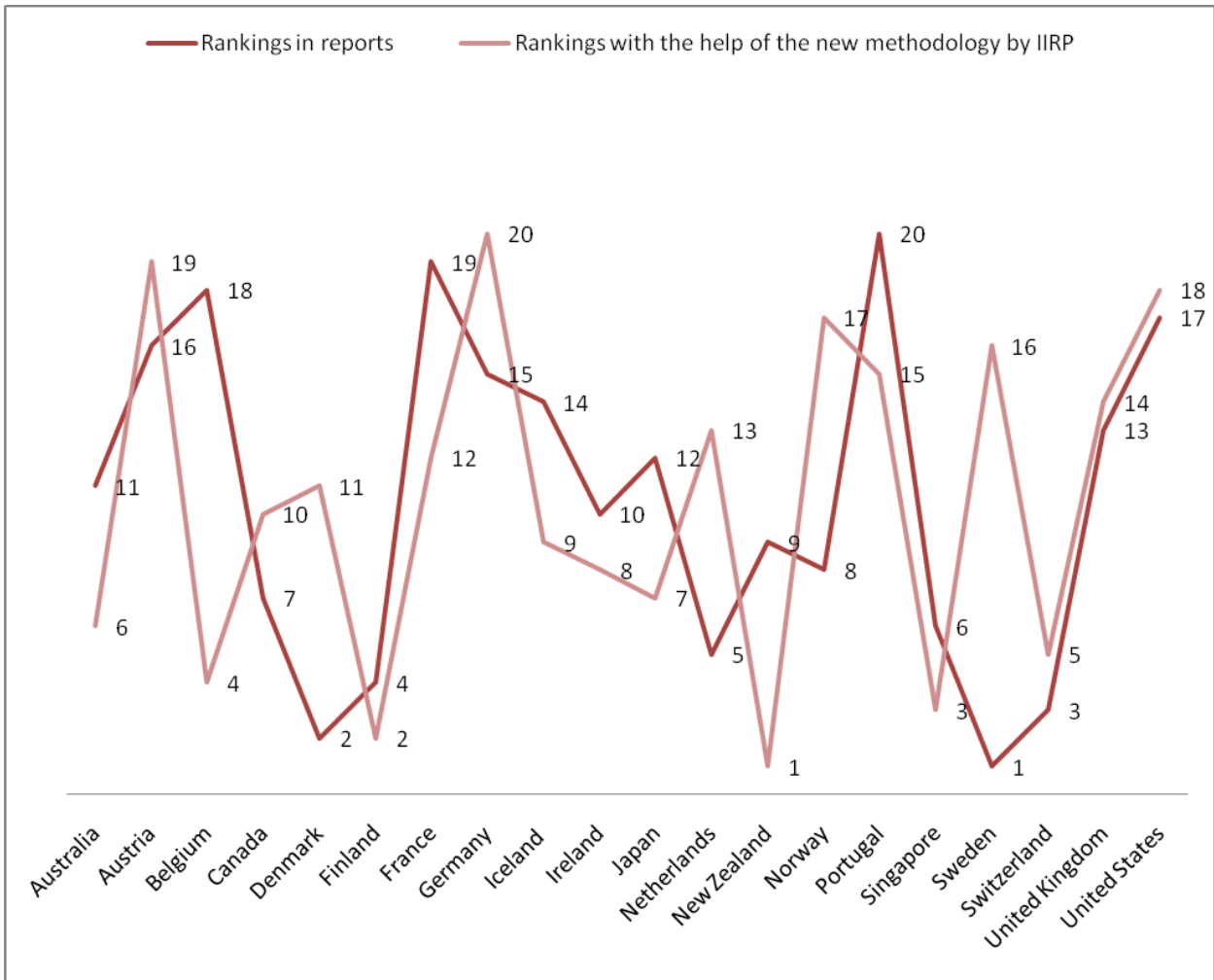


Appendix 4. IIRP by the new methodology for 2009-2013 compared with the base year 2009 in 20 developed countries

| | Rankings in reports | Rankings with the help of the new methodology by IIRP |
|------------------------|---------------------|---|
| Albania | 28 | 21 |
| Armenia | 21 | 7 |
| Azerbaijan | 30 | 17 |
| Bosnia and Herzegovina | 29 | 15 |
| Bulgaria | 16 | 11 |
| Cambodia | 32 | 26 |
| China | 20 | 24 |
| Croatia | 11 | 6 |
| Czech Republic | 2 | 3 |
| Estonia | 3 | 1 |
| Georgia | 10 | 8 |
| Hungary | 6 | 5 |
| India | 25 | 30 |
| Indonesia | 27 | 10 |
| Jordan | 18 | 20 |
| Kazakhstan | 19 | 25 |
| Kyrgyz Republic | 35 | 29 |
| Latvia | 5 | 2 |
| Lithuania | 1 | 4 |
| Macedonia | 14 | 19 |
| Moldova | 24 | 28 |
| Montenegro | 8 | 16 |
| Paraguay | 26 | 31 |
| Peru | 15 | 18 |
| Philippines | 31 | 13 |
| Poland | 7 | 9 |

| | Rankings in reports | Rankings with the help of the new methodology by IIRP |
|--------------------|---------------------|---|
| Romania | 13 | 22 |
| Russian Federation | 17 | 27 |
| Serbia | 22 | 23 |
| Slovak Republic | 9 | 14 |
| Slovenia | 4 | 12 |
| South Africa | 12 | 32 |
| Ukraine | 23 | 33 |
| Venezuela | 34 | 34 |
| Vietnam | 33 | 35 |

Appendix 5. IIRP in reports and by the new methodology for 2009-2013 in 35 developing countries and countries in transition



Appendix 6. IIRP in reports and by the new methodology in 20 developed countries for 2009-2013