ROMANIA'S SPECIALIZATION IN TRADE TOWARDS EU-27-A REVEALED COMPARATIVE ADVANTAGE APPROACH

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"International competitiveness" is a complex topic which raised over time many questions and theories on key factors that underpin it and is still subject to wide debate. Such analysis proves to be necessary under the new requirements raised by the participation of Romanian organizations in the European and global competitive environment in which competiting for new markets can be a platform of economic recovery.
As companies compete for markets and resources, national economies compete with each other to achieve performance in a specific activity: for example, we can say that Romania has become less competitive in clothing production, and competitive in cars production. But it makes sense to say that "Romania has become more or less competitive as the economy?".
The answer is no."Competitiveness" is a meaningless word when referring to national economies. Deniying Romanian competitiveness in a particular industry does not mean that Romania's economy is less competitive. The decline in these industries may be a manifestation of their change in production factors endowment or necessary reallocation these factors from old activities with comparative advantage to new ones.
This paper aims to examine the structural competitiveness of Romania vis-a-vis EU-27. Empirical analysis is based on Revealed Comparative Advantage (RCA), an indicator often used in international trade analysis. Section II reviews the empirical literature on the comparative advantage and the competitiveness of Romania, highlighting various theories and approaches, alternative measures of RCA indices are presented in the section III, section IV reports empirical results and the final section draws some conclusions based on the findings.
In 2009, in terms of orientation of the foreign investors towards the economic sectors, according to NACE Rev. 2 Classification, the direct foreign investments were directed mainly to Manufactured goods (31,1% of total), within its best represented branches: oil, chemicals, rubber and plastic processing (6,3% of total), metallurgy (5,2%), transport industry (4,7%), food, beverage and tobacco industry (4,1%) and cement, glass, ceramic(3,3%), some of the sections having low weight to the potential, such as textiles, clothing and leather (1.4%), decreasing their attractiveness due to the convergence of non-tradable goods prices towards Eurozone prices, according to the Balassa-Samuelosn effect. Development of sections refering to intensive technology products should be a priority in the economic transformation of the countries converging to Euro Zone, especially Romania.These sections are: XVI: „Machinery and mechanical appliances;electrical equipment; sound and image recorders and reproducers" and XVIII „Optical, photographic, cinematographic, medical or surgical instruments and apparatus and similar; clocks and watches; musical instruments; parts and accessories thereof". An increase in exports of these products may have beneficial effects on trade balance, balancing it by reducing the imports of these goods.

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I. Introduction

"International competitiveness" is a complex topic of global concern which raised over time many questions and theorieson key factors that underpin it.Such analysis proves to be necessary under the new requirements raised by the participation of Romanian organizations in the European and global competitive environment in which competiting for new markets can represent a platform of economic recovery. The popularity of the concept of "competitiveness" is in continuous growth, as researchers, politicians and business man try to assign different definitions and meanings, according to the field in which they perform.For members of government, competitiveness is a positive balance of trade. For some economists, competitiveness represents a low unit labor cost adjusted according to exchange rates. Increasing international competitiveness is an economic policy priority for all nations of the world knowing that between prosperity of a nation and its degree of international competitiveness there is a strong interconnection. Undoubtedly, economic growth - reflected by an upward trend of the main economic indicators (GNP per capita, production per capita, the export value per capita, etc.) - is a necessary condition for increasing wealth. As companies compete for markets and resources, national economies compete with each other to achieve performance in a specific activity: for example, we can say that Romania has become less competitive in clothing production, and competitive in cars production. But it makes sense to say that "Romania has become more or less competitive as the economy?".

The answer is no. "Competitiveness" is a meaningless word when referring to national economies. Deniying Romanian competitiveness in a particular industry does not mean that Romania's economy is less competitive.The decline in these industries may be a manifestation of their change in production factors endowment or necessary reallocation these factors from old activities with comparative advantage to new ones. In a desirable context, with perfect balance, optimal resource allocation counts, not the rise or decline in specific activities.Relevant examples in this respect is Switzerland, though endowed with natural and a spectacular mountain landscape, it continues to dominate the watch industry and obtain a huge profit for almost 100 years, and Finland which maintains its leading position in mobile phones. This contradicts the theory of free trade which asserts that free trade automatically diverts nations towards industries for which they are best prepared.

This paper aims to examine the structural competitiveness of Romania vis-a-vis EU-27. Empirical analysis is based on Revealed Comparative Advantage (RCA), an indicator often used in international tradeanalysis.The plan of the paper is as follows. The following section reviews the empirical literature on thecomparative advantage and the competitiveness of Romania. Alternative measures of RCA indices are presented in the Section III. Section IV reports empirical results and the final section draws some conclusionsbased on the findings.

II. Literature review

A way to highlight a country's degree of specialization in different goods, services or industries industries, it is the determination of revealed comparative advantage index (RCA). (Cristureanu, 2004; Cojanu, 2007).In the theories of international trade, comparative advantage is an important concept for explaining pattern of trade. David Ricardo (1817) firstly introduces the concept of comparative advantage with very strict assumptions. Countries exploit technological differences is then well recognized as the Ricardian model. In the modern theories of international trade such strict assumptions are replaced with the more realistic ones. Heckscher (1919) and Ohlin (1933) examine the effect of different factor endowments on international trade. Their model, which is well known as the Heckscher-Ohlin (HO) model, concludes that a country will export commodity uses the abundant factor of production, while it will import commodity uses the scarce factor of production.

So far, the dynamic theory of comparative advantage has put greater attention on the changes in supply (production) side. This is related to how specific determinants affect the output (economic) growth and, in turn, comparative advantage. Redding (2004) finds that comparative advantage is endogenously determined by the past technological changes and innovation. To justify national policies to stimulate and support industries that have comparative advantage, it appears as a reality "ex ante", which provides reliable performance. But this theory is contradicted by the reality of market dynamics which states that comparative advantage is either gained or lost.În schimb, ţările care, în lipsa unei teorii mai bune a competitivităţii, mai utilizează în proiectarea politicilor lor teoria avantajelor comparative, riscă să neglijeze o gamă largă de opţiuni politice privind creşterea eficienţei şi promovării creşterii care ţin cont de prezenţa (pervasiveness) eşecurilor de piaţă în economiile moderne (Stiglitz, 1989a).
The dynamics of comparative advantage might be also caused by the role of input trade (Jones, 2000), the friction in international trade and investment flows due to geography, institutions, transport, and information cost (Venables, 2001), the transmission of knowledge across borders (Grossman and Helpman, 1991), the technological differences across border (Trefler, 1995), and the monopolistic competition in differentiated products with increasing return to scale (Krugman, 1979). Indeed, many applied economists, e.g. Liesner (1958), Kanamori (1964), Balassa (1965), Donges and Riedel (1977), Bowen (1983), Vollrath (1991), Dalum et al. (1998) and Laursen (1998), among others, have tried to make various empirical measures to “reveal” countries’ comparative advantage. Also, countries may very much differ in the quantity of products they export through the export prices of similar goods [Schott (2002), Hummels and Klenow (2002)]. The Balassa index has been subject to several critiques, leading some authors to propose several modified versions. For instance, Laursen (1998) suggests a transformation that produces a symmetric outcome, ranging from -1 to 1 and with a threshold of 0; Proudman and Redding (1997, 2000) suggest a transformation that results in a constant mean across the different sectors for a given country. Nevertheless, the popularity of the original index remains in place and the traditional Balassa index has been used extensively in the literature. As in the Proudman and Redding (1997, 2000) contribution, the product specialization index suggested here has a clear and well-defined link with the original Balassa index. In his study, entitled „Convergence of the Export Structure of Romania, Croatia, Serbia and Bosnia-Herzegovina to the Structure of Import Demand in Developed Countries” (2010), Goran Nikolić is analyzing the export structures of observed transitional countries (Romania, Croatia, Serbia and Bosnia-Herzegovina) with the import structure of developed economies (EU) to examine if there is convergence, and the level of that convergence. The study points out that in Romania, between 2000 and 2009 was registered a poor, but significant convergence, due to the share of 20.1% of goods belonging to sections 0- Food and live animals and 6-Manufactured Foods Classified by Material (especially the early stage of processing of goods, especially products), in total exports. In Romania, the share of 47,9% of the sections 7-Machinery, Transport Equipment and 5-Chemical Products was very high, mainly due to the numerous subdivisions 78-Road Vehicles and 77-Electrical Machinery, which includes the production of motor vehicles and electrical machines, intensified after 2000 along with increasing of foreign direct investment flows. The main difference between the export structures of developing countries considered in the study and trade structures of the EU27 remains the technology intensive products.
Some economists argue that the nature of international trade is in a continuous change (Grossman and Rossi-Hansberg 2006, 2008, Blinder 2006, 2009, Hanson, Mataloni and Slaughter 2005). Instead of simply creating more trade in goods, global integration is increasingly marked by “trade in tasks” (Grossman and Rossi-Hansberg 2006), meaning more trade of intermediate goods and services due to the widespread emergence of offshoring. Other economists bring into discussion the public choice theory. Oates and Schwab (1988) stated that governments can set

"weak" or "strong" standards and by employing public choice theory, government officials may want to impose weak environmental standards in order to attract capital investment.

III. Methodology

A way to highlight a country's degree of specialization in a particular product or industry, is the determination of Comparative Advantage Index (CAI). CAI compares the share of production / exports of a country for a specific product / industry in it's total production / export with the share in production / world exports (or a group of countries) of that product / industry. Before Balassa introduced his famous index of comparative advantage in 1965, Liesner (1958) was the one who contributed to the empirical literature of AC. In this sense, Liesner (1958) developed the first empirical study in the area of CA. The simple measure proposed by Liesner for calculating CA was:

$$RCA_1 = {X_{ij}}/{X_{nj}} \quad (1)$$

where *x* represents exports, *i*is a country, *j* is a commodity (or industry), and *n* is a set of countries (e.g. the EU). An advanced formula of the CA was later presented by Balassa (1965) and was widely accepted in the literature:

$$RCA_2 = \frac{X_{ij}/X_{it}}{X_{nj}/X_{nt}} = \frac{X_{ij}/X_{nj}}{X_{it}/X_{nt}} \quad (2)$$

where *x* represents exports, *i*is a country, *j* is a commodity (or industry), *t* is a set of commodities (or industries) and *n* is a set of countries. RCA_2 measures a country's exports of a commodity (or industry) relative to its total exports and to the corresponding exports of a set of countries, e.g. the EU. Comparative advantage is "revealed" if RCA_2> 1. If RCA_2 is less than unity, it is said that the country has a comparative disadvantage in that good/industry.ButRCA_2index is considered to be biased because of omission of imports, especially when the country has an important dimension(Greenaway and Milner, 1993).An alternative RCA index (RCA_3 in equation 3) is calculated only to make reference to country's own trade performance. This type of measuring country's comparative advantage also allows the simultaneous calculation of exports and imports of a good or industry:

$$RCA_3 = \frac{(X_{ij} - M_{ij})}{(X_{ij} + M_{ij})} \quad (3)$$

In the case of ecuation 3, index ratio ranges from -1 (X_{ij} = 0 and revealed comparative disadvantage)to +1 (M_{ij} = 0 and revealed comparative advantage). However,, regardingRCA_3, exists ambiguity around zero value (Greenaway and Milner, 1993). You can get another version of the Balassa RCA (1965) derived the following equation:

$$RCA_4 = \frac{X_{ij}/X_{it}}{M_{ij}/M_{it}} = \frac{X_{ij}/M_{ij}}{X_{it}/M_{it}} \quad (4)$$

where *X* and *M* are exports and respectively imports, *i* is a country,*j* is a product (or industry), *t* is a set of commodities (or industries). A similar version of equation 4 derived from Balassa (1965) is as follows:

$$RCA_5 = ln\left[\frac{\left(X_{ij}/X_{it}\right)}{\left(M_{ij}/M_{it}\right)} * 100\right] \quad (5)$$

The RCA_3, RCA_4 , RCA_5 indices point out the bilateral competitiveness between Romania and EU. In our study, we will concentrate only on bilateral competitiveness.

To analyze the Revealed Comparative Advantage for Romania using Balassas alternative measures of RCA, I used Combined Nomenclature (CN) which is the European Community's

classification of goods, which meets requirements in terms of external trade statistics (both intra– and extra–Community) covering Romania's exports and imports on bilateral level with the EU-27 for the period 2007-2009 from the Romanian National Institute of Statistics.

IV. Results and main findings

The followings are the basic points and outcomes on our alternative RCA calculations. The following classifications are based on the common characteristics of commoditygroups, and are taken into account RCA_3 , RCA_4 , RCA_5indices.

Table 1: Outcomes based on the common characteristics of commodity groups

CN Code	***Sectors with RCA in all (three) indices* (Section)**
01	• live animals
27	• mineral fuels and oils;bituminous substances; mineral waxes
31	• fertilizers
42	• leather goods
44	• wood, charcoal and articles of wood
61	• knitted or crocheted clothingand accessories
62	• not knitted or crocheted clothing and accessories
64	• footwear and parts thereof
76	• aluminium and articles thereof
86	• railways or tramway locomotivesand rolling-stock
89	• ships, boats and floating structures
94	• furniture; lighting fittings and other similararticles; prefabricated buildings

Table 2: Outcomes based on the common characteristics of commodity groups

Sectors with "increasing" RCA in time period (year-by-year) Romania vis-à-vis the EU market		***Sectors with "decreasing" RCA in time period year-by-year observation Romania vis-à-vis the EU market***	
CN Code	**Section**	**CN Code**	**Section**
44	• wood, charcoal and articles of wood	*01*	• live animals
94	• furniture; lighting fittings and other similar articles; prefabricated buildings	*31*	• fertilizers
		42	• leather goods
		61	• knitted or crocheted clothingand accessories
		62	• not knitted or crocheted clothing and accessories
		64	• footwear and parts thereof

V. Conclusions

Romania has the 11th largest economy in the European Union by total nominal GDP and the 8th largest based on purchasing power parity (PPP). With annual GDP growth rates consistently above 6%, Romania was one of the fastest growing markets in the European Union (EU) until 2009. The country has also been referred as a "Tiger" given its rapid development and high economic growth rates and compensates the structural gaps with a high commercial integration with the rest of the EU-27 countries, while 2009-2010 registered a slight decrease.

Given that about half of Romania's trade with EU-27 is done with the core of the euro area(Germany, France and Italy), then their macroeconomic developments will decisively influencethe industrial activity and exports of the Romanian economy. Economic shocks that will affectthese economies will be transmitted through trade in the Romanian economy and these willbecome more symmetrical.In 2009, in terms of orientation of the foreign investors towards the economic sectors, according to NACE Rev. 2 Classification, the direct foreign investments were directed mainly to *Manufactured goods* (31,1% of total), within its best represented branches: *oil, chemicals, rubber and plastic processing* (6,3% of total), *metallurgy* (5,2%), *transport industry* (4,7%), *food, beverage and tobacco industry* (4,1%) and *cement, glass, ceramic*(3,3%). There are areas with a low weight to the potential, such as textiles, clothing and leather (1.4%), decreasing their attractiveness due to the convergence of non-tradable goods prices towards Eurozone prices, according to the Balassa-Samuelosn effect.Development of sections refering to intensive technology products should be a priority in the economic transformation of the countries converging to Euro Zone, especially Romania. These sections are: XVI: „*Machinery and mechanical appliances;electrical equipment; sound and image recorders and reproducers*" and XVIII „*Optical, photographic, cinematographic, medical or surgical instruments and apparatus and similar; clocks and watches; musical instruments; parts and accessories thereof*". An increase in exports of these products may have beneficial effects on trade balance, balancing it by reducing the imports of these goods.

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