THE COMPARATIVE ADVANTAGE IN ROMANIA'S INTRA-COMMUNITARY COMMERCIAL RELATIONS

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The article identifies the relative advantages that Romania has undertaken in its commercial relations with the European Union by the analysis of a system of indices of the revealed comparative advantage, meant to reflect the complex issues of change in the structure of Romania's external trade.
In this respect, four indices of the comparative advantages considered relevant were selected, the reality captured by the four criteria being sufficiently diverse to reveal the comparative advantage, in an economic sense and with a high statistical significance.
It should be noted, however, that the analysis of the comparative advantage in Romania's foreign trade and the interpretations made are applied to international trade flows in goods.

Keywords: international economic relations, external trade, specialization, revealed comparative advantage indices.

JEL: C10, C43, F14, F41.

External trade analyses always require supplementing *quantitative* data with *qualitative* details, provided by structural analysis indicators. Other tools of macroeconomic analysis combine the structures of exports and imports in order to highlight the *quality of international trade*.
The proportions theory of factors of production, Heckscher-Ohlin, explains international trade of complementary goods by the difference in availability and intensity of production factors. Therefore, on a market characterized by perfect competition, trade in complementary goods takes place due to comparative advantages arising from differences in endowments in factors of production.
Among the first studies that try to estimate the comparative advantage in commercial relations between countries is *Liesner*'s, in 1958. The indicator proposed in this study is a very simple one, thus leaving much room for the many further improvements that followed. The index is calculated as the ratio between a country's exports for a product and the exports for the same

product made by a group of countries, which were in the study the European Economic Community[168].

The most popular index used to quantify the relative advantages occurred seven years later, in 1965, belonging to *Bela Balassa* whose name it bears. This index is essentially based on the same idea, of the comparison of a country's exports for a certain product to the exports for the same product made by a group of countries, considered as a reference, but it does not directly compare the exports for the certain product, but their weights in the total trade, which was actually a significant improvement.

The revealed comparative advantage index defined by Balassa, for an economy engaged in international trade, is based on the assumption that a country with a competitive economy specializes in the development and international trade of certain goods only to the extent to which it owns a certain superiority or an advantage in their production, which is either the ownership of the necessary factors of production or of a technological nature. The relation for the analysis proposed by Balassa is actually a comparison between the share of the products within an industry in a country's exports, and the share of the same products in world exports:

$$ACR2_{kt} = \frac{X_{ikt}/X_{it}}{X_{nkt}/X_{nt}} = \frac{X_{ikt}/X_{nkt}}{X_{it}/X_{nt}}$$

From the two equivalent ways of calculating this indicator in the formulas presented earlier also result the two equivalent interpretations of this index. If the value of the index is greater than 1, a comparative advantage is relevant for the sector or product. Of course that this indicator also allows for a number of criticisms and improvements that have not delayed to appear, but the popularity of index hasn't been too much affected.

One of the most significant such criticisms is that the Balassa Index does not take the imports into account or, more specifically, the share of imports for different product groups in total imports. In this respect, in *1991, Vollrath* proposes three indices which he considers relevant in assessing the comparative advantages and which names as follows: *the relative commercial advantage*, *the relative advantage log for export* and *the revealed competitiveness*. Among these three indices, the first one respond very well to the necessity to bring imports in estimating the comparative advantage, by calculating the difference between the original index and its homologous for imports, as follows:

$$ACR3_{kt} = \frac{X_{ikt}/X_{it}}{X_{nkt}/X_{nt}} - \frac{M_{ikt}/M_{it}}{M_{nkt}/M_{nt}}$$

This index becomes comparable to zero and the results, positive or negative, are interpreted as a compared advantage or disadvantage.

Another important index, which also takes into account both the share of exports and the share of imports is the index proposed by *Damien Neven* in *1995*:

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168 $ACR1_{kt} = X_{ikt}/X_{nkt}$, where: X_{ik} is the export of country i for product k; X_{nk} is the export of a group of counties n for product k; t – the time period corresponding to the analysis.

$$ACR4_{kt} = \left(\frac{X_{ikt}}{X_{it}} - \frac{M_{ikt}}{M_{it}} \right) \cdot 100 \text{, unde } ACR4_{kt} \in (-10\%, 10\%)$$

A country has a comparative advantage in the industry or branch "k" is positive, when the $ACR4_{kt}$ is positive, due to the high degree of international specialization for the products in this industry. Thus, we can deduce that the share of the products in the industry "k" in total exports is higher than the corresponding share in total imports.

When the $ACR4_{kt}$ is negative, the country has a comparative disadvantage, as an expression of a strong dependency on imported products in the industry "k"; the country does not produce or is not able to produce these goods.

Essentially, the revealed comparative advantage proposed by Neven has the same interpretation towards value zero. The difference to Vollrath's index is that it focuses on the relations between the two streams for the country concerned, leaving aside the comparability with the reference group or world trade, thus showing a higher distance from the original index of Balassa.

It is often possible for a country to record a comparative advantage in terms of the indicator $ACR4_{kt}$, and yet, to record a deficit for the certain product because of the general level of imports higher than the level of exports. The indicator proposed by *Greenaway* and *Milner*, in 1993, surprised exactly the existence or non-existence of the trade deficit for a sector or product. The indicator is determined as a share of the deficit in the total trade recorded for the product:

$$ACR5_{kt} = \frac{X_{ikt} - M_{ikt}}{X_{ikt} + M_{ikt}}$$

This indicator, which has an interpretation similar to that of the indicator $ACR4_{kt}$, actually makes an equivalence between the deficit and comparative disadvantage, which is still a fairly restricted view and totally different from the previous indices, therefore they are not comparable.

Other approaches have remained faithful to the Balassa Index, just trying some corrections. For example, Balassa's index is not centered; if a country has a comparative disadvantage for a given product, the index varies between 0 and 1 for that product, and if, on the contrary, there is a comparative advantage, the index may vary, in theory, from 1 to infinity. Therefore, in *1998*, *Dalum*[169] proposes an index that varies from -1 to 1, the index being thus centered around 0. This index thus brings a correction to Balassa Index.

In *2000*, *Proudman* and *Redding* have reflected the fact that the arithmetical mean of the Balassa Index calculated from the indices related to products groups on different levels of detail, is not equal to 1. At first sight it is natural to assume that in the case of a country with an index value above 1 for some sectors (i.e. comparative advantage), while for others an index value lower than 1, overall, the average is around 1, thus reaching an equilibrium between the sectors for which there is an advantage and those for which there is a comparative disadvantage. The authors found that things are not in accordance with reality because of the way the original index and its average per sectors are calculated, and not due to a comparative advantage or disadvantage registered at a global level, which could ultimately lead to erroneous interpretations. Therefore, another variant of the index calculation was proposed, in which it becomes normalized in relation

169 The index proposed by Dalum: $ACR6_{kt} = \left(ACR2_{kt} - 1 \right) / \left(ACR2_{kt} + 1 \right)$

to its average, so that the average of the comparative advantage indices for a country, is always equal to 1[170].

Another approach to the comparative advantage, frequently encountered in the literature, is that which introduces a means of quantifying the production of a country, usually GDP, in calculating comparative advantage indices.

Because of the fact that the different ways of calculating the index of comparative advantage are not equivalent, on the contrary, they capture different aspects of reality from complementary approaches, for the analysis conducted for Romania there were selected four of these indices: ACR2, ACR3, ACR4 and ACR5. In this way, we found that the reality captured by each of these indices is diverse enough to reveal the comparative advantage that Romania has undertaken in the trade with the EU in its new composition.

Thus, for the indices ACR2 and ACR3 which, by the means of calculation, raise the issue of a group of countries as a reference, the intra-communitary trade has been used. The data being viewed from an EU perspective, the effect of decreasing Romania's trade deficit for different sections or groups of products, turns mostly on the indicator ACR5, as this is the only one that does not use weights of the groups of products concerned, in the sense of improvement . For the other indicators, the share of a certain product in total should be approximately the same, whether using the cif prices or f.o.b. Taking into account that the main emphasis will be placed on the dynamic evolution of these indicators, and the cif / fob ratio is approximately constant over time, we consider the conclusions of the analysis as significant and relevant in this respect.

In order to analyze the evolution over time of Romania's degree of specialization compared to the EU-15 (*Figure 1.*) and to the EU-27 (*Figure 2.*), between 1999-2008, the indicator proposed by Damien Nevén is used, as it highlights the evolution in time of the revealed comparative advantage index for the two divisions of SITC Rev. 3. The results show that Romania's highest level of specialization compared to the EU is in the production of clothing and the lowest level of specialization (comparative disadvantage) is in the textiles sector .

Figure 1. **The evolution of Romania's comparative advantage compared to EU-15, for two groups of products**
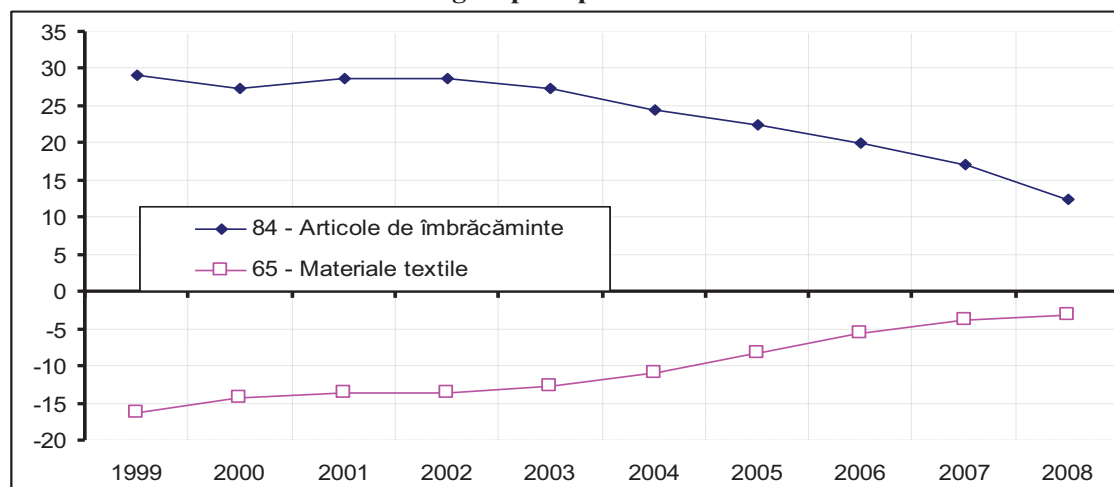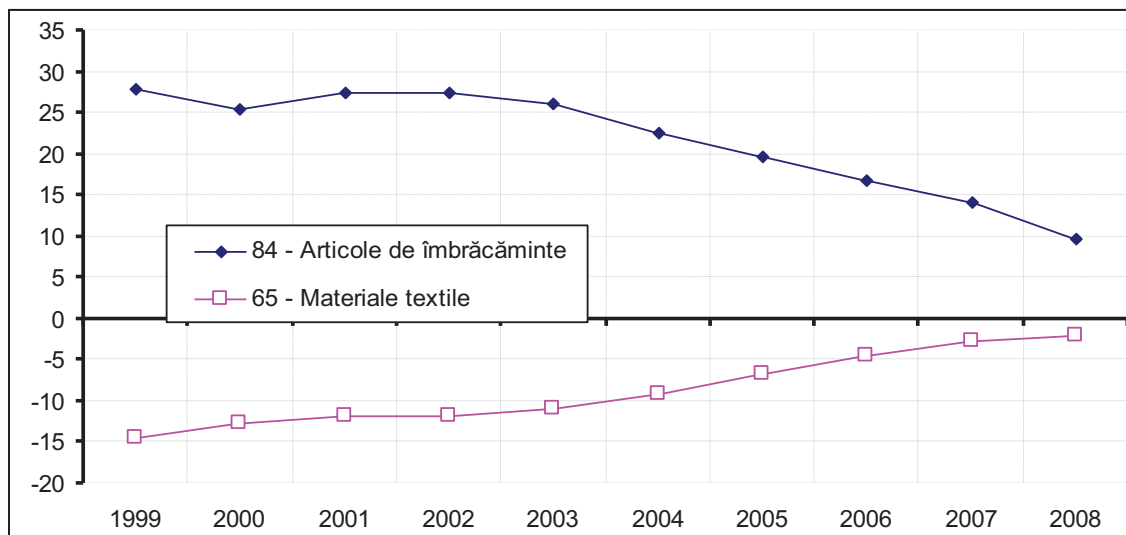

Primary data source: *Eurostat.*

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170   The   comparative   advantage   indicator   elaborated   by   Proudman   şi   Redding:

$$ACR7_{kt} = \frac{X_{ki}/X_i}{\frac{1}{m}\cdot\sum_{k=1}^{m}X_{ki}/X_i}$$

*Figure 2.***The evolution of Romania's comparative advantage compared to EU-27, for two groups of products**

Primary data source: *Eurostat*.

Lately, one may notice a decreasing trend of the comparative advantage for clothing and an increasing trend of the comparative advantage for textiles. Last year, IACR for clothing decreased by -21%, mainly due to the total exports' growth at a much faster pace (8.57%) than the exports' growth for the goods in the SITC division 84 (*Table 1.*). Therefore, we can assume that direct export is beginning to show a more dynamic evolution.

Table 1. **The analysis of Romania's comparative advantage index variation for 2007-2008**

Formula		2007	2008	Variation (%)
Export 84	**1**	*2883051025*	*2275353705*	**-21.07827**
Total export	**2**	*18258018758*	*19823556953*	**8.57452**
1/2*100	**3**	*15.79060173*	*11.47802945*	**-4.31257**
Import 84	**4**	*525977296*	*604350882*	**14.90056**
Total import	**5**	*31935267358*	*36244688542*	**13.49423**
4/5*100	**6**	*1.64701078*	*1.667419162*	**0.02040**
IACR (3-6)	**7**	*14.14359095*	*9.810610287*	**-4.33298**

Source: Data processing *COMEXT*, *Eurostat*.

Because of the different components underlying the construction of the four indicators of the comparative advantage (ACR2, ACR3, ACR4, ACR5), they do not provide redundant information. This does not mean that if one of the indicators shows comparative advantage, automatically, other indicators will show the same result. Therefore, the imposition of four conditions, involving different angles of approach, is to is meant to achieve a rather restrictive filtering of the results. An example is shown in *Figure 3.*, where the product group "059-Fruit juices" presents comparative advantage throughout the whole period, according to three

indicators - ACR3, ACR4 and ACR5 but it does not present comparative advantage according to the classical Balassa indicator.

Figure 3. **The evolution of Romania's comparative advantage for the product group "059-Fruit juices"**

Primary data source: *Eurostat*.

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