ABOUT COMPETITIVENESS IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT: THE CASE OF BULGARIA

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Abstract- In today's uncertain climate, competitiveness and sustainable development have become milestones of both advanced and emerging countries. Thus, the goal of this paper is to research the interconnection between the competitiveness and sustainable development factors for the emerging country Bulgaria, based on the existing literature and the most recent studies in this area. Using extensive data over a period of 10 years, this study explores and tests the sign of the relationship between national competitiveness and sustainable development indicators for the case of Bulgaria. The dataset includes the Global Competitiveness Index values and the sustainable development indicators for both countries and covers the period of 2004 – 2013. Our findings are the basis of developing new models describing the relationships between competitiveness, economic growth and sustainability, justified by the need of sustainable economy's development to increase the national competitiveness, in order to attract financial resources necessary for financing the growth of the economy and economic entities.

Keywords- Competitiveness, Sustainable Development, Indicators, Sustainable Competitiveness.

I. INTRODUCTION

In an increasingly open and integrated world economy, competitiveness has become a central preoccupation of both advanced and emerging countries [1].

Based on the most recent studies in this research field, the concept of competitiveness (at the national level) can be defined as the set of institutions, policies and factors that determine the level of productivity of a country [2]. Competitiveness generates challenges for the countries by creating financial and nonfinancial performance for companies, welfare for citizens and sustainable prosperity for the economy. In this regard, competitiveness has become a goal for economies in their flounder for achieving a high level of performance.

The European Commission has shown increasing interest in the issue of sustainable development, not only in the context of environmental policies but, more recently, in the context of all policy decisions, be they economic, social or environmental. In this sense, competitiveness represents a key issue in the context of knowledge based economy and considering the need to identify competitive factors that are the basis of European policies' design. This creates a need for research initiatives to develop the concept of competitiveness, with much of the research focusing on how sustainable development and competitiveness interact [3], [4].

Based on this approach, our research is focused on analyzing the relationship between the national competitiveness in Bulgaria (calculated as the global index of competitiveness developed by the World Economic Forum) and the most relevant indicators of sustainable development, taking into account previous national and international studies and their results, using econometric modeling on data during a period of 10 years (2004 -2013).

Our research starts with an analysis of the competitiveness and sustainable development theoretical concept tendencies, taking into the account the existing literature and the most recent studies, with a specific focus on competitiveness in the context of sustainable development (section 2). Section 3 presents the conceptual model and hypotheses; section 4 analyzes the current methodological approaches and their results and finally, in section 5 are presented the conclusions, which may contribute for further research.

II. LITERATURE REVIEW

In today's climate, competitiveness and sustainability have become catch words in the discourse on global prosperity and development strategies. Competitiveness from a firm's point of view is defined as the ability to produce the right goods and services of the right quality at the right price, at the right time, thus meeting customers' needs more efficiently and more effectively than other firms do [5]. National competitiveness refers to a country's ability to create, produce, distribute and service products in the international trade while earning rising returns on its resources [6]. International competitiveness is defined as "the ability to sustain, in a global economy, an acceptable growth in the real standard of living of the population with an acceptably fair distribution, while efficiently providing employment for substantially all who can and wish to work and doing so without reducing the growth potential in the standards of living of future generations"[7].

For the last quarter-century, the World Economic Forum has led in the evaluation of the nation's competitiveness its publication - The Global Competitiveness Report. The WEF uses three competitiveness indicators to analyze national competitiveness from both macro- and microeconomic perspectives. The Growth Competitiveness Index (GCI) [8] represents an evaluation based on critical, and mostly macroeconomic environmental, factors that influence sustained economic growth over the medium-to-long term. Business Competitiveness Index (BCI) developed by Porter investigates those company-specific factors that lead to improved efficiency and productivity indicators at the micro-level, and is complementary to the GCI. Recently, GloCI (2004) was developed, a synthesis of the GCI and BCI. This new index is designed to unify the two earlier measures, and, eventually, to replace them in The Global Competitiveness Report.

The measurement of GloCI is captured by including a weighted average of many different components, each measuring a different aspect of competitiveness. These components are grouped into 12 pillars of economic competitiveness. The GloCI takes into account the stages of development by attributing higher relative weights to those pillars that are more relevant for an economy given its particular stage of development. Although all 12 pillars matter to a certain extent for all countries, the relative importance of each one depends on a country's particular stage of development. To implement this concept, the pillars are organized into three subindexes, each critical to a particular stage of development. The basic requirements subindex groups those pillars most critical for countries in the factor-driven stage (institutions, infrastructure, macroeconomic environment, health and primary education). The efficiency enhancer's subindex includes those pillars critical for countries in the efficiency-driven stage (higher education and training, good market efficiency, labor market efficiency, financial market development, technological readiness). The innovation and sophistication factors subindex include the pillars critical to countries in the innovation-driven stage (market size, business sophistication, innovation).

In the context of population and consumption of natural resources growth, sustainable development is a development model aimed at a balance between economic growth, quality of life and environmental preservation in the medium and long term, without increasing consumption of natural resources beyond the capacity of the Earth. A distinctive feature of the European model of development is represented by the junction between the objective of increasing competitiveness and social and environmental objectives, which leads to deeper relationships between sustainable development and competitiveness.

The examination of the literature on the subject of sustainable development suggested that some discussion of the meaning of the term was warranted, not because there is no definition, but because there are so many. As other writers have pointed out that there are so many interpretations of the term has meant that each individual has been able to claim that his or her use of the phrase is appropriate. One result has been that the wide acceptance of the term noted above in many cases is simply acceptance of the phrase but not its implications. The original definition of sustainable development was provided by the Brundtland Commission in the report Our Common Future as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [9]. This definition has been subject to a wide range of interpretation.

The definition captures several dimensions of development that surpass economic growth in order to include the tangible and the intangible necessities of life. Although initially the concept only focused on the environmental aspects of development [10], it further evolved in including both an economic and a social dimension.

Despite mounting interest in sustainable development, the relationship between sustainability and competitiveness has been only marginally explored. So far, economists have devoted their efforts to trying to understand the way economic growth impacts the quality of the environment or income distribution within a country and vice versa. However, little is known about how these aspects of sustainability relate to competitiveness. When considering the dimensions of sustainable development in regards to defining competitiveness, several approaches should be excluded. Thus, currently the interconnection between the two concepts appears only when approaching competitiveness from a national or international perspective.

Some researchers have proposed a holistic definition of competitiveness, taking into account the sustainability [11]: "Competitiveness is relative and not absolute. It depends on shareholder and customer values, financial strength which determines the ability to act and react within the competitive environment and the potential of people and technology in implementing the necessary strategic changes. Competitiveness can only be sustained if an appropriate balance is maintained between these factors which can be of a conflicting nature". However, it is sustained that the acceptable living standards should be combined with a sustainable economy [12]. The strategy Europe 2020 hints that EU member states should regard environmental challenges as growth opportunities, thus using efficiently their natural resources towards economic growth. It is a known fact that all of an economy's sectors can contribute to smart growth through using

new technologies for innovations. Also, researchers are preoccupied with identifying specific future sustainable competitiveness drivers.

The Sustainable Development Indicators (SDIs) are used to monitor the EU Sustainable Development Strategy (EU SDS) in a report published by Eurostat every two years. Of more than 100 indicators, twelve have been identified as headline indicators. They are intended to give an overall picture of whether the European Union has achieved progress towards sustainable development in terms of the objectives and targets defined in the strategy.

It can be concluded that globalization, social progress, sustainability and competitiveness are interlinked with different types of competitive advantages that interact and reinforce each other.

III. RESEARCH FRAMEWORK AND HYPOTHESIS

In order to determine if there is a relationship between specific competitiveness indicators and sustainable development indicators, we first identified the indicators of competitiveness and sustainable development, based on the previous literature review.
When adressing the issue of competitiveness measurement, as shown previously, there are various categories identified. The most comprehensive study is developed by the World Economic Forum and sustains that the concept of competitiveness involves static and dynamic components: although the productivity of a country clearly determines its ability to sustain a high level of income, it is also one of the central determinants of the returns to investment, which is one of the central factors explaining an economy's growth potential [2]. The World Economic Forum uses three indicators to capture all the aspects of competitiveness: growth competitiveness index, business competitiveness index and global competitiveness index. Thus, based on the specific studies, we have decided to use in our study as measures of competitiveness the global competitiveness index, which takes into account both macro- and microeconomic perspectives to analyze national competitiveness [2].

The European Commission proposed the new European Union strategy for smart, sustainable and inclusive growth – "Europe 2020". The European Commission identifies three key drivers for growth, to be implemented through concrete actions at The European Commission and national levels: smart growth (fostering knowledge, innovation, education and digital society), sustainable growth (making the production more resource efficient while boosting the competitiveness) and inclusive growth (raising participation in the labour market, the acquisition of skills and the fight against poverty - Europe 2020. A Strategy for Smart, Sustainable and Inclusive Growth. Thus, according to our research's goal, we consider that the following indicators are the most relevant sustainable development indicators, that will be taken into account in our research (National Statistical Institute, Republic of Bulgaria):

- Socio-economic development - a sustainable growth of the economy and of the productivity, high levels of knowledge and investment (in human capital and in innovative and eco-efficient processes and products), competitive business, full and high-quality;
- Sustainable consumption and production - the more sustainable consumption patterns with an increase of the re-usage and recycling would lower the needs for raw materials and would reduce the pressure on the environment;
- Social inclusion - access to employment, education, health care, housing as well as the degree of meeting the main needs and the ability to participate fully in society;
- Demographic changes - the number and the age structure of the population influence the size of the economy and the social expenditures;
- Public health - improvements in health status, and increases in life expectancy and in healthy life-years, lead to a longer and more productive working life;
- Climate change and energy - the sustainable eco-efficient energy development and in particular the decrease of the greenhouse gas emissions is at the core of the national energy policy
- Sustainable transport - the main social function of transport is to provide access to main services as health care, education, trade, tourism, sport and entertainment;
- Global partnership – official development assistance;
- Good governance - a process of better policy-making and a process by which better policy decisions are implemented.

Based on the specific literature findings, presented above, we have developed the following research hypothesis for Bulgaria:
H1: There is a correlation between the competitiveness, calculated as the global index of competitiveness and the indicators of sustainable development;
H2: There is a positive correlation between the competitiveness, calculated as the global index of competitiveness and the indicators of sustainable development.

IV. METHODOLOGY AND RESULTS

In order to test and validate the research's hypothesis, we have selected the values for Global Index of Competitiveness and the indicators of sustainable development for Romania and Bulgaria. The period of time taken into consideration for the analysis covers 10 years (from 2004 to 2013), thus, the necessary data was extracted for each indicator for the indicated

period. The first issue addressed concerned measuring the determined variables, as shown in table 1 below.

Table I: Variables defining

Variable	Measuring	Source
Global Index of Competitiveness (GCI)	$SI_1 + SI_2 + SI_3$	The Global Competitiveness Report
Socio-economic development (SED)	Real GDP per capita, growth rate and totals	Statistical yearbook
Sustainable consumption and production (SCP)	Resource productivity	Statistical yearbook
Social inclusion (SI)	People at-risk-of-poverty or social exclusion	Statistical yearbook
Demographic changes (DC)	Employment rate of older workers	Statistical yearbook
Public health (PH)	Healthy life years and life expectancy at birth, by sex	Eurostat
Climate change and energy - Greenhouse gas emissions (CCE-GGE)	Greenhouse gas emissions	Statistical yearbook
Climate change and energy - Primary energy consumption (CCE-PEC)	Primary energy consumption	Statistical yearbook
Sustainable transport (ST)	Energy consumption of transport relative to GDP	Statistical yearbook
Global partnership (GP)	Official development assistance as share of gross national income	Statistical yearbook
Good governance (GG)	Level of citizens´ confidence in EU institutions	Statistical yearbook

Next, given the nature of our research and of the collected data, we applied an econometric modeling using Microsoft Office Excel 2007.

We first realized a descriptive statistic of the eleven variables (GCI, SEC, SCP, SI, DC, PH, CCE-GGE, CCE-PEC, ST, GP, GG), for the 10 years period of time taken under consideration, presented in table 2 below.

Table II. Descriptive statistics

Var.	Mean	Std. dev.	Variance	Skewness	Kurtosis
GCI	4.03	0.13	0.02	0.49	-0.05
SED	4.46	1.07	1.15	-0.59	-1.09
SCP	0.20	0.02	0.004	0.24	-1.55
SI	53.12	7.05	49.73	0.34	-2.11
DC	42.27	5.09	25.95	-1.14	0.10
PH	68.56	3.40	11.57	0.55	-1.86
CCE-GGE	58.10	3.05	9.30	-0.10	-0.70
CCE-PEC	18.3	0.88	0.78	-0.16	-1.14
ST	100.7	4.93	24.27	0.87	-0.50
GP	0.07	0.02	0.004	-0.19	-0.94
GG	58.2	3.19	10.18	1.03	0.99

The Skewness and Kurtosis test values indicate that the analyzed series are not normally distributed and therefore they can be interpreted in our approach. The estimation strategy carries the running of a separate regression for highlighting the existing connections between each of the indicators.

An additional step in the advanced analysis is the development of regressions in order to estimate the intensity of the connections that can be outlined between the various forms of estimation of the dynamic in the outcome competitiveness indicator and the sustainable development indicators (formula 1).

$$Y_{it} = \alpha_i + \chi_{it}\,\beta + \varepsilon_{it} \qquad (1)$$

where:

y_{it} – the dependant variable, i=entity, t=time; α_i – the unknown intercept for each entity; x_{it} - independent variable; β - the coefficient for the independent variable; ε_{it} – within entity error.

The implementation of the estimation strategy involves:

- the obtaining of the regression parameters;
- the estimation of the intensity of the links between endogenous and exogenous variables in terms of Student t-test (an empirical value of this test greater

than 2 reflects a significant connection; the higher this value is so can be presumed the fact that the bond strength is more pronounced).

In order to avoid some multicollinearity problems that can be induced by the structural connections between the financial indicators considered, we will perform separate regressions for each explanatory variable.

Table III. Analysis results

Var	Coefficient	Multiple R	R Square	t-stat
SED	0.08	0.71	0.50	2.86
SCP	4.43	0.72	0.51	2.90
SI	-0.009	0.53	0.28	-1.76
DC	0.01	0.50	0.25	1.63
PH	0.02	0.63	0.40	-2.30
CCE-GGE	-0.01	0.39	0.15	-1.18
CCE-PEC	-0.08	0.57	0.33	-1.98
ST	-0.01	0.44	0.20	-1.40
GP	4.36	0.69	0.48	2.71
GG	0.007	0.18	0.03	0.52
Crit T	2.26	2.26	2.26	2.26
N^{o} obs.	110	110	110	110

Based on the results obtained in the regressions we may notice the following issues:
- a 1% increase in the value of SED determines the increase of GCI by 0,08%;
- a 1% increase in the value of SCP determines an increase of GCI by 4,43% ;
- a 1% increase in the value of PH determines an increase of GCI by 0,02% ;
- a 1% increase in the value of GP determines an increase of GCI by 4,36%;
- social inclusion, demographic changes, climate change and energy, sustainable transport and good governance (as indicators of sustainable development) do not have a significant statistically impact for the forecast of the Global Competitiveness Index in Bulgaria.
- Overall, the results of the analysis showed that there is a strong positive correlation between the national competitiveness, measured with GCI and the indicators of sustainable development included in our database for Bulgaria, fact that validates the both hypothesis H1 and H2.

CONCLUSIONS AND DISCUSSIONS

Our research has two main approaches: a theoretical one focused on researching the area of competitiveness and sustainable development theory in order to provide the basis of developing new theoretical models and a practical one, namely identifying how competitiveness is affected by the sustainability indicators in Bulgaria.

Taking in consideration the theoretical approach, our research underlines the fact that there is no inherent conflict between competitiveness and sustainability, but a need to develop a system of competitiveness which is as beneficial as possible, in terms of economic, social and environmental growth.

First of all, we underlined the necessity for a clear categorization of the theoretical definitions of competitiveness in order to create a fundamental systematic background for the future theory development.

As shown in our paper, there are different approaches in defining competitiveness, either from various disciplines' point of view or according to different research areas.

When linking competitiveness to sustainable development, we pointed that only two approaches are valid, those of national and international competitiveness, approaches that broaden the concept in considering the dynamic political, economic and social environment. With the growing interest in the problem of sustainability, it shall be expected that in the future the competitiveness' definition will include the sustainability dimension.

We then demonstrated that the relationships between sustainable development and competitiveness are currently acknowledged in the specific research area, emphasizing the shift towards a new concept – sustainable competitiveness.

Moreover, by further analyzing the methodological approaches in assessing both sustainable development and competitiveness, we may conclude that there still is no common ground between researchers as to integrate the two dimensions in a specific model, with many different interpretations and methods that guarantee reliability and informative value.

As for the practical aspect of our research, our analysis's results demonstrated that indeed national competitiveness in Bulgaria is affected by the sustainable development indicators, however, debates arise when considering the appropriate measurement instruments. Countries which are highly ranked regarding competitiveness are even highly ranked regarding living standards [13]. Therefore we can conclude that in Bulgaria there are difficulties in the processes of employment, education, health care, housing, the degree of meeting the main needs, the ability to participate fully in society, the sustainable

eco-efficient energy development, the sustainable transport and in the process of better policy-making.
Sustainable development and national competitiveness of the countries stand for a better quality of life. Restoring the trust in the financial system and the economy's stability is a primary goal in order to come out of the recession and to take the sustainable development path which is stimulating employment, social inclusion, investing in knowledge and technologies for increasing national competitiveness, economic growth, long-term prosperity and environmental protection - all of which are sustainable development objectives in the long term. The current crises give the emerging countries the opportunity to turn to an ecologically efficient economy, which is characterized by low levels of carbon emissions and effective use of resources and which is based on sustainable production in all sectors and on a more sustainable way of life. This would improve the well-being of the citizens and at the same time would decrease the consumption of both energy and natural resources and would minimize the negative impacts on health and on the environment.
Therefore, an environment that supports high levels of wellbeing (socio-economic development, social inclusion, public health) is becoming an important driver of competitiveness as country's endeavors to attract and develop world-class companies and workers.

Of course there are clear limitations of the analysis, namely: the limited number of indicators considered, analyzed data heterogeneous structure, the analyzed time interval and possible errors induced by the non-linear interactions between the variables. The main directions of future research would be limited to the integration in the analysis of a wider set of explanatory variables and the extension of the analysis for all of the five levels of competitiveness (firm, sectors, national, regional and international level).

Further, the agreement of the "Europe 2020" strategy creates a need of research leads to develop the concept of competitiveness, with more researches focusing on how competitiveness and sustainable development interact.

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