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# Ukrainian prospects in the space of European agro-food trade based on quantitative economic analysis

**Abstract.** The continuing process of global integration bears implications for the formation of food markets in the global and regional levels. According to the latest estimates, Ukraine is able to feed more than 200 million people currently. But this production should be effective not only from the standpoint of food security but also from a Growth position. Formation of trade policy is the most important way to achieve this one. This paper assessed the current state of the European trade ties of internal agro-food market based on Trade Density Econometric Models. We provide in this paper a comparative evaluation of alternative approaches to possible development scenario for Ukrainian agricultural market based on the European experience. The research includes theoretical modelling foundations, datasets employed and analytical comparison of previous studies. The results can be used to determine government agricultural policies and large agricultural companies.

**Key words:** agro-food market, world trade network, trade density, association agreement, free trade area

## Introduction

The last two decades of global trade is characterized by the rapid proliferation of the regional trade agreements network. Usually regional integration association formed around integration centers, the role of which carry the most developed countries - EU, US, Japan and more recently China and Russia. Currently EU has 28 FTA operating agreements. Changes in the institutional, technological and economic environment raise new challenges to the Ukrainian, European and even World agro-food trade policy. As a result, agro-food trade and its enforcement face new challenges with the worldwide development of regulation and investment liberalization, as well as the widespread changes in technologies and institutions.

In this study we research the number of reasons and patterns which can predetermine the formation of trade networks with economic, geographic and historical perspective.

A threefold objective is pursued here. This paper describes this different context: the first part is the analysis of changes in the world trade conditions and the transformation of the world trade network, based on the previous review of existing research that analysis of complex networks to empirically investigate international trade and countries' trade relation.

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Then it explains how the European agro-food trade policy accounts for this evolving situation. For these purpose applied the three-step model for estimating of European Union Trade Relation Density (EUTRD). It is also important to note that the study of trade relations between the EU countries narrowed down to market agricultural products. Since this World Trade Segment is critical important under conditions of food and energy security balance formation and in terms of resource capacity. Also, the final part of the study is an analysis of condition and prospects of the Ukrainian market development from a position of global integration, for which the agro-food production and trade is leading.

Lastly, in conclusions will be proposed a set of directions which should or could be undertaken in the future.

## Material and methods

The present research is based on general scientific methodology. The first issue, which was addressed, concerns the study of the trade microstructure in international trade. Taking into account theory of a network's community (Newman, 2003) and based on the study by Fan was use weighted external optimisation algorithm (WEO) and coarse grain in process to classify countries. They are divided into three groups naturally; these groups also reflect the structure of "core/periphery», like the entire network, that is consistent with the three trading cores: the European Union, the United States, and the East Asian countries: China and Japan, described by the geography of international trade issues (Fan, et al., 2014).

We have applied the three-step model for estimating of European Union Trade Relation Density (EUTRD) in the second part. Initially, the whole array of data was synced in order to preserve cause-and-effect relationships between input and output.

Next, regression analysis was performed using semi-linear and multiple correlation coefficients followed by evaluation of the mean square error.

With the help of semi-linear correlation coefficient (Fig. 1) density of relation between two vectors was measured: import and export groups.

$$r_{x,y} = \frac{\sum_{i=1}^{n}(y_i - y^-)(x_i - x^-)}{\sqrt{\sum_{i=1}^{n}(x_i - x^-)^2 \sum_{i=1}^{n}(y_i - y^-)^2)}} \quad (1)$$

where:

$x$ – factor variable (export/import of the country);

$y$ – resultant variable (export/import of the other country).

The linear correlation coefficient ranges from -1 to 1. Equality coefficient zero indicates the absence of a linear relationship. Equality factor "-1" or "1" indicates the presence of a functional connection. The sign "+" indicates straight connection, the sign "-" on the reverse link.

Multiple correlation coefficients were used to establish the tightness of linear relationship in pair's export-import and import-export between countries.

Multiple correlation coefficient ranges from 0 to 1. Correlation coefficient "zero" indicates no linear relationship. Respectively, equal to one indicates the absolute functional connection. The coefficient does not indicate the direction of the bond.

Mean square error for a pair of linear correlation coefficient is calculated by the formula (Fig. 2) :

$$\sigma_{r=}(1-\rho^2)/\sqrt{n} \quad (2)$$

where:
*p* - aggregate correlation coefficient;
*n* -sample size

As a result of calculations, quasi-model matrices were created. Lastly, it was determined the density in selected countries' groups for this one was used the correlation matrices based on the previous results.

System analysis, monographic, abstract and logical, balance and graphs scientific methods were used for third part of study. The current state of World Trade Network and its influence on the feather agro-trade policy development in EU and Ukraine are the main motive of the investigation. Also, they are a major reason for agricultural activities.

## Data sources

All studies were based on international trade data that are available from the Direction of Trade Statistics. Trade flows between the countries are unified under current US dollars as a unit. All of the countries included in the data are treated as vertices, with imports and exports as directed links.

For EUTRD Models we used time series data set for Euro Trade according to Ukrainian Commodity Classification for Foreign Economic Activity (Harmonized commodity description and coding system) over the period 2002-2012, per month.

We have created a General Model of EUTRD based on the natural and monetary value (unified in US dollars) of agricultural products exports and imports by 24 commodity groups including 195 sub-groups within the 28 countries of the European Union. All data are continuous. Source of information is the State Statistics Committee of Ukraine (State Statistics Service of Ukraine).

Ways to adapt that have been proposed in the current study are based on leading practices in this field from a regional perspective.

## Research and Discussion

## World Trade Network

Taking into account that the scientific interest in the development of complex networks grown steadily over the last decade, a considerable amount of work has been devoted to the empirical study of the International Trade Network (ITN) from this new perspective. [Benedictis 2011; Bhattacharya 2008; Newman 2004].

The ITN, also known as the World Trade Web (WTW) and the World Trade Network (WTN), is defined as the network of import/export relationships between world countries in a certain period.

For our work is interesting from the standpoint of the general laws study of global trade network formation and their respective impact on the future opportunities and development of Ukrainian agro-food trade through the EU trade network.

Ying Fan, Suting Ren and other developed a map of International Trade Relations based on the results of quantitative analysis (Fig. 1).

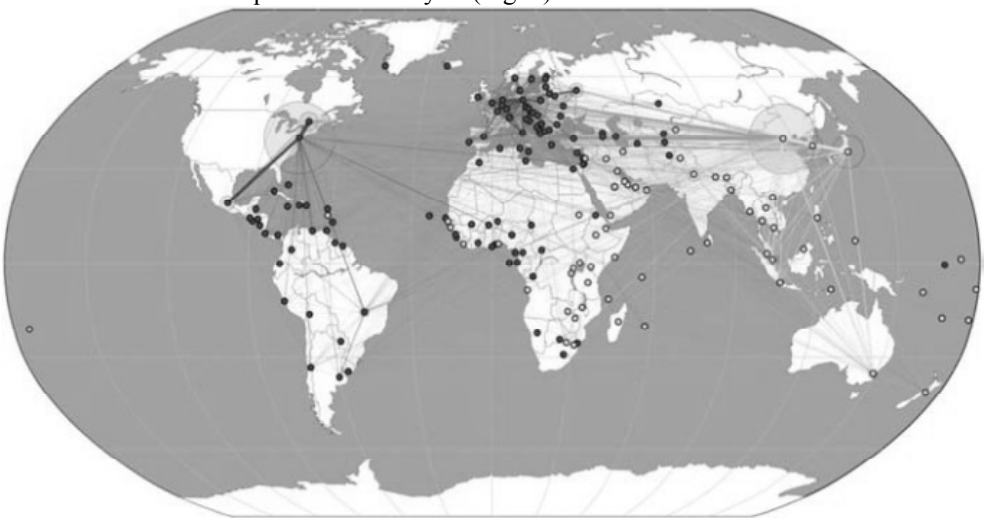


Fig. 1. Communities of the International Trade Network in 2010

Source: Fan Y., Ren S., Cai H, Cui H., 2014. The state's role and position in international trade: A complex network perspective, Economic Modeelling, vol. 39, Issue C.

Points indicate that countries and lines denote the trading relationship between two countries. The size of the orange concentric circles around the points indicates the total volume of trade, and the line width indicates the intensity of flow trade between countries. Different colors (green, mauve and yellow) represent different Groups, and the orange line represents the trading links between Groups.

In this figure we find that the world is clearly divided into three parts: Western on the left, Central in the middle and Eastern on the right. The Western Group contains almost all countries in North and South America and several countries in other continents (such as Nigeria, Congo, Israel and Afghanistan). The Central Group middle community consists of most European countries and their neighboring countries. It also includes many western African States. The vast majority of Asian countries and most east African countries compose the Eastern Group. The results show that there are trading centers in the groups (here trading centers are those countries that have huge flows of imports and exports far greater than other countries).

Central Group most interested us in framework of this research. So based on the results of the Fan, Ren and other study that are based on WEO analyses, we can draw the following conclusions: Central Group is more clustered, which indicates closer trade ties, followed by Eastern Group and Western Group. The Central and Eastern Groups account for 53.9% of all trade; hence, they make important contributions to world trade [Fan, Ren and other 2014].

## European Union Trade Relation Density

As shown in previous research, EU trade network relations are extremely wide even outside and it's one of the world's most powerful.

Overall, EU has 27 valid agreements which provide for the creation of a Free Trade Area (FTA) (excluding Syria, agreement is still not implemented) - Table 1.

Table 1. EU Free Trade Area Valid Agreements

| Countries | Year of Valid Agreements | Agreements type |
|---|---|---|
| Switzerland | 1973 | EFTA |
| Liechtenstein | 1973 | EEA |
| Andorra | 1991 | Customs Union |
| San Marino | 1992 | Customs Union |
| Norway | 1992 | EEA |
| Iceland | 1992 | EEA |
| Turkey | 1995 | Customs Union |
| Palestinian Authority | 1997 | Association Agreement |
| Faroe Islands | 1997 | Denmark Autonomous Territory |
| Tunisia | 1998 | Association Agreement |
| South Africa | 2000 | Agreement on Trade, Development and Cooperation |
| Morocco | 2000 | Association Agreement |
| Mexico | 2000 | Free Trade Area |
| Israel | 2000 | Association Agreement |
| Jordan | 2002 | Association Agreement |
| Lebanon | 2003 | Association Agreement |
| Chile | 2003 | Association Agreement |
| Macedonia | 2004 | Stabilization and Association Agreement |
| Egypt | 2004 | Association Agreement |
| Croatia | 2005 | Stabilization and Association Agreement |
| Algeria | 2005 | Association Agreement |
| Bosnia and Herzegovina | 2008 | Stabilization and Association Agreement |
| Albania | 2009 | Stabilization and Association Agreement |
| Montenegro | 2010 | Stabilization and Association Agreement |
| South Korea | 2011 | Free Trade Area |
| Peru | 2013 | Tripartite Free Trade Area (including Columbia) |
| Serbia | 2010 | Stabilization and Association Agreement |

Source: EU official website (http://trade.ec.europa.eu)

Also, the EU's largest investor is the Russian economy: the amount of accumulated capital in 1994 was 227 $ U.S. billion, including more than105 $ U.S. billion of direct investment. Russian investments to economies of EU member states are 77.5 $ U.S. billion including 52 $ U.S. of direct investment. The main document that is the legal basis of

cooperation between Russia and the EU is the Partnership and Cooperation Agreement which entered into force in December of the year [Ostashko 2013].

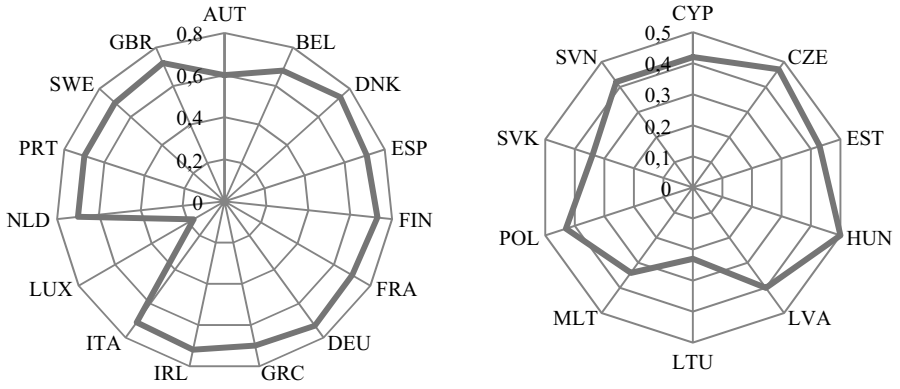
Thus, a strong Central Group trading net is an important influence point on Ukraine's trade policy and defining such relations with Russia.

The main changes inside the integration process in the European Union for new associated countries as well as for neighboring countries are the lower tariffs and increasing of market access. The welfare gains from tariff reduction are the sum of gains to consumer and producer surpluses net of revenue loss.

The next step, is to identify possible reasons that affect the density of trade relations inside the EU. This study focus on the follow features of European market: tariff policy, "historical" and "geographical". We are especially interested in the density of EU Agro-Food Market trade relations as the most important for the Ukrainian economy development.

Geographical location is very important to evaluate the influence for trade intensity. And here we propose to use the following classification: "Old" Europe: France, Germany, United Kingdom, Netherlands, Belgium, Austria, Ireland, and Luxemburg; "Mediterranean" Europe: Italy, Portugal, Spain, Greece, Cyprus, and Malta; "Nordic" Europe: Sweden, Finland, Denmark, Estonia, Latvia, and Lithuania; "Post-Warsaw Agreement" Europe: Bulgaria, Poland, Czech Republic, Slovakia, Slovenia, Hungary, Romania, and Croatia.

In our research we analyzed the density of trade relations in the EU agricultural market (Fig. 2) accordingly to the general historical formation of the European Union. As the result, level of trade density for integrated countries (EU-15) is almost two times higher, than for new member states (EU-10) – Fig. 2 (a) and (b) respectively.



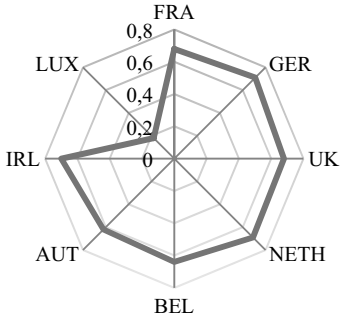

a)EU – 15 b) EU – 10

Fig. 2 - Density of Trade Relations under the EU Agricultural Market

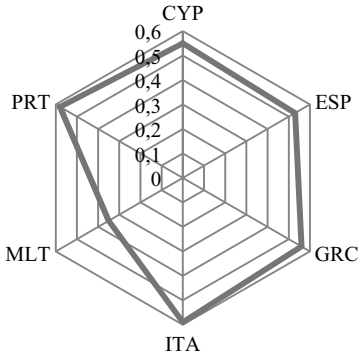
Source: own research.

We can explain such results by historical reasons, deep integrations, and strong trade and production links between all European countries. The Luxemburg example can be interpreted by the relatively low volume of agri-food trade turnover. In contrast to the EU-15 trade we have the results for EU-10 group of countries. Here, as it shown on Fig. 2 (b)

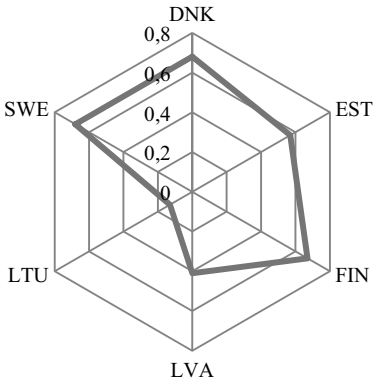
This part of research confirms our hypothesis about dependence of trade density on the level of integration (including the production links, standards, trade accession to the markets and consumer habits). Another part was about "regional" dependencies in trade density of agri-food items.



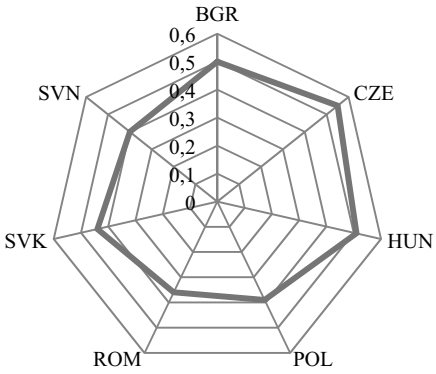

a) "Old Europe" Group




b) "Mediterranean Group"




c) "Nordic" Group




d) "Former SU" Group

Fig. 3 - Density of trade relations under the EU agricultural market

Source: own research

As we can see from Fig. 3, "geographical" position for each country is the strong motivation for trade. Only Luxemburg, Malta and Lithuania shows the low trade density inside the group. This antimony could be explained by the nearness of huge and more capacity markets (predominantly from "Old Europe"). In the group of countries from "Post - Warsaw Agreement" we can observe the middling level of trade density. Bulgaria, Czech Republic and Hungary demonstrates higher level of integration. The main reason here is the higher level of industry development.

## Ukrainian Agro-Food Trade Prospects

The domestic market capacity is the average annual consumption of certain products and the average population, and is an important element for making up the demand and supply of food and determination of independence for individual products. Compared with the previous year, in 2010 was a noticeable increase in capacity of the internal market in four groups of food: "meat and meat products" - by 4.1%, "eggs" - by 6.2%, "vegetables and melons" - by 4.3%, "fruits, berries and grapes" - by 4.9%.

## Ukrainian Agro-Food Market – Structure and Features

However, the reduction of average consumption has reduced the capacity of the internal market in five major groups of food, namely, by group, "bread and bread products", "milk and milk products", "fish and fish products", "vegetable oil" and "sugar" The negative trend of the past year is a reduction in the diet Ukrainian those types of food consumption which are below the rational norm (dairy and fish products).

Meeting the needs of the population in food, the extent of its purchasing power in 2010 as in previous years, carried out mostly by domestic production. The most vulnerable positions in terms of import dependency positions are "fish and fishery products", "fruits, berries and grapes," "vegetable oil of all kinds," the share of imports from these groups in the total consumption respectively of 71.6, 51.3 and 46,9 percent at a 30-percentage threshold criteria.

It should be noted that a significant percentage of imports in the group "all vegetable oil" due to import of tropical oils, which are not produced in Ukraine (palm, coconut oil, etc.), but widely used in the production of food domestic industry. Meanwhile, the local demand for sunflower oil was provided entirely by domestic production.

Last year, the dependence of the domestic market from imports of fish and fishery products increased by 6.3 percentage points, due to a decrease in fishing and extraction of other aquatic resources in inland waters, the volume of which in 2010 compared with the previous reduced by 14.9 percent.

## Effects of Consolidation

The implications of what such a system will mean for farmers can already be seen in the particular parts of industry in Ukraine. For example app 90 percent of chickens produced for meat are grown under production contracts with fewer than 10 companies. The farmer furnishes the land and labor, and is required to invest hundreds of thousands of dollars for buildings and other equipment. The company provides the chicks, feed and medicine and agrees to pay a guaranteed price per kilo. It is similar to US history where in the 1950s there were more than a thousand companies, most poultry farmers benefited from such contracts because they were protected from price fluctuations, but now that four vertically integrated firms control 50% of the market, the terms of the contracts are much more favorable to the companies [Howard 2006].

Grain and vegetable growers may soon find themselves in a similar situation. Genetically engineered (GE) crops are controlled by just six multinational corporations, and

the technology is being used as a tool to consolidate the seed supply. Crop farmers are then being locked into food chain clusters through "bundling," or linking patented seeds with contracts, chemicals and credit.

Consumers are also harmed by consolidation. GE foods, for example, have been introduced into the food system without public consent, or even public knowledge, as recent polls have shown6, thus limiting the freedom to choose non-GE products. Price gouging is another way that food conglomerates may exploit their increasing power. Although farm milk prices are the lowest they have been since the 2000s, prices paid by consumers have not declined. This is somewhat of an exception, however, as most food prices have remained low over the past few decades (except of products like carbonated beverages, snacks and breakfast cereals, which are already dominated).

## Production as the Main Food Supply Factor

Concerning the situation in Ukraine, we can note that now big and medium agro-holdings became the main producing power in agricultural sector of economy. According to industry researches which are based on information from individual companies and media reports, large agro-businesses presently lease over 3.5 mln ha of land, or 10.8% of total arable land and 20% of leased arable land, with the smallest companies in this group controlling over 30 thousand ha each.

Over the last five years the term "agro-holding" has emerged and became common for description of agricultural production in Ukraine. This type of production structure having several competitive advantages in production as well as in investment sphere is expanding its influence at nearly every field of agricultural activity, actively consolidating through leasehold the main production resource – agricultural land. Last tendencies in the Ukrainian agro-holdings activities:

- The grain market in 2010/2011 was characterized by a high level of administrative intervention, i.e. quotas (till 31 March 2011 and the export duties to 1 January 2012), which led to the revision of the priorities of export-oriented agricultural holdings specialized in soybean, rape seed and corn.
- Low quotas and high tariff made the barley crop less attractive for growing, while corn has become very attractive due to high economic returns and stable excess demand in foreign markets.
- Sugar segment is characterized by a high degree of consolidation as a result of assets purchase transactions of Kernel and Ukrlandfarming sugar companies. This trend will continue.
- In the dairy sector, the selling price of milk and dairy products increased by 60% as a result of which the profitability of milk production amounted to 17.5%. Moreover, there is a lack of quality raw milk products. Due to such factors, the sector is attractive for investors.
- In livestock, integration processes dominated the poultry industry; however in 2010 they also started to play a notable role in the pig breeding industry. In the near future, consolidation and expansion of production capacity will continue.
- Today, agricultural holdings are paying careful attention to the cultivation of potatoes (Mriya, Svarog, IMC). The barriers faced in this field are as follows: the need in costly investments in the infrastructure, logistics and marketing.

In 2011, 3 mln Ukrainians were working in Ukraine's agricultural industry, or 15% of all labor force. Ukrainian agricultural producers enjoy a number of competitive advantages over their foreign peers, particularly low labor costs. Labor force is inexpensive and highly qualified. Domestic agricultural companies pay farm workers USD 2/hour on average compared to USD 40/hour in Germany, USD 6-10 in CEE countries, and USD 3 in Russia.

Among the popular crops in Ukraine are wheat, corn, sugar beets, sunflowers, legumes, tobacco, vegetables and fruits. Following the Ukrainian club of Agricultural Business in their researches 20 agricultural enterprises produced 9.6% of the total wheat in 2012, while in 2010 and 2011 they made 8.6% and 8.4% respectively, and therefore, the average concentration factor of manufacturers market in the last three years stiffened around 9%. Herewith the production of wheat is growing (22.3 million tons in 2011), and the concentration ratio falls. Conversely, production is falling (15.8 million tons in 2012) - the concentration ratio increases. It can indicate the perfect competition or another effect, because wheat production is largely located in the south, where the concentration of agricultural holdings is lower and in "normal" weather conditions, their share is falling. But even in the top 20 manufacturers only Top Six succeeded relatively far off. But the rearguard is tight enough leg to leg (from 0.44% to 0.27% on the downlink). The rest are likely to deter the "social importance" of wheat and it turns out that we have not profitable to produce wheat for other crops. For example corn trend brought this crop to first place in terms of production during previous years. The share of the top 20 companies rose to 21.7% in 2012 from 19.6% in 2011.

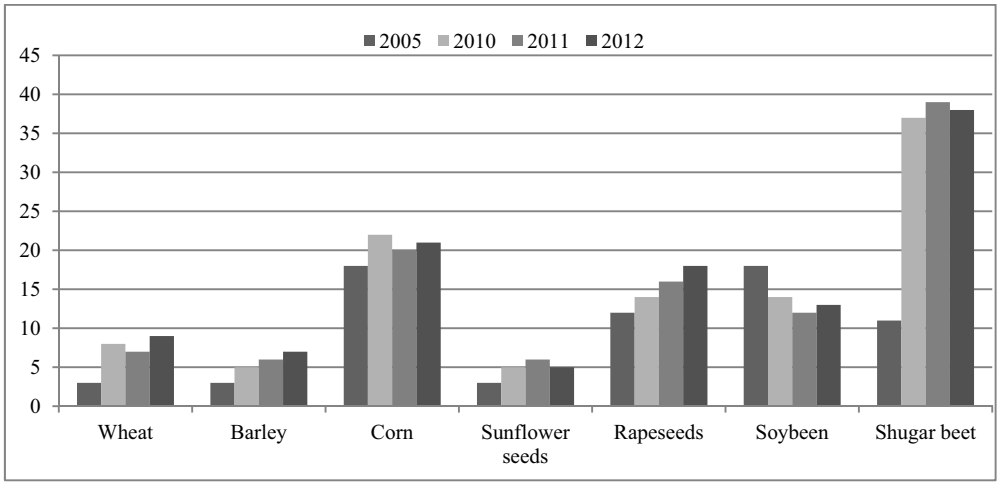



Fig. 4. Share of top-20 Agro-Holding in Crop Production in Ukraine during 2005-2012

Source: AgriSurvey Research «Agrifood Sector of Ukraine-2013: Personal Look».

Discordant trends of consolidation were observed in the oilseeds production. The share of the top 20 enterprises in the production of sunflower in the last three years, virtually unchanged (6.2% in 2010-2012). A soybean demonstrates tendencies similar to corn – due to high profitability of crop we can observe the unprecedented increase in the number of business entities that are engaged in production - from 6.1 thousand in 2011 to 7.4 thousand in 2012. But this does not affect the position of the top 20 companies that increased their

own production and, consequently, market share - from 12.4% to 13.4%. The total production of soybeans in 2011-2012 was at 2.3-2.4 million tons. [*AgriSurvey Research «Agrifood Sector of Ukraine-2013: Personal Look»*]

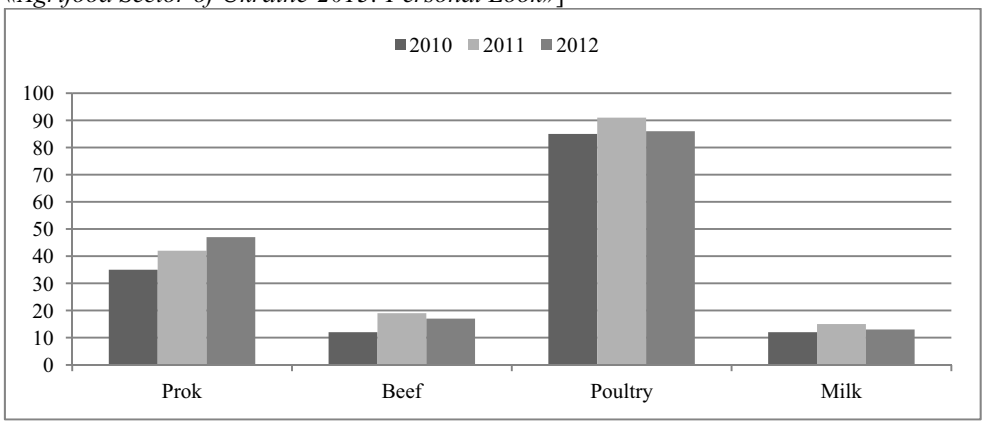



Fig. 5. Share of top-20 Agro-Holding in Animal Production in Ukraine during 2010–2012

Source: AgriSurvey Research «Agrifood Sector of Ukraine-2013: Personal Look».

Note, that corn exports from the Ukraine, following the USDA Agricultural Projection to 2022 rise nearly 6.6 million tons (43 percent) to nearly 22 million tons by 2022. Favorable resource endowments, increasing economic openness, wider use of hybrid seed, and greater investment in agriculture all stimulate corn production in this region. Although FSU feed use of corn rises rapidly in the projections, the region's corn exports increase twice as much as any exporting region other than the United States. The FSU becomes the world's second-largest corn exporter as its shipments surpass Argentina's.

## Foreign Trade

The last decade characterized by the tangible increase in the volume of foreign trade in agricultural products, and its share in total turnover, which currently amounts to 18-19%. Exports of agricultural and food products is dominated by commodity grain, oil products and food products. About a one third of agri-food products was exported to the European Union.

Regarding foreign trade balance, the trade group 1-24 HS Ukraine is a net exporter of peremptory. As for the European Union, only in 2010 the import agro-food products in Ukraine exceeded their exports due to high yields of grains and oilseeds in Europe.

The structure of agricultural product's exports in trade between Ukraine and the European Union in 2006 to 2011 basically unchanged. The main share of exports in 2006 to 2011 has the following products: cereals (26%), oils and fats (28%), oilseeds (26%) residues and waste from the food industry (7%), edible fruits and nuts (4.3%), alcoholic and soft drinks (2.5%) – (Table 2).

Table 2 - Structure of main agricultural products exports from Ukraine to EU-27, by 1-24 codes of Ukrainian Classification of Goods for Foreign Economic Activity in 2006-2011 years, it should be stated if it is in thousand or%

| Codes | Products | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| 7 | Edible vegetables, plants, roots and tubers | 39,8 | 23,1 | 19,4 | 23,1 | 23,4 | 8,5 |
| 8 | Edible fruit and nuts; peel of citrus fruit or melons | 105,8 | 100,3 | 82,1 | 56,6 | 75,0 | 35,3 |
| 10 | Cereals | 202,7 | 62,4 | 962,3 | 454,3 | 158,1 | 486,4 |
| 12 | Oilseeds and oleaginous fruits | 210,2 | 306,6 | 1189,8 | 757,5 | 704,4 | 228,1 |
| 15 | Animal or vegetable fats and oils | 467,6 | 808,1 | 658,7 | 469,0 | 631,9 | 442,5 |
| 17 | Sugars and sugar confectionery | 5,6 | 20,0 | 9,4 | 15,3 | 17,0 | 12,0 |
| 18 | Cocoa and cocoa preparations | 15,1 | 14,9 | 14,0 | 20,3 | 26,2 | 8,3 |
| 19 | Preparations of cereals, flour or starch | 11,5 | 13,9 | 18,3 | 15,6 | 14,4 | 8,0 |
| 20 | Preparations of vegetables, fruit or nuts | 20,4 | 99,6 | 17,2 | 16,8 | 31,4 | 8,4 |
| 21 | Miscellaneous edible preparations | 6,1 | 7,5 | 11,6 | 12,6 | 15,1 | 8,2 |
| 22 | Beverages, spirits and vinegar | 61,1 | 61,0 | 51,9 | 45,5 | 32,0 | 10,3 |
| 23 | Residues and waste from the food industries | 61,4 | 113,6 | 118,9 | 170,3 | 193,9 | 159,0 |
| | Total 1-24 | 1243,8 | 1663,6 | 3186,0 | 2085,0 | 1946,6 | 1430,9 |
| | Share of goods 1-24 | 10% | 12% | 18% | 22% | 15% | 15% |
| | Total export | 12087,9 | 13916,4 | 18128,5 | 9504,4 | 13061,6 | 9702,2 |

Source: State Statistics Service of Ukraine

During the last years we can observe the very clear tendency to increase the value of imports of European products to Ukraine (Table 3).

The causes of this phenomenon were the general increase in cost of goods in the world and the growth of the Ukrainian population share of people who are willing to pay more money for better quality, including imported goods which are not produced in Ukraine, liberalization of imports in Ukraine (reduced import duty rates) and restore activity of the food industry, which for the finished production of raw material, which is absent in the country.

The major share of imports in 2006 to 2011 take the following products: various food products (15.2%), meat and edible offal (9.5%), cocoa and cocoa preparation (7%), fats and oils (6.0%), and tobacco and tobacco substitutes (6.3%), edible fruits and nuts (5.7%).

Limiting factor of growth in imports was a decrease in product sales in the country due to reduced demand, and problems in importing the credit clearance of goods, obtaining permits and others.

Table 3. Structure of imports of agricultural products from EU-27 to Ukraine, by 1-24 codes of HS in 2006-2011 years

| Codes | Products | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|
| 1 | Live animals | 38,8 | 50,9 | 83,4 | 73,8 | 67,0 | 35,9 |
| 2 | Meat and edible meat offal | 38,8 | 13,6 | 465,5 | 260,7 | 239,5 | 75,7 |
| 3 | Fish and sea products | 57,9 | 60,9 | 88,1 | 65,4 | 95,4 | 39,7 |
| 4 | Dairy produce; eggs; natural honey | 26,8 | 31,7 | 64,9 | 39,8 | 61,7 | 29,3 |
| 6 | Live plants and floricultural products | 32,7 | 49,0 | 67,9 | 42,5 | 51,6 | 42,0 |
| 7 | Edible vegetables, plants, roots and tubers | 14,1 | 17,6 | 45,6 | 28,2 | 55,9 | 44,9 |
| 8 | Edible fruit and nuts; peel of citrus fruit or melons | 56,2 | 63,0 | 132,5 | 178,9 | 198,6 | 86,5 |
| 9 | Coffee, tea, maté and spices | 27,6 | 36,6 | 50,3 | 47,7 | 47,1 | 31,0 |
| 10 | Cereals | 22,9 | 43,6 | 69,2 | 27,8 | 76,2 | 113,7 |
| 12 | Oilseeds and oleaginous fruits | 47,4 | 76,0 | 147,7 | 66,2 | 81,8 | 92,4 |
| 13 | Lac; gums, resins, other vegetable saps and extracts | 16,8 | 16,9 | 30,0 | 27,7 | 25,2 | 11,3 |
| 15 | Animal or vegetable fats and oils | 58,4 | 76,4 | 121,3 | 101,2 | 101,3 | 49,9 |
| 16 | Meat preparations | 30,8 | 26,0 | 35,0 | 24,9 | 28,7 | 14,5 |
| 17 | Sugars and sugar confectionery | 9,8 | 16,5 | 17,7 | 13,9 | 15,3 | 6,5 |
| 18 | Cocoa and cocoa preparations | 112,5 | 115,8 | 162,0 | 132,4 | 139,1 | 72,9 |
| 19 | Preparations of cereals, flour or starch | 30,5 | 45,2 | 65,4 | 47,7 | 66,8 | 41,8 |
| 20 | Preparations of vegetables, fruit or nuts | 76,7 | 92,0 | 115,8 | 80,7 | 107,2 | 61,6 |
| 21 | Miscellaneous edible preparations | 206,9 | 272,1 | 343,6 | 253,5 | 261,5 | 154,1 |
| 22 | Beverages, spirits and vinegar | 58,3 | 86,1 | 134,5 | 73,4 | 122,6 | 78,7 |
| 23 | Residues and waste from the food industries | 93,0 | 109,5 | 167,2 | 156,1 | 159,6 | 72,4 |
| 24 | Tobacco and manufactured tobacco substitutes | 103,5 | 112,9 | 87,6 | 74,8 | 106,4 | 37,6 |
| | Total 1-24 | 1181,3 | 1426,7 | 2512,5 | 1832,3 | 2122,5 | 1201,6 |
| | Share of goods 1-24 | 7% | 6% | 9% | 12% | 11% | 11% |
| | Total import | 16194,6 | 22218,7 | 28867,3 | 15392,7 | 19099,0 | 11163,6 |

Source: State Statistics Service of Ukraine.

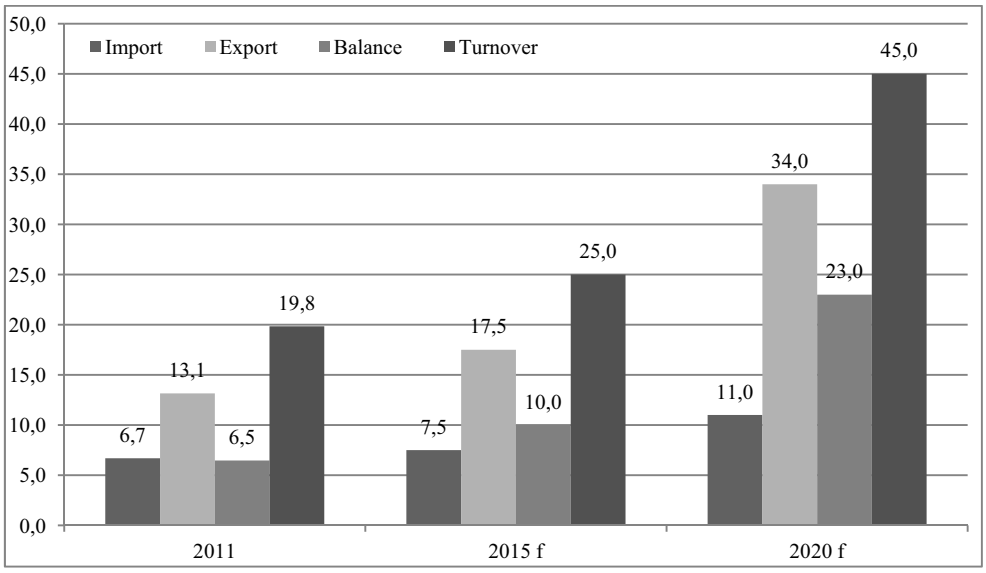



Fig. 6. Agri-Food Products Foreign Trade, bln USD

Source: own research

Current trends in foreign trade in agricultural and food products and the analysis of the current situation on the markets of basic commodities allows to predict a slight increase in their foreign trade in the optimistic scenario of the events and their reduction in pessimistic. Thus the pessimistic development involves low level of exports of cereals, oilseeds and their products as a result of the introduction of quotas, export duties and the introduction of restrictive action by the customs.

## Conclusion

Our research demonstrates that between different approaches the level of trade density demonstrates depth of integration inside the EU. We proved that even inside the common market, with common monetary and trade policy the one of the most important factor is the geographical disposition of trading countries, closing of markets as well as historical aspect of integration. In our further researches we are going to analyze the opportunity for Ukraine in the trade of Agro-Food productions and evaluate the potential market shares for particular markets.

Taking into account the facts that based on empirical studies that the density of trade relations depends on the historical background and geographical location from one side, and based on the contention that the Association Agreement (AA) between EU and Ukraine creates some trade regimes asymmetry, from other hand. Therefore AA chapters Four (Trade and Trade Related Rules) and Five (Economic and Sectorial Cooperation) should consider the specific conditions inherent in Ukraine.

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