

# The assessment of the comparative effectiveness of various reforms by Life Quality Index

Samson Davoyan, Ashot Davoyan and Ani Khachatryan

**Abstract**— The authorities of different countries implement political, economic, social reforms based on the opportunities to develop and implement various perspective, strategic and short-run projects contributing to the development of the economy. During that period some questions arise such as 1. how effective, interconnected and reasonable various reforms are, 2. how efficient the implemented reforms in one country are compared to others. As an answer to these questions we make following supposes: the effectiveness of all various reforms to some extent are revealed in the indexes by international and non-government organizations. In order to solve the problems we have developed a new methodology to create more integral index that can include a large amount of indexes to assess the comparative efficiency of various reforms for some period.

**Keywords**— Democracy, innovation, globalization, peace, reforms, assessment, development, life quality, index, competitiveness, freedom, efficiency.

## I. INTRODUCTION

THE governments of different countries developed programs to surmount challenges of the last world economic crisis (2008-2009), but those countries implemented the programs with different comparative efficiency. We suppose that the results of those reforms are expressed in various indexes by different international and

Samson Davoyan is Doctor of Economic Sciences, professor member of Association of Economists of Armenia, lecturer professor in Russian-Armenian (Slavonic) University, director of Gyumri branch of the Armenian State Economic University (phone: 00374 91434283; e-mail: [samsondavoyan2014@gmail.com](mailto:samsondavoyan2014@gmail.com)).

**Ashot Davoyan**, Armenia, PhD, senior researcher in “Ambert” research centre at Armenian State University of Economics, MBA, bachelor and master degree at Yerevan State University, master school at George Town University in the USA for 2006-2007, Finance academy in Switzerland in 2008, “Business Management” Start-up project of Skolkovo in Moscow for 2013 (phone: 00374 55401070; e-mail: [ashot\\_davoyan@yahoo.com](mailto:ashot_davoyan@yahoo.com)).

Ani Khachatryan, is a lecturer at Armenian State University Gyumri Branch, a post graduate-student at Armenian State University of Economics, has both Bachelor and Master degree on Business Organization. (phone 00374 98 166151 e-mail: [ani.kh88@mail.ru](mailto:ani.kh88@mail.ru), [anikhachatryansamveli@gmail.com](mailto:anikhachatryansamveli@gmail.com)).

non-government organizations. [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 (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 (20 developed, 35 countries in transition and developing 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 assess 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, Serbia, Slovak Republic, Serbia. Slovenia, Ukraine, Venezuela and Vietnam.

The integral index consists of nine indexes for the last 4 years: Global Peace Index for 2011-2014, Global Innovation index for 2010-2013, KOF Index of Globalization for 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 2011-2014, The Human Development for 2010-2013. As a result we have Life Quality

Index (LQI).

### **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 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 [3]. Each of them consists of a set of indicators constructed by laws and regulations in accordance with: procedures to be undertaken, time needed, costs that businesses have to support and other composite indicators based on multiple parameters. [4].

### **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 [5]. 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 [6].

### **D. 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 [7]. 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 [8].

### **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 [9]. 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. [10].

### **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 [11].

### **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 [12].

### **H. 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 subindices: 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.

### **I. The Global Peace Index (GPI)**

The GPI measures the relative position of nations' and regions' peacefulness. The GPI comprises 22 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 society, Political instability, Military expenditure as a percentage of GDP, Financial contribution to UN peacekeeping missions, Level of violent crime, etc. [13].

## II. 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 28 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 eight 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.

*At the first stage*, we developed the methodology which is based on the following issue: to measure the interconnection between indexes describing the economic reforms in two group of countries that we selected, the influence on each other and the integral indexes with their scales based on the extent of the influence.

For the calculations we have used Eviews 6 program. The measurement is based on method of the calculation of the panel data.

The above-mentioned approach helped us to have scales of each index in the integral index and create Life Quality Index (LQI) [15].

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

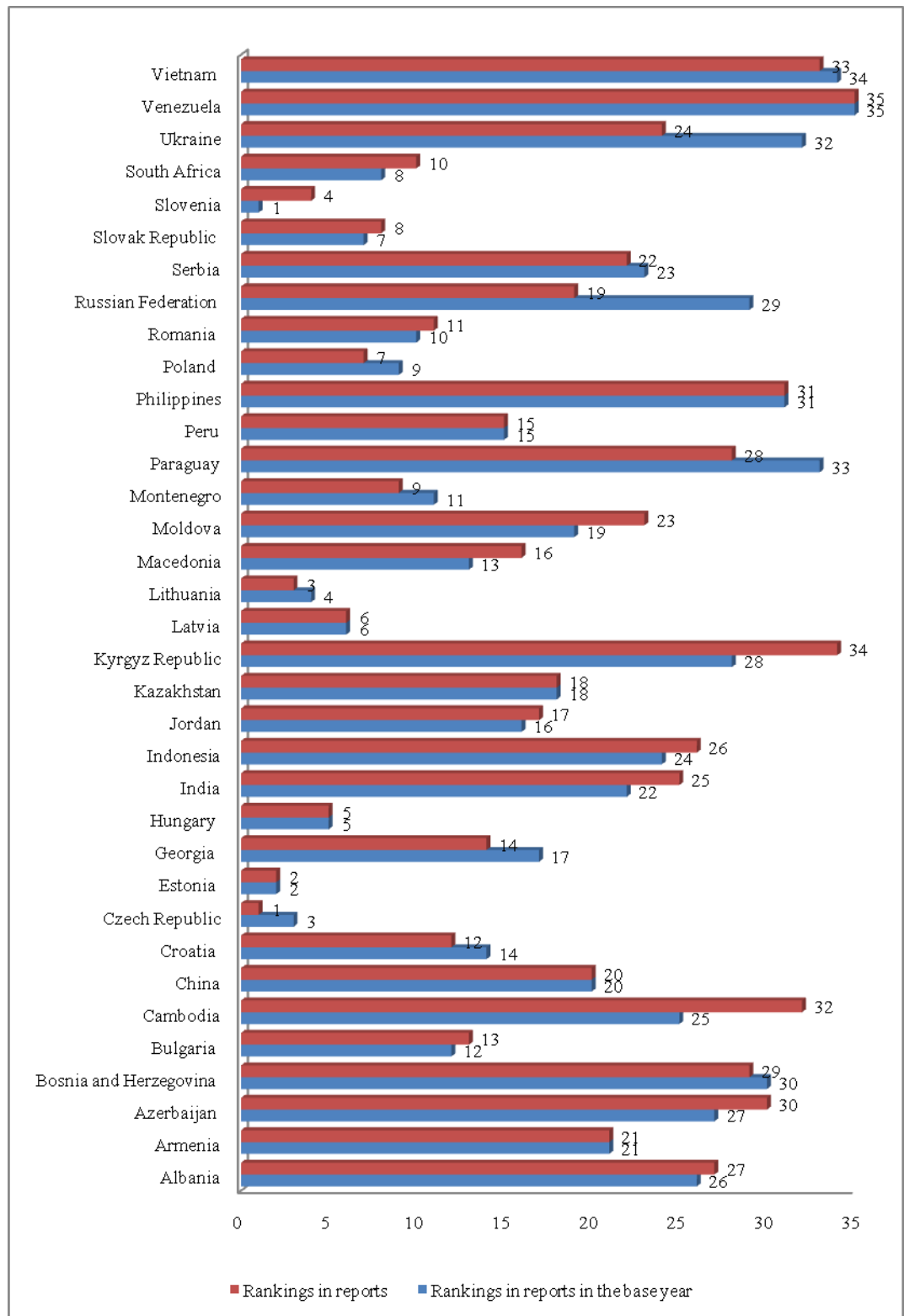


Fig. 1. LQI in reports for 2009-2013 compared with the base year (2009) in 26 countries in transition and 9 developing countries.

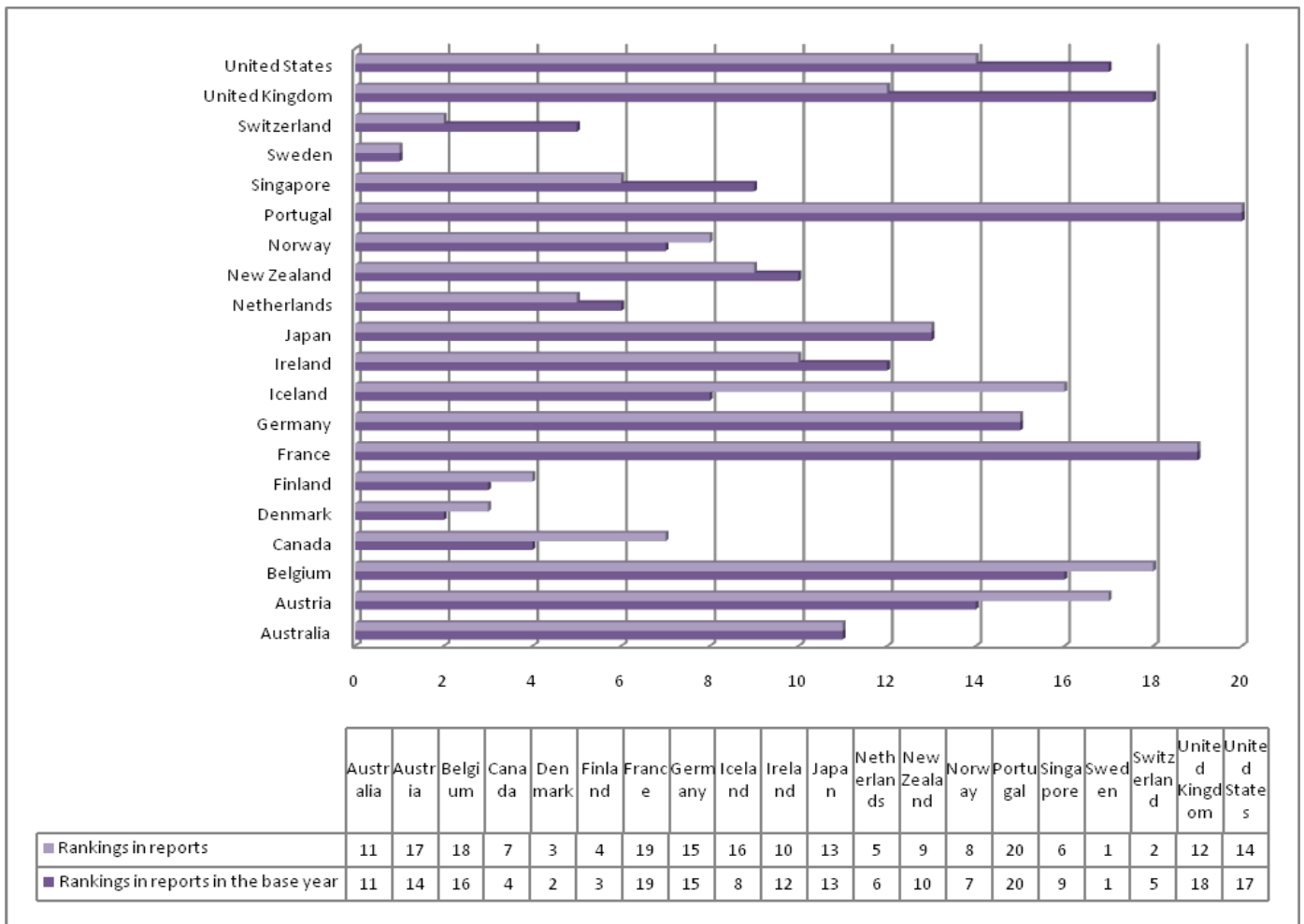


Fig 2. LQI in reports for 2009-2013 compared with the base year (2009) in 20 developed countries.

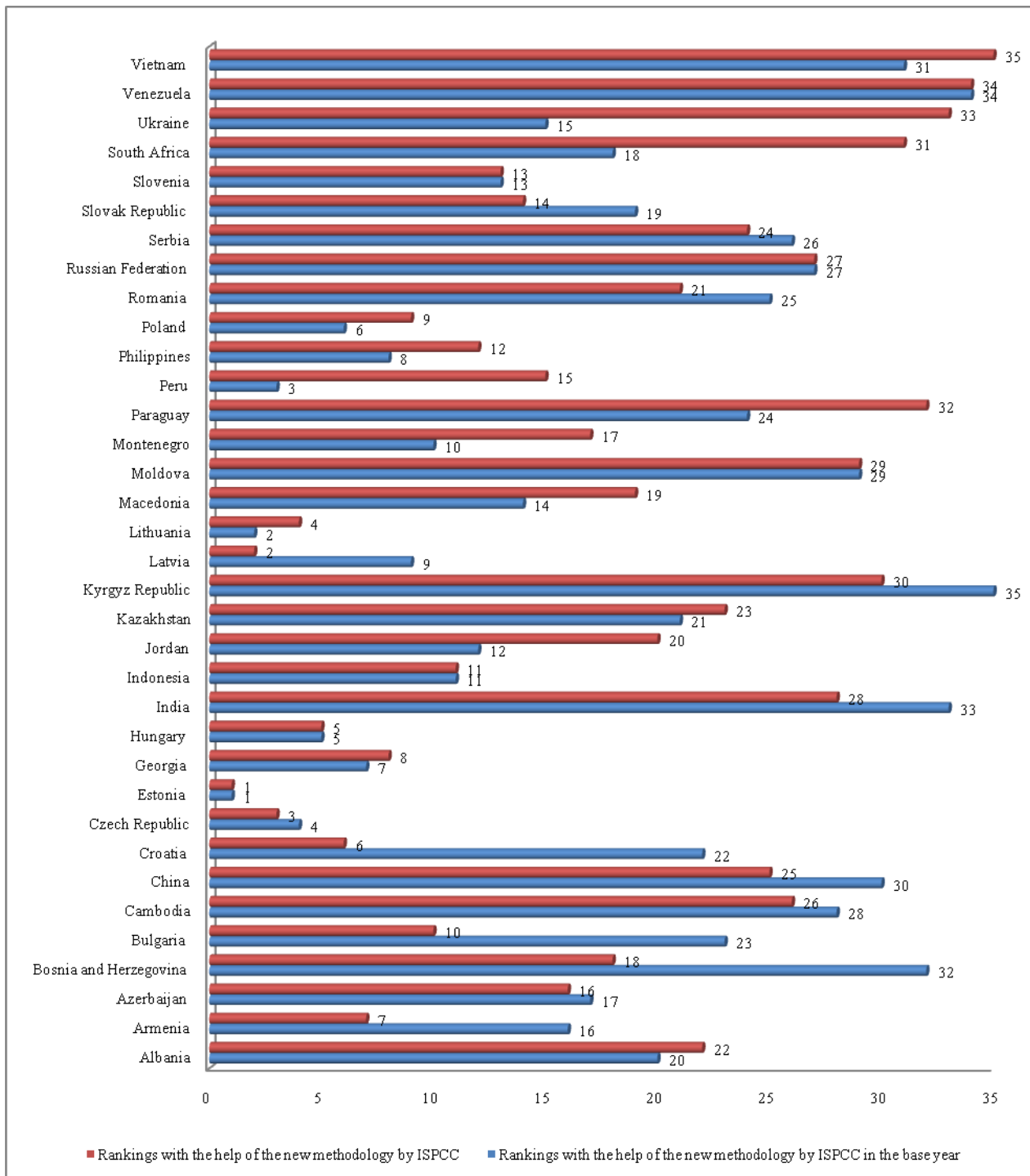
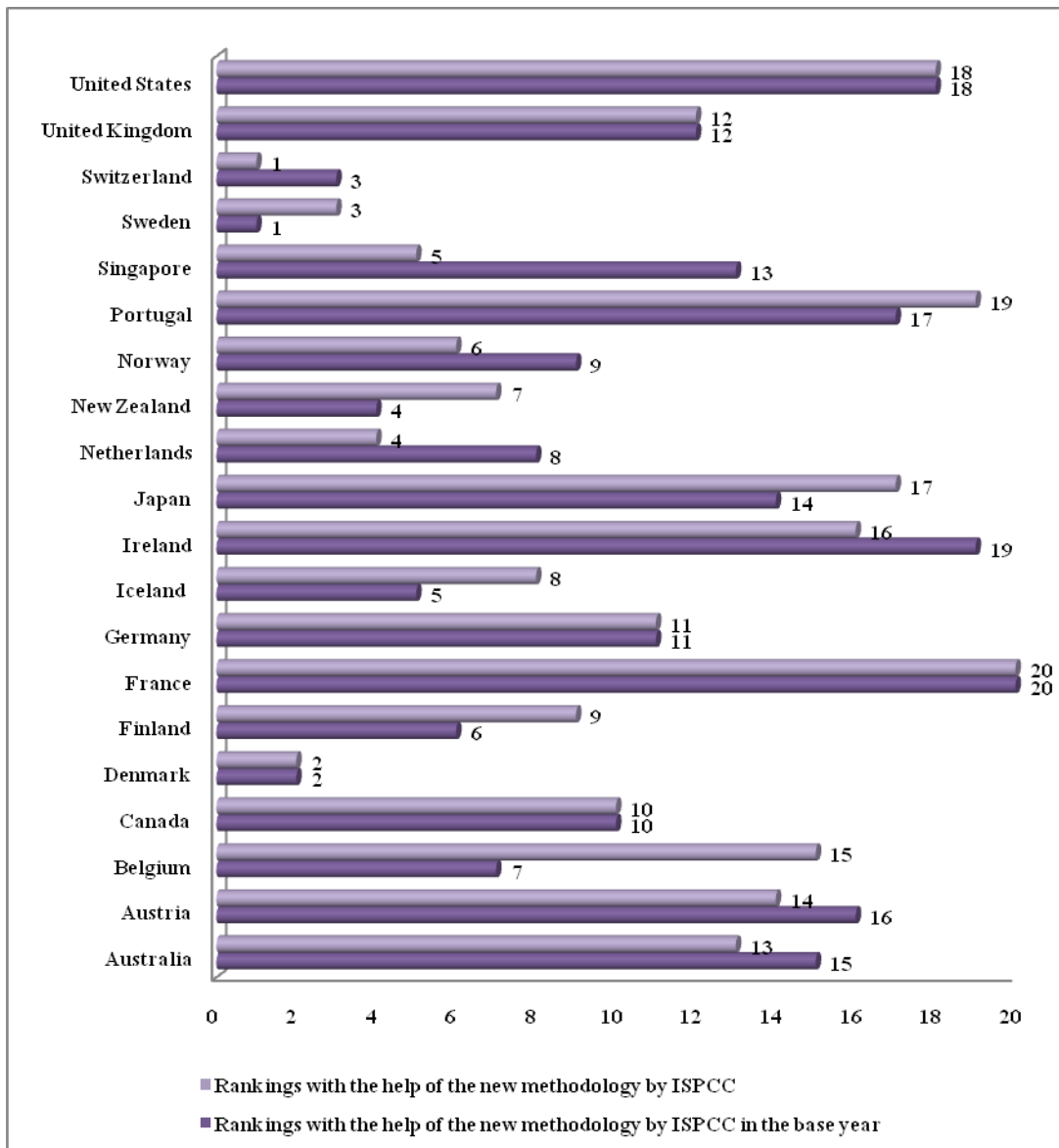


Fig. 3. LQI by the new methodology for 2009-2013 compared with the base year 2009 in 26 countries in transition and 9 developing countries.



**Fig. 4. LQI by the new methodology for 2009-2013 compared with the base year 2009 in 20 developed countries.**

*At the second stage* in order to decide the scales we used the following principle: to summarize the scaled coefficients that are based on the calculation of the influence of the indexes [16].

*At the third stage* We have taken 3 periods for two groups of countries 2010-2013 /2010-2011, 2010-2012, 2010-2013/ for 9 indexes.

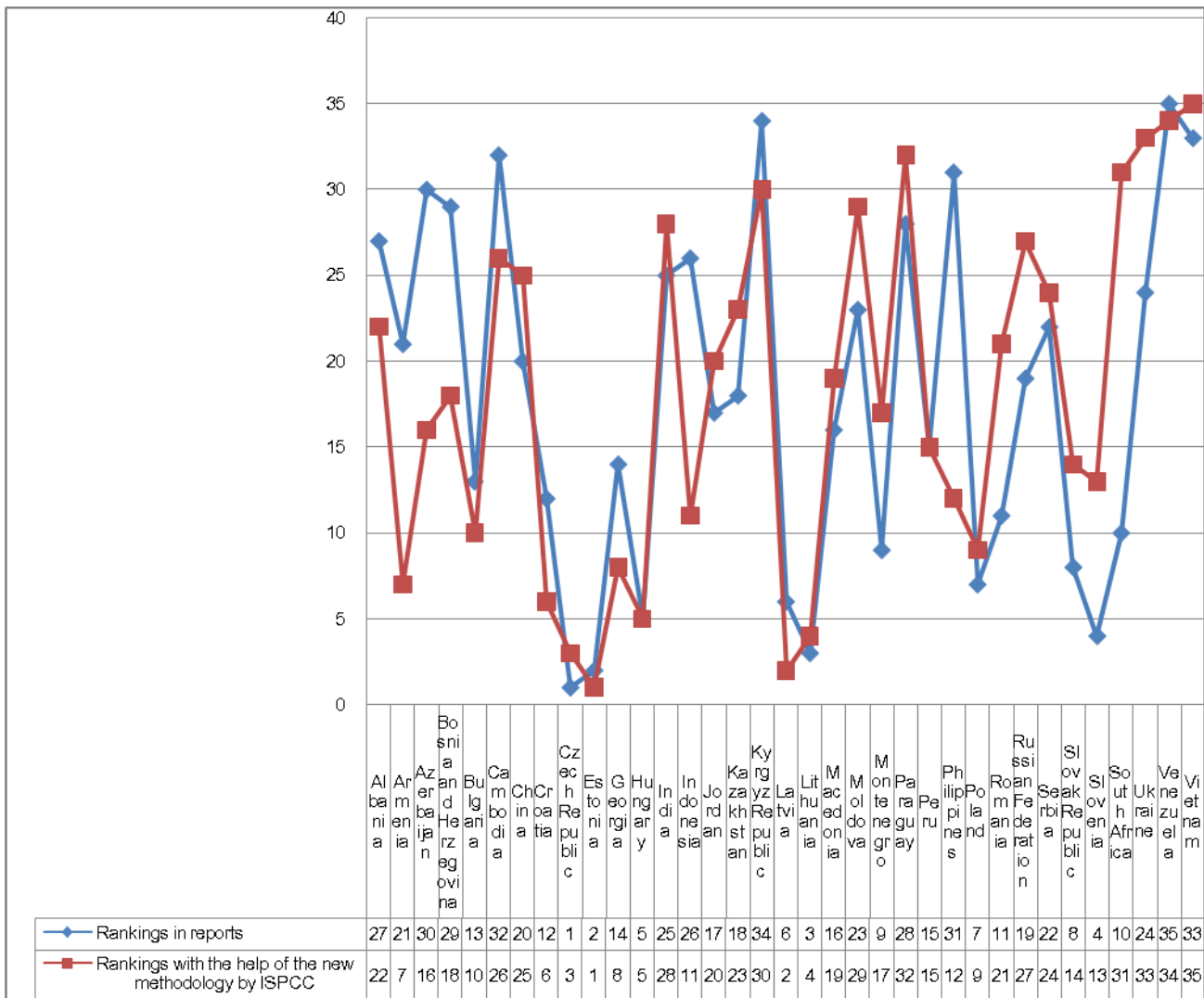


Fig. 5. LQI in reports and by the new methodology for 2009-2013 in 26 countries in transition and 9 developing countries.



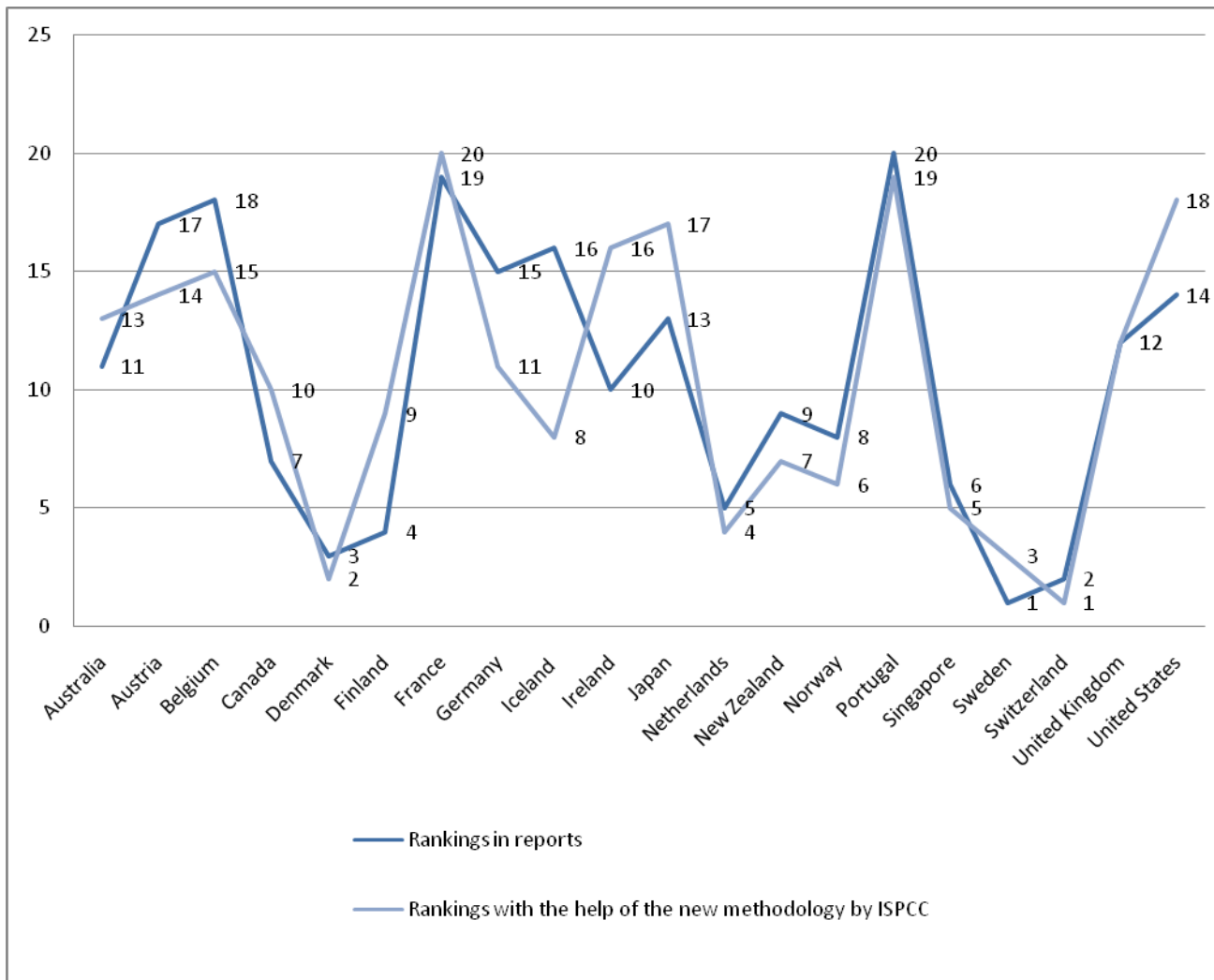


Fig. 6. LQI in reports and by the new methodology in 20 developed countries for 2009-2013.

According to the suggested methodology, we measure LQI for 20 developed, 35 countries in transition and developing countries, considering the change of rank and score adjusted with scale coefficients for 2010-2013. The results witness, that the reforms for 2010-2013 have more effectively implemented in such countries as Estonia, Armenia, Bosnia and Herzegovina, Georgia, Latvia, Lithuania, Croatia, but less effectively in such countries as Jordan, Kazakhstan, Slovak Republic, Slovenia.

## CONCLUSION

There are a lot of phenomena and tendencies determining the up to now development and form of macro environment – world economy and society [17]. According to the World Bank and International Monetary Fund the countries are classified into developed, developing countries and countries in transition. The basic of the methodology that we suggest is two parameters: the change

of the rank and the average score of the country by the index for two periods.

*As a result Life Quality Index created according to our methodology can be director for the state institutes that implement various reforms comparing the results to other countries in the group that provide high efficiency of reforms, also those countries that provide low effectiveness. The latter will become the basis for those countries to implement reforms for those directions that have low efficiency.*

## REFERENCES

- [1] Samson Davoyan, Tatevik Sahakyan, The assessment of the effectiveness of reforms in various countries, Advances in Environment Sciences, Development and Chemistry, Proceedings of the 2014 International Conference on Energy, Environment, Development and Economics, Santorini Island, Greece, July 17-21, 2014, p. 405-416.
- [2] The Global Competitiveness Report, The World Economic Forum, [weforum.org](http://weforum.org).
- [3] Doing Business Report, The World Bank, [doingbusiness.org](http://doingbusiness.org).

- [4] Antonio Pavone, Paola Pianura, Ease of Doing Business: An Efficiency Comparison of the G20 Economies, *Mathematical methods in Engineering and Economics*, Proceedings of the 2014 International Conference on Economics and Business Administration II, Prague, Czech Republic, April 2-4, 2014, p. 49-57.
- [5] Corruption Perceptions Index 2012: Full Source Description/Transparency International, 2012, p. 45, [www.transparency.org](http://www.transparency.org).
- [6] Kaufmann, Daniel, "Corruption, Governance and Security: Challenges for the Rich Countries and the World," MPRA Paper 8207, University Library of Munich, Germany, 2004, p. 77.
- [7] Samson Davoyan, Ashot Davoyan, The issues of the improvement of the methodology for the assessment of reforms, *Recent Advances in Mathematics, Statistics and Economics*, Proceedings of the 2014 International Conference on Economics and Statistics, Italy, Venice, March 15-17, 2014, p. 192-199.
- [8] Samson Davoyan, Tatevik Sahakyan, The assessment of reforms in different countries by social-economic development integral index, *World Academy of Science, Engineering and Technology*, Issue 79 Stockholm, July 2013, p. 1324.
- [9] United Nations Organization, UNDP.org
- [10] Jiri Krupka and Romana Provaznikova, Analysis of standard of living models based on multiple criteria decision analysis, *International journal of economics and statistics*, Volume 2, 2014
- [11] Economist Intelligence Unit, [www.eiu.com](http://www.eiu.com).
- [12] <http://globalization.kof.ethz.ch/>
- [13] Global Peace Index 2014: measuring peace and assessing country risk, *Institute for Economics and Peace*, p. 38.
- [14] First A. Peter I.Kamyshanov, Second B. Alexander P. Kamyshanov, New paradigm in the regional management, *International journal of economics and statistics*, Volume 2, 2014.
- [15] Samson Davoyan, The assessment of the reforms in different countries using social-economic development index, *Conference on The trends of changes of the world economy and the challenges in Armenia*, Gyumri, 2012, p.6.
- [16] Samson Davoyan, Tatevik Sahakyan, The assessment of the effectiveness of reforms in various countries, *Advances in Environment Sciences, Development and Chemistry*, Proceedings of the 2014 International Conference on Energy, Environment, Development and Economics, Santorini Island, Greece, July 17-21, 2014, p. 405-416.
- [17] Veronika Burešová, Lilia Dvořáková, Economic Development Paradigm Influence on Performance Management Methods and Tools, *Recent advances in Economics, Management and Development*, Proceedings of the 2014 International Conference on Economics, Management and Development (EMD 2014) Interlaken, Switzerland, February 22-24, 2014, p. 155-161.