

HIGHLIGHTS

Highlight 1. Measuring the Quality of Economic Growth

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Abstract: *Quality of economic growth is not a new idea, even though it only recently got into the spotlight. It is a complex, multidimensional concept that valorises the process of economic growth from different aspects and offers an insight into its sustainability. Measuring the quality of growth is a complex and delicate task. This article is a step in that direction. Two variants of the Quality of Growth Index have been constructed for 16 European countries – 11 EU member states and five Western Balkan countries. Bearing in mind the importance of economic fundamentals of growth, as well as its social effects, calculated Quality of Growth Indices are comprised of key economic and social indicators – components. Based on the value of the two Indices, as well as the individual components, the progress for the selected European countries in the previous period was evaluated and a comparison was made. The conducted empirical research indicates the extent to which the economic growth so far is based on sound economic basics and how it has influenced the increase of social well-being in the observed countries. Since the achievement of dynamic and high-quality economic growth is an imperative for the coming period, this research is particularly important as it represents a “pioneering” undertaking to quantify the quality of growth in individual European countries. The results of the research can provide information to economic policy makers of the analysed countries on what has been achieved so far and point to the desirable directions of action in the future in order to ensure faster and better growth of their economies.*

Introduction

The unsustainability of pre-crisis models of economic growth came to light with the emergence of the global economic crisis a decade ago. The crisis has highlighted the weaknesses that are present in many economies, as well as the fact that it is important not only to recover from recession, but also to establish new models of economic growth. The Quality of Economic Growth, in addition to dynamics, defines economic development in the long term, so the speed and ways of increasing production are equally important in the long run.

This paper shows the key characteristics of the Quality of Economic Growth, as well as important indicators that represent the basic components in establishing the quality of growth indicators. Two variants of the Qua-

lity of Growth Index have been created, which include economic and social indicators. Empirical analysis deals with the measurement of the Quality of Economic Growth in the countries of the new EU member states and the Western Balkan countries, which represents a “pioneering” venture to quantify the quality of growth in these European countries. The aim is to gain insight into the achievements of the observed countries so far, and to provide guidelines to economic policy makers on healthy ways of achieving economic growth in the future. Additionally, measuring the quality of economic growth in Serbia, as well as the comparison with other countries in the sample, sets the foundation for formulating appropriate messages for managing development policy in the coming period.

Defining the Quality of Economic Growth

Quality economic growth is multidimensional - in addition to economic, it includes social and environmental aspects of growth in production activity. According to the Quality of Economic Growth concept, the ways in which growth is achieved are also important, but also the results from the aspect of human well-being. The special significance of this concept lies in a comprehensive approach to increasing production, simultaneously taking into account the economic, social and environmental dimensions of this process. Its essence is to ensure fast and stable economic growth, and a long-term increase in the standard of living of the population².

Quality economic growth is long-lasting because it is self-sustaining - i.e. current growth creates favourable bases for future production growth. In addition, quality growth takes care of vulnerable groups in society, as well as the natural environment. Quality economic growth is dynamic, stable and resistant to external shocks, accompanied by high investments (primarily in human capital). Some authors define quality growth as a growth that reduces extreme poverty, narrows structural inequalities, protects the natural environment and, as such, maintains the process of growth itself (López, Thomas and Wang, 2008). Other authors consider that good economic growth is strong, stable and sustainable, i.e. one that increases labour productivity and leads to socially desirable outcomes - e.g. improving living standards, in particular through the reduction of poverty (Martinez and Mlachil, 2013).

Some periods in the development of the economy and society are declared successful only because they have

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² Jovanović Gavrilović (1997), p.32

achieved a high growth rate. However, rapid growth in the present can be achieved at the expense of future prosperity. The experiences of countries have shown that high growth rates do not necessarily lead to better social outcomes, i.e. a significant reduction in poverty, inequality and unemployment, and as such are not a guarantor of its quality. Therefore, it is important to take into account many aspects of growth, in order to realistically perceive relevant implications for human well-being and assess its importance for long-term economic expansion.

Constructing the Quality of Growth Index

To measure the quality of growth, we calculated two Quality Growth Indices: QGI and QGI_m. Indices were calculated on a sample of 16 European countries - 11 new EU member states³ and five Western Balkan countries⁴. We started from the work of Mlachila, Tapsoba and Tapsoba (2014) and based on their method, created related indices⁵. Based on the available data for the observed group of countries, the index values for the period 2001-2015 are calculated⁶.

The Quality of Growth Index is an aggregate indicator that reflects the multidimensional nature of growth, since its composition includes economic and social indicators. Therefore, the Quality of Growth Index consists of several indicators that represent its components/subcomponents.

In creating the Index, we used a min-max approach, since the indicators that represent its components/subcomponents are displayed in different units of measure.

We used the following formula for the conversion of values for each individual indicator:

$$(X - X_{\min}) / (X_{\max} - X_{\min})$$

In the given formula, X is the indicator value for a given country and year, while X_{\max} and X_{\min} are the maximum and minimum value of that indicator in the observed countries in a given year. In this way, the obtained indicator values are reduced to a number in the range (including) 0 and 1. Thus, for each indicator, value 0

is assigned to a country with a minimum value of the indicator, and a value of 1 to the country with its highest value. Therefore, the initial values of the indicators are reduced to the index numbers by this procedure, which, with a certain weighting, are an integral part of the Quality of Growth Index.

The Quality of Growth Index has two key dimensions: *Growth Fundamentals* and *Social Outcomes* (see Figure 1). Components that can be used to calculate the *Growth Fundamentals* are *Strength*, *Volatility*, *Sectoral Composition* and *Demand Composition* (Figure 1).

Growth Strength represents the annual change in the real GDP *per capita*. Growth volatility is calculated as the reciprocal value of the coefficient of variation for a three-year span⁷. *Sectoral Composition* reflects the extent to which economic growth is generated by diversified sources. Considering the availability of data, the indicator is one minus the Herfindahl-Hirschman index (HHI) of export flows, which indicates the diversification of export products and represents a *proxy* for diversification of production. External orientation of growth (*Demand Composition*) is approximated by the percentage share of net external demand in GDP, i.e. net exports and GDP ratio.

Within the Social Outcomes, the *Health* component consists of two sub-components: life expectancy and the reciprocal value of the infant mortality rate. The average number of years of schooling was used as an indicator of *Education*⁸.

The index can be calculated using different weights. In this analysis (as with Mlachila et al., 2014), equal weights for each dimension, component, and sub-component were used, where in the first variant of calculating the Quality of Growth Index, the *Growth Fundamentals* included the four components listed (*Strength*, *Volatility*, *Sectoral Composition* and *Demand Composition*). In the second variant, we took into account only two components (*Sectoral Composition* and *Demand Composition*). The Dimension *Social Outcomes* is the same in both variants of the Index.

The Quality of Growth Index is calculated in two variants, because the strength and volatility can be treated as components of the quality of growth, but also as indicators of its quantity, whereby the qualitative side of growth is assessed on the basis of other indicators.

3 The Czech Republic, Poland, Hungary, Slovakia, Slovenia, Bulgaria, Romania, Latvia, Lithuania, Estonia and Croatia.

4 Serbia, Macedonia, BiH, Montenegro, and Albania.

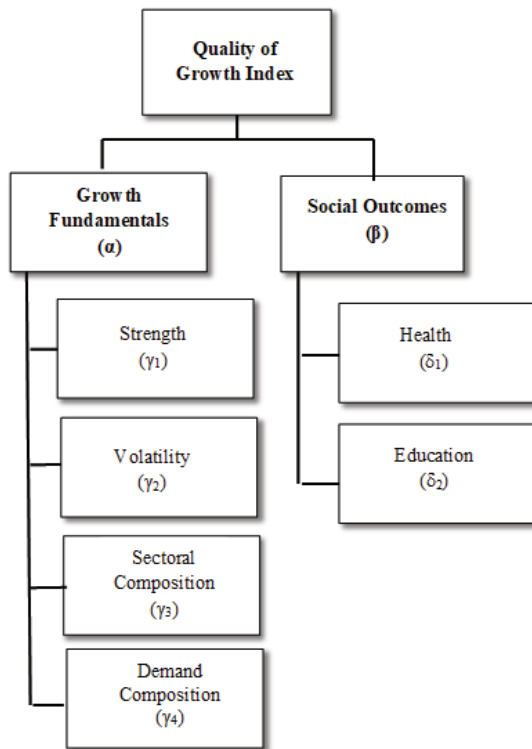
5 Mlachila, Tapsoba and Tapsoba (2014) described the process and calculated the Quality of Growth Index for more than 90 countries in the world. Considering the countries that are the subject of our analysis, the authors calculated the Index for only three countries: Poland, Bulgaria and Albania.

6 The data we have are for the period 2000-2016, but since one indicator (volatility of growth) is calculated as a three-year moving average (for a certain year, it is calculated as a quotient of average and standard deviation of the growth rate for that year, previous and the following year), the value of the Growth Index can be acquired for the time period 2001-2015.

7 See the previous footnote.

8 Mlachila, Tapsoba and Tapsoba (2014) used primary school graduation rate, considering the availability of data in the selected countries, with a note that a series of other relevant education indicators can be used as well - among others, average number of years of schooling (see pages 7 in the authors' paper), which we consider more adequate for the countries included in our research.

Figure 1. Quality of Growth Index Components



Source: Mlachila et al. (2014), p.6
 Note: $\alpha, \beta, \gamma_1, \gamma_2, \gamma_3, \gamma_4, \delta_1$ and δ_2 are the weights attributed to each dimension/component of the Quality of Growth Index.

In the first variant of the Quality of Growth Index, which we have labelled QGI:

- *Growth Fundamentals*, as shown in Figure 1, comprise of four components. The value of each component/indicator, reduced to scale 0-1 and weighted with 0.25, i.e. data is equal to each weight, $\gamma_1, \gamma_2, \gamma_3, \gamma_4$, from 25% with variable *Strength, Volatility, Sectoral Composition* and *Demand Composition*.
- *Social Outcomes* are composed of two components: *Health* and *Education*, whose values are calculated from the previous min-max form after calculation, ranging from 0 to 1. Equal weights are assigned to them (see Figure 1): $\delta_1 = \delta_2 = 50\%$. Since *Health* consists of two sub-components, their values (also in the range 0-1) are also weighted at 50%.

The formula for calculating QGI is the following:

$$QGI = 0,5 \cdot (0,25 \cdot \text{Strength} + 0,25 \cdot \text{Volatility} + 0,25 \cdot \text{Sectoral Composition} + 0,25 \cdot \text{Demand Composition}) + 0,5 \cdot (0,5 \cdot \text{Health} + 0,5 \cdot \text{Education})$$

In addition, we have calculated a somewhat changed (modified) Quality of Growth Index, QGI_m:

- *Growth Fundamentals* comprise of two components: *Sectoral Composition* and *Demand Composition*. The value of each stated indicator reduced to the scale

0-1, by which we assign ponders 0.5 (i.e. in Figure 1 $\gamma_1 = \gamma_2 = 0$, while $\gamma_3 = \gamma_4 = 0,5$).

- *Social Outcomes* remain unchanged compared to QGI, i.e. they are comprised of two components, *Health* and *Education*, reduced to values between 0 and 1, with ponders $\delta_1 = \delta_2 = 50$, as well as equal ponders (50%) of the sub-components within *Health* component.

Therefore, after excluding the impact of the growth rate and growth volatility on the value of the Index, we calculate the modified QGI (QGI_m) as follows:

$$QGI = 0,5 \cdot (0,5 \cdot \text{Sectoral Composition} + 0,5 \cdot \text{Demand Composition}) + 0,5 \cdot (0,5 \cdot \text{Health} + 0,5 \cdot \text{Education})$$

The Main Results

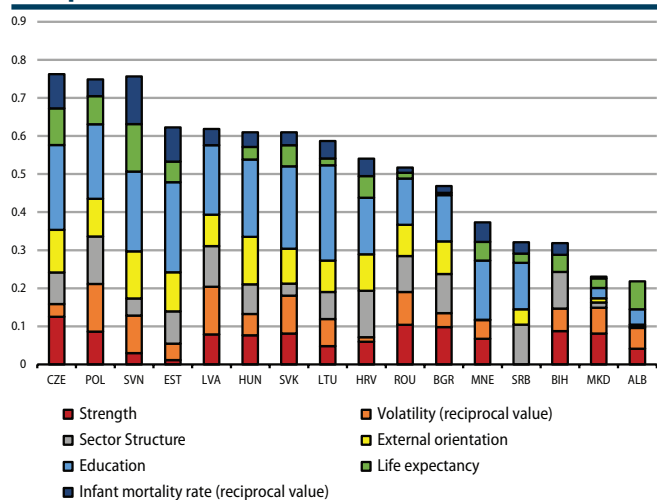
The QGI values for the observed European countries are shown in Chart 1, in descending order in 2015. The observed rank of countries according to QGI is similar to that based on per capita income, which suggests that this index is significantly correlated with the level of income of countries in the sample.

In addition to the height of the columns - QGI values - Chart 1 also shows the contribution of each component to the formed value of the Index. Czech R. occupies the first position in the sample, with an index of 0.76. The second and third positions are occupied by Poland and Slovenia, with QGI values of 0.75 and 0.63, respectively. According to QGI, Serbia is ranked 13th out of 16 countries surveyed. The value of QGI in Serbia is 0.32 in 2015, and is better ranked than Bosnia and Herzegovina, Macedonia and Albania. The lowest value of QGI of 0.22 in the observed year was recorded in Albania.

If we look at the value of the components that constitute the QGI - or to be more precise, the weighted values of each indicator previously reduced to a scale of 0 to 1 - one can see the relative advantage / backlog of each country in relation to others according to each indicator in 2015. In the case of the Czech Republic, the importance of all components in the formation of the QGI value is quite visible (with the biggest contribution of education), except that, compared to other countries, a somewhat more pronounced growth volatility was recorded. According to the presented QGI components, Serbia, in relative terms, has a satisfactory level in the case of diversification of exports, followed by education. The lowest values were recorded in two components: growth rates in 2015 and growth volatility in the period 2014-2016. With these two indicators, Serbia had the worst result (it had reached the lowest values) compared to other countries and they amounted to 0 and gave zero contribution to QGI. The value of Albania's QGI com-

ponents is low - with more pronounced contribution of growth stability and life expectancy (Chart 1).

Chart 1. Values of QGI and Its Components in Selected European Countries

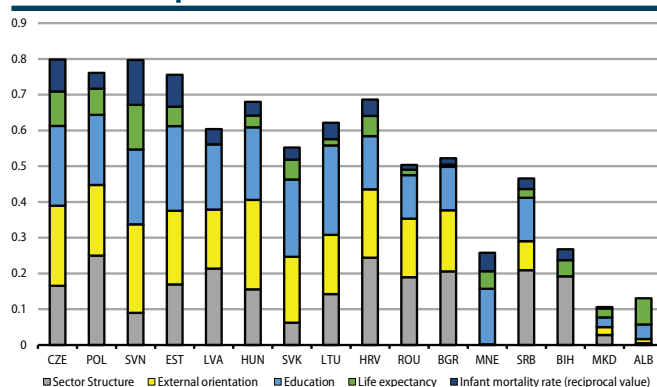


Source: Authors' own calculation and presentation using the data of the World Bank, UNDP and UNCTAD

Note: CZE – The Czech Republic, POL - Poland, SVN - Slovenia, EST - Estonia, LVA - Latvia, HUN - Hungary, SVK - Slovakia, LTU - Lithuania, HRV - Croatia, ROU - Romania, BGR - Bulgaria, MNE - Montenegro, SRB - Serbia, BIH - Bosnia and Herzegovina, MKD – Macedonia, and ALB - Albania.

The results of QGI_m for 2015 - its values, as well as the contribution of each individual component, are shown in Chart 2. It can be noted that the ranking of countries is to a certain extent altered. In the first place, the Czech Republic, whose QGI_m value is 0.798, is followed by Slovenia, which occupies the second position with QGI_m 0.797. The third place is Poland, whose QGI_m is 0.761. With QGI_m of 0.466 Serbia is ranked as 12 out of 16 countries surveyed. Therefore, according to this calculated index, Serbia is ranked better than according

Chart 2. Values of Modified QGI and it components in selected European Countries



Source: Authors' own calculation and presentation using the data of the World Bank and UNCTAD

Note: CZE – The Czech Republic, POL - Poland, SVN - Slovenia, EST - Estonia, LVA - Latvia, HUN - Hungary, SVK - Slovakia, LTU - Lithuania, HRV - Croatia, ROU - Romania, BGR - Bulgaria, MNE - Montenegro, SRB - Serbia, BIH - Bosnia and Herzegovina, MKD – Macedonia, and ALB - Albania.

to the QGI and is located in front of all the other countries of the Western Balkans. In the last position among the countries observed, now is Macedonia, with QGI_m 0.106. The contribution of each individual indicator that enters the calculation of QGI_m is also seen in Chart 2.

Chart 3 and Chart 4 show the levels of QGI and QGI_m, respectively from 2001 to 2015. We reiterate that these are relative levels, since the value of the Index is weighted by the sum of the values of the components expressed in relation to the values of those components of other countries in the sample for each year. For both indices, data for QGI and QGI_m for Serbia in each observed year are given, as well as the average values of these indices for 11 EU countries and 3 WB countries⁹.

The data on both charts indicate that the average value, whether QGI or QGI_m, for 11 EU countries is relatively the highest throughout the time interval. Serbia has a relatively lower value of the quality index in each year in comparison with the average value of 11 EU countries. On the other hand, the value of the Serbian index is above the average level of the index for the three WB countries.

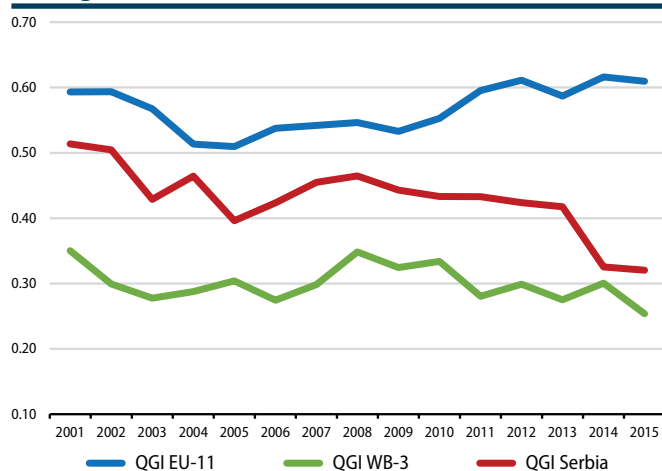
Growth rate and growth volatility are important components of QGI. They together determine one-fourth of QGI values. This leads to an obvious difference in the relative level of the index, as well as the level changes shown in Chart 3 and Chart 4, depending on whether the index contains these two components or not.

Chart 3 shows that the very low growth rate in Serbia (the lowest among the observed countries) and the very high (relatively most pronounced) growth volatility had a dominant contribution to the relative decrease in the QGI level in Serbia compared to the QGI of the two groups of countries in 2014 and 2015. In fact, in Serbia in 2014 and 2015, adverse weather conditions - floods in 2014 and drought in 2015 - reflected on economic growth. Therefore, in the past two years, the relative decrease in the level of QGI of Serbia can be estimated as a result of extreme factors and can therefore be considered as temporary. However, one should bear in mind that one can expect the same relative position of Serbia towards the QGI in 2016 and 2017, keeping in mind also the adverse weather conditions in these two years and the relatively low growth rate in comparison with the countries of Central and Eastern Europe. The poor performance of Serbia in relation to other countries in the sample can be partly attributed to the fundamental weaknesses of the domestic economy, removal of which

⁹ Values for QGI and QGI_m are calculated without Montenegro, as there is no data for each year of the displayed time interval: 2001-2015.

would lead to an improvement in the quality of Serbia's growth in the future period.

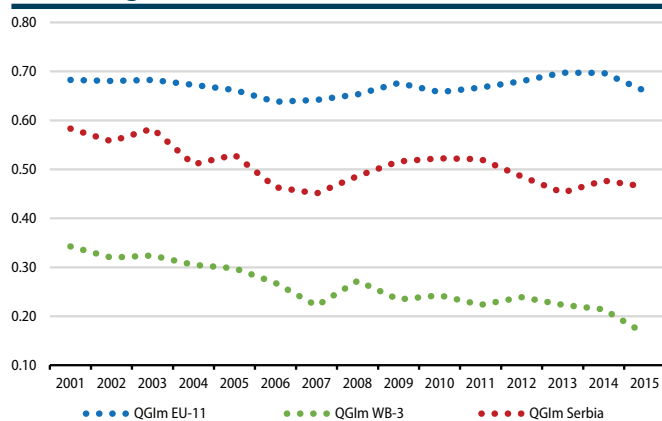
Chart 3. Level of Serbia's QGI compared to EU and WB averages, 2001-2015



Source: Authors' own calculation and presentation using the data of the World Bank, UNDP and UNCTAD

Note: EU-11 – average value of QGI of 11 observed EU member states, WB-3 – average value of QGI of B&H, Albania and Macedonia.

Chart 4. Level of Serbia's QGI_m compared to EU and WB averages, 2001-2015



Source: Authors' own calculation and presentation using the data of the World Bank, UNDP and UNCTAD

Note: EU-11 – average value of QGI_m of 11 observed EU member states, WB-3 – average value of QGI of B&H, Albania and Macedonia

Conclusion

Empirical research in this paper was carried out with the idea of creating indicators for measuring the Quality of Economic Growth, monitoring changes in the quality of growth and its components, as well as the comparison of countries with the quality of growth and its dynamics. The paper evaluates two variants of the Quality of Growth Index (QGI and QGI_m) for European transitional countries during the period 2001-2015. Their values indicate that the transition countries that are members of the EU have a relatively higher level of quality of economic growth than the countries of the

Western Balkans. In addition, both indicators indicate that the quality of growth in Serbia is below the level of quality of EU member states' growth, and above the level of non-EU member countries.

In the past few years, Serbia's economy has achieved relatively lower economic growth compared to other transition countries in Europe, primarily due to unfavourable weather conditions. However, in the domestic economy there are certain fundamental weaknesses, removal of which would lead to higher and more stable growth rates, as well as to better development performances. This would mean improving the quality of Serbia's growth, i.e. permanent improvement of prosperity both from the economic and from the social point of view.

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