Some Empirical Approaches of the Competitiveness' Diamond – The Case of Romanian Economy

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In this paper, we try to overview some of the main extensions of Michael Porter's competitiveness diamond, considering the complexity of actual international economic interdependencies, starting with the presumption that activities of multinational firms should be considered as an endogenous factor of the diamond. Also, using some adequate data, we try to show the configuration of the competitiveness' diamond in the case of Romanian economy, taking into consideration the actual stage of research in the field. We consider such a venture as being very useful in the context of regional economic integration of our country's economy, because it could help showing the actual configuration of some of our variables in relation with the international business environment. Our empirical results show, as expected, that Romania has smaller scores with respect to most of the variable taken into consideration. Nevertheless, analyzing also the international variables and not only the domestic ones, as Porter sustains, gives a better insight relative to the national competitiveness, moreover in the case of a small open economy. For such a country like Romania, we consider that the double diamond is better to be used compared to the simple one.
Key words: *country specific advantages, dual double diamond model, multi-*

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national firms.
JEL Classification: *F12, F23.*

I. Introduction

The growing interdependencies between national economies materialize in acceleration of the process of economic integration, both on global and regional scale. As a consequence, the necessity of redefining the concept of economic competitiveness and competitiveness' main framework, results from two important reasons: the first comes from the fact that international factor movement and the activity of multinational firms cannot be neglected when we are about to measure the performances of a national economy and, secondly, a more distinct separation should be made between the factors which influences the competitiveness in the case of a large economy and in the situation of a small developing economy. The complexity of actual world economy makes the debates over the concept of economic competitiveness, and how could we better define it, more passionate being essentially centered on the components of Michael Porter's diamond of competitiveness. The structure of the paper is as follows: in the next section we analyze the most relevant publications on this issue, followed by empirical evidence on the economy of Romania and European Union.

II. Literature review

Porter didn't include the multinational firms' cross-borders activities among the components of his diamond and this fact could constitute the source of many errors in evaluating the configuration of one nation's competitiveness. In fact, the new economic realities proves it is essential to define a clear separation between the home diamond, which would be available for a home economy, and the diamonds of other economies which are commercial partners, or important source

of investment capital for that economy. That's why, in a study regarding the new aspects of the concept, John H. Dunning (Dunning, 1995) defines the term competitiveness as a way of benchmarking the economic performance of a country, or of another economic entity. We expect, from such a benchmarking process, to obtain the terms of comparison between national economies, or for its companies, not as an isolated or static case, but regarding the whole context of the competitive advantage with the mobility of assets in the production process and regarding the international value-added chain. As Dunning asserts in the same article (Dunning, 1995), the existence of asset mobility between countries implies the usage of the competitive advantage of the firms outside their home countries and its vast influences over the national diamond. That's why, taking into consideration the activity and economic determinants of multinational firms, we could define not only one competitiveness diamond, but multiple diamonds, corresponding with all these interactions. More, the study made by Buckley, reveals some essential terms in which the competitiveness is perceived (Buckley *et al.*, 1988). The study tends to demonstrate that competitiveness should be a microeconomic concept, which has the best measure in the 3P's: „competitive performance, competitive potential and management process". That's why, we tend to consider this concept a microeconomic one, being easier to measure at that level. Adopting such terms of the analysis, there is no methodological problem in including firms' activities as a part of the competitiveness diamond. Based on Buckley, at a microeconomic level, competitiveness could be defined in terms of superior quality and lower costs, comparing with competitors, the "long-run profit performance" and the ability to ensure superior returns. Such essential studies, comes as a confirmation that the multinational firm could be taken into consideration as a participant into the diamond.

Alan M. Rugman defines the multinational firm (Rugman, 1992) as "a corporation that operates across borders in the production and

distribution of its goods and services". The majority of multinationals has a decentralized form of organizing its cross-border activities, offering a generous autonomy to the overseas affiliates. In such a framework, it is already acceptable to consider, Rugman says, that we have a "network of virtually autonomous firms". Consequently, it is acceptable to say these entities usually operate not only across nations' borders, but also across nations' competitiveness diamonds. We consider that, at a microeconomic level, such economic entities needs to gain and preserve its competitive advantages both on home country's diamond *and* many other national diamonds. Following this argument, at a macroeconomic scale, it means that foreign direct investment, made by multinationals; do represent an important source of competitive advantage to the host country *and* home country, because of the value-added activities spread across borders. Moreover, the cross countries activities of multinationals could be interpreted as a transfer of competitive advantage between economies, simply because multinationals use the differences in factor costs and the complementarities in resources available between different economies, in one word – the country-specific differences.

In the same time, Porter's model has been considered limited due to the narrow definition it applies to the foreign direct investments' flows (Rugman & D'Cruz, 1993): it considers only the outward investment flows as a source of competitive advantage for a specific country. This is because Porter took into consideration only the activities of home based multinational firms as sources of competitiveness, taking the foreign affiliates as sources of imports for that economy. The real world interactions between inward and outward foreign direct investments transform the initial competitiveness diamond into a unilateral view over the international interdependencies. During the years passed since Porter issued his diagram of competitiveness, it was proved that foreign direct investments represent an important source of competitive advantages for the domestic firms, due to the indirect effects and positive externalities spread into the host economy. One

important aspect about Porter's view over the determinant factors influencing the competitiveness are the components itself of the diamond. He considers as outside variables only the role of government and chance. In the meanwhile, other contributors to this field of research tried to add more variables considered essential, to define the influences of the international economic interdependencies. Thus, John H. Dunning introduced the multinational firms activities as a third important outside variable (Rugman & D'Cruz, 1993), asserting that its place could not be among the variables of "firms strategies, structure and rivalry" – side of the diamond and making the structure of the framework more clear. Alan M. Rugman concludes that over 90 percent of national economies cannot be reflected through the initial competitiveness diamond (Rugman & D'Cruz, 1993) and that a "double diamond", or multiple diamond frameworks should be added in order to make the model more relevant.

Perhaps one of the most comprehensive analysis on this issue was made by John H. Dunning (Dunning, 1992), which largely referred to the necessity of reconsidering the main factors of impact over the economic competitiveness, in direct connection with Michael Porter's analysis. As Dunning emphasizes, one of the main deficiency of Porter's diamond is ignoring the important role of multinational firms, which by the investment process, can influencing both their own competitiveness and that of the countries in which they are active (Dunning, 1992). An important argument in defining multinational firms as an exogenous variable of the diamond is the fact that more than 40% of its sales are subject of production processes localized in other countries than its home economy. Also, as Dunning says, the value of those sales exceeds by far that of international trade transactions. That means international business transactions can influence the main elements of the configuration proper for the other variables which constitutes the competitiveness diamond. The basics of the multiple diamond, with multinationals considered as an exogenous factor, in Dunning's opinion, is formed by the fact that the

investor firms may be influenced by the configuration of the factors which form the competitiveness diamond in the home countries of their production facilities and this can have important consequences for the competitiveness in their home countries.
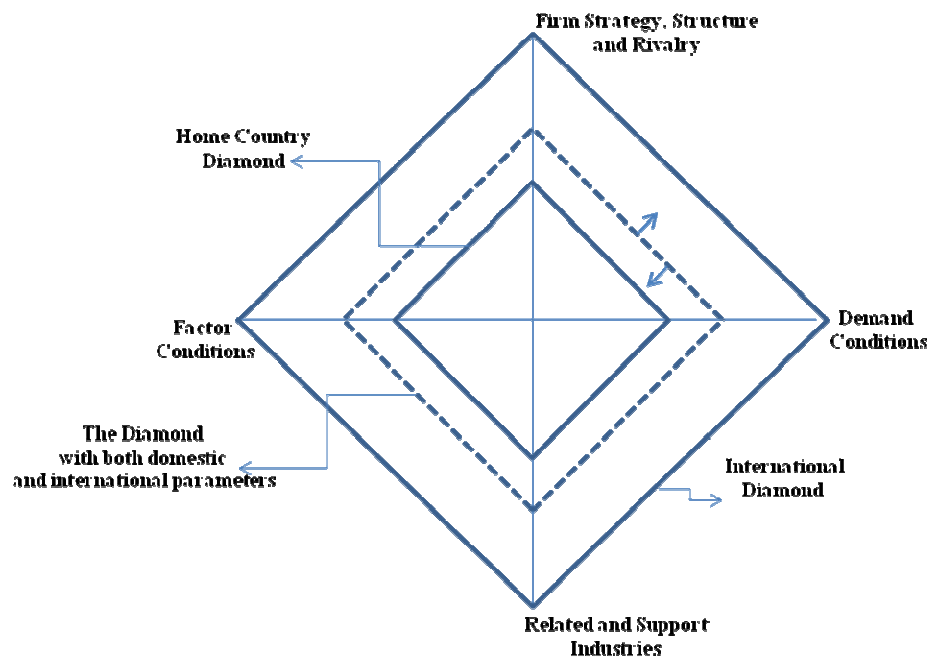
On this more general framework, an important distinction must be made. This is the case of the differences between large sized economies, such the United States, or other high industrialized countries, which can influence the level and dynamics of the prices of its produced goods and the small developing economies, which could not exert decisive influences over the formation of international prices of their produced goods and do not have relevant domestic sources of capital to be invested abroad. In the first case, what really matters tend to be the balance between the domestic resources transferred abroad and the foreign resources of capital and technology present inside the home economy. When he considers the influences of such an exogenous variable, Dunning refers to the business activities of the multinationals as being formed by the domestic output of the foreign based companies *and* the foreign output of the domestic based companies (Dunning, 1992). In the second case, of small developing economies, the core characteristics of the variable tends to be the same, but the structure of influences are certainly different. Although many developing economies has relevant outward oriented direct investment flows, such as China or Brazil, many of these economies remain at the stage of receivers, or hosts, of foreign direct investment flows from the rest of the world. Moreover, the configuration of competitive advantage of this group of economies tends to be strongly dependent on the activities of foreign multinational firms, in some cases in large proportions, and the foreign capital and technological resources tends to have a crucial importance. Although we consider Dunning's study as an essential one, the analysis of the contribution of each elements of the competitiveness diamond is not enough to better define the crucial factors of influence over the competitiveness in the case of smaller developing countries. That's why, we could define

Dunning's analysis as limited because the study still considers the role of multinational firm as an exogenous factor of the diamond.

As a consequence, in a generalized double diamond framework, variables could be approached as in the figure 1 (Moon *et al.*, 1998).

Figure 1

The diamond of competitiveness with both domestic and international influences

Source: (Moon *et. al*, 1998)

In figure no. 1, the international diamond tends to be fixed, on a short time perspective, because it refers to the whole context of international business, as a parameter in influencing the competitiveness. The home country diamond tends to vary according to the size of that economy and its competitiveness (Moon et al., 1998,

p. 138). What is most relevant in this analysis, is the significance of the dotted line diamond, which represents, according to the quoted authors, the home country's parameters, which influence its competitiveness, taking into account all the other internal and international variables. The dotted line could shift outward, or inward, depending on the spatial configuration of regional, or global, competitiveness of all sources of investment capital available in a period of time. Accordingly, in the case of generalized double diamond framework, the definition of economic competitiveness suffers adjustments, adding to the old variables the influence of international value-added chain, which could influence over long periods of time the dynamics of its competitive advantage. The author's view extends to the influence of both domestically owned and foreign owned companies (Moon *et al.*, 1998), over the home country diamond.

The growing international interdependencies, along with the increased links between sectors and industries of countries' structures, made possible an in deep analysis of the role and functions of multinational corporations' activities. On this basis, the study of multinationals as an *endogenous* factor of the competitiveness diamond was possible taking into account the significance of so- called *"country specific advantages"*. In our opinion, this interesting and complex concept is directly linked with the ability of an economy to sustain and achieve gains from both inward and outward oriented foreign direct investments flows. The concept seems to be related with the "embedded" into the ability of firms to operate and react to their rivals', or partners' actions and seems to be the "bridge" between the macroeconomic and the microeconomic dimension of competitiveness. For example, a country could rich gains from inbound foreign direct investments through the enlarged access to the foreign advanced technologies, skills and financial capital resources, and, in the same time, to profit from outbound direct investments, by reaching access to cheaper workforce resources, different sources of raw materials, or favorable location of

its firms' productive capabilities. The situation was analyzed by Alan M. Rugman (Moon *et al.*, 1998) and others, when they developed the "generalized double diamond", on the case of Korea and Singapore, two of the most dynamic and competitive economies in the world. Starting from here, there is only one step through the logical process of assimilating the multinational corporations' activities into the competitiveness diamond, as an endogenous factor. And this is due by admitting that the country specific advantages, in the situation of highly interdependent economies and with international economies of scale, *actually are* important sources of advantages for multinational corporations *and* the reverse. The idea is founded on the presumption that the combination of country specific advantages of *all* the economies in which multinationals are operating contributes to the sources of competitiveness in the case of the firms and was analyzed by Asian economists later on (Cho *et al.*, 2008). These authors compared different models which forms the topic and arrived to the conclusion that the "*dual double diamond model*" could be the most relevant in the analysis of national competitiveness, covering a whole range of variables taken into consideration and reflecting heterogeneous countries' characteristics. In fact, this model represents a new extension of the original model of the simple diamond, because, in our opinion, it starts from the same concepts, but, in the same time, it could be considered much more than a simple extension, simply because it integrates the new dimensions of actual international business and sources of competitiveness.

In order to visualize the evolution of the idea, we must set up a graphic framework, adding previous contributions of the Asian economists we already quoted here. To arrive to the *dual double diamond* model, we should first mention the Cho and Moon's contribution to the "*nine factor* model" (Cho & Moon, 2000, p.135-146), which represents the "human" dimension of the competitiveness diamond. In their book, the authors we've mentioned add to Porter's diamond another four variables, such as: workers, professional managers and

engineers, entrepreneurs and politicians and bureaucrats. In the same time, they maintain as exogenous variable the "chance events" (Cho & Moon, 2000, p.143-145). Each of these supplementary variables, added by the authors, could be measured in terms of many factors which affect the amount of influence attributed into the main diamond. Adding this view over the competitiveness diamond, we now could depict the whole image of the evolution inside this field, based on Cho and Moon's later contribution, we've already mentioned earlier (Cho *et al.*, 2008).

- Stage 1: the *single diamond* – which is the classical Porter's diamond of a nations' competitiveness, with the accent exclusively on the six physical factors and focusing on only one economy;

- Stage 2: the *nine factor model* – adding the "human" dimension to the Porter's mainframe and still oriented on one economy, but taking into discussion the role of foreign direct investments made by multinational corporations of different origins;

- Stage 3: the *double diamond model* – the extension of the single diamond, compared with the whole international business environment and considering the interactions between domestic and foreign factors which could influence the competitiveness of a one country;

- Stage 4: the *dual double diamond model* – which adds the influence of "human" variables to the double diamond, internally and externally, and offering the possibility to better considering "country specific advantages" as a factor of influence at micro- and macroeconomic level.

Due to this view, we consider two sets of remarks, which we take as conclusions to this overview:

- the international dimension of multinational corporations' activities should be considered as a endogenous variable, on the fourth

stage, because of their power of influencing/and being influenced by country specific advantages,

- although the model is more and more comprehensive on its approach at the macroeconomic level, making us believe it is more than a simple extension of the classical analysis, its character, or nature, remains a microeconomic one.

III. The analysis of generalized double diamond model for Romanian economy

In the following section, we want to build the generalized double diamond for Romania and the European Union 27 and to point out the differences between the two economies. At a first glance, such a comparison would be inappropriate, but we analyze all the variables as relative values (ratios) and not as absolute values. In other words, we want to compare the Romanian economy with an average economy belonging to European Union.

The double diamond for the two economies is based on the average values of the data over five years between 2002 and 2006. We underlined whenever data was not available for that period of time. The primary used databases are those of Eurostat and Romania's National Institute for Statistics.

As mentioned in the literature review, the dependent variable for our study is the national competitiveness of an economy, which can be expressed as an index and can bring some insights when a competitiveness hierarchy is needed. Porter (Porter, 1990) uses the export performance and the outward FDI to measure the national competitiveness, but we think that these two indicators and some others are explanatory variable and not the competitiveness *per se.* Following Moon *et al.*(Cho & Moon, 2000, p. 119-121) and Liu and Hsu (2009), we consider that the four elements of Porter's diamond are relevant parameters to sketch the borders of a national diamond,

but they should be observed both at the national and international level.

In the next paragraphs we will present the factor conditions, demand conditions, related and supporting industries and firm strategy, structure and rivalry and the corresponding proxies used to measure the performances in a certain field.

Factor conditions. Although Porter does not clearly separate the human from the physical factors, as Cho does, he underlines the importance of the *advanced* factors relative to the *basic* ones. For our country, with a developing economy, the basic factors still play an important role for the national diamond of competitiveness. In the present paper we chose the average labor force participation and average GDP per person employed in industry to measure the basic factors. The advanced factors were calculated based on the average researchers per 1000 persons employed, and average civil R&D expenditure as a percentage of GDP, respectively.

At the international level, the competitiveness of a country can be seen as its capacity to gain superior market shares. In the same time, the increasing wages at the national level influence the firms to relocate the production and invest abroad, but also to attract foreign direct investments and achieve technology in order to improve the domestic factor conditions. That is why, for the international diamond we used proxies like: average exports of goods per capita, average outward / inward FDI as a percentage of GDP and average number of patent granted per 1 million inhabitants (see table 1).

After measuring the corresponding proxies, we transformed each average value in an index, by giving 100% to the highest value of the two economies and calculating the relative value of the index for the second economy. For example, taking the average labor force participation, as an average for the period of time 2002-2006, we notice that this ratio is 62.9% in Romania and 69.38% for EU27. We give the value of 100% to EU and the relative value for Romania is:

62.9*100/69.38 = 90.66%. When we want to sum up all for proxies for the domestic factor conditions just in one parameter, we compute the unweighted average of the former. That is why; we become 40.58% the average index for Romania and 100% for European Union.

As we expected, the European Union registered the best results with respect to all the variables. The sole exception was related to the inbound FDI, where these represent 26.42% of the Romanian GDP and 16.40% in the situation of European Union.

Table 1

Factor conditions' dimensions both for the domestic and international diamond of Romania and European Union[1]

Domestic variables						
Factor condition						
	Variable	Proxy	Romania	European Union	Romania's Index	EU's Index
	Basic factors	Average labor force participation (%), 2002-2006	62.90	69.38	90.66%	100%
		Average GDP/person employed in industry (EUR), 2002-2006	7571.23	45793.45	16.53%	100%
	Advanced factors	Average researchers per 1000 employment, 2002-2006	3.13	9.36	33.44%	100%
		Average estimated civil R&D expenditure as a percentage of GDP (%), 2002-	0.40	1.84	21.74%	100%

[1] The main source for in using the appropriate indicators and the structure of the date was the paper of Liu & Hsu (2009), and that of Cho & Moon (2000).

		2006				
Average					40.58%	100%
International variables						
	Basic factors	Average export of goods per capita (EUR/inhabitant), 2002-2006	900	6100	14.75%	100%
		Average outbound FDI as a percentage of GDP (%), 2004-2006	0.45	21.50	2.10%	100%
	Advanced factors	Average number of patents granted per million of inhabitants, 2002-2004	0.46	40.88	1.13%	100%
		Average inbound FDI as a percentage of GDP (%), 2003-2006	26.42	16.40	100%	62.10%
Average					29.50%	90.52%
International diamond					35.04%	95.26%

Source: Values calculated based on data offered by the Eurostat database, available online at the address: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search _database.

The next variable of the diamond is the *demand conditions* (see table 2). Here, we must distinguish between the size of the market and its sophistication. At the domestic level, we measured the market size using as proxy the average real GDP per capita and its sophistication as the percentage of population who has at least tertiary education. For the both indicators, the European Union has obtained the best scores. On average, Romania's performances regarding the domestic

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demand conditions are about one third of those corresponding to EU. At the international level, the market size was estimated as the share of exports in GDP. In this respect, the exports to GDP ratio is almost equal, which shows that the international economic transactions play a very significant role for both economies. For the sophistication of the demand condition we used as proxy the so called export diffusion index, quantified as the ratio of the economy's exports (excluding the first three most important destination markets) in the total exports of the country. This proxy reflects how well integrated is the corresponding economy at the international level.

Table 2

Demand conditions' dimensions both for the domestic and international diamond of Romania and European Union

Domestic variables						
Demand condition						
	Variable	Proxy	Romania	European Union	Romania's Index	EU's Index
	Market size	Average real GDP per capita (EUR/capita), 2002-2006	2800	19500	14.36%	100%
	Sophistication	Average percentage of population over 15 years that has at least tertiary education (%), 2002-2006	7.95	16.32	48.71%	100%
Average					*31.54%*	*100%*
International variables						
	Market size	Average export dependency ratio (GDP %), 2002-2006	34.28	36.46	94.02%	100%
	Sophistication	Export diffusion index (% exports, without	55.60	61.97	89.72%	100%

		top three destination markets), 2002-2006				
Average					91.87%	100%
International diamond					61.71%	100%

Source: Values calculated based on data offered by the Eurostat database, available online at the address: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search _database.

One can notice that the international variables are very significant for the Romanian economy and it makes a noticeable difference for our country's diamond when the international parameters are taken in consideration, because now the ratio between the two countries becomes 1:0.6 instead of 1:0.3 (when considering just the domestic factors).

The third pillar of the competitiveness' diamond is represented by the *related and supporting industries* (see table 3). In his book, Porter underlines the role of the related industries such as banking and finance, energy, transportation and communication for the development of the national clusters. Thus, in our paper we used a proxy called ITC (*information*, *communication* and *technology*) which sums up three variables like: number of cell phones per person, access to a personal computer and to the internet. The average values are then computed and one can remark that ITC represents just 37% from the level of EU. Another variable used to point out the significance of related and supporting industries at the national level, was the average energy efficiency, measured like GDP reported to the gross consumption of energy. Also here we can notice a quite large discrepancy between our country and the average of European Union. But, in order to have a better idea, we took into consideration also some international variables related to this third pillar of the competitiveness. On the one hand we looked for cost of calls from

Romania and EU respectively, to USA and the cost are higher in the first economy. In European Union for 1 Euro it is possible to have a call almost ten times longer comparing to the situation in our country. On the other hand, Romania has a better position when referred to the international mobility compared to EU 27. The international mobility was determined as a composite index formed from both teachers' stays abroad and students' scholarships. This indicator can be interpreted at least in two ways. On the one hand, in the time period 2002-2006 the funds allocated to scholarships were higher and that represented on opportunity for many teachers and students to profit from training abroad. On the other hand, the countries in the European Union have high level universities and their students' or teachers' training does not necessary require an international mobility. Summing up, the domestic and international performances with respect to *related and supporting industries*, Romania's scores are half from those of EU. Nevertheless, these scores are better when taking into consideration the international diamond, too.

Table 3

Related and supporting industries' dimensions both for the domestic and international diamond of Romania and European Union

Domestic variables						
Related and supporting industries						
	Variable	Proxy	Romania	European Union	Romania's Index	EU's Index
		Information, communication and technology (TTC)	-	-	37%	100%
		Average energy efficiency (EUR/kilogram of oil)	1.27	5.46	23.26%	100%
Average					*30.13%*	*100%*
International variables						

International calls to USA	Number of minutes per 1 EUR	2.60	19.30	13.47%	100%
International mobility	Teachers/students' stays abroad as percent of academic staff/students in country of origin (%)	-	-	100%	84.33%
Average				*56.73%*	*92.16%*
International diamond				*43.43%*	*96%*

Source: Values calculated based on data offered by the Eurostat database, available online at the address: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.

The last factor of the Porter's diamond represents the *firm strategy, structure and rivalry* (see table 4). Porter pointed out how important the domestic rivalry is in order to improve the quality of the offered products and also to lower their price. In a study on the economy of Japan (Sakakibara & Porter, 2001), it is demonstrated the positive relationship between the high degree of the domestic competition and the performances on the international markets. At the domestic level, we measured the average nominal wage per hour in the Romanian economy and this represents 10% from the European one. As international variable we analyzed the share of exports of high technology in total exports. This is a very good indicator for the activity of the multinational corporations and the structural changes that have been taking place in the two economies. For Romania, these high-tech exports represent about 3% of the total and in EU 27 about 18%. But, also in this case the international indicators bring valuable information relative to our country competitiveness.

Table 4

Firm strategy, structure and rivalry' dimensions both for the domestic and international diamond of Romania and European Union

Domestic variables					
Related and supporting industries					
	Variable	Proxy	Romania	European Union	Romania's Index	EU's Index
		Average nominal wage per hour in the economy (EUR/hour), 2002-2006	2.00	19.95	10%	100%
Average					*10%*	*100%*
International variables						
		Exports of high technology products as a share of total exports (%), 2002-2006	3.28	18.26	17.96%	100%
Average					*17.96%*	*100%*
International diamond					*14%*	*100%*

Source: Values calculated based on data offered by the Eurostat database, available online at the address: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search _database.
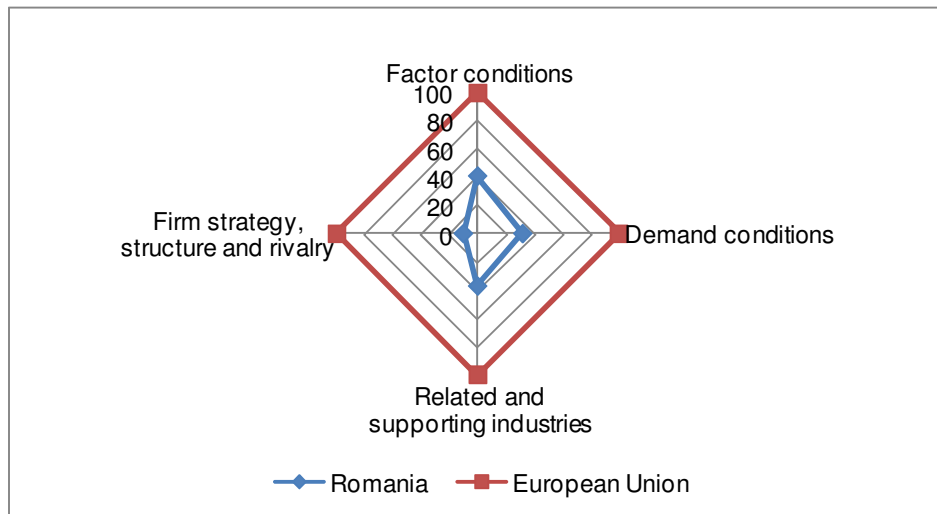
In the figure 2 and 3 we represented graphically the domestic and international diamond.

In the case of European Union, there are not large differences to be noticed. In comparison to that, for Romania it is quite a discrepancy between the two diamonds. The area covered by the international diamond is larger than that of the domestic one. This means that for
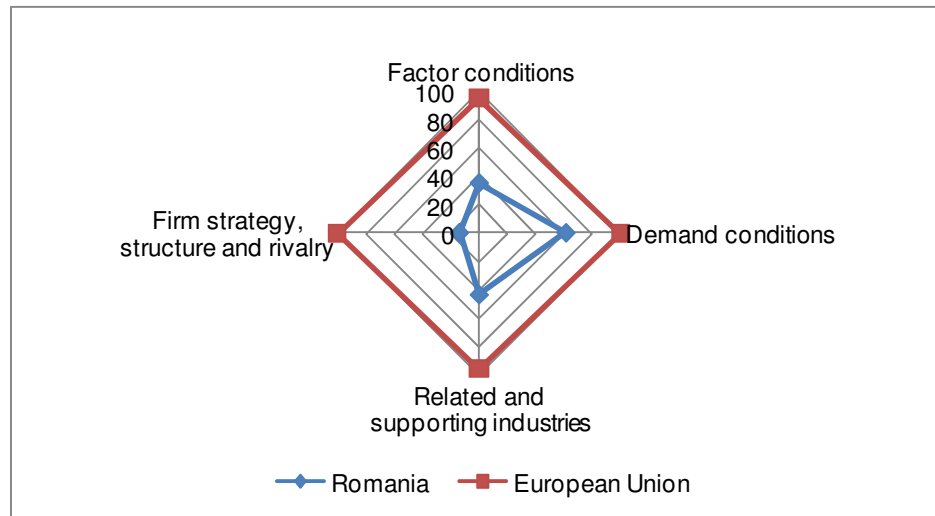
our country the role of the multinational corporation is important to be taken when talking about the national competitiveness.

Figure 2

The domestic diamond of Romania and European Union

Source: Own calculations based on data offered by Eurostat.

Figure 3

The international diamond of Romania and European Union

Source: Own calculations based on data offered by Eurostat.

More precisely, we could observe from figures 2 and 3 that the most significant differences appear when we analyze some indicators like: the number of patents granted, exports per capita, export's dependency, export diffusion index, inbound and outbound foreign direct investments. These variables depend directly or indirectly from the activity of multinational corporations. That is why, when analyzing only the home factor conditions, the index for Romania takes a value of 40%, but the international values worsen the index at 35% because we included here, the average outbound FDI and the average number of patents, fields in which Romania performs poorly. For all the other three pillars of the diamond, the international influences improve the conformation of the Romanian diamond. The demand condition has a value of 61% internationally compared to 31%, domestically, the related and supporting industries obtained a score of 43% compared

to 30% and, finally the firm strategy, structure and rivalry' index took the value of 14% when considering also the multinationals' activity. This is also the field in which, from our point of view, Romania should improve significantly.

IV. Concluding remarks

In our opinion such an analysis is important because it covers a field of research, which is very much discussed at the international level, mainly by the politicians. Although there are a lot of recommendation that the firms, countries, exported goods etc. should become more competitive, there is a large debate about what the term means. The purpose of our study was not to expose the opinions related to competitiveness, but to focus on one theory, which was very much discussed in the economic literature, namely the Porter's diamond of competitive advantage. Along with its merits, the Porter's opinion has also some important deficiencies, which are mainly related to the activity of multinational corporations. Or, in a world for which notions like "globalization" and "internationalization" play a more and more significant role, the component of multinational corporations can hardly be ignored, especially for small open countries like Romania. As we said before, the Porter's diamond is well known among the economist, but its extensions are not very much analyzed by the researchers.

In the Romanian economic literature, the studies written on this subject focus especially on different definitions of the concept and, eventually on the diamond of competitive advantage without going (as far as we know) any further. Such contributions are those of Cojanu (1997) but it applies strictly the Porter's clusters table for the case of Romania's industries, without building a corresponding national diamond for our country. Another analysis (Boscaiu & Mazilu, 2001), also at the micro level belongs to Boscaiu and Mazilu, who measure the competitiveness of those firms which are active in manufacturing,

by taking into consideration their capital structure, investments, exports, productivity, profit etc. At the micro- and macroeconomic level, the publications of Ovidiu Folcuţ (2005) and Daniel Daianu et al. (2001) bring some insights related to the structure of Romania's international trade with the main commercial partners, especially European Union and reveal the competitive and not competitive industries, after calculating some indicators belonging to the class of revealed comparative advantage indexes.

After researching the national and international literature on our topic, we considered that such an empirical study will be welcomed, because it reveals on the one hand the importance of the activity of multinational corporations for Romania relative to the average of EU 27, and on the other hand it reveals also the discrepancies between our country and the economic region to which we belong. The gap can be noticed daily in different fields of the socio-economic life, but we did not find an empirical model to reflect numerically the differences for the entire economy. Our study intends to offer this holistic image, taking into consideration also the limitations of the indicators used for the present research. The differences between Romania and European Union are obviously very large but not so large when taking into consideration also the international factors. This indicates that the activity of multinationals can and must be quantified, when speaking about the national competitiveness and by including this aspect we can offer a better image of the competitive power of an economy.

Also, in our opinion, the contribution of the present paper is mainly relevant for both Romanian and international economic literature because it empirically demonstrates the importance of an extended diamond model when measuring the international competitiveness of a country. As far as we know, there are no similar researches in Romanian literature and just a few at the international level. But this article can have also a practical impact for the persons responsible of implementing the economic policies in order to foster the national competitiveness.

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