IS THERE ANY RELIABLE COMPASS FOR TRACKING EU MEMBER STATES COMPETITIVENESS?

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Abstract: *Competiveness has a variety of definitions that lead to different indicators, each with its own particular application. Moreover, for any single concept of competitiveness, several measures may be constructed, depending on further specific assumptions. No single measure, or limited set of measures can provide all the information required to assess and manage an economy. In this paper we decided to construct two composite indices to assess two dimensions of competitiveness: one called simply economic robustness and the second one called price competitiveness. Almost all the time the decisions we make depend on what me measure, how we do our measurements and how we interpret them. To construct the composite indices we applied an exploratory factor analysis which is based on the idea that strongly correlated indicators refer to the same underlying (latent) dimension. Thus, a data set consisting of many indicators can be reduced into a single or a small number of composite variables (the so-called factor scores), each reflecting a significant part of the total variance. The indicators included in our analysis are: GDP per capita, domestic demand, private consumption, governmental consumption, gross fixed capital formation, harmonized index of consumer prices (HICP), Labor Cost Index (LCI), Industrial Production Index (IPI), export of goods and services, import of goods and services, real effective exchange rate (UCL based) and population and the data were collected for all EU Member States in the year 2010, as they are considered to track wealth and economic growth, indicate economic robustness and correlate with countries competitiveness. After constructing the composite indices, we tested their robustness throughout a pooled OLS (Ordinary Least Squares) regression on the GDP per capita, as the dependent variable. The outcomes proved to be significant and having the expected signs. The conclusions highlight that among countries that were characterized by high economic robustness in 2010 are Germany, Spain, France, Italy, Netherlands and United Kingdom, while among the countries that performed poorly we can mention Malta, Estonia, Bulgaria and Romania.*

Keywords: factor analysis; price competitiveness index; economic robustness index; EU 27
JEL *Classifications*: F41, F15,

1. Introduction

The term “international competitiveness” has been associated over time with different definitions and senses, being at the moment one of the most controversial topics. Although some economists argue that competitiveness is generated at the microeconomic level, the level at which it is sustained and reinforced is the macroeconomic level, although, at the macro-economic level, the concept of competitiveness is much more poorly defined and more strongly contested. The lack of a commonly accepted definition is by far one of the most important source of opposition to the concept of macro-economic competitiveness or international competitiveness.

In an increasingly globalizing world, most countries are integrated into the world economy, voluntarily or by force. International competitiveness has to be in this context both reflected by internal and external performances. We cannot say that a country is competitive if its living standards are low although its cheap products are sold worldwide; and also it is not common for a country to enjoy a high living standard if it doesn't have any internationally competitive products, firms or industries. There are a variety of definitions of competiveness that lead to different indicators, each with its own particular application. Moreover, for any single concept of competitiveness, several measures may be constructed, depending on further specific assumptions. No single measure, or limited set of measures, can provide all the information required to assess and manage an economy. These measures range from indicators of economic performance, single-factor indicators based on price or cost development, to composite indices reflecting economic, structural and institutional factors.

The problem of national competitiveness is extremely important in the context of countries accession to the Economic and Monetary Union, as future member states must integrate into a competitive economic area. Thus, in this paper we decided to construct two composite indices to assess two dimensions of competitiveness: one called simply economic robustness and the second one called price competitiveness. To construct these indices we applied an exploratory factor analysis which is based on the idea that strongly correlated indicators refer to the same underlying (latent) dimension, so that a data set consisting of many indicators can be reduced into a single or a small number of composite variables (the so-called factor scores), each reflecting a significant part of the total variance. We considered 12 significant variables: GDP *per capita*, domestic demand, private consumption, governmental consumption, gross fixed capital formation, harmonized index of consumer prices (HICP), Labor Cost Index (LCI), Industrial Production Index (IPI), export of goods and services, import of goods and services, real effective exchange rate (UCL based) and population and we collected our data for all EU Member States in the year 2010. After constructing the composites, we tested their robustness by regressing them on the GDP *per capita,* as the dependent variable. The outcomes proved to be significant with the expected signs.

The plan of the paper is as follows: the following section reviews the empirical literature in the field of international competitiveness; section 3 presents the construction of the two composite indicators developed in this study based on the considered variables; section 4 presents the methodology chosen for our data and section 5 reports the data and main findings. The outcomes are highlighted in the last section of the paper.

2. Related literature

Many economists seem to think that like trade performance, living standard alone does not give a complete answer to the competitiveness question hence they combine issues of external balance and domestic performance *(Aiginger, 1998)*, which *Fagerberg et al. (2007)* calls the "double meaning" of national competitiveness, i.e. trade performance and economic well-being of citizens. In this sense, many studies developed different methodologies in order to measure the many dimensions of competitiveness or to capture the overall effect of the international competitiveness. Even though some institutions have taken a broad view with an emphasis on the overall competitiveness and others have focused on

the competitiveness of the external sector, the most commonly used research methods in this field are still quantitative, many researchers choosing the indexing and classification method. The same methodology is applied by the two well-known institutions *WEF (World Economic Forum)* and *IMD (International Institute for Management Development)* which are first building an index of national competitiveness (by compiling individual sub-indicators into a single composite indicator), then calculate each country's score based on the indicator and classify the countries based on the scores obtained. There are also several institutions that monitor countries competitiveness using both macro and micro-based competitiveness indicators. The EC publishes annually the "*European Competitiveness Report" (2012)* which analyzes recent developments of overall competitiveness performance of the European Union (EU) and the impact of economic reforms on productivity. The Organization for Economic Cooperation and Development (OECD) also studies the impact of policies on labor productivity in member countries in its annual publication entitled "*Going for Growth" (2011)*. The IMF regularly reviews competitiveness developments as part of its Article IV surveillance exercise of member countries, while the World Bank has developed also international rankings of countries using competitiveness indicators which have a microeconomic focus.

In the paper called *"How much did competitiveness of the Greek economy decline since EMU entry?" (Malliaropulos, 2010)* the author construct sectorial indices of price and wage competitiveness and combine them into two aggregate indices of Real Effective Exchange Rates (REERs) in order to assess Greek's competitiveness in terms of relative prices and unit labor costs. Although manufacturing and international trade in goods have traditionally represented a basis for the calculation of exchange rate indices or national price competitiveness indicators, this approach is however too narrow to measure macroeconomic competitiveness of a country – especially in developed economies where the service sector has a growing trend *(Magerl and Mooslechner, 2006).* Until recently, there was a lack of reliable indicators that could be used to put numbers on the so-called many dimensions of competitiveness, emphasized by the theoretical literature. But in recent years, the availability and quality of different aspects of development improved significantly, giving researchers new opportunities to investigate the differences in economic performance among countries, by integrating large amounts of information into easily understandable formats, like for example, composite indicators (*Freudenberg, 2003)*. As Joseph Schumpeter (*Schumpeter, 1943*) already stated, price or cost competitiveness are left behind by other measures of competitiveness, like new comodity, new technology, new sources of supply and new type of organization. *Fagerberg (2007)* also constructed two composite indices to assess technological competitiveness and the capacity of countries to exploit such competitiveness. He based his composites on several reliable indicators and applied a confirmatory factor analysis in order to give weights to the variables in the composite. Further, he tested their robustness using cross-sectional data for a large number of countries, and the reported results were arguably consistent with other lessons from the literature. In the paper *"Measuring External Competitiveness: An Overview" (Leichter et al., 2010)* the authors are assessing Italy's external competitiveness, using a large number of indicators and comparing Italy's competitive position among the major OECD countries in 2006 (pre-crisis) and 2008 throughout a Principal Components Analysis (PCA), a methodology to synthesize much of the information contained in a number

of observed variables in terms of a smaller number of unobserved variables. Although preliminary, their results showed that the variation in Italy's competitiveness was left relatively unchanged by the crisis.

3. Methodology

Almost all the time the decisions we make depend on what me measure, how we do our measurements and how we interpret them. The indicators considered in this section are: GDP *per capita*, domestic demand, private consumption, governmental consumption, gross fixed capital formation, harmonized index of consumer prices (HICP), Labor Cost Index (LCI), Industrial Production Index (IPI), export of goods and services, import of goods and services, real effective exchange rate (UCL based) and population and were collected for all EU Member States in the year 2010. These indicators serve several purposes but first of all they are considered to track wealth and economic growth, indicate economic robustness and correlate with countries competitiveness.

GDP, as a key concept of macroeconomics, reflects the market value of all goods and services intended for final consumption, produced in all branches of the economy in a country in one year. It can serve as a measure of well-being of a country and also provide a good first approximation for international and temporal comparisons. It is well known the fact that, domestic demand, as a component of GDP can influence economic growth by stimulating economic activities and can generate jobs and increase production capacity. Because GDP combines the sum of all activities that can be assess in money and not their usefulness (or even their destruction) means that GDP is not a complex tool for measuring well-being and quality of life, which is why we have introduced in the analysis the two components of consumption. Another adequate indicator used in the present analysis is gross fixed capital formation, giving a measure on the expenditure on capital goods (durable goods) purchased by the productive units to be used for at least one year in the production process, as well as the value of homes purchased (or built) by population. Harmonized Index of Consumer Prices (HICP), as a weighted average of price indices of member states who have adopted the euro serves at maintaining price stability in the Euro Area and is also used to assess the convergence criteria on inflation that countries must fulfill in order to adopt the Euro. The Labor Cost Index (LCI) measures the cost pressure arising from the production factor "labor", while the Producer Price Index (PPI) measures the average change over time in the selling prices received by domestic producers for their output. Total exports gives information about the foreign demand for goods/services produced by the country in question, while total imports reflect how strong the domestic demand is. Increase or decrease of a currency in relation to another currency reflects the confidence of international economic entities in that country's economy (among other factors) as well as the degree of competitiveness of its exported products (a low exchange rate indicates a low price of the products and thus a competitive advantage). Real Effective Exchange Rate (REER) aims to assess a country's price or cost competitiveness relative to its principal competitors in international markets. Its importance stems from the fact that it can be used as an indicator for international trade competitiveness of countries. Because of its important role played in an economy, the real exchange rate has been one of the most controversial issues both in theory and practice.