

The measurement of the competitiveness of EU agricultural production at the macroeconomic level

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Abstract

The twenty-first century seems to have begun with turbulent occurrences, but also with new challenges and opportunities. The survival and success in these turbulent times increasingly depends on competitiveness: the ability to compete. The simple economic analysis, and experience from economic life confirm that the development of national economies is historically dependent on the success rate of domestic producers and their skills to compete effectively on international markets. Due to the development of the international business environment and escalating pressure of globalization achieves increasing importance exactly the phenomenon of the competitiveness. Main aim of this article is to measure the competitiveness of EU agricultural production at the macroeconomic level during the period from 2007 to 2012.

Key words competitiveness, agricultural production, RCA 1, Grubel-Lloyd index

1. INTRODUCTION

The concept of competitiveness has always been subject to a great interest for both: for reserachers and for people involved in practical business. Market economy is the competitive economy and therefore different type of theories consider the competition for an important part of economic activity. Increasing importance of competitiveness can be explained by continuous integration and globalisation and therefore is necessary growth of competitive strength.[13, p.7]. The simple economic analysis, and experience from economic life confirm that the development of national economies is historically dependent on the success rate of domestic producers and their skills to compete effectively on international markets. Due to the development of the international business environment and escalating pressure of globalization achieves phenomenon of the competitiveness increasing importance. [2, p.8].

The term „competitiveness“ has been defined by many researchers as a multidimensional and relative term. It originates from the Latin word "competer" which implies participation in the commercial rivalry for markets. The importance of the various criteria of competitiveness changes with time and context. Because this term has never been consistently defined in the economic literature, it has many different meanings. [1, p.3]. For generally accepted definition of competitiveness can be regarded the definition of the European Commission. It defines competitiveness as *"the ability of companies, industries, regions, countries and transnational regions exposed to international competition, to generate relatively high income and employment levels."* [5].

The competitiveness can be understood to: [11, p.4].

- macroeconomic and

- microeconomic level.

Macroeconomic concept of competitiveness represents the ability of businesses in the whole economy to compete through the price or other characteristics of goods with companies based in other countries. World Economic Forum and the International Institute for Management Development annually publish their Global Competitiveness Index. Like all such indices, also this index summarizes a number of indicators into a single number, which is a weighted average of all factors entering into the evaluation. On the other hand, some economists tend to measure the competitiveness of countries by their real exchange rates. These methods measure the deviation from purchasing power parity. [11, p.4]. Probably the biggest polemic in examining of international competitiveness is whether it can ever explore at the macro level, or whether such research has ever sense. The opinion, that the concept of competitiveness does not make sense in applying at the national level and therefore its practical use is not justified, is confirmed by number of renowned economists. The most famous advocate of this argument is an US economist Paul Krugman. [11, p.4].

2. MATERIALS AND METHOD

Main aim of this article is:

- to measure the competitiveness of EU agricultural production at the macroeconomic level.

The main data were obtained from Eurostat that falls under the European Commission: [6], [7], [8]. We analyzed the period from 2007 to 2012 and the data for the whole EU 27. We chose the commodity groups SITC 0, 1, 2 and 4.¹ For comparison, we also analyzed the data for total exports, imports and balance of EU 27, which include all commodity groups. [14]. In this paper we have used the following logical scientific methods: analysis, synthesis and graphical methods.

Table 1 The value of exports, imports and trade balance in the period from 2007 to 2012 (mill.EUR)

EXPORT	2007	2008	2009	2010	2011	2012
SITC 0+1	62060	68411	62802	76265	89100	99596
SITC 2+4	30282	32136	27914	37671	45009	47494
TOTAL	1244005	1319819	1101746	1360059	1561890	1686452
IMPORT	2007	2008	2009	2010	2011	2012
SITC 0+1	75616	80820	73755	80698	91392	92790
SITC 2+4	70362	75542	47534	71118	85800	80871
TOTAL	1445155	1582932	1234317	1531043	1726514	1791022
BALANCE	2007	2008	2009	2010	2011	2012
SITC 0+1	-13556	-12409	-10953	-4433	-2293	6806
SITC 2+4	-40080	-43406	-19620	-33447	-40790	-33376
TOTAL	-201150	-263113	-132571	-170984	-164624	-104570

Source: Eurostat. Own processing.

¹ One of the most commonly used classification is the Standard International Trade Classification (SITC rev. 4) of the United Nations (UN), which allows you to compare statistics of foreign trade on a worldwide basis. The agricultural production is included SITC 0 (Food and live animals), SITC 1 (Beverages and tobacco), SITC 2 (Crude materials, inedible, except fuels) and SITC 4 (Animal and vegetable oils, fats and waxes).

A large set of indicators can be given for calculating the competitiveness. There are: revealed comparative advantage index (RCA), indicators of trade coverage (TC), relative revealed comparative export advantage index (XRCA), relative import penetration index (MRCA), import penetration index (MP), relative trade advantage index (RTA), intra-industry trade index (GL), revealed comparative advantage export indicator (XCA), competitive position Indicator (Ct) and others. [10, p.2].

We chose the numerical calculations using RCA index (Index of revealed comparative advantages) and GL index (Grubel-Lloyd index), which measure the intra-industry trade.

The index of revealed comparative advantages RCA is an index used in international economics for calculating the relative advantage or disadvantage of a certain country in a certain group of goods or services. It was based on the Ricardian concept of the comparative advantages.

$$RCA\ 1 = \ln \left[\left(\frac{x_{ij}}{m_{ij}} \right) : \left(\frac{X_j}{M_j} \right) \right]$$

when x_{ij} – export of country j in the commodity group i,
 m_{ij} – import of country j in the commodity group i,
 X_j – total export of country j,
 M_j – total import of country j.

If is the index $RCA\ 1 > 0$, than the country has a comparative advantage; if $RCA\ 1 < 0$, the country has a comparative disadvantage for the export of this commodity. If the result is equal 0, then there is no comparative advantage or disadvantage. [12].

By professional explanatory dictionary, the comparative advantage can be defined as: „the ability of a person or a country to produce a particular good or service at a lower marginal and opportunity cost over another“. [3].

The most often used index for determining the extent of intra-industry trade is Grubel-Lloyd index (GL), which was proposed by Grubel and Lloyd (1975).

$$GL_i = 1 - \frac{|X_i - M_i|}{X_i + M_i}$$

when X_i – export of country in the commodity group i,
 M_i – import of country in the commodity group i.

The Grubel-Lloyd index therefore is in the range between zero (indicating pure inter-industry trade) and one (indicating pure intra-industry trade). The value 0 means the complete specialization of the country. [4, p. 35].

3. RESULTS AND DISCUSSION

The European model of agriculture is a set of shared values of the EU member states. It was created at a time when Europe faced new type of challenges and increasing international competition. The challenges and opportunities affecting European agriculture are the following:

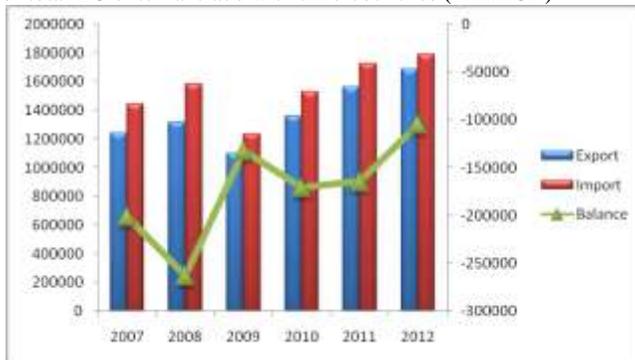
- the impact of the international trade liberalization on the competitiveness of European agriculture,

- the long term market trends of agricultural products as increasing the volatility of the markets and changes in the habits and expectations of the consumers,
- the enlargement of the European Union,
- financial constraints in the budget of European Union,
- implementation of new technologies, mainly information technology,
- the climate change impacts,
- the growing population and urbanisation in the world. [9].

We can see that agriculture in Europe was and still is influenced by numerous factors, from which is also reflected its overall competitiveness and position in the world market. In this section we will deal with the analysis of the competitiveness of agricultural production, but at the beginning it is necessary to briefly analyze foreign trade of European Union in general.

The figure 1 shows the development of total EU external trade with third countries during the period from 2007 to 2012. The left range of the chart shows the export and import values and the right range of the graph shows the values of the trade balance. In the entire monitoring period, the value of total import was higher than the value of total export. The whole period was marked by a negative trade balance.

Figure 1 The state of total EU external trade with third countries (mill.EUR)



Source: Eurostat. Own processing.

The EU is the second largest agricultural exporter after the U.S. It is important to note that the EU is the largest importer of agricultural commodities in the world, too. In the entire monitoring period, the value of import of commodity groups SITC 0 and SITC 1 was higher than the value of their export, excluding year 2012. Only in 2012, the trade balance achieved the positive value. The value of imports of commodity groups SITC 2 and SITC 4 is much higher than the value of their exports. The European Union has achieved in the trade with these commodities long term trade deficit. EU net exports of all supported agricultural commodities have been in decline over the last 10 years, what is the result of CAP reforms, decline of EU production and also result of the increase in consumption in European Union.

Table 2 shows the results of RCA 1 index for commodity groups SITC 0+1 and SITC 2+4 for the period from 2007 to 2012. The values of RCA 1 index achieved the negative values in the commodity groups SITC 2 +4, over the whole period the. It follows the EU had the comparative disadvantage in the export of crude materials, inedible, except fuels (SITC 2), animal and vegetable oils, fats and waxes (SITC 4) in the whole period 2007-2012. In the export of commodity groups SITC 0+1 was the situation slightly different. RCA 1 index achieved the positive values except for years 2007 and 2009. In recent years, the

EU achieved the comparative advantage in the export of food and live animals (SITC 0), beverages and tobacco (SITC 1).

Table 2 The results of RCA 1 index for the period from 2007 to 2012

RCA 1	2007	2008	2009	2010	2011	2012
SITC (0+1)	-0,0477045	0,0150946	-0,0471402	0,0619223	0,0748094	0,1309426
SITC (2+4)	-0,6932185	-0,6729277	-0,4186953	-0,5170277	-0,5449482	-0,4720925

Source: Own processing.

For getting a more complex information, there is analysed in the paper the inter-industrial trade with agricultural production with countries of the EU and with the third countries. Table 3 shows the results of Grubel-Lloyd index for commodity groups SITC 0+1 and SITC 2+4 for the period from 2007 to 2012. GL index values are close to the limit value of one, which means insufficient or weak specialization in the European Community over the whole period. The index values showed this proximity to intra-industry trade but no to inter-industry trade.

Table 3 The results of GL index for the period from 2007 to 2012

	2007	2008	2009	2010	2011	2012
SITC 0+1	0,90	0,92	0,92	0,97	0,94	0,97
SITC 2+4	0,60	0,60	0,74	0,70	0,69	0,74
TOTAL	0,93	0,91	0,94	0,94	0,95	0,97

Source: Own processing.

CONCLUSION

In this paper we have dealt with competitiveness of the agricultural production of the European Union towards third-country markets. The comparative advantage in the export commodity groups SITC 0+1 was confirmed by RCA index 1 several times and in commodity groups SITC 2 +4 was confirmed the comparative disadvantage throughout the period. The index for evaluation of comparative advantages is the evaluation of IIT on the basis of Grubel-Lloyd index. GL index values are close to the limit value of one, which means insufficient or weak specialization in the European Community over the whole period. For EU 27 countries is greatest motivation just expanding and securing of their own markets, their gradual coalescence and in this way increasing of the competitive resistance to third countries standing outside the European community. [2]. It is necessary that European agriculture has preserved and has increased its competitiveness and its market shares on internal as well as external market, whilst observing of the commitments taken by the EU in its international trade relations.

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