DOES THE GLOBAL COMPETITIVENESS INDEX DEMONSTRATE THE RESILIENCE OF COUNTRIES TO ECONOMIC CRISES?

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Abstract. *The concept of a country's competitiveness still does not have a clear and straightforward meaning and remains ambiguous. Different economists stress various aspects of the concept and use a number of different methods to evaluate how competitive a country is. This paper focuses on the Global Competitiveness Index, which is calculated by the World Economic Forum and is one of the most well-known measures of competitiveness. The World Economic Forum (2015) defines the competitiveness of a country as a "set of institutions, policies and factors that determine the level of productivity of a country" and argues that productivity "is the main long-run engine for growth, living standards and prosperity". The definition suggests that a higher competitiveness ranking shows higher productivity of the country's economy, which should lead to higher and more sustainable economic growth. In addition, economic growth leads to higher living standards and prosperity of the country's citizens. In the light of the definition, the paper forms the hypothesis that if a country is ranked to be more competitive (i.e., its Global Competitiveness Index is higher), it should have greater resilience to an economic crisis than less competitive countries. In other words, more competitive countries should have higher and more sustainable economic growth rates than the less competitive countries. In order to check this hypothesis, the paper uses the graphical analysis method and examines the relationship between the Global Competitiveness Index and the economic growth of countries during the period of 2006-2015. The research findings show that there is a weak or no relationship between the Global Competitiveness Index and the GDP growth of countries; however, it is a negative relationship between the Global Competitiveness Index and the standard deviation of the country's GDP growth. The results argue that the Global Competitiveness Index is not capable of forecasting the future GDP growth rates of a country; however, the Global Competitiveness Index indicates if the country avoids sharp fluctuations in its GDP growth rates and maintains sustainable economic growth throughout the period.*

Keywords: *Competitiveness, country's competitiveness, Global Competitiveness Index, economic crises.*

I. Introduction

The concept of competitiveness differs according to the level of analysis: firm, industry or country. One can judge about a firm's competitiveness by its profitability, market share or share prices. An industry's competitiveness is analysed by its share of GDP or export ratios. However, the meaning of a country's competitiveness is still under discussion and different economists may have different notions about the concept.

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Classical and neo-classical economists understood the competitiveness of a country to simply be its exporting power: the power to gain from international trade by exporting cheap and low-cost goods. For them the concept of a country's competitiveness was rather obvious: defined as the ability to export any kind of goods. After the introduction of M. E. Porter's "diamond" model, which offered a multi-variable approach to competitiveness, the notion of a country's competitiveness began to be understood as a complex concept with many variables, depending not only on the exports but also on the overall economic success of a country (Porter, 1992). Such elaboration of the notion of competitiveness allowed to move from associating it with exclusively export success to a broader concept, such as a *"country's ability to provide an environment that enables companies to improve and innovate faster than foreign rivals"* (Cornelius, 2002). According to P. Aghion and P. Howitt, the economic conditions of a country are the key factor determining the level of firm competition, its influence on competitiveness and the efficiency of the legal environment (Aghion et al, 2005). Other economists broadened the concept even more, arguing that the internal prosperity of a country is integral to its competitiveness. J. Fagerberg (1988) states that a competitive country is the one that ensures a high level of social welfare for its citizens.

However, the concept of country's competitiveness still remains a "*dangerous obsession*" (Krugman, 1994). P. Krugman (1994) noted that although the concept of a country's competitiveness remains undefined, it is widely used and evaluations of various measures of competitiveness are often made. According to P. Krugman (1994), the concept of competitiveness is "*elusive*" and the competitiveness of a country cannot be compared to a firm's competitiveness, since "if *a corporation is uncompetitive, <...> unless it improves its performance, it will cease to exist. Countries, on the other hand, do not go out of business. They may be happy or unhappy with their economic performance, but they do not have a well-defined bottom line*".

Economists choose different angles to define and to analyse the competitiveness of a country. Some of them (e.g., P. Krugman) argue that a country's competitiveness depends on its productivity level. Others (e.g., B. Balassa) argue that country's ability to export successfully shows its competitiveness. The third ones (e.g., World Economic Forum, World Competitiveness Centre, etc.) calculate complex indexes, including a number of aspects pertaining to the country's economic, cultural, technological and other performances. However, competitiveness is not fully described by any of these concepts and yet is closely related to all of them. Competitiveness is not to be understood in the same manner as productivity, because productivity measures just how efficiently domestic input is used to produce a given level of output and competitiveness is closely related to competing between the countries. Competitiveness cannot be fully described by the country's export abilities either, because various export measures taken alone do not show either sustainability of the country's economy or the standards of living of its citizens. C. Gaglio (2015) argues that productivity is important in making internal com-

panies and industries efficient and competitive in the foreign markets by the reallocation of resources to the most productive products and companies. On the other hand, exports "*are a link between a country's external and internal performance*" (Gaglio, 2015), because exports show the ability of domestic companies, which use their given domestic input to export to foreign markets.

Such complexity of the concept determines that the competitiveness of countries is often measured by calculating various complex indexes (the World Economic Forum calculates the Global Competitiveness Index, the World Competitiveness Centre calculates the IMD index, the Centre for International Competitiveness calculates the World Knowledge Competitiveness Index, etc.). Although economists (e.g., Xia, Liang, Zhand, Wu (2012)) criticize complex indexes of competitiveness for the lack of their theoretical and methodological foundation, they seem to combine various points of view, thoroughly analyse countries' performance and provide a complex approach to its' competitiveness.

This paper will analyse one of the most well-known complex indexes of countries' competitiveness – the Global Competitiveness Index. The author aims to evaluate if this index truly represents what it aspires to, i. e., does it really show a country's competitiveness as it is defined by the World Economic Forum, and if it could be used to forecast a country's resilience to economic cycles.

The results of the analysis imply that the Global Competitiveness Index' is not suitable for the forecasting of a country's economic growth, but it does show if the country avoids sharp fluctuations in its GDP growth rates and is able to maintain sustainable economic growth throughout the period.

II. Global Competitiveness Index

The Global Competitiveness Index (GCI), calculated by the World Economic Forum (WEF), is one of the most well-known competitiveness measures. GCI began to be calculated in 2006 and replaced its previous version, known as the Growth Competitiveness Index.

The World Economic Forum defines a country's competitiveness as a "*set of institutions, policies and factors that determine the level of productivity of a country, which in turn sets the level of prosperity that the country can earn*" (Schwab, 2015). WEF economists argue that the growth of total factor productivity allows countries to use their resources more efficiently and is the main driver for prosperity, because "*the productivity level also determines the rates of return obtained by investments in an economy, which in turn are the fundamental drivers of its growth rates*" (Schwab, 2015). The theoretical basis of the Global Competitiveness Index is the idea of social competitiveness, because GCI's theory is based on the understanding that the main driver of competitiveness is economic prosperity of the country and its citizens, i.e., a country's competitiveness

depends not only on the exports, but also on the economic conditions inside the country.

The Global Competitiveness Index is measured in accordance with the theory of countries' development stages (Porter *et al*, 2001). GCI consists of 12 pillars of competitiveness, which are grouped in 3 groups:

1. ***Basic requirements*** are the most important for countries that are in the stage of factor-driven growth (the first stage of development, common in low-income countries. Their competitiveness depends on cheap labour force and natural resources). These factors are effective institutions, good infrastructure, a stable macroeconomic environment, quality of health and primary education.

2. ***Efficiency enhancers*** are the most important for countries that are in the stage of investment-driven growth (the second stage of development common in medium-income countries. Their competitiveness depends on infrastructure, foreign direct investment and modern technologies). The factors are higher education and training, efficient goods and labor markets, developed financial markets, technological readiness and market size.

3. ***Innovation and sophistication*** are the most important for countries that are in the stage of innovation-driven growth (the third stage of development common in high-income countries. Their competitiveness depends on R&D and a highly educated labor-force). These factors are business sophistication and innovation.

Based on the development stages theory, the calculation of GCI slightly differs for countries depending on their stage of development. For the countries that currently are in the first stage of development (factor-driven), the lion's share of GCI (60 %) is made of basic requirements, 35 % of GCI is made of efficiency enhancers, leaving only 5 % for innovation and sophistication. For the countries that are in the second stage of development (investment-driven), WEF takes efficiency enhancers as the most important factors for growth (50 %), then basic requirements (40 %) and, finally, innovation and sophistication (10 %). Last, for the countries that are in the highest stage of development (innovation-driven), efficiency enhancers still make up 50 % of GCI; however, innovation and sophistication consist of 30 %, leaving only 20 % for basic requirements. For the countries that currently are in any of the transition stages, these shares are modified according to their actual development level: e. g., Lithuania is now considered to be under transition from the second to the third stage of development, hence, Lithuania's GCI is calculated taking 50 % of efficiency enhancers, 28,5 % of innovation and sophistication and 21,5 % of basic requirements.

One of the points of critique for the GCI's predecessor, the Growth Competitiveness Index, was that the countries were divided in only 2 groups: innovative and non-innovative countries (among the latter were the ones that had less than 15 patents for 1 million of its citizens last year). The Global Competitiveness Index solved the problem

by increasing the number of country groups from 2 to 5. Hence, the countries' level of competitiveness can be evaluated more precisely by measuring their current level of development. However, this change does not solve all the problems of the method. On the one hand, different ways to calculate GCI for the countries that are in different stages of development allows to avoid punishing any country for investing in the factors that are needed in its' particular development stage. On the other hand, this method makes the Global Competitiveness Indexes different for different countries. Hence, it is questionable if indexes that are calculated in 5 different ways could be compared among each other.

GCI includes 2 types of data: statistical (from IMF, UN and other international agencies) and survey (made annually by WEF itself in order to capture respondents' opinions about their country and to fill the gaps in statistical data). Using not only statistical, but also survey data is widely criticized by the economists (Zinnes *et al*, 2001), who believe that opinions are subjective and depend upon the cultures and attitudes of the countries. Hence, survey data is not a good basis for comparing countries and judging which country is more or less competitive. However, WEF economists believe that survey data is essential to get qualitative assessment (e. g., the government's position, success of the countries' economic policy, common business practice, level of competition, expectations, etc.) or data that is not easily evaluated or comparable.

III. The Method of the Analysis

The World Economic Forum (2015) defines a country's competitiveness as a "*set of institutions, policies and factors that determine the level of productivity of a country*" and argues that productivity "*is the main long-run engine for growth, living standards and prosperity*" (Schwab, 2015). The definition suggests that a higher competitiveness ranking shows higher productivity of the country's economy, which in turn should lead to higher and more sustainable economic growth. In addition, economic growth leads to higher living standards and prosperity of the country's citizens. According to the economists of the World Economic Forum (WEF), "*a more competitive economy is the one that is more likely to grow faster over time*" (Schwab, 2015), i. e., higher competitiveness index values should show a country's ability to grow faster than those countries with lower competitiveness index rates.

In the light of the definition, the paper offers the hypothesis that if a country is ranked to be more competitive (i. e., its Global Competitiveness Index is higher), it should have greater resilience to economic crisis compared to less competitive countries. In other words, more competitive countries should have higher and more sustainable economic growth rates than the less competitive countries.

In order to check this hypothesis we shall use the graphical analysis method and examine the relationship between the Global Competitiveness Index and the economic growth of examined countries during the period of 2006-2015.

The following data was used in the research:

1. GCI data for the period 2005-2015 taken from the World Economic Forum dataset (World Economic Forum, 2015).

2. GDP growth data for the period of 2005-2015 represented by the annual percentage growth rate of GDP at market prices based on constant local currency. The source of this data were the World Bank national accounts and OECD national accounts (World Bank, 2015).

The research focusses on the EU-27 countries plus Norway, Switzerland, Iceland, the United States and the Russian Federation.

The aim of this research is to check if the Global Competitiveness Index is capable of forecasting the resilience of countries to economic shocks. Therefore, countries' GDP growth rates during the time of the crisis (2008 – 2012) or during the post crisis period (2013–2015) are compared to the Global Competitiveness Index values of previous periods.

IV. Global Competitiveness Index and Countries' GDP Growth

This section uses the graphical analysis method to examine the relationship between the Global Competitiveness Index values of countries and their GDP growth rates. According to the WEF definition, countries that are more competitive should produce faster GDP growth rates over time. Therefore, we will check if higher GCI scores are able to forecast higher future GDP growth rates or higher average GDP growth rates. WEF economists assume that economies that are more competitive should "*grow faster over time*". However, they do not specify the period of forecasting. In order to have the longest possible period, we will take the earliest possible GCI score (of the year 2006) and compare it with GDP growth rates of different years of crisis. We could expect a positive relationship between a country's GCI score and its' GDP growth rates, which would demonstrate that more competitive countries are bound to achieve faster economic growth.

Figure No. 1 shows that the GDP growth rates for 2008-2011 seem to depend slightly positively on the GCI score for 2006. However, very low R^2 values imply that the specification of the model is not correct, i. e., the dependency of a country's GDP growth on its' GCI score is doubtful. The strongest relationship seems to be between the GCI score for 2006 and the GDP growth rate for 2008, but it is *negative*, showing that the more competitive a country is, the lower the GDP growth rate this country could expect in the period of 2 years.

Analogous results were received by analysing the relationship between other GCI scores and GDP growth rates for the forthcoming years.
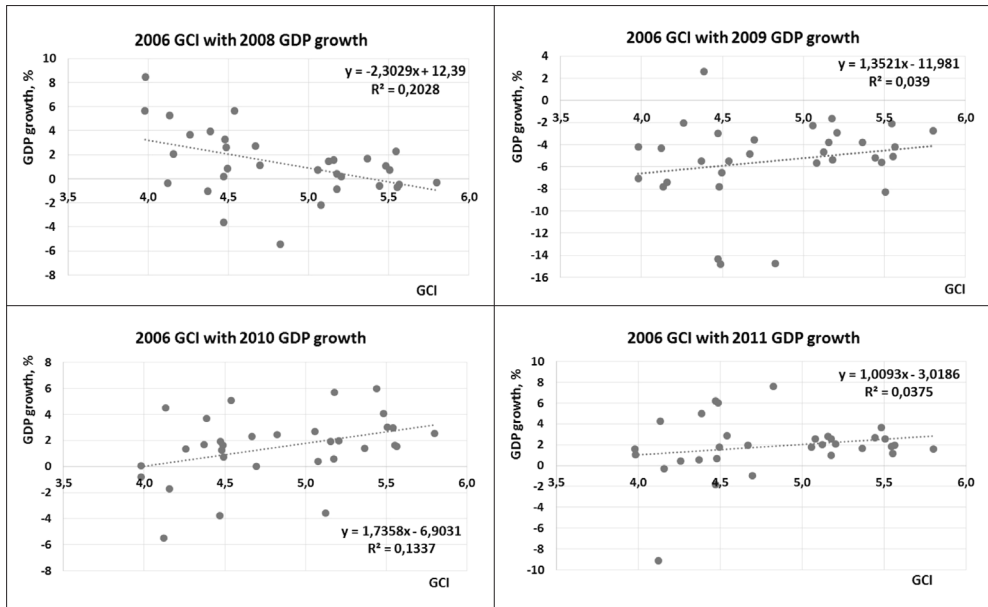
FIG. NO. 1. **Relationship between the GCI score for 2006 and the GDP growth rates
for years 2008–2011**

Although we could not find any significant relationship between the GCI score and GDP growth, there might be a relationship between the GCI score and the average GDP growth. However, Figure No. 2 shows that there is no significant relationship between the GCI for 2006 and the average GDP growth during the crises years (2008-2012) as well as the relationship between the GCI for 2012 and the average GDP growth during the post-crises period (2013-2015). Analogous results were received comparing the GCI values for 2006 and the average GDP growth for the whole period 2006-2015.
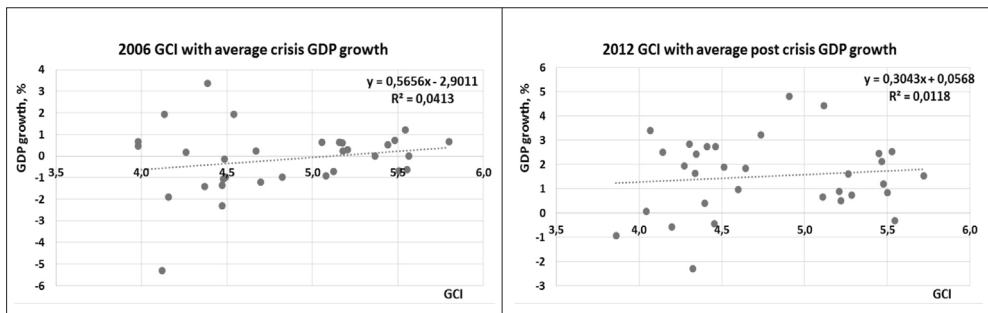

FIG. NO. 2. **Relationship between the GCI score and GDP growth rates for crisis and
post-crisis years**

Overall, this analysis shows that there is weak or no relationship between a country's GCI and its' GDP growth; hence, there is no evidence that GCI could forecast a countries' GDP growth in the medium term and its' resilience to an economic crisis.

V. Global Competitiveness Index and Standard Deviation of Countries' GDP Growth

The analysis in the previous section allows us to reject the hypothesis that the countries that have higher GCI index values will grow faster in the medium term. However, we can judge about a country's economic performance not only by country's GDP growth rates as such, but also by the *sustainability* of a country's GDP growth rates. In other words, a more competitive country should be the one that grows steadily and avoids sharp fluctuations in its' GDP growth rates, i. e., its regular GDP growth may be not very high, but it should not decrease severely in the years of economic crises.

Therefore, this section offers the hypothesis that the more competitive countries can maintain the sustainability of their GDP growth rates even in the years of economic downturn.

In order to check this hypothesis, we will use the graphical analysis method to find out if there is any relationship between GCI values for 2006 and the standard deviation of countries' GDP growth. Standard deviation of GDP growth was calculated taking GDP growth data for the period of 2006-2015.

Figure No. 3 shows that there is a negative relationship between the GCI values of countries for 2006 and the standard deviation of GDP growth. In other words, the more competitive country is, the steadier does its GDP grow year by year. This result validates the hypothesis that

FIG. NO. 3. **Relationship between the GCI score for 2006 and the standard deviation of GDP growth rates**

countries that are more competitive avoid sharp fluctuations in their GDP growth rates and are more resistant to economic crises.

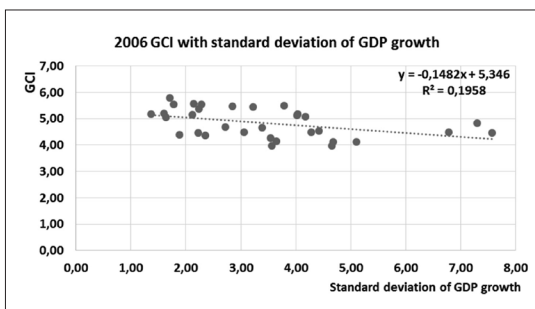## VI. Conclusion

The aim of this research was to analyse if the Global Competitiveness Index values could serve as an indicator of the country's future economic growth and its resilience to economic crisis. The results of the research imply weak or no relationship between the GCI values of countries and their GDP growth rates, as well as between GCI values and

average GDP growth for any period. However, there is negative relationship between the GCI values of countries and the standard deviation of their GDP growth. The findings suggest that although GCI is not able to predict a country's future GDP growth rates, higher GCI values indicate that those economies will grow steadier and will experience gentler fluctuations than the economies with lower GCI scores. Hence, the GCI as a measure of countries' competitiveness does demonstrate the resilience of countries to economic crises: a more competitive country is also more resistant to economic downturns.

The findings of this analysis can serve as a background for future research of one-index-based measures of a country's competitiveness. The graphical analysis method used in the paper allows us to check the relationship only between the GCI score of one period and the GDP growth rate of another period. It is expected that more robust results could be obtained by constructing an econometric model which enables us to check the relationship between GDP growth and GCI values for more than a single period.

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