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# Romania's development level comparing with EU countries: The RGS (Relative Gap Scoring) Ranking Index

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# ROMANIA'S DEVELOPMENT LEVEL COMPARING WITH EU COUNTRIES
## - The RGS (Relative Gap Scoring) Ranking Index –

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## Abstract

The main objective of Romania's post-accession strategy stands for the convergence with the EU Member States. If the nominal convergence (low inflation rate, stability of the exchange and interest rates, contained public debt) seems more easily to be achieved, the real convergence is supposed to catch up structural gap, connected more or less to issues belonging to the development process approach. The study aims at comparative assessment of Romania's development level within UE 27, proposing a composite index, called Relative Gap Scoring (RGS). This method is based on a scoring calculation depending on the quotient of each indicator level for a certain country and of the country's ranked first for the respectively indicator, having the advantage to evidence the relative gaps and providing a synthetic image of their resultant. The RGS index has been constructed by the geometric aggregation of scoring resulted for 10 economic and social indicators, considered relevant for the prospective of real convergence. Examining Romania's position within the ranking of EU countries according to the RGS index, the study found that large gap of the current state of economic and social development of our country still remain. Nevertheless, it is worth mentioning that Romania stood at 42.5 percent of the EU average in 2007, while in relation to GDP per capita (PPS) at 40.4 percent, which reveals that, in terms of real convergence, the time horizon of catching up with EU countries could be shorter.

**Key Words:** Economic and Social Development, International Comparisons, Composite Indexes, Statistical Methods

**JEL Classification: B40, C10, O10, O57**

## 1. Introduction

The economic development is a sequentially process, but that requires continuous improvement of the capacity production of goods and services, accompanied by appropriate changes in the way of business organization at company and business environment levels and also in macroeconomic management and quality of governance. The history of mankind reveals passing through different stages of economic development (countries are classified as having developed, undeveloped or developing economy, some of the latter being called economies in transition or emerging economies), concepts related to the evolving society typology (industrial, post-industrial or tertiary, information society and, more recently, knowledge-based economy) or of the environment quality (sustainable development).

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At lower levels of development stages, the economic growth is determined by the use of primary factors of production (land, low processing industries, poorly qualified labor), with the advance in the upper stages, moving the emphasis on capital factor (usually by importing technologies on FDI vector).

At higher levels of development, the economy turns from importing technologies to generating technologies, and on the basis of widely scientific knowledge, they become able to achieve high rates of innovation, strengthening their competitiveness on the globalised world market.

Starting from the main objective of Romania's post-accession strategy, i.e. the convergence with the EU Member States [14], the study aims at evaluating the comparative current level of economic and social development of Romania. Several arguments of the need for a complex analysis of the development level, having in view relevant indicators for the economy's performances, but also for the population standard of living, or other social issues.

Under the circumstances of a brief review of theoretical and practical approaches based on composite indexes, a method of assessing the level of development through a related composite index, called *Relative Gap Scoring* (RGS), has been proposed. Certain reasons behind its advantages, but also some reserves in the interpretation of results are presented. The method is applied to the European Union member countries, based on a composite index constructed by the selection of 10 economic and social indicators (among them GDP per capita, Exports per capita, the share of Services in GVA, Energy intensity, Access to Internet, the share of R&D spending in GDP and other), considered significant for various aspects of the development level.

## 2. Assessing the development level. Methodological approach

In the absence of techniques and methodologies generally accepted, the assessment of development level of a country is proving to be a complex process, a multitude of influence factors and a series of characteristics having to be considered. Starting from the fact that the economic development implies social welfare and from the difficulties of understanding the differences between nations in respect of living standard, the analysis of economic indicators has to be completed by the examination of social indicators.

As much as these indicators would be relevant, considered on an individual basis, they could reflect only partially the picture of the general development level. Therefore, we consider appropriate to discuss the possibilities of constructing a composite index showing the level of economic and social development, which is supposed to ensure a higher degree of relevance of the results stemmed by a comparative analysis between countries.

In general, in their attempt to capture the complex nature of the development process, the composite indexes are considered a way of filtering the reality in an acceptable form [11], including the assessment a country performances on the basis of different indicators, starting from economic growth and ending with the quality of life [9]. Among the arguments in favor of this approach is their ability to synthesize complex and multidimensional problems, to facilitate the classification of countries according to different indicators, providing a picture of the comparative performance between different countries. Meanwhile, opponents of composite indexes object that, if they are defective or poorly constructed could send wrong messages, that the choice of indicators and the weighting method are subjective and can arises controversies, including political, that increasing the quantity of data make more difficult their analysis. Even if a part of these objections appear as justified, if we have to take the example of structural indicators issued by EU for assessing the progress in meeting Lisbon targets, containing 107 variables reviewed annually, we find that the related databank is visited extensively both by the European Commission, as well as by external users [8].

It is worth mentioning that the tries to assess the performance of countries under various aspects (competitiveness, quality of governance, education, public health, environment, human rights, security, etc.), including for monitoring the international commitments, were multiplied significantly in recent decades, the number of composite indexes elaborated to  compare different countries  increasing also exponentially.

If the object of discussion would be the sustainable development, meaning, according to the Brundtland Commission, that type of development covering the needs of the present without compromising the chances of future generations, one could talk about a consensus on its crucial importance, both at national and global level. When intervenes the issue of criteria to be used to decide whether a nation is engaged or not on a sustainable path, controversies are already arising, becoming obvious that macroeconomic indicators as GDP fail to reach some critical dimensions, such as the sustainability of production and consumption in relation with the environment. Thus, researches in this field have generated a series of composite indexes for evaluation and monitoring the sustainable development, which differs from the viewpoint of their sub-component, and of the way in which they are aggregated. Among this composite indexes are the Ecological Footprint, the Environmental Sustainability Index or the Index of Sustainable Economic Welfare. On the question of whether these indexes are able to capture enough the multidimensional nature of sustainable development and to correctly rank the countries or if they can reveal the extent to which mankind, as a whole, is consuming the ecosystem resources by a sustainable manner, it is answered that, although conceptually are well structured, the lack of data for all countries is restraining most often their relevance [6].

We point out that in 2005, 135 composite indexes were counted [1], more than 80% of them dating after 1990, when the first applications were registered in the economic field, subsequently the composite indexes extending to wider areas. According to their coverage, the composite indexes were classified in two broad categories:

1. Economic openness and competitiveness, for example: Internal Market Index (European Union), Composite Leading Indicator (OECD), Foreign Direct Investment indices (UNCTAD) or Global Competitiveness (World Economic Forum).

2. Development and security, for example: Human Development Index (UNDP), Political Rights and Civil Liberties (Freedom House), Corruption Index (Transparency International) or Global Terrorism Index (World Market Research Center).

Usually, composite indexes are elaborated by public entities or international organizations, by private institutions (consulting companies, NGOs, international rating agencies, universities, etc.), such as those mentioned above between parenthesis, but sometimes, individual authors have succeed to impose in the literature as Robert Prescott-Allen, through the development and calculating of an index of well-being [2].

Passing through controversies about the benefits and/or disadvantages of using composite indexes, it should be noted that, indeed, from the methodological point of view, two major problems are emerging: the correlation between indicators and their complementarities or degree of substitution. If a composite index is constructed on the basis of indicators closely correlated between them, is expected that it will have enough robustness for not to be significantly affected by the steps involved during the analysis (method of aggregation and/or normalization), its validity depending more on the theoretical background. If, however, is seeking to construct a totally uncorrelated composite index, the results of countries ranking based on individual indicators analysis become more difficult to interpret. On the other hand, as some authors explain [3], the aggregation of indicators by providing appropriate weights according to their relative importance, basically acts as a substitution rate, which is representing a major limit of composite indexes.

## 3. The Method of Relative Gap Scoring

Having in view the reserves on composite indexes highlighted in the economic literature by various authors, we think they are however useful for trying to assess the comparative development level of different countries. Under these circumstances, some basic requirements need to be considered:
- adjusting the quality of a composite index by an accurate selection of its components;
- normalizing the statistical data in order to avoid the differences between measurement units;

- using of appropriate method of indicators aggregation;
- examining the links or correlation with other indicators or composite indexes;
- applying the model to a concrete analysis and introducing real statistical data;
- evaluating the results, including by the deconstruction of composite indexes for analytical purposes.

The composite index proposed in this study, called Relative Gap Scoring (RGS), is based on a scoring calculation depending on the quotient of each indicator level for a certain country and of the country ranked first (the country leader for the respectively indicator).

For each indicator, the formula for scoring calculation at country level is as follows:

$$S_{ij} = \frac{I_{ij}}{I_{imax}} \times 100 \qquad \textbf{(1)} \qquad \text{where:}$$

$S_{ij}$ - relative gap scoring of the indicator i for the country j

$I_{ij}$ - the level of indicator i for the country j

$I_{imax}$ - the maximum level of the indicator, i.e. of the country leader (depending on the nature of the indicator, could be also the minimum level, energy consumption for example).

The **RGS$_j$** composite index may be calculated for each country j, either by a summing aggregation of the scoring for all indicators:

$$RGS_j = \frac{\sum\limits_{i} S_{ij}}{n} \qquad \textbf{(2)}$$

or by a geometric aggregation:

$$RGS_j = \sqrt[n]{\prod\limits_{i} S_{ij}} \qquad \textbf{(3)} \qquad \text{where } \mathbf{n} \text{ is the number of indicators.}$$

According to the formula for scoring calculation, the proposed model has the advantage to show the relative gap between countries, the composite index providing a synthetic image of their resultant. By dividing a certain level of an indicator to the maximum recorded in the leading country, the statistical data are normalized too. We emphasize also that our option for geometric aggregation avoids the situation where, under the circumstances of a close development level between two countries, the one which holds ranks much different within the hierarchy of various indicators (some ahead, some in the back) would be favored compared with the other which has similar (more balanced) positions on most (or all) indicators. Also, from the methodological point of view, the formula for scoring calculation ensure that the final results are not supposed to be affected by a possible lack of data for certain indicators and/or for some countries. In one such approach, which is seeking to assess the level of economic and social development of Romania compared to EU countries on the basis of a composite index, as a result of successive iterations under the restrictions of data availability, 5 economic indicators and 5 social indicators were selected, considered significant for the prospective of real convergence, as:

1. Gross Domestic Product per capita (euro)
2. Exports per capita (euro)
3. Services (percent of GVA)
4. R&D Expenditures (percent of GDP)
5. Energy Intensity (energy consumption, kgoe/1 000 euro GDP)
6. Internet Access (percent of population)
7. Human Resources Expenditures (percent of GDP)

8. Life Expectancy (years)
9. Social Protection Expenditures (percent of GDP)
10. Corruption Perception (index)
For the cases where several countries have met the same scoring, they were ranked according to the level of GDP per capita. We emphasize that the choice for the share in GDP of many indicators started from the premise that - despite the dispersion being less, the scoring was influenced to some extent - the dependence of indicators absolute values by the size of GDP per capita could be diminished (see also the Methodological Appendix).

## 4. Assessing Romania's development level compared to EU countries based on RGS

As noted, individual analyzed, nor economic and/or social indicator could reflect, but partially, from a single perspective, the general level of a country development, what is seeable by the discrepancies, sometimes very large, between the positions of the same countries within different rankings. Although the method of Relative Gap Scoring has some inconveniences, we believe that it succeed, in a significant extent, to alleviate most of the above mentioned discrepancies, thereby providing an adequate validity to the analytical support. We emphasize that the matrix of correlation coefficients (Table 1) is showing a close correlation between almost all indicators composing RGS index, which is conferring a high degree of its relevance.

Table 1

**Correlation coefficients between indicators**

|  | GDP per capita | Exp per capita | Serv | R&D Exp | Energy Intens | Internet Access | Human Res Exp | Life Expect | Social Prot Exp | Corrupt Index |
|---|---|---|---|---|---|---|---|---|---|---|
| GDP per capita | 1,00 | 0,79 | 0,57 | 0,56 | 0,77 | 0,72 | 0,20 | 0,64 | 0,56 | 0,77 |
| Exports per capita |  | 1,00 | 0,33 | 0,45 | 0,50 | 0,69 | 0,10 | 0,38 | 0,42 | 0,62 |
| Services |  |  | 1,00 | 0,08 | 0,50 | 0,43 | 0,13 | 0,49 | 0,38 | 0,45 |
| R&D Expendit |  |  |  | 1,00 | 0,56 | 0,72 | 0,53 | 0,48 | 0,74 | 0,81 |
| Energy Intensity |  |  |  |  | 1,00 | 0,64 | 0,38 | 0,80 | 0,75 | 0,76 |
| Internet Access |  |  |  |  |  | 1,00 | 0,39 | 0,45 | 0,57 | 0,89 |
| Human Res Expendit |  |  |  |  |  |  | 1,00 | 0,18 | 0,46 | 0,45 |
| Life Expectancy |  |  |  |  |  |  |  | 1,00 | 0,76 | 0,62 |
| Social Prot Expendit |  |  |  |  |  |  |  |  | 1,00 | 0,69 |
| Corruption Index |  |  |  |  |  |  |  |  |  | 1,00 |

Without considering absolute the positive attributes of the composite index RGS, it is noted that the final ranking of EU countries (see Appendix 1) put on the first 7 positions a group of countries relatively small as territorial and/or population size (Denmark, Sweden, Luxembourg, Netherlands, Belgium, Finland, Austria), which indeed meet the attributes of developed countries, being in the top 10 for the most indicators. Large countries as Germany, France and United Kingdom hold respectively 8th, 10th and 11th ranks, between them interposing Ireland. Slovenia holds a surprising 12th position,

before Italy, Spain and Portugal. In the second half of the ranking, Hungary and the Czech Republic are occupying 17th and respectively 18th positions, followed by Estonia, before Cyprus and Greece. On low ranks are Latvia, Lithuania and Poland, respectively 23th - 25th places.

Romania holds the 26th position (before Bulgaria), this ranking being closer in our view to the economic and social realities of the two countries, compared with many other evaluations of various institutions or international organizations, which placed Bulgaria ahead of our country. With respect to RGS resulted for EU member states, it is noted that this composite index, which represents an aggregation of relative gaps, vary between 79.9 (Denmark) and 22.9 (Bulgaria). For Romania, the SDR index stands for 24.3, which is representing about 1/3 against the most developed European countries. We appreciate that the gap revealed by these figures, which take into account the comparative aggregate standing of several economic and social indicators, represents a more valid starting point for the assessment of Romania's real convergence prospects with the EU Member States [10].

The analysis of GDP per capita in PPS (Purchasing Power Standards), an indicator often used in international comparisons, highlights some discrepancies, generated probably by the methodological imperfections of transforming the price differences between countries in purchasing power parity (Table 2).

**Table 2**

**Rank of several EU countries**

| Country | GDP per capita (PPS) | | | RGS Index | | |
|---------|------|------|------|---------|------|------|
|         | Euro | Rank | % | Scoring | Rank | % |
| Luxembourg | 70200 | 1 | 283.9 | 75.4 | 3 | 131.8 |
| Ireland | 36300 | 2 | 146.6 | 64.4 | 9 | 110.5 |
| Netherlands | 32600 | 3 | 131.8 | 72.0 | 4 | 125.9 |
| Austria | 31800 | 4 | 128.3 | 69.7 | 7 | 121.9 |
| Denmark | 30900 | 5 | 124.6 | 79.9 | 1 | 139.7 |
| Sweden | 30700 | 6 | 124.0 | 76.3 | 2 | 133.4 |
| Belgium | 29600 | 7 | 119.3 | 70.7 | 5 | 123.6 |
| ---------------- | ---------- | ------- | -------- | --------- | ------- | ------ |
| Hungary | 15900 | 22 | 64.3 | 40.5 | 17 | 70.8 |
| Lithuania | 14900 | 23 | 60.0 | 32.4 | 25 | 56.6 |
| Latvia | 14400 | 24 | 58.2 | 33.2 | 23 | 58.0 |
| Poland | 13500 | 25 | 54.6 | 32.5 | 24 | 56.8 |
| ROMANIA | 10000 | 26 | 40.4 | 24.3 | 26 | 42.5 |
| Bulgaria | 9400 | 27 | 38.1 | 22.9 | 27 | 40.0 |

**Source**: for GDP per capita (PPS) data from Eurostat and for RGS index on the basis of Appendix 1

Even if Luxembourg is leading the ranking, which it could be correct (and it coincides with the position occupied by this country according to the RGS index), the advance of 3/1 versus the EU average and particularly the rank 2 of Ireland (lagging much behind Luxembourg, but having an advance of 1.5/1 versus the EU average) seems to be unrealistic. Also, as appears in the ranking according to the GDP per capita (PPS), the gap of 2.4/1 between Luxembourg and Belgium, two neighboring countries, virtually without borders and with many common characteristics, is undoubtedly exaggerated. We think that, although it not differs fundamentally in respect of the ranking, the gap between EU countries are more realistic revealed by the method proposed in this study. We emphasize that, according to GDP per

capita (PPS), Romania was situated in 2007 at 40.4% of the EU average, while according to RGS at 42.5%, which, even if it seems an insignificant difference, reveals that, in terms of real convergence, the time horizon of catching up with European Union countries could be shorter.

**5. Concluding Remarks**

Considering Romania's position within the rankings of individual indicators and with other countries compared with the one according to the composite index RGS, lead to the conclusion that our country is in a transition stage towards achieving a middle development level, the accession to EU being a clear opportunity to accelerate this process. Significant gap of Romania in relation to the EU Member States still remain, especially concerning some economic indicators (GDP per capita, Exports per capita, Services in GVA, Energy Intensity).

This general conclusion offer an essential reference point in the attempt to set up the development priorities of Romania in order to achieve the fundamental objective of the post-accession strategy, namely the convergence with the EU Member States. Therefore, improving internal and external parameters of Romania's economic development - with positive effects on social indicators configuration - depends crucially on the competitiveness increase, on reducing the structural gap in terms of technology, but also of services, their support through appropriate policies and instruments, proving to be vital for the future of our country, both in the European context, but also globally.

## Methodological Appendix

In order to ensure a higher degree of comparability and consistency of statistical data, a single source has been used, i.e. the portal of Eurostat (*www.europa.eu*), except for one indicator. In many cases, the selection of indicators has been made according to the availability of data for all countries under review, and on the most recent year, usually 2007.

For the selected indicators, the following methodological clarifications have been made:

**1. Gross Domestic Product per capita** was calculated by dividing the GDP expressed in euro (current prices) to the total population. The reference year for all countries is 2007.

**2. Exports per capita** are calculated by dividing the exports expressed in euro (FOB prices) to the total population. The reference year for all countries is 2007.

**3. Services** (percent of Gross Value Added) was calculated by adding the weights in the GVA (at current prices) of the gross value added weights for the following categories of services: wholesales, transport and communications, hotels and restaurants, financial services and business services. According to available data, the reference year is 2007, for the Czech Republic and Ireland, 2006. For Romania, the data were provided by NIS and refers to the year 2007.

**4. R&D Expenditures**, expressed as a share of GDP, represents gross domestic expenditure, included funding from the state budget, companies and foreign sources allocated to the development of human knowledge and for using it in order to new applications. According to available data, the reference year is 2006, and for Italy, United Kingdom and Portugal is 2005. For Romania, the data were provided by NIS and refers to the year 2007.

**5. Energy Intensity** figures were taken as such from the data source. The figures results by dividing the gross domestic consumption of energy, expressed in kilograms of oil equivalent to the GDP, expressed in thousands of euro (at 1995 constant prices). According to available data, the reference year for all countries is 2005.

**6. Internet Access** figures were taken as such from the data source, representing the share of households that have Internet connection at home. The population is considered including persons aged between 16 and 74 years. The reference year for all countries is 2007.

**7. Human Resources Expenditures** as a share of GDP, are the current and capital expenditures allocated from the state budget teaching institutions, according to GDP. According to available data, the reference year is 2005, for Czech Republic and Estonia the year 2004. For Romania the data were provided by NIS and refers to the year 2007

**8. Life Expectancy** is expressed in years and was calculated, based on data from the indicated source, by the simple arithmetic mean of levels for men and women respectively, having in view the similar share of the population by gender. According to available data, the reference year is 2006, for Italy the year 2004 and for United Kingdom the year 2005.

**9. Social Protection Expenditures** as a share of GDP (at current prices) were taken as such from the data source. These expenditures include grants, transfers, administrative costs of social protection programs and other social costs. According to available data, the reference year is 2005, and for Portugal, the year 2004.

**10. Corruption Perception** is a synthetic index issued by an NGO worldwide recognized (Transparency International), based on surveys and opinion polls, especially in the political and business environment. According to available data in the Global Corruption Report 2007 [15], the reference year is 2006. Note that in the absence of data, the EU average was calculated on the basis of the arithmetic average of member countries indexes.

## RGS Index Syntetic Table

| Country | Rank | RGS Index | GDP per capita Scoring | Exports per capita Scoring | Services Scoring | R&D Exp Scoring | Energy Intensity Scoring | Internet Access Scoring | Human Res Exp Scoring | Life Expect Scoring | Social Prot Exp Scoring | Corrupt Index Scoring |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Denmark | 1 | 79,9 | 55,6 | 40,5 | 85,6 | 65,1 | 100,0 | 94,0 | 100,0 | 96,7 | 94,1 | 99,0 |
| Sweden | 2 | 76,3 | 48,5 | 39,6 | 81,8 | 100 | 55,8 | 95,2 | 84,2 | 99,9 | 100,0 | 95,8 |
| Luxembourg | 3 | 75,4 | 100,0 | 100,0 | 100 | 39,4 | 60,1 | 90,4 | 46,0 | 97,9 | 68,4 | 89,6 |
| Netherlands | 4 | 72,0 | 45,5 | 71,9 | 86,5 | 46,1 | 58,4 | 100,0 | 62,7 | 98,5 | 88,1 | 90,6 |
| Belgium | 5 | 70,7 | 41,6 | 86,9 | 88,1 | 49,1 | 55,5 | 72,3 | 71,9 | 98,0 | 92,8 | 76,0 |
| Finland | 6 | 69,9 | 45,0 | 36,3 | 75,8 | 92,5 | 47,3 | 83,1 | 76,2 | 98,0 | 83,4 | 100,0 |
| Austria | 7 | 69,7 | 43,7 | 41,9 | 78,5 | 65,7 | 76,4 | 72,3 | 65,7 | 98,6 | 90,0 | 89,6 |
| Germany | 8 | 67,2 | 39,2 | 34,4 | 80,9 | 67,3 | 72,7 | 85,5 | 54,7 | 98,4 | 91,9 | 83,3 |
| Ireland | 9 | 64,4 | 57,3 | 60,1 | 74,4 | 35,4 | 79,3 | 68,7 | 57,6 | 98,3 | 56,9 | 77,1 |
| France | 10 | 61,0 | 39,7 | 18,6 | 90,7 | 56,8 | 61,5 | 59,0 | 68,5 | 99,8 | 98,4 | 77,1 |
| United Kingdom | 11 | 60,3 | 44,3 | 15,4 | 90,8 | 47,2 | 56,3 | 80,7 | 65,8 | 97,5 | 83,8 | 89,6 |
| Slovenia | 12 | 53,3 | 22,2 | 31,9 | 74,5 | 42,6 | 35,6 | 69,9 | 70,4 | 96,5 | 73,1 | 66,7 |
| Italy | 13 | 50,3 | 34,5 | 17,7 | 83,2 | 29,2 | 59,9 | 51,8 | 53,5 | 99,8 | 82,5 | 51,0 |
| Spain | 14 | 47,7 | 31,4 | 11,6 | 78,3 | 32,2 | 52,1 | 54,2 | 51,1 | 100,0 | 65,0 | 70,8 |
| Portugal | 15 | 44,4 | 20,4 | 10,3 | 85,3 | 21,7 | 47,3 | 48,2 | 65,2 | 97,3 | 77,2 | 68,8 |
| Malta | 16 | 40,7 | 17,5 | 15,0 | 89,9 | 14,5 | 42,3 | 65,1 | 35,4 | 98,0 | 57,2 | 66,7 |
| Hungary | 17 | 40,5 | 13,3 | 20,1 | 77,8 | 26,8 | 21,0 | 45,8 | 65,8 | 90,6 | 68,4 | 54,2 |
| Czech Republic | 18 | 40,0 | 16,6 | 25,4 | 69,6 | 41,3 | 13,9 | 42,2 | 52,8 | 94,6 | 59,7 | 50,0 |
| Estonia | 19 | 38,6 | 15,4 | 17,5 | 80,4 | 30,6 | 11,8 | 63,9 | 60,1 | 90,0 | 39,1 | 69,8 |
| Cyprus | 20 | 38,0 | 26,6 | 3,8 | 92,3 | 11,3 | 46,2 | 47,0 | 83,6 | 99,4 | 56,9 | 58,3 |
| Greece | 21 | 36,2 | 27,2 | 4,5 | 86,2 | 15,3 | 48,2 | 30,1 | 48,1 | 98,2 | 75,6 | 45,8 |
| Slovakia | 22 | 34,4 | 13,5 | 23,1 | 70,7 | 13,1 | 13,1 | 55,4 | 46,5 | 91,7 | 52,8 | 49,0 |
| Latvia | 23 | 33,2 | 11,6 | 7,8 | 87,7 | 18,5 | 17,7 | 61,4 | 61,1 | 87,4 | 38,8 | 49,0 |
| Poland | 24 | 32,5 | 10,7 | 7,8 | 75,7 | 15 | 19,5 | 49,4 | 66,1 | 92,8 | 61,3 | 38,5 |
| Lithuania | 25 | 32,4 | 11,0 | 10,8 | 71,9 | 21,4 | 12,0 | 53,0 | 59,8 | 87,8 | 41,3 | 50,0 |
| ROMÂNIA | 26 | 24,3 | 7,5 | 4,0 | 65,6 | 21,2 | 9,8 | 26,5 | 51,9 | 89,6 | 44,4 | 32,3 |
| Bulgaria | 27 | 22,9 | 5,0 | 5,1 | 72,2 | 12,9 | 7,2 | 22,9 | 54,5 | 89,8 | 50,3 | 41,7 |
| UE Average | | | 57,2 | 33,0 | 22,9 | 84,2 | 49,3 | 54,9 | 65,1 | 61,0 | 95,9 | 85,0 | 67,7 |

**RGS Ranking for Economic and Social Indicators**

## 1. GDP PER CAPITA

| Country | GDP per capita (euro) | Scoring | Country | GDP per capita (euro) | Scoring |
|---|---|---|---|---|---|
| 1. Luxembourg | 75208 | 100,0 | 15.Cyprus | 20000 | 26,6 |
| 2. Ireland | 43063 | 57,3 | 16. Slovenia | 16667 | 22,2 |
| 3. Denmark | 41780 | 55,6 | 17. Portugal | 15368 | 20,4 |
| 4. Sweden | 36476 | 48,5 | 18. Malta | 13171 | 17,5 |
| 5. Netherlands | 34199 | 45,5 | 19. Czech Rep. | 12449 | 16,6 |
| 6. Finland | 33864 | 45,0 | 20. Estonia | 11567 | 15,4 |
| 7. United Kingdom | 33283 | 44,3 | 21. Slovakia | 10167 | 13,5 |
| 8. Austria | 32867 | 43,7 | 22. Hungary | 10030 | 13,3 |
| 9. Belgium | 31267 | 41,6 | 23. Latvia | 8728 | 11,6 |
| 10. France | 29850 | 39,7 | 24. Lithuania | 8284 | 11,0 |
| 11. Germany | 29447 | 39,2 | 25. Poland | 8059 | 10,7 |
| 12. Italy | 25968 | 34,5 | **26. ROMANIA** | **5631** | **7,5** |
| 13. Spain | 23607 | 31,4 | 27. Bulgaria | 3763 | 5,0 |
| 14. Greece | 20492 | 27,2 | EU Average | 24842 | 33,0 |

## 2. EXPORTS PER CAPITA

| Country | Exports per capita (euro) | Scoring | Country | Exports per capita (euro) | Scoring |
|---|---|---|---|---|---|
| 1. Luxembourg | 34167 | 100,0 | 15. Italy | 6064 | 17,7 |
| 2. Belgium | 29707 | 86,9 | 16. Estonia | 5970 | 17,5 |
| 3. Netherlands | 24566 | 71,9 | 17. United Kingdom | 5255 | 15,4 |
| 4. Ireland | 20534 | 60,1 | 18. Malta | 5122 | 15,0 |
| 5. Austria | 14325 | 41,9 | 19. Spain | 3955 | 11,6 |
| 6. Denmark | 13853 | 40,5 | 20. Lithuania | 3698 | 10,8 |
| 7. Sweden | 13546 | 39,6 | 21. Portugal | 3528 | 10,3 |
| 8. Finland | 12405 | 36,3 | 22. Latvia | 2675 | 7,8 |
| 9. Germany | 11758 | 34,4 | 23. Poland | 2657 | 7,8 |
| 10. Slovenia | 10896 | 31,9 | 24. Bulgaria | 1758 | 5,1 |
| 11. Czech Rep. | 8678 | 25,4 | 25. Greece | 1540 | 4,5 |
| 12. Slovakia | 7885 | 23,1 | **26. ROMANIA** | **1364** | **4,0** |
| 13. Hungary | 6852 | 20,1 | 27. Cyprus | 1282 | 3,8 |
| 14. France | 6370 | 18,6 | EU Average | 7839 | 22,9 |

## 3. SERVICES

| Country | Services (percent of GVA) | Scoring | Country | Services (percent of GVA) | Scoring |
|---------|---------|---------|---------|---------|---------|
| 1. Luxembourg | 85,2 | 100,0 | 15. Estonia | 68,5 | 80,4 |
| 2. Cyprus | 78,6 | 92,3 | 16. Austria | 66,9 | 78,5 |
| 3. United Kingdom | 77,4 | 90,8 | 17. Spain | 66,7 | 78,3 |
| 4. France | 77,3 | 90,7 | 18. Hungary | 66,3 | 77,8 |
| 5. Malta | 76,6 | 89,9 | 19. Finland | 64,6 | 75,8 |
| 6. Belgium | 75,1 | 88,1 | 20. Poland | 64,5 | 75,7 |
| 7. Latvia | 74,7 | 87,7 | 21. Slovenia | 63,5 | 74,5 |
| 8. Netherland | 73,7 | 86,5 | 22. Ireland | 63,4 | 74,4 |
| 9. Greece | 73,4 | 86,2 | 23. Bulgaria | 61,5 | 72,2 |
| 10. Denmark | 72,9 | 85,6 | 24. Lithuania | 61,3 | 71,9 |
| 11. Portugal | 72,7 | 85,3 | 25. Slovakia | 60,2 | 70,7 |
| 12. Italy | 70,9 | 83,2 | 26. Czech Rep. | 59,3 | 69,6 |
| 13. Sweden | 69,7 | 81,8 | **27. ROMANIA** | **55,9** | **65,6** |
| 14. Germany | 68,9 | 80,9 | EU Average | 71,7 | 84,2 |

## 4. R&D EXPENDITURES

| Country | R&D Expendit. (percent of GDP) | Scoring | Country | R&D Expendit. (percent of GDP) | Scoring |
|---------|---------|---------|---------|---------|---------|
| 1. Sweden | 3,73 | 100,0 | 15. Estonia | 1,14 | 30,6 |
| 2. Finland | 3,45 | 92,5 | 16. Italy | 1,09 | 29,2 |
| 3. Germany | 2,51 | 67,3 | 17. Hungary | 1,00 | 26,8 |
| 4. Austria | 2,45 | 65,7 | 18. Portugal | 0,81 | 21,7 |
| 5. Denmark | 2,43 | 65,1 | 19. Lithuania | 0,80 | 21,4 |
| 6. France | 2,12 | 56,8 | **20. ROMANIA** | **0,79** | **21,2** |
| 7. Belgium | 1,83 | 49,1 | 21. Latvia | 0,69 | 18,5 |
| 8. United Kingdom | 1,76 | 47,2 | 22. Greece | 0,57 | 15,3 |
| 9. Netherlands | 1,72 | 46,1 | 23. Poland | 0,56 | 15,0 |
| 10. Slovenia | 1,59 | 42,6 | 24. Malta | 0,54 | 14,5 |
| 11. Czech Rep. | 1,54 | 41,3 | 25. Slovakia | 0,49 | 13,1 |
| 12. Luxembourg | 1,47 | 39,4 | 26. Bulgaria | 0,48 | 12,9 |
| 13. Ireland | 1,32 | 35,4 | 27. Cyprus | 0,42 | 11,3 |
| 14. Spain | 1,20 | 32,2 | EU Average | 1,84 | 49,3 |

## 5. ENERGY INTENSITY

| Country | Energy Intensity (Kgoe/1000 euro GDP) | Scoring | Country | Energy Intensity (Kgoe/1000 euro GDP) | Scoring |
|---|---|---|---|---|---|
| 1. Denmark | 114,1 | 100,0 | 15. Finland | 241,5 | 47,3 |
| 2. Ireland | 143,9 | 79,3 | 16. Cyprus | 246,9 | 46,2 |
| 3. Austria | 149,3 | 76,4 | 17. Malta | 269,9 | 42,3 |
| 4. Germany | 157,0 | 72,7 | 18. Slovenia | 320,5 | 35,6 |
| 5. France | 185,5 | 61,5 | 19. Hungary | 543,6 | 21,0 |
| 6. Luxembourg | 189,8 | 60,1 | 20. Poland | 584,7 | 19,5 |
| 7. Italy | 190,7 | 59,9 | 21. Latvia | 644,8 | 17,7 |
| 8. Netherlands | 195,5 | 58,4 | 22. Czech Rep. | 823,4 | 13,9 |
| 9. United Kingdom | 202,6 | 56,3 | 23. Slovakia | 868,6 | 13,1 |
| 10. Sweden | 204,3 | 55,8 | 24. Lithuania | 949,1 | 12,0 |
| 11. Belgium | 205,7 | 55,5 | 25. Estonia | 966,9 | 11,8 |
| 12. Spain | 219,2 | 52,1 | **26. ROMANIA** | **1164,9** | **9,8** |
| 13. Greece | 236,5 | 48,2 | 27. Bulgaria | 1582,4 | 7,2 |
| 14. Portugal | 241,4 | 47,3 | EU Average | 208,1 | 54,9 |

## 6. INTERNET ACCESS

| Country | Internet Access (percent of pop.) | Scoring | Country | Internet Access (percent of pop.) | Scoring |
|---|---|---|---|---|---|
| 1. Netherlands | 83 | 100,0 | 15. France | 49 | 59,0 |
| 2. Sweden | 79 | 95,2 | 16. Slovakia | 46 | 55,4 |
| 3. Denmark | 78 | 94,0 | 17. Spain | 45 | 54,2 |
| 4. Luxembourg | 75 | 90,4 | 18. Lithuania | 44 | 53,0 |
| 5. Germany | 71 | 85,5 | 19. Italy | 43 | 51,8 |
| 6. Finland | 69 | 83,1 | 20. Poland | 41 | 49,4 |
| 7. United Kingdom | 67 | 80,7 | 21. Portugal | 40 | 48,2 |
| 8. Belgium | 60 | 72,3 | 22. Cyprus | 39 | 47,0 |
| 9. Austria | 60 | 72,3 | 23. Hungary | 38 | 45,8 |
| 10. Slovenia | 58 | 69,9 | 24. Czech Rep. | 35 | 42,2 |
| 11. Ireland | 57 | 68,7 | 25. Greece | 25 | 30,1 |
| 12. Malta | 54 | 65,1 | **26. ROMANIA** | **22** | **26,5** |
| 13. Estonia | 53 | 63,9 | 27. Bulgaria | 19 | 22,9 |
| 14. Latvia | 51 | 61,4 | EU Average | 54 | 65,1 |

## 7. HUMAN RESOURCES EXPENDITURES

| Country | Human Resources Expendit. (percent of GDP) | Scoring | Country | Human Resources Expendit. (percent of GDP) | Scoring |
|---|---|---|---|---|---|
| 1. Denmark | 8,28 | 100,0 | 15. Estonia | 4,98 | 60,1 |
| 2. Sweden | 6,97 | 84,2 | 16. Lithuania | 4,95 | 59,8 |
| 3. Cyprus | 6,92 | 83,6 | 17. Ireland | 4,77 | 57,6 |
| 4. Finland | 6,31 | 76,2 | 18. Germany | 4,53 | 54,7 |
| 5. Belgium | 5,95 | 71,9 | 19. Bulgaria | 4,51 | 54,5 |
| 6. Slovenia | 5,83 | 70,4 | 20. Italy | 4,43 | 53,5 |
| 7. France | 5,67 | 68,5 | 21. Czech Rep. | 4,37 | 52,8 |
| 8. Poland | 5,47 | 66,1 | 22. Spain | 4,23 | 51,1 |
| 9. United Kingdom | 5,45 | 65,8 | 23. Greece | 3,98 | 48,1 |
| 10. Hungary | 5,45 | 65,8 | 24. Slovakia | 3,85 | 46,5 |
| 11. Austria | 5,44 | 65,7 | 25. Luxembourg | 3,81 | 46,0 |
| 12. Portugal | 5,40 | 65,2 | **26. ROMANIA** | **3,48** | **42,0** |
| 13. Netherlands | 5,19 | 62,7 | 27. Malta | 2,93 | 35,4 |
| 14. Latvia | 5,06 | 61,1 | EU Average | 5,05 | 61,0 |

## 8. LIFE EXPECTANCY

| Country | Life Expectancy (years) | Scoring | Country | Life Expectancy (years) | Scoring |
|---|---|---|---|---|---|
| 1. Spain | 81,1 | 100,0 | 15. United Kingdom | 79,1 | 97,5 |
| 2. Sweden | 81,0 | 99,9 | 16. Portugal | 78,9 | 97,3 |
| 3. France | 80,9 | 99,8 | 17. Denmark | 78,4 | 96,7 |
| 4. Italy | 80,9 | 99,8 | 18. Slovenia | 78,3 | 96,5 |
| 5. Cyprus | 80,6 | 99,4 | 19. Czech Rep. | 76,7 | 94,6 |
| 6. Austria | 80,0 | 98,6 | 20. Poland | 75,3 | 92,8 |
| 7. Netherlands | 79,9 | 98,5 | 21. Slovakia | 74,4 | 91,7 |
| 8. Germany | 79,8 | 98,4 | 22. Hungary | 73,5 | 90,6 |
| 9. Ireland | 79,7 | 98,3 | 23. Estonia | 73,0 | 90,0 |
| 10. Greece | 79,6 | 98,2 | 24. Bulgaria | 72,8 | 89,8 |
| 11. Belgium | 79,5 | 98,0 | **25. ROMANIA** | **72,7** | **89,6** |
| 12. Finland | 79,5 | 98,0 | 26. Lithuania | 71,2 | 87,8 |
| 13. Malta | 79,5 | 98,0 | 27. Latvia | 70,9 | 87,4 |
| 14. Luxembourg | 79,4 | 97,9 | EU Average | 77,8 | 95,9 |

## 9. SOCIAL PROTECTION EXPENDITURES

| Country | Social Protection Expendit. (percent of GDP) | Scoring | Country | Social Protection Expendit. (percent of GDP) | Scoring |
|---|---|---|---|---|---|
| 1. Sweden | 32,0 | 100,0 | 15. Hungary | 21,9 | 68,4 |
| 2. France | 31,5 | 98,4 | 16. Spain | 20,8 | 65,0 |
| 3. Denmark | 30,1 | 94,1 | 17. Poland | 19,6 | 61,3 |
| 4. Belgium | 29,7 | 92,8 | 18. Czech Rep. | 19,1 | 59,7 |
| 5. Germany | 29,4 | 91,9 | 19. Malta | 18,3 | 57,2 |
| 6. Austria | 28,8 | 90,0 | 20. Ireland | 18,2 | 56,9 |
| 7. Netherlands | 28,2 | 88,1 | 21. Cyprus | 18,2 | 56,9 |
| 8. United Kingdom | 26,8 | 83,8 | 22. Slovakia | 16,9 | 52,8 |
| 9. Finland | 26,7 | 83,4 | 23. Bulgaria | 16,1 | 50,3 |
| 10. Italy | 26,4 | 82,5 | **24. ROMANIA** | **14,2** | **44,4** |
| 11. Portugal | 24,7 | 77,2 | 25. Lithuania | 13,2 | 41,3 |
| 12. Greece | 24,2 | 75,6 | 26. Estonia | 12,5 | 39,1 |
| 13. Slovenia | 23,4 | 73,1 | 27. Latvia | 12,4 | 38,8 |
| 14. Luxembourg | 21,9 | 68,4 | EU Average | 27,2 | 85,0 |

## 10. CORRUPTION PERCEPTION

| Country | Corruption Perception Index | Scoring | Country | Corruption Perception Index | Scoring |
|---|---|---|---|---|---|
| 1. Finland | 9,6 | 100,0 | 15. Slovenia | 6,4 | 66,7 |
| 2. Denmark | 9,5 | 99,0 | 16. Malta | 6,4 | 66,7 |
| 3. Sweden | 9,2 | 95,8 | 17. Cyprus | 5,6 | 58,3 |
| 4. Netherlands | 8,7 | 90,6 | 18. Hungary | 5,2 | 54,2 |
| 5. Luxembourg | 8,6 | 89,6 | 19. Italy | 4,9 | 51,0 |
| 6. United Kingdom | 8,6 | 89,6 | 20. Czech Rep. | 4,8 | 50,0 |
| 7. Austria | 8,6 | 89,6 | 21. Lithuania | 4,8 | 50,0 |
| 8. Germany | 8,3 | 83,3 | 22. Slovakia | 4,7 | 49,0 |
| 9. Ireland | 7,4 | 77,1 | 23. Latvia | 4,7 | 49,0 |
| 10. France | 7,4 | 77,1 | 24. Greece | 4,4 | 45,8 |
| 11. Belgium | 7,3 | 76,0 | 25. Bulgaria | 4,0 | 41,7 |
| 12. Spain | 6,8 | 70,8 | 26. Poland | 3,7 | 38,5 |
| 13. Estonia | 6,7 | 69,8 | **27. ROMANIA** | **3,1** | **32,3** |
| 14. Portugal | 6,6 | 68,8 | EU Average | 6,5 | 67,7 |

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