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## The Assessment of Various Reforms with the Help of an Integral Index (The Case of Transition Economies)

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### Abstract

Authorities of different countries develop and implement various socio-economic reforms. All those reforms pursue one goal; to respond relevantly to internal and external challenges, maintain sustainability in not only economic, but also social and political areas.

Socio-economic reforms have made structural adjustments worldwide. These adjustments are addressed to multidimensional economic and social issues. Not only social, but also economic development, sustainability and international competitiveness of a country is widely dependent on effective implementation of socio-economic reforms in an observed country.

There are different methodological approaches in quantitative assessment of reforms. These methods are proposed by different international organizations, researchers and research centers.

Among all methods, index assessments are used widely. Thus, economic reforms are assessed though many indexes (i.e. Global Competitiveness Index, Global Innovation Index, Economic Freedom Index, Human Development Index, Social progress index etc.).

The main objective of our research is to develop a new methodology, which addresses to development of an integral index of various reforms that will include as many indexes as possible that partially assess different areas of reforms. With this paper, we aim to assess how effectively have governments of the observed economies in transition (Armenia, Georgia, Azerbaijan, Moldova, Ukraine, Romania, Bulgaria and Slovakia) implemented social-economic reforms. We create a new and unique methodology that enables researchers to make comparative analysis on the many aspects of reforms and transformations. The results of the integral index of Reforms give an opportunity to define directions in which countries have implemented reforms more effectively compared to others and in which direction reforms have implemented less efficiently for each country observed.

*Keywords: Method, transition, factor analysis, reforms, comparative, index, economic, corruption, weighted average, effectiveness, assessment, development*

## 1. Introduction to Socio-Economic Reforms

Given the importance of various reforms, governments of different countries develop certain programs and policies to make these reforms more effective and feasible. The issue of successful implementation if the above-mentioned programs is even more relevant for developing economies.

The issue becomes more important for countries in transition, as they need special and focused political approaches in their “way to a market economy and economic liberalization”.

Socio-economic reforms in nations in transition, are addressed to the following social concerns;

1. Poverty;
2. Malnutrition;
3. Mortality Rates;
4. Illiteracy, etc.

Main goals of implementing reforms are embodied in directions described below.

1. Creating employment opportunities with special emphasis on job opportunities for unskilled workers;
2. Employment opportunities for unskilled laborers can be created specially in heavy industries with the implementation of effective economic reforms;
3. Bring down the general level of poverty;
4. Raise the average standard of living in the society;
5. Provide basic social facilities like health-care education;
6. Provide better living conditions especially to the rural poor;
7. Ensure proper sanitary conditions, eradication of illiteracy;
8. Contribute significantly to social development.

The phenomenon of reforms has a long history, its roots come from Adam Smith’s century’s old question: How do countries become rich? From the very start of reforms in the early 1990s, the most important objective in transition economies was to raise living standards by boosting output.

The increasing interest and importance of various reforms caused debates over the choice of reform strategy that was fueled by the deep production falls experienced in all transition economies.

This situation emphasized, that Adam Smith’s question essentially epitomized the discussion of which reform strategy was most likely to be successful.

Since then, any researchers have tried to assess efficiency of reforms and their impact on economic sustainability.

Despite huge contribution to the analysis of reforms, a number of issues related to the choice of reform strategy and its impact on growth remain unresolved. Among them are;

- What is the relative importance of individual reform elements?
- Can different reform elements substitute for each other or are some reforms complementary in the sense that their implementation has to be synchronized or sequenced to obtain favorable results?
- How rapidly should reforms be implemented?

## 2. Overview of Methodology

As already mentioned, we purpose to assess comparative efficiency if reforms implemented in economies in transit with the help of an integral index, which we call “Integral index of Reforms”.

The new index has 20 indexes as its components (Legatum Prosperity Index, Social Progress Index, Global Innovation Index, Network Readiness Index, Corruption Perception Index, Enabling Trade Index, Environment Performance Index, Tourism and Travel Competitiveness Index, Doing Business Index, Global Peace Index, Economic Freedom Index, Democracy Index, Human Development index, Bertelsmann Transformation index, Global Gender Gap Index, The Basel AML Index, Enabling trade index, Logistics performance index and Human Capital Index). These component-indexes unveil implemented reforms of countries in different directions.

Given the issue of component indexes varying in different intervals, we normalize them in the interval of (0;1).

One of the most outstanding aspects of our methodology is quantitative assessment that gives an opportunity to define the scale of each index that we measure with the help factor analysis. Each component sub-index has its weighting coefficient, which is calculated with the help of SPSS program. The weighting coefficients represent the comparative importance of a given sub-index in formatting the overall index (they represent the extent to which the given sub-index describes and measures the reforms implemented in observed countries).

Thus, the components included in the integral index of Reforms are as follows;

1. **The Global Competitiveness Index (GCI)** – The World Economic Forum annually publishes the Global Competitiveness Report, describing the Global Competitiveness Index. The index contains 3 sub-indexes, which, in turn, are based on 12 pillars (infrastructure, institutions, market size, health and primary education, higher education and training, etc.). The spectrum of the GCI includes 119 indicators<sup>1</sup>.
2. **The Index of Economic Freedom** – The Index of Economic Freedom is being published by The Heritage Foundation and The Wall Street Journal since 1994. The index assesses the economic freedom of countries through 12 pillars<sup>2</sup>. All pillars of the Index are scaled equally. The scores of individual pillars range from 0 to 100; countries that get 100 are the freest economies of the world.
3. **Doing Business** – The index assesses business activity in different countries on the basis of 11 areas of regulation (starting a business, dealing with construction permits, getting credits, paying taxes, etc.)<sup>3</sup>. The Doing Business index is calculated by the World Bank and International Financial Corporation.
4. **The Human Development Index** – The Index measures a standard of living, the literacy rate, the life expectancy in order to compare and assess the human potential of different countries<sup>4</sup>.
5. **The Democracy Index** – The Index is published by the Economist Intelligence Unit. It includes 60 indicators grouped in five pillars: electoral process and pluralism, civil liberties, functioning of government, political participation, and political culture<sup>5</sup>.
6. **KOF Index of Globalization** – KOF Index is released by the Economist Intelligence Unit<sup>6</sup>. The Index measures the three main dimensions of globalization: economic, social and political.

<sup>1</sup> <https://widgets.weforum.org/global-competitiveness-report-2017/>

<sup>2</sup> <http://www.heritage.org/index/about> The index was previously calculated according to the results of 10 pillars, but the methodology has changed since the launch of the index's 2016 edition.

<sup>3</sup> <http://www.doingbusiness.org/reports/global-reports/doing-business-2017>

<sup>4</sup> <http://hdr.undp.org/en/2016-report>

<sup>5</sup> <https://www.eiu.com/topic/democracy-index>

<sup>6</sup> <http://globalization.kof.ethz.ch/>

7. **The Global Innovation Index (GII)** – The index was first published in 2007 by INSEAD. The index assesses innovation capabilities and results in evaluated economies. The GII consists of two sub-indexes: The Innovation Input Sub-Index and the Innovation Output Sub-Index, each built around pillars<sup>7</sup>.
8. **The Corruption Perception Index** – The Index published by Transparency International anti-corruption organization. It measures the perceived levels of public-sector corruption based on different assessments and business opinion surveys<sup>8</sup>.
9. **The Global Peace Index (GPI)** – The index measures the relative position of nations' and regions' peacefulness. It includes 23 indicators that measure the existence of absence violence or fear of violence<sup>9</sup>.
10. **Legatum Prosperity Index (LPI)** – Legatum Prosperity Index is an annual ranking based on a variety of factors including wealth, economic growth, education, health, personal well-being, and quality of life. The index is based on 8 sub-indexes and 89 different indicators. The LPI is developed by the Legatum Institute<sup>10</sup>.
11. **Travel and Tourism Competitiveness Index (TTCI)** – The index is published by the World Economic Forum and assesses the extent to which nations and regions are putting in place the factors and policies to make it attractive to develop the travel and tourism sector<sup>11</sup>. The Index scores range from 1 to 6. The TTCI is based on three main sub-indexes (regulatory framework; business environment and infrastructure; human, cultural and natural resources).
12. **Environment Performance Index (EPI)** – The index measures the observed countries' performance efficiency on high-priority environmental issues in two broad policy areas: protection of human health from environmental harm and protection of ecosystems<sup>12</sup>. The index is calculated by the research Centre of Yale University.
13. **Global Gender Gap Index (GGGI)** – The Index was first published in 2006 by World Economic Forum<sup>13</sup>. It benchmarks national gender gaps of evaluated countries on economic, political, education- and health-based criteria.
14. **The network Readiness Index** – The index is developed by the World Economic Forum and Cornell University. It assesses the influence of information technologies on the health and wellness of the citizens of evaluated economies. The NRI includes 4 sub-indexes, which, in turn, are based on 53 indicators<sup>14</sup>.
15. **The BASEL AML index** – The Basel AML (anti-money laundering and counter terrorist financing) Index measures the risk of money laundering and terrorist financing of countries based on publicly available sources<sup>15</sup>.

<sup>7</sup> <https://www.globalinnovationindex.org/>

<sup>8</sup> [https://www.transparency.org/news/feature/corruption\\_perceptions\\_index\\_2016](https://www.transparency.org/news/feature/corruption_perceptions_index_2016)

<sup>9</sup> <http://visionofhumanity.org/indexes/global-peace-index/>

<sup>10</sup> <http://www.prosperity.com/>

<sup>11</sup> <https://www.weforum.org/reports/the-travel-tourism-competitiveness-report-2017>

<sup>12</sup> <http://epi.yale.edu/chapter/methods>

<sup>13</sup> <https://www.weforum.org/reports/the-global-gender-gap-report-2017>

<sup>14</sup> [http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/?doing\\_wp\\_cron=1515773985.3519079685211181640625](http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/?doing_wp_cron=1515773985.3519079685211181640625)

<sup>15</sup> <https://index.baselgovernance.org/>

16. **The Social Progress Index** – The index is developed by the initiative of the Oxford University in 2013<sup>16</sup>. The SPI measures the level of social development and wellbeing, it is based on 12 pillars (that include 52 indicators), grouped in 4 sub-indexes.
17. **The Enabling Trade Index** – The ETI is first published in 2008 by *the World Economic forum*. It is a comprehensive toll to assess the country's inclusion in international trade<sup>17</sup>. The index covers all possible areas of international relations, and is based on 4 sub-indexes, 7 pillars and 56 indicators.
18. **The Bertelsmann Stiftung's Transformation Index (BTI)**- The BTI analyzes and evaluates the quality of democracy, market economy and political management in number of developing and transition countries<sup>18</sup>. It measures successes and setbacks on the path toward a democracy based on the rule of law and a socially responsible market economy.
19. **Logistics Performance Index (LPI)** – The LPI is calculated by the World Bank<sup>19</sup>. It uses six key dimensions to benchmark countries' performance. The index's scorecards demonstrate comparative performance – the dimensions show on a scale (lowest score to highest score) from 1 to 5 relevant to the possible comparison groups – of all countries, region and income groups.
20. **Human Capital Index** – The Index is released by the World Economic Forum and ranks 130 countries on how well they are developing their human capital. The Index's score is calculated on a scale from 0 (worst) to 100 (best)<sup>20</sup>.

Thus, the integral index of Reforms is calculated with use of the following formula.

$$R_{ind}^j = \sum_{i=1}^n x_i^j S_i^j$$

Where:

$R_{ind}^j$  – The Integral Index of Reforms,

$x_i^j$  – the weighting coefficient of each sub-index,

$S_i^j$  – the score of the j country according to the results of i index

i=1, 2, ... n – component indexes (which we named “sub-indexes”). For example, i=2 Social Progress Index,

j=1, 2, ... m – observed economies in transition

### 3. The Observed Countries and Weighting Coefficients

For the purpose of conducting a comparative analysis on the effectiveness of socio-economic reforms implemented in different countries, we have calculated a new Index, named the integral Index of Reforms (IIR). Our database covers the indicators assessing the reforms in various areas during 2010-2016. The indicators are collected from the basic 20 component-indexes, measured

<sup>16</sup> <https://www.socialprogressindex.com/>

<sup>17</sup> <http://reports.weforum.org/global-enabling-trade-report-2016/>

<sup>18</sup> <http://www.bti-project.org/en/home/>

<sup>19</sup> <https://lpi.worldbank.org/>

<sup>20</sup> <https://www.weforum.org/reports/the-global-human-capital-report-2017>

by different international organizations and research centers. The database includes indicators for the following countries (economies in transition);

- Armenia;
- Georgia;
- Azerbaijan;
- Moldova;
- Ukraine;
- Romania;
- Bulgaria;
- Slovakia.

As already mentioned, we have calculated weighting coefficients for each component sub-index of the Integral Index of Reforms (see Table 1).

**Table 1.** The weighting coefficients of the ingredients of the IIR<sup>21</sup>

<b>SUB-INDEXES</b>	<b>WEIGHTING COEFFICIENTS</b>
The Global Competitiveness Index (GCI)	0.0762
The Bertelsmann Stiftung's Transformation Index (BTI)	0.0708
Doing Business	0.0693
The Index of Economic Freedom	0.0641
The Democracy Index	0.0632
The Human Development Index	0.0621
The Corruption Perception Index	0.0602
The Global Peace Index (GPI)	0.0582
KOF Index of Globalization	0.0574
The Social Progress Index	0.0574
The Global Innovation Index (GII)	0.0531
Legatum Prosperity Index (LPI)	0.0462
The BASEL AML index	0.0412
Global Gender Gap Index (GGGI)	0.0351
The Enabling Trade Index	0.0345
Travel and Tourism Competitiveness Index (TTCI)	0.0341
Logistics Performance Index (LPI)	0.0341
Environment Performance Index (EPI)	0.0307
Human Capital Index	0.0302
The Network Readiness Index	0.0219

#### 4. The Results and Comparative Analysis

We have applied the described methodology for the observed economies in transit and have calculated the integral index of Reforms for 2014-2016<sup>22</sup>.

Thus, the results (Fig. 1) witness, that the process of transforming the economy was successfully implemented in Slovakia, which is the leader among the observed economies.

Another outstanding advantage of our research, is that it gives an opportunity to separate the indicators that positively influence on the process of implementing reforms in the observed economies, and the ones that have a negative impact.

<sup>21</sup> Missing data were completed using the method of "similar objects" and using average indicators.

<sup>22</sup> For bringing the results to a single scale, we have normed the scores in the range (0-1)

We have made selective analysis for Armenia, Moldova and Georgia.

Thus, main factors influencing positively on the efficiency of reforms in Armenia are the following:

1. Health,
2. Quality of primary education,
3. Ease of starting a business,
4. Quality of demand conditions, etc.

Indicators, having negative impact on Armenia's reforms were:

1. Corruption,
2. Intellectual Property rights,
3. Infrastructure,
4. Institutions, etc.

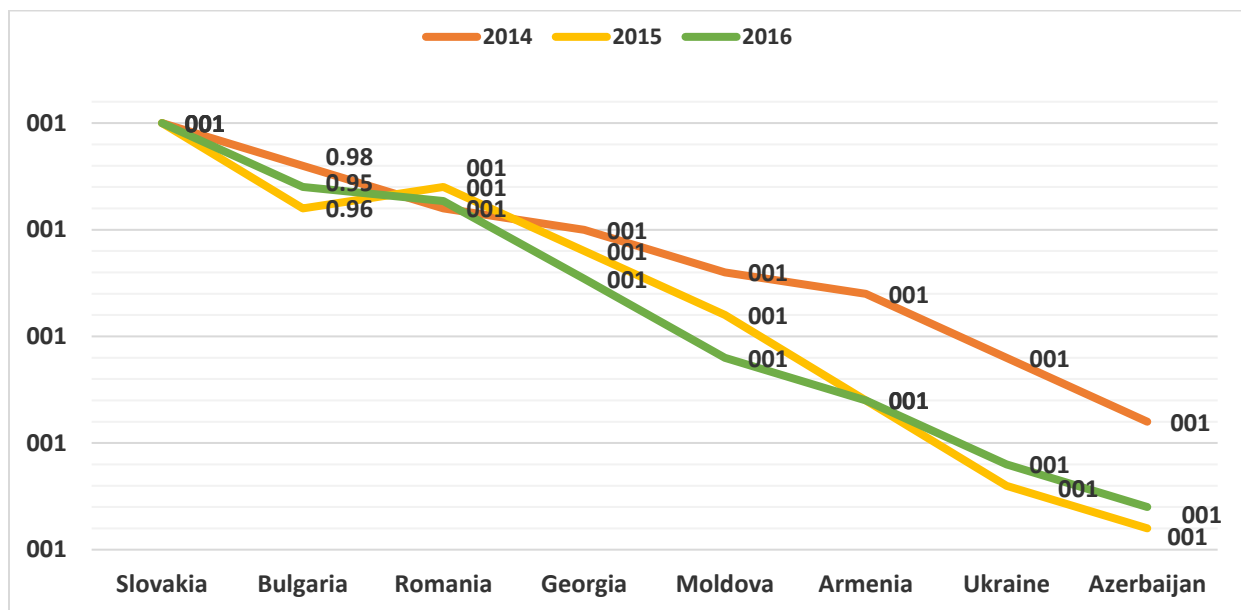


Fig. 1. The results of the integral index of Reforms, 2014-2016

Efficiency of reforms in Georgia was mainly influenced by:

- A. Positive influencers;
  1. Judicial independence,
  2. Rule of Law,
  3. Low rates of inflation,
  4. Government efficiency, etc.
- B. Negative influencers;
  1. Infrastructure,
  2. High rate of unemployment,
  3. External conflicts,
  4. Competition in domestic markets, etc.

Competitiveness Potential of Moldova is generally conditioned by the following factors;

- A. Positive shift;
  1. Innovation capabilities,
  2. Ease of paying taxes,

3. Technological readiness,
  4. Infrastructures, etc.
- B. Decline;
1. Access to financing,
  2. R&D expenses,
  3. Government effectiveness,
  4. Corruption, etc.

These results are applicable in evaluating governance and policymaking processes in different countries. As it was mentioned above, this method of conducting comparative analysis can be extended and applied to any country and groups of countries depending on given circumstances.

## 5. Conclusions

As a consequence, we can make the following concluding remarks;

1. The integral index of Reforms measures the comparative efficiency of reforms for 2014-2016. Its outcomes reveal the indexes and directions of reforms were implemented in the observed transition economies.
2. The results of our research certify that we can provide guidance for the authorities of countries with the help of the Integral Index of Reforms about the factors that led to progress and changes that negatively impacted the results of reforms and constrained the opportunities of countries to realize their potential.
3. We have more important theoretical, methodological and empirical issue to include various indexes that partially reveal quantitative assessment of reforms in some areas. So the synergy effect of those indexes will help to reveal reforms with more integrity.
4. As we had the changes of the indexes that significantly influenced the change of the comparative effectiveness of countries, we could evaluate the pillars that caused the improvement of the results.
5. The suggested methodology can be applied in both various areas, in economics and other social sciences.

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