

# SLOVAKIA IN COMPETITIVENESS INDICES

Ing. Tibor Lalinský, National Bank of Slovakia

With Slovakia's gradual incorporation into the European Union there could be seen an increasing interest in comparative analyses providing a picture on the group of acceding countries. Comparing countries from a variety of aspects together was at the beginning possible only on the basis of a narrow range of periodically compiled indices – summary indicators comparing individual countries in worldwide terms. With the approach of the date for EU enlargement the interest in analyses providing a picture on the degree of convergence achieved and an estimate of the time necessary for achieving the average of the original EU countries by individual candidates gradually grew.

Top-ranking countries from the beginning of the accession processes had until recently retained their leading positions. Countries such as the Czech Republic, Hungary and Slovenia, which were the most advanced along the path to convergence, are currently finding themselves behind leading Estonia. Hungary has recently, due to a worsening in its fiscal and monetary situation, fallen down the league to 6th place behind Slovakia, which thanks to undertaken reforms is being pushed forward<sup>1</sup>.

The first part of this article describes the most common indices, which may, on the basis of the range of indicators used, be classified into three basic groups. The first group comprises indices on overall competitiveness, the second group consists of indices of "partial" competitiveness and the third group may incorporate other indices covering a small number of countries (EU candidate and new member states), which are assessed on the basis of a narrowly specified group of partial indicators.

The second part of this article contains a mutual comparison of the most common indices from various aspects. We have not included in this article an in-depth analysis of the methods used in compiling the individual indices, we describe only the basic rules used in aggregating the values achieved in the individual partial indicators.

In the third part of this article there is a detailed breakdown of the current standing of Slovakia in the commonest indices in comparison with other new EU member states, as well as with the original EU member states.

## 1. Basic description of the most common indices<sup>2</sup>

### 1.1. Overall competitiveness indices

Probably the oldest, annually updated index of countries' competitiveness is the competitiveness indicator presented in the Global Competitiveness Report. The World Economic Forum has issued this report since 1979. In 2003 the number of countries evaluated in this report was increased from 80 to 102. The overall ranking is given by the gradual aggregating of countries' success in 160 partial indicators. The situation in the selected countries is compared from two main aspects: competitiveness in economic growth and competitiveness at the micro-level. Competitiveness in economic growth is represented by the GCI index (growth competitiveness index), which is further subdivided into three sub-indices (technology index, public institutions index and macro-economic environment index). Competitiveness at the micro-level is represented by the BCI index (business competitiveness index), comprising two sub-indices (company operations and strategy index and quality of the national business environment index).

Currently the most cited is the World Competitiveness Index, published since 1989 by the Swiss Institute for Management Development (IMD)<sup>3</sup>. This index is presented in the World Competitiveness Yearbook – an annually updated analysis of the competitiveness of the 60 most important economies<sup>4</sup>. The World Competitiveness Index reflects the development of 323 indicators, of which 129 are numeric, 112 indicators are additionally created on the basis of research, and 82 supporting indicators not included in the overall evaluation. The World Competitiveness Yearbook distinguishes four main fields of competitiveness: economic performance, government efficiency, business efficiency and infrastructure. Each of these groups of indicators is further divided into five sub-groups.

Despite the fact that the aim of both indices mentioned so far is to evaluate the overall competitiveness of countries, these indicators differ not only in the number and man-

<sup>1</sup> On the basis of the Deka Converging Europe Indicator (DCEI) from DekaBank.

<sup>2</sup> The following analysis is based on the last available versions of the indices mentioned. See literature sources used.

<sup>3</sup> Until 1989 the Institute for Management Development (IMD) had cooperated with the World Economic Forum in creating the Global Competitiveness Report. Following a difference in their opinions on defining and measuring competitiveness the Institute for

Management Development began to issue the World Competitiveness Yearbook in 1989.

<sup>4</sup> In the last version from 2004 the number of countries evaluated was increased against the previous version from 49 to 52 and it evaluated also 8 globally important regional economies with a high degree of independence from their respective country were included, namely Bavaria, Catalonia, Ile-de-France, Lombardy, Maharashtra, Rhone-Alps, Sao Paulo and Zhejiang.



ner of aggregating the partial indicators, but also in the definition of competitiveness itself. According to the World Economic Forum competitiveness is the ability of a country to achieve a permanently-high rate of GDP growth per capita. The Institute for Management Development (IMD) understands competitiveness as a country's ability to create added value and thus increase national wealth through the management of values and processes, attractiveness and assertion, globality and proximity, and the integration of these relations into an economic and social model.

### 1.2. Partial competitiveness indices

Besides indicators of countries' overall competitiveness, a number of indicators comparing the partial competitiveness of countries exist. Among such indicators we can rank the economic freedom index, the knowledge based economy development index, the tax misery index, the business climate index, the commercial payment-incident index and others.

The economic freedom index, in line with its name, focuses on one of the important factors of a country's competitiveness. This indicator however takes into account a broad range of indicators, therefore it may under certain conditions be considered also as an indicator of a country's overall competitiveness. The overall ranking of countries depends not simply on freedom in business at the national and international level, sufficient protection of ownership rights, but also, for example, on the effectiveness of the public sector and access to credit. A number of institutions deal with the issue of international comparisons of economic freedom, one being the Index of Economic Freedom, drawn up each year by the Heritage Foundation. A very similar ranking of countries in the field of economic freedom is compiled also by the Fraser Institute under the title Economic Freedom of the World Index (EFW index).

The index of economic freedom, published yearly by the Heritage Foundation in co-operation with the Wall Street Journal, compares 155 countries on the basis of 50 indicators classified into 10 categories: trade policy, taxation, government intervention, monetary policy, inflow of capital and foreign investment, banking and finance, wage and price control, property rights, regulation and the black market.

Sixty two independent institutes from around the world are involved in preparing the EFW index<sup>5</sup>. The index compares 123 countries on the basis of the 38 partial indicators, classified into five main groups: size of government expenditures, taxes and the extent of state enterprises, the legal structure and security of property rights, access to

a stable currency, freedom in international trade and regulation of credit, labour market and business.

### 1.3. Other indices of countries' competitiveness

In connection with the EU's enlargement, there is growing demand for indicators that compare the current and future EU countries<sup>6</sup> (mainly the new member states, but also candidate countries), and at the same time take account of the specifics of development in the EU. As yet there is no generally accepted index for comparing the overall competitiveness of all EU countries, founded on a unified database<sup>7</sup>. The most important indices comparing the new member states and candidate countries of the EU are those compiled by the German DekaBank. It is Deka Converging Europe Indicator (DCEI), which assesses the convergence of individual countries to the EU and the recently designed and published<sup>8</sup> indicator evaluating the attractiveness of a country for the inflow of foreign investment, the Standortindikator.

The Converging Europe Indicator attempts to provide a complex overview of the overall degree of convergence. It allows the analyst to take into account many indicators at once and at the same time expresses the level of their fulfilment by a single figure – a figure from 0 to 100. It covers not simply the Maastricht indicators of nominal convergence, but also several real convergence indicators. DCEI describes the degree of convergence in four areas: monetary, fiscal, real-economic and institutional. The analysis of the monetary field rests on the rate of inflation, long-term interest rates, exchange rate and growth of bank lending. The fiscal field covers the state budget deficit, state institutions' deficit, foreign debt and the private sector's share in GDP. The real-economy field rests on the GDP per capita, share of agriculture in GDP, rate of unemployment and share of foreign trade with the EU in total foreign trade. Institutional convergence is assessed on the basis of indicators from the European Bank for Reconstruction and Development. DCEI evaluates in total 11 countries on the basis of 16 partial indicators. In contrast to the other indices analysed, this indicator is updated every four months.

The Standortindikator is compiled from 18 indicators, classified into two main groups (specific and general indicators) and into 8 sub-groups. Each sub-group (besides macro-stability) comprises two partial indicators. The process of compiling the Standortindikator and the selection of source indicators is based on the works of Garelli – the main author of the World Competitiveness Yearbook. From the

<sup>5</sup> This index was established on the basis of the conclusions from a series of conferences on the topic of measuring economic freedom organised by the Fraser Institute since 1986 in cooperation with the Nobel laureates for economics M. Friedman, G. Becker and D. North.

<sup>6</sup> Due to the limited data published publicly, international comparisons often do not include Cyprus and Malta.

<sup>7</sup> An effort to compile such a comparison was the article published in the Biatec Journal no. 8/2004, under the title Evaluating Slovakia's Competitiveness in the EU25.

<sup>8</sup> First published in August 6, 2004 in Handelsblatt.



comparison of the indicators used it follows that out of the whole list of indicators used in creating the World Competitiveness Yearbook only the really basic indicators pertinent to a decision on investing in the country have been used. Indicators on the country's future orientation have been left out, for example, public finance indicators, the degree of the economy's openness, development of private sector investments, etc. Compared to the overall evaluation of competitiveness, an interesting point is the greater emphasis the Standortindikator places on tax and legislation. DeKaBank considers an important factor for the inflow of investment to a country, for example, also its level of corruption.

## 2. Comparison of the methods used in compiling the most common indices

A common feature of these indices is that they compare dozens of large world economies and are a reflection of the state and development of a large number of various indicators. They differ from one another in the manner used for summarising the results for individual indicators. The index of economic freedom is compiled in the simplest and probably also the most objective method of an unweighted arithmetic average<sup>9</sup>. In the case of the other indices a weighted arithmetic (or geometric) average method is used.

In aggregating the results for individual indicators in the World Competitiveness Report, not only various weights for individual indicators are used, but also the weights of individual indicators, or sub-indices, differ depending on the country evaluated. In the case of calculating the growth competitiveness index as a weighted sum of three sub-indices (technology index, public administration index and macroeconomic environment index) for an "innovation country"<sup>10</sup>, the technology index is assigned a higher weighting than for other countries (one half in the case of innovation countries and one third in the case of other countries).

The construction of the Converging Europe Indicator (DCEI) is based on the assumption that in the case of the negative development of an individual partial indicator this development has a tendency to block development in other fields, as well. Therefore in the case of the DCEI the resultant index is not calculated by a simple average of the results achieved in the individual indicators, but a weighted geometric average (Cobb-Douglas function) is used for calculating the overall degree of convergence.

Prior to compiling the overall ranking of countries taking into account all partial indicators it is necessary to transfer the figures reached in the framework of the individual disparate indicators into a mutually comparable form. One of the solutions is to compile a numerical ranking of the countries for each indicator, and then to use the average of the rankings for each individual indicator for a country's summary evaluation. Each of the indices mentioned here uses a different method of transferring the values of the individual indicators into a common figure.

In the case of the Growth Competitiveness Index and the Business Competitiveness Index the expression used for this transfer is:

$$6 \times (\text{country's value} - \text{minimum}) / (\text{maximum} - \text{minimum}) + 1$$

The value of each indicator and also the resultant value of the index moves within the range 1 to 7.

The rival World Competitiveness Report in its recalculation of indicators to a common value uses standard deviation, by means of which a standardised value is calculated for each of the 241 indicators for each of the 60 countries. In this case the overall index is not identical with the calculated weighted averages of the standardised values of individual indicators, but the summary standardised values for individual countries are further recalculated to a value from 0 to 100, the best country is assigned the value 100 and the values for other countries are recalculated in proportion to this country.

In the case of the economic freedom index the original values of the indicators for individual countries are assigned a value from 1 to 5. The summary index of economic freedom is given by an unweighted arithmetic average, thus also taking a value from 1 to 5, where countries with a value close to 1 are considered the freest and countries with an index closer to 5 are considered the least economically free<sup>11</sup>.

The EFW index uses a scale from 0 to 10, where the country achieving the best results in a given indicator is assigned the value 10 and the country with the worst result receives a zero, other countries are assigned values between 0 and 10 for the given indicator. In contrast to the economic freedom index, the summary index in this case is found by a weighted arithmetic average, and the country achieving the highest summary index value is considered the freest.

The Converging Europe Indicator (DCEI) focuses on the degree of a country's convergence with the EU. The partial indicators for individual countries are compared with the average for the EU15, set at 100 points. Values of indicators for individual countries may therefore achieve 0 to 100 points. The points for the individual countries are subsequ-

<sup>9</sup> For a more detailed analysis of the influence of the use of weighted and unweighted arithmetic average see Chapter 3 - Weighting the Components of the Index of Economic Freedom, 2004 Index of Economic Freedom, Heritage Foundation, 2004.

<sup>10</sup> In total the 25 most innovation-important countries (USA, Japan, Taiwan, Sweden, Switzerland, Israel, Finland, Germany, Canada, Singapore, Holland, Luxembourg, Denmark, Korea, Belgium, France, Austria, Great Britain, Norway, Iceland, Australia, New Zealand, Ireland, Hong Kong and Italy).

<sup>11</sup> 1 to 1.99 – free countries, 2 to 2.99 – mostly free, 3 to 3.99 – mostly unfree, 4 or more – unfree countries.

ently averaged using a weighted geometric average method.

In constructing the Standortindikator a weighted arithmetic average of each country's values for individual indicators is again used. In this case individual indicators are assigned a value from a scale from -2 to +2. The more attractive the country, the higher the index's value.

The indices mentioned above differ not only in the calculation methodology used, the number of countries monitored and the number of indicators, but also in the specific indicators included in the calculation. In general, however, it may be said that individual indicators move in conjunction, basic macroeconomic indicators in particular (inflation, GDP per capita, etc.).

### 3. Slovakia's standing in the most common indices

Slovakia is included in each of the indices mentioned above. In comparison with other countries it is found largely in the upper half of the countries evaluated. At present only in the World Competitiveness Index does Slovakia finish the second third of countries, being assigned 40th place out of the 60 globally most important economies.

Slovakia achieves the best position – first place – in the Standortindikator.

In all the indices analysed, besides the Standortindikator, which was published for the first time, Slovakia has recorded a significant improvement on the previous period. The most significant improvement was recorded in the converging Europe indicator, in which Slovakia improved on its last year performance, moving up the rankings from its original 8th position to the 4th position among 11 countries. This advance however was connected to a significant extent with the recency of the database, which is highest in the case of the Converging Europe Indicator. The weakest year-on-year improvement was observed in the Growth Competitiveness Index and the Business Competitiveness Index, where this is related to the fact that the compilation of these indicators for 2004 was based on data from 2002, and where significant changes in Slovakia's economy had occurred only since 2003. Due to the restructuring of banks, continuing price liberalisation, as well as tax reform, more significant progress in strengthening economic freedom in Slovakia, as well as its overall competitiveness is now becoming internationally recognised.

With regard to the different number of countries monitored in the framework of the indices analysed, which ranges

**Table 1 Ranking of EU member states in competitiveness and economic freedom**

| Country        | Global Competitiveness Index 2003/2004 |                | World Competitiveness Yearbook 2004 |         | EFW index 2004 |         | Index of Economic Freedom 2004 |         |
|----------------|--|----------------|-------------------------------------|---------|----------------|---------|--------------------------------|---------|
|                | GCI ranking                            | Ranking in BCI | Index value                         | Ranking | Index value    | Ranking | Index value                    | Ranking |
| Belgium        | 14                                     | 8              | 70.3                                | 10      | 7.35           | 9       | 2.19                           | 12      |
| Cyprus         | –                                      | –              | –                                   | –       | 6.61           | 22      | 1.95                           | 7       |
| Czech Republic | 20                                     | 16             | 56.4                                | 17      | 6.89           | 17      | 2.39                           | 18      |
| Denmark        | 3                                      | 3              | 84.4                                | 1       | 7.56           | 7       | 1.8                            | 5       |
| Estonia        | 10                                     | 13             | 68.4                                | 11      | 7.69           | 6       | 1.76                           | 3       |
| Finland        | 1                                      | 1              | 83.6                                | 2       | 7.69           | 4       | 1.95                           | 7       |
| France         | 13                                     | 7              | 67.7                                | 12      | 6.82           | 19      | 2.63                           | 22      |
| Greece         | 18                                     | 19             | 56.3                                | 18      | 6.87           | 18      | 2.8                            | 24      |
| Holland        | 4                                      | 6              | 78.6                                | 7       | 7.69           | 5       | 2.04                           | 10      |
| Ireland        | 15                                     | 10             | 80.3                                | 4       | 7.83           | 2       | 1.74                           | 2       |
| Lithuania      | 21                                     | 20             | –                                   | –       | 6.79           | 21      | 2.19                           | 12      |
| Latvia         | 19                                     | 14             | –                                   | –       | 7.04           | 15      | 2.36                           | 16      |
| Luxembourg     | 9                                      | –              | 83.1                                | 3       | 7.81           | 3       | 1.71                           | 1       |
| Hungary        | 17                                     | 18             | 57.2                                | 16      | 7.25           | 12      | 2.6                            | 21      |
| Malta          | 8                                      | 21             | –                                   | –       | 6.80           | 20      | 2.51                           | 20      |
| Germany        | 5                                      | 4              | 73.4                                | 8       | 7.34           | 10      | 2.03                           | 9       |
| Poland         | 24                                     | 23             | 42                                  | 21      | 6.37           | 24      | 2.81                           | 25      |
| Portugal       | 12                                     | 17             | 58.5                                | 14      | 7.18           | 13      | 2.38                           | 17      |
| Austria        | 7                                      | 9              | 78.9                                | 6       | 7.54           | 8       | 2.08                           | 11      |
| Slovakia       | 23                                     | 22             | 57.5                                | 15      | 6.58           | 23      | 2.44                           | 19      |
| Slovenia       | 16                                     | 15             | 55.5                                | 19      | 6.22           | 25      | 2.75                           | 23      |
| Spain          | 11                                     | 12             | 67.4                                | 13      | 7.08           | 14      | 2.31                           | 15      |
| Sweden         | 2                                      | 2              | 79.6                                | 5       | 7.28           | 11      | 1.9                            | 6       |
| Italy          | 22                                     | 11             | 50.3                                | 20      | 6.98           | 16      | 2.26                           | 14      |
| Great Britain  | 6                                      | 5              | 72.2                                | 9       | 8.19           | 1       | 1.79                           | 4       |



from 10 to 155 countries, from the aspect of Slovakia's supranational affiliation to the EU it would be appropriate to compare Slovakia's current ranking in the indices with that of other EU countries. If we take into consideration the EU25 we can compare the positioning of these countries in the examined indices of economic freedom and, with certain limitations also their positioning in indices of overall economic competitiveness. As can be seen from table 1, in comparison with other EU25

countries, Slovakia lags in the bottom third, or even in the bottom fifth of countries. It achieves the best position within the EU in the Global Competitiveness Index, achieving 15th place from among 21 EU countries evaluated<sup>12</sup>.

If we focus our attention on the newly accepted EU member states, which may be considered as Slovakia's greatest competitors not only regarding convergence to the EU average but also in gaining foreign direct investment and economic growth, we can compare the rankings of most of these countries in all the six indices mentioned above. Slovakia currently achieves clearly the best position from among the new member states as regards its attractiveness to foreign investment. In connection with the radical reform measures and still low wage costs the Standortindikator places Slovakia in the top position. Slovakia's growing competitiveness is also witnessed by the second place among the six new EU member states evaluated in the World Competitiveness Yearbook. Slovakia achieved sixth place from among all the ten new EU member states in both the economic freedom index and the degree of applying economic freedoms necessary for further economic growth. The ranking of the new member countries in the individual indices is shown in table 2.

### Conclusion

Following a basic description of the most common competitiveness indices, which forms the first part of this article, in the second part we focused primarily on comparing the ways of aggregating the values of partial indicators used in calculating the indices described. Despite the fact that we have not dealt in depth with the methods used in compiling the individual indices, from a mutual comparison

**Table 2 Ranking of new EU member states according to the most common indices**

| Country        | Global Competitiveness Report 2003/2004 |     | World Competitiveness Yearbook 2004 | EFW Index 2004 | Index of Economic Freedom 2004 | DEKA-DCEI 7/2004 | DEKA-Standort-indikator 8/2004 |
|----------------|---|-----|-------------------------------------|----------------|--------------------------------|------------------|--------------------------------|
|                | GCI                                     | BCI |                                     |                |                                |                  |                                |
| Cyprus         | –                                       | –   | –                                   | 7              | 2                              | –                | –                              |
| Czech Republic | 6                                       | 4   | 4                                   | 4              | 5                              | 3                | 5                              |
| Estonia        | 2                                       | 1   | 1                                   | 1              | 1                              | 1                | 4                              |
| Hungary        | 4                                       | 5   | 3                                   | 2              | 8                              | 6                | 6                              |
| Latvia         | 5                                       | 2   | -                                   | 3              | 4                              | 8                | 3                              |
| Lithuania      | 7                                       | 6   | -                                   | 6              | 3                              | 6                | 2                              |
| Malta          | 1                                       | 7   | -                                   | 5              | 7                              | -                | -                              |
| Poland         | 9                                       | 9   | 6                                   | 9              | 10                             | 4                | 7                              |
| Slovakia       | 8                                       | 8   | 2                                   | 8              | 6                              | 4                | 1                              |
| Slovenia       | 3                                       | 3   | 5                                   | 10             | 9                              | 2                | 8                              |

of the competitiveness indices it is clear that the mentioned indices differ not only in terms of the calculation methodology used, in the number of indicators monitored, but also in terms of the specific indicators included in the calculation. In general, however, some indicators, mainly the basic macro-economic ones, tend to overlap.

In the third part we broke down in detail the current standing of Slovakia in the most common indices. Despite the different methods and data sources used for calculating the analysed indices, it may be said that the improving economic situation of Slovakia is gradually becoming reflected not only in indicators of the macro-economic environment, but also in summary comparative indices evaluating countries' competitiveness. In the past period Slovakia has improved its standing in all the most frequently used indices. The realisation of widespread and, in many cases, radical reforms in key areas has created the conditions for further growth in Slovakia's competitiveness. The country's economic freedom is growing, as is its attractiveness to foreign investment, which is manifested not only in improving competitiveness, but also in a faster rate of convergence.

In calculating the examined indicators different starting points have been used and due to the large number of evaluated countries the ranking of countries has in many cases been compiled on the basis of data from 2002, where it was only in 2003 that the improvements in various fields in Slovakia became apparent. Therefore a significant improvement in Slovakia's position may be expected in the next update of some indices. It is questionable whether at the time of updates based on the currently favourable data, which in some cases means the update for 2006, Slovakia will continue to make headway in raising its competitiveness as it will be testified by the results of some indices<sup>13</sup>.

<sup>12</sup> The Global Competitiveness Report 2003/2004 does not evaluate Cyprus and Luxembourg. The World Competitiveness Report 2004 does not contain an evaluation of Cyprus, Malta, Lithuania or Latvia.

<sup>13</sup> For example, the evaluation in the Global Competitiveness Report 2003/2004 based on data from 2002 ranked Slovakia on the second place from bottom among the 24 EU countries evaluated.