

Agri-Food Competitive Export Performance in EU Countries

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Abstract: *Export competitive performance is a main issue in the trade between European Union countries, which is based on agri-food market. Agriculture and food industry sector has been influenced by two main occurrences in the past fifteen years. First of all by European Union expansion in 2004 by Central and Eastern European countries, which opened many possibilities for new twelve member states and strengthened its competition among old and new countries. The second affect was recorded by economic crisis in 2008.*

The main objective of this paper is to analyse export competitive performance in agricultural sector and food industry of selected European Union countries. Our analysis is concentrated from 2010 to 2015 with respect of European Union consists of 28 member states. In our paper, we have chosen two indicators: Balassa RCA index (Revealed Comparative Advantage) for a calculation of an advantage or a disadvantage of selected countries in a selected types of goods or services and EMS index (Export Market Share) describes the export performance in European Union area based on its member states. Our data came from Eurostat database of international trade which have been necessary to analyse RCA and EMS indexes.

Key words: Competition · Agriculture · Food industry · European Union · RCA index · EMS index

JEL Classification: Q18 · C19

1 Introduction

Export competitive performance is a main issue in the intra European Union trade based on agri-food market. Agriculture and food industry sector has been influenced by two main occasions in the past fifteen years. First of all by EU expansion in 2004 by Central and Eastern European countries and the second affect was recorded by economic crisis, which occurred in 2008. Firstly, the changes have been performed in the export competitive performance by creating risks and profits between old and new member states. The expansion in 2004 opened many possibilities for new twelve member states and subsequently strengthened its competition among old and new countries. Moreover, reduction in tariffs led to changes in agriculture and increased their competitiveness. Secondly, the economic crisis, which occurred in 2008, is still affecting economy in EU. There's a fact that agriculture and food industry sectors are interested in other issues like globalization, transportation costs, mainly changes in consumer behaviour. These issues might be available for competitors to find out how to differentiate their products or services. It is really necessary to study the situation in EU agri-food market, as each member states compete together and how they can handle some opportunities and threats.

1.1 Exporting

Export might have a direct effect on productivity and the benefits will be stronger for export. First of all competitiveness upon exporting firms are likely to be serious in markets. They already have a significant number of local suppliers and may attract a quantity of suppliers who came from abroad. However, consumers can make greater demands on exporter regarding the quality of products. The second one are the opportunities to educate from offshore contacts which is going to be more useful. And the last one benefit is that firms shall be able to put on imperfect market higher prices to consumers in wealthy countries (Atkeson and Burstein, 2010). Most countries operate an export promotion agency to help domestic firms succeed in export markets. These programs help firms to lower variable or fixed costs of trading, e.g. by assisting firms to find a distributor, navigate foreign customs and product regulations, or adapt products to foreign tastes. Many papers have evaluated the effectiveness of these programs and have consistently shown that they

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boost both aggregate and firm-level exports in particular by helping existing exporters enter new product or destination markets. They also help firms survive on export markets, for example during a cyclical downturn. (Broocks and Van Biesebroeck, 2017).

1.2 European Union

As we know second largest exporter and the largest importer of agriculture products is EU. In each country are as consumption, trade or even their production in the case of agriculture, they are influenced due to their policies and also government programs. It has brought a turnover with a position in trading of agriculture production which subsequently over last years has led EU to the position of second largest exporter in the world in the case of agriculture products. In that time when prices were higher, the export of some products of EU has also increased. Thus CAP was trying to isolate the part of agriculture of European Union based on the findings of market forces. Thank to this, it grants an exemption to both consumers and producers in EU and consequently increase the regulation on countries which have an open agrarian market. The treaty of Rome provided for a common agricultural policy would: guarantee food suppliers at stable and reasonable prices, ensure a fair standard of living for farmers and improve agricultural productivity through technical progress and develop more rational production system that would employ resources more efficiently. Change in size is a remarkable feature of the EU. First of all in 1995 were included only 15 countries (EU15, accession of Sweden, Austria and Finland). In 2004 have joined 10 member states in May 2004 (EU10) and another two in 2007 (accession of Romania and Bulgaria). Finally it has brought the total number of 28 member states of EU in 2013 (OECD, 2011).

The support of the EU for the rules-based multilateral trading system is crucial to the ability of the system to deliver the benefits from trade to all its members. The EU's position as the world's leading exporter of goods and the second-largest importer is testimony both to the importance of trade to the European consumer and producer, and to the significance of the EU as a market for most WTO members (Lajdová, 2010). The European Union is the largest exporter and importer in both merchandise and commercial services trade in the world. The EU accounts for 25.8% of the world gross domestic product, and its share in the world exports of goods and commercial services is 16% and 22% respectively (European Commission, 2012). But this leading position of the EU is not steady.

The globalization of the world economy and trade liberalization brings a growing interdependence of countries and regions and also more trade. But the movement of production from developed countries to developing countries is also accompanied by the transfer of know-how and technologies to these countries. Moreover, developing countries are usually able to offer better production conditions, especially cheaper labour force and easier regulations in the area of labour standards and the protection of the environment, than developed countries. The result of this development is that more countries are incorporated into world trade and this contributes to the growth of competition in the world market (Fojtikova, 2014). The Treaty of Rome authors gave competition policy – with its embedding in the Community's constitution – a privileged position in the founding of the European Community. Since the European Union was first conceived as an economic area, competition policy represented a fundamental policy pillar ensuring a well-functioning common market that would be undistorted by the domestic arrangements of Member States. Taking such a leadership role implies that European Commission actions not only have the immediate goal of ameliorating anti-competitive merger proposals, but also involve the additional goal of setting a benchmark to achieve desired levels of EU-wide merger control (Barros, Clougherty and Seldeslachts, 2013).

The international flows had developed during the last decades. The high developed countries are important exporters and producers, often net producers. In the some time, other countries belonging to the emergent economies have become important exporters of agri – food products. Importers prefer to buy from the markets where products have the best price for the target market, while exporters choose the market with most advantageous product price. It is more important for local agri – food products to be competitive on the EU market and to assess the potential gains of the increased demand (Liliana Cimpoeis, 2016).

EU consumers in the 21st century are particularly concerned about the safety and quality of food. The EU food safety policies aim to protect consumer health through a farm-to-fork safety approach, imposing traceability requirements throughout EU food chains - while taking into account international agreements, such as the Sanitary and Phytosanitary and Technical Barriers to Trade agreements under the WTO (Jean-Christophe Bureau, Johan Swinnen, 2017).

Firms will produce innovations when they have the ability to commercialize, to sell a product or service at a profit. The profitability of an innovation depends on the degree to which firms are able to capture the rents generated by their innovations. These factors are also related to market structure. Especially with respect to firm integration and alliances the individual firm's concern about appropriation will vary depending on the industry in which the alliance occurs and the degree to which the appropriability regime in the industry is tight or loose (Kostas Karantininis, Johannes Sauer, William Hartley Furtan, 2009).

2 Methods

The main objective of this paper is to analyse export competitive performance in agricultural sector and food industry of selected European Union countries. Our analysis is concentrated from 2010 to 2015 with respect of European Union consists of 28 member states. In this paper we use data taken from Eurostat Database of international trade. These data are consisted from two-digits codes from 01 to 24 (except of animal feeding, tobacco, fisheries and agricultural non-foodstuffs) and they are summarized into two sectors: agriculture and food industry, which are explained in the Table 1.

Table 1 Division of goods into two sectors: agriculture and food industry following by Eurostat

| Agriculture | Food Industry |
|--|---|
| 01- Live animals | 02-Meat and edible meat offal |
| 07-Edible vegetables and certain roots and tubers | 04-Dairy products |
| 08-Edible fruits and nuts; peel of citrus fruits or melons | 09-Coffee, tea, mate, spices |
| 10-Cereals | 11-Products of milling industry, malt, starches |
| 12-Oil seeds and oleaginous | 15-Animal or vegetable fats and oils |
| | 16-Preparations of meats, fish |
| | 17-Sugar and sugar confectionery |
| | 18-Cocoa and cocoa preparations |
| | 19-Preparations of cereals, flour, starch of milk |
| | 21-Miscellaneous edible preparation |
| | 22-Beverages, spirits and vinegar |

Source: Eurostat Database of international trade

In our paper, we have chosen two indicators:

- Balassa Revealed Comparative Advantage Index (RCA)

The RCA is an index by which we could calculate an advantage or a disadvantage of certain country in certain type of goods or services. In our case we use only standard Balassa RCA index to calculate each member state of European Union in two sectors, both in agriculture and food industry. To calculate we have chosen the following equation:

$$RCA_{ij} = \frac{[(X_{ij}/\sum_{j=1}^n X_{ij})]}{[(\sum_{i=1}^m X_{ij}/\sum_{i=1}^m \sum_{j=1}^n X_{ij})]} \quad (1)$$

where:

- X_{ij} exports of sector i from country j
- n the number of countries analysed
- m total number of sectors

- Export Market Share Index (EMS)

The EMS index describes the export performance in European Union area based on its member states. Due to this index we have considered which country has the highest share on European Union market. EMS index could be calculated by the following equation:

$$EMS = \frac{\text{export of one sector (agriculture or food industry)}}{\text{total export of all sectors of all European Union countries}} \quad (2)$$

3 Research results

3.3 The Revealed Comparative Advantage

The RCA in agriculture sector and food industry sector of big countries includes seven countries. Based on the calculations of Eurostat Database and unifications of value we make a table (Table 2) of big countries for 2010-2015 period of time.

Table 2 RCA of big countries in agriculture and food industry sectors

| agriculture sector | | food industry sector | |
|--------------------|-----------|----------------------|-----------|
| | 2010-2015 | | 2010-2015 |
| Spain | 187.038 | Luxembourg | 118.222 |
| France | 114.704 | Germany | 117.210 |
| Netherland | 119.061 | Belgium | 103.017 |
| Belgium | 91.505 | Italy | 102.935 |
| Italy | 91.453 | France | 94.694 |
| Germany | 51.758 | Netherland | 93.192 |
| Luxembourg | 48.603 | Spain | 68.923 |

Source: Own processing based on Eurostat Database of International Trade

The result in RCA agriculture sector of big countries we may conclude, that Spain still holds its position (from 2000 is leader in RCA agriculture sector) and it achieves the highest value among all the big countries analysed. Netherland have taken over the position from France in the years 2010 – 2015 and became the second largest export leader in agriculture sector due to increasing they're export. On the other hand, the result in RCA food industry sector of big countries show, that Spain has the lowest value. In the analysed period 2010-2015 the leader in food industry sector was belonged to Luxembourg and also closely to Germany. In this paper we also calculate the RCA index for small countries. Small countries include eight member of European Union. The results in years 2010-2015 are shown in the table (Table 3).

Table 3 RCA of small countries in agriculture and food industry sectors

| agriculture sector | | food industry sector | |
|--------------------|-----------|----------------------|-----------|
| | 2010-2015 | | 2010-2015 |
| Greece | 152.690 | Ireland | 124.568 |
| Portugal | 108.265 | UK | 116.778 |
| Denmark | 68.273 | Sweden | 114.302 |
| Finland | 64.425 | Austria | 113.029 |
| Austria | 63.396 | Finland | 112.396 |
| Sweden | 59.751 | Denmark | 111.229 |
| UK | 52.554 | Portugal | 96.931 |
| Ireland | 31.119 | Greece | 80.902 |

Source: Own processing based on Eurostat Database of International Trade

Based on the results shown in the table we can conclude that only Greece as a country is the most competitive in agriculture sector. While Portugal started to export much more in the analysed period and it might be in the next year close to Greece. Despite of those biggest agriculture exporters, the other countries are almost equal and are competitive with respect to each other. Ireland is the country with the lowest value of RCA index in agriculture sector. The results in RCA food industry sector of small countries based on calculations is clear, that small countries of European Union are more progressive and they are more competitive to each other. If we compare them with big countries, they are countries with higher export competitive performance.

The RCA in both analysed sectors of Central and Eastern Europe's countries include thirteen countries. Till the year 2012 was composed from twelve member states of European Union, but after the year 2013 have joined Croatia as the last member state of European Union.

Table 4 RCA of Central and Eastern Europe's countries in agriculture and food industry sectors

| agriculture sector | | food industry sector | |
|--------------------|-----------|----------------------|-----------|
| | 2010-2015 | | 2010-2015 |
| Romania | 227.680 | Malta | 110.356 |
| Bulgaria | 218.576 | Poland | 108.969 |
| Cyprus | 176.475 | Estonia | 108.641 |
| Slovenia | 166.567 | Czech Republic | 96.673 |
| Hungary | 165.009 | Lithuana | 94.635 |
| Latvia | 150.520 | Croatia | 94.295 |
| Slovakia | 127.171 | Slovakia | 90.098 |
| Croatia | 115.890 | Latvia | 81.438 |
| Lithuana | 114.257 | Hungary | 76.319 |
| Czech Republic | 109.039 | Slovenia | 74.604 |
| Estonia | 74.998 | Cyprus | 71.190 |
| Poland | 74.852 | Bulgaria | 57.247 |
| Malta | 55.934 | Romania | 54.030 |

Source: Own processing based on Eurostat Database of International Trade

In the analysed years countries such as Romania and Bulgaria have the highest export competitive performance in agriculture sector of Central and Eastern Europe's countries. In 2013, when Croatia became a part of European Union has overtaken some of Central and Eastern Europe's countries with high export performance. The results in RCA food industry sector based on calculation is clear, that countries such as Estonia and Poland are leaders in this sector rather than in agriculture sector. While for Malta, which has the lowest export performance in agriculture sector, in sector of food industry has the lowest value. When Croatia has joined after the year 2013 and became a part of European Union, it's export competitive performance is close to some of Central and Eastern Europe's countries. The Slovak Republic is ranked 7th in the list of countries, which belong to the Central and Eastern Europe's countries, based on the calculation of RCA index in the agriculture sector and food industry sector.

3.2 The Export Market Share

The EMS in agriculture sector and food industry sector is calculated for seven big countries (Netherlands, Spain, France, Germany, Belgium, Italy, Luxembourg) eight small countries (Greece, Portugal, Austria, Sweden, UK, Denmark, Finland, Ireland) and thirteen Central and Eastern Europe's countries (Romania, Cyprus, Hungary, Bulgaria, Slovenia, Slovakia, Lithuania, Latvia, Czech Republic, Poland, Malta, Estonia, Croatia). All of them are members of European Union. The results are shown in the following table (Table 5).

Table 5 EMS in agriculture sector and food industry sector

| agriculture sector in % | | food industry sector in % | |
|-------------------------|-----------|---------------------------|-----------|
| | 2010-2015 | | 2010-2015 |
| Netherlands | 19.33 | Germany | 18.73 |
| Spain | 17.14 | Netherlands | 15.40 |
| France | 14.81 | France | 12.46 |
| Germany | 8.14 | Belgium | 9.01 |
| Belgium | 7.85 | Italy | 7.55 |
| Italy | 6.61 | Spain | 6.41 |
| Poland | 3.16 | UK | 5.59 |
| Hungary | 3.30 | Poland | 4.69 |
| UK | 2.48 | Denmark | 3.64 |
| Denmark | 2.22 | Ireland | 3.27 |
| Romania | 2.06 | Austria | 2.97 |
| Czech Republic | 1.83 | Czech Republic | 1.66 |
| Bulgaria | 1.78 | Hungary | 1.59 |
| Austria | 1.64 | Sweden | 1.13 |
| Greece | 1.34 | Slovakia | 0.94 |
| Slovakia | 1.27 | Portugal | 0.93 |
| Portugal | 1.02 | Greece | 0.72 |
| Ireland | 0.81 | Lithuania | 0.60 |
| Lithuania | 0.72 | Romania | 0.52 |
| Sweden | 0.58 | Bulgaria | 0.48 |
| Latvia | 0.51 | Finland | 0.36 |
| Slovenia | 0.45 | Luxembourg | 0.34 |
| Croatia | 0.22 | Estonia | 0.28 |
| Finland | 0.20 | Latvia | 0.28 |
| Estonia | 0.19 | Slovenia | 0.21 |
| Luxembourg | 0.14 | Croatia | 0.18 |
| Cyprus | 0.10 | Cyprus | 0.04 |
| Malta | 0.00 | Malta | 0.01 |

Source: Own processing based on Eurostat Database of International Trade

Based on results in EMS agriculture sector of big countries we may conclude, that in analysed period Netherlands, Spain and France hold the highest market share. Consequently Germany, Belgium, Italy, Poland, Hungary, UK, Denmark and Romania have lower market share in agriculture sector. Other European Union countries have in the agriculture sector the lowest export market. During the economic crisis the EMS of several big countries have fallen and only Netherlands was trying to keep their EMS in agriculture sector in analysed period. We could definitely see the differences between member states of big countries and small countries. Only five countries have EMS greater than 1%. Central and Eastern Europe's countries have held the lowest EMP compare with either big or small countries. Only first three countries such as Poland, Hungary and Czech Republic have greater than 1%. In the food industry sector, Germany has the highest percentage value of EMS from all countries of European Union. We can state on the basis of the data given in the table that economic crisis might have an impact on decline in food industry sector of small countries in years 2010-2015. We may conclude that the results in agriculture sector and the results in food industry sector approxi-

mately did not change in Central and Eastern Europe's countries. Poland, as a part of Central and Eastern Europe's countries, has the highest export market share in both sectors and is seems rapidly increasing in food industry sector. After Croatia has joined in 2013, their EMS is a little bit lower than in agriculture sector. Despite of economic crisis which started in 2009, EMS in food industry sector of each Central and Eastern Europe's countries has increased. If we compare Central and Eastern Europe's countries with big or small countries in both sectors, our opinion is that they have been at least influenced by economic crisis.

4 Conclusions

The aim of this paper was to evaluate the export competitive performance at a sector level in intra European Union trade within the period of years 2010-2015. At first we could say that there is a relationship between agriculture and food industry sector concentrate in intra-EU market. Several countries play a key role in exporting. Spain and Netherland are holders of the highest export market share in agriculture sector, while according to our calculations in food industry sector Germany has hold higher export market share. Countries such as Spain, France, Netherland and Italy have the largest comparative advantage in agriculture. However in food industry sector Germany, Luxembourg and Belgium have higher comparative advantage. Secondly, it seems that there is a relationship between agriculture sector and food industry sector, which are interconnected. However they don't have a similar tendency in export performance and thus we couldn't examine which one is pushing or pulling to the other one. Thirdly, our analysis showed that the CEEC's countries after an entrance into the European Union, were competitive and have had high comparative advantage in agriculture sector.

References

- Atkeson, A., & Burstein, A. T. (2010). Innovation, firm dynamics, and international trade. *Journal of Political Economy*, 118(3), 433-484. doi:10.1086/653690.
- Barros, P. P., & Clougherty, J. A. (2013). Europeanization of EU member-state competition policy: The commission's leadership role. *International Review of Law and Economics*, 34, 41-51. ISSN 0144-8188. doi: <https://doi.org/10.1016/j.irl.2012.11.001>.
- Broocks, A., & Van Biesebroeck, J. (2017). The impact of export promotion on export market entry. *Journal of International Economics*, 107, 19-33. ISSN 0022-1996. doi: <https://doi.org/10.1016/j.jinteco.2017.03.009>
- Bureau, J. CH., & Swinnen, J. (2017). EU policies and global food security. *Global Food Security*. ISSN 2211-9124. doi: <https://doi.org/10.1016/j.gfs.2017.12.001>.
- Cimpoies, L. (2016). An Analysis of Moldova 's Agri-food Products Competitiveness on the EU Market. In *Agriculture and Agricultural Science Procedia*, 10, 532-538. ISSN 2210-7843. doi: <https://doi.org/10.1016/j.aaspro.2016.09.030>
- Fojtíková, L. (2014). Performance and Growth of the Eurozone Export. *Procedia Economics and Finance*, 12, 154-163. ISSN 2212-5671. doi: [https://doi.org/10.1016/S2212-5671\(14\)00331-1](https://doi.org/10.1016/S2212-5671(14)00331-1)
- Karantininis, K., Sauer, J., & Furtan, W. H. (2010). Innovation and integration in the agri-food industry. *Food Policy*, 35(2), 112-120. ISSN 0306-9192. doi: <https://doi.org/10.1016/j.foodpol.2009.10.003>
- Lajdová, Z. (2010). Dairy trade policy, revealed comparative advantage and competitiveness: a case of EU and Russian Federation in dairy trade. In *PEFnet 2010 : sborník příspěvků z konference posluchačů doktorského studia, 14. ročník, 12. listopadu 2010*. Brno: Mendelova univerzita. ISBN 978-80-7375-450-1.
- OECD. (2011). *Evaluation of Agricultural Policy Reforms in the European Union*. OECD Publishing. ISBN 978-92-64-11208-7.

