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THE POSITION OF RUSSIAN FEDERATION IN THE INTERNATIONAL MARKET OF AGRICULTURAL AND FOODSTUFF PRODUCTS

PhD dissertation

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Abstract

After a significant decline in the early 90s and a long process of transformation, the Russian economy is beginning to recover and stabilize. Agriculture is also slowly but surely recovering. Currently, Russia is seeking not only to achieve a high level of self-sufficiency in basic agricultural products, but also claims to be a major exporter of agricultural products and foodstuffs. To achieve all these goals Russian agricultural products must be competitive both in the domestic and global market. Russia's accession to the World Trade Organization has made the issue even more important.

This thesis provides an analysis of the current position of the Russian Federation in the global market of agricultural products and foodstuffs with accent on product structure and competitiveness of Russian agricultural exports in relation to specific regions and countries over the period 1996-2012.

The objectives of this paper are to examine Russia's economic performance, role of agriculture in the economy, structure of agricultural production, investigate the product and territorial structure of Russian foreign trade in agricultural products and foodstuffs, analyze factors affecting country's agricultural trade as well as to identity the most important segments where Russian agricultural products has a comparative advantage.

Agriculture is an important part of the Russian economy. Russia is characterized by large areas of agricultural land, a third of its population lives in rural areas. However, the share of agriculture in GDP is relatively low and amounts about 3% of GDP.

Russian Federation produces a lot of agricultural products and foodstuffs. But country is not self-sufficient in many products. The highest level of import dependence is observed for meat, vegetables and fruits. Primary products dominate in the structure of Russian exports.

Food and agricultural products amount about only 2% of Russian agricultural export. The share of agricultural products in Russian import is more significant and amounts to 14%. However in 2000s, there is the significant growth of foreign trade turnover due to the expansion of both imports and exports.

Results of the regression analysis of the factors affecting country's agricultural trade have shown that there exists a strong relationship between the gross agricultural production value and agricultural exports. There are also high correlation and statistical significance in relations between government support for agriculture and agricultural exports as well as between world food prices and agricultural exports. There is also an evidence of the significant relationship between world food prices and Russia's agricultural export prices. So it can be said with some

certainty, that Russian export prices substantially follow the worldwide prices. Hypotheses about relationships between ruble exchange rate and country's agricultural exports and imports were deemed insignificant.

The analysis of competitiveness of Russian agricultural products is performed using several measures of "revealed" comparative advantage (classical Balassa's index of revealed comparative advantage, Vollrath's index and Lafay index) and the analytical tool named "products mapping".

Balassa's index identified a group of products, which has relatively stable comparative advantage during the whole period. Among those products we can count cereals, oilseeds, vegetable oils and chocolate.

Analysis by regions showed that Russia has comparative advantages in relation to CIS countries and Asian countries due to its geographical location and good trade relations.

Analysis by groups of products (according to the degree of processing) revealed a shift of comparative advantage from by-products (e.g. bran of wheat, sunflower cake etc.) in 1998-2001 to primary products in 2002-2010 (wheat, barley, whole cow milk, sunflower seed etc.). There were no significant movements towards the growth of comparative advantage in processed products over the period.

During the „product mapping", from the total export flows we distinguished a group of products that includes 5% of the exported goods, but accounts for about 50% of the value of total agricultural exports. Items in this group have a comparative advantage and positive trade balance. There was also identified the opposite group where 80% of items account for only about 30% of total exports, but 95-99% of the total imports. These items have comparative disadvantage and negative trade balance. But there was a reduction in the value of group that has comparative disadvantage, while the group of leading exports has been steadily growing. These trends can be considered as a strengthening of the comparative advantages of Russian agricultural export.

We also identified a group of products that have comparative advantages in relation to specific region or country despite of comparative disadvantages in relation to the whole world.

Analysis of industry showed that the extent of intra-industry trade in agricultural products in Russia varies significantly depending on the geographical region. The lowest level of intra-industry trade is observed in relation to Africa and South America, the highest - in relation to CIS countries.

Abstrakt

Po výrazném poklesu na počátku 90. let a dlouhém procesu transformace se ruská ekonomika začíná postupně stabilizovat. Sektor zemědělství se rovněž výrazně stabilizoval. V současné době se Rusko snaží nejen o dosažení vysoké úrovně soběstačnosti v základních zemědělských produktech, ale také se snaží prosadit se jako vývozce zemědělských produktů a potravin. K dosažení všech těchto cílů ruské zemědělské produkty musí být konkurenceschopné jak na domácím i světovém trhu. Vstup Ruska do Světové obchodní organizace pak představuje velmi velkou výzvu.

Tato práce obsahuje analýzu současného postavení Ruské federace na světovém trhu se zemědělskými produkty a potraviny s důrazem na strukturu a konkurenceschopnost ruského vývozu zemědělských produktů ve vztahu ke konkrétním regionům a zemím v období 1996-2012 .

Cílem této práce je prozkoumat ekonomický vývoj Ruska, úlohu zemědělství v ekonomice, strukturu zemědělské výroby, komoditní a teritoriální strukturu ruského zahraničního obchodu se zemědělskými produkty a potravinami a dále pak analyzovat faktory, které ovlivňují zahraniční obchod. Práce rovněž identifikuje nejdůležitější komoditní a zbožové segmenty, v rámci kterých ruské zemědělství a potravinářství dosahuje komparativních výhod.

Zemědělství je důležitou součástí ruské ekonomiky. Rusko disponuje rozsáhlými plochami zemědělské půdy, třetina obyvatel žije ve venkovských oblastech. Nicméně podíl zemědělství na HDP je relativně nízký a činí asi 3 % HDP.

Ruská federace vyrábí velké množství zemědělských produktů a potravin. Ale země není úplně soběstačná. Nejvyšší úroveň závislosti na dovozu je ve vztahu k masu, zelenině a ovoci. Co se týče ruského exportu – tomu dominují zejména nezpracované zemědělské produkty.

Potraviny a zemědělské produkty představují pouze 2 % ruského zemědělského vývozu. Podíl zemědělských produktů v rámci celkového ruského zbožového dovozu je výraznější a činí 14 %. Z hlediska vývoje ruského agrárního obchodu, je důležité zejména období let 2000 – 2012, kdy došlo k výraznému růstu hodnoty a objemu agrárního zahraničního obchodu a to jak ve vztahu k dovozu, tak i ve vztahu k vývozu.

Výsledky regresní analýzy faktorů ovlivňujících ruský zahraniční obchod se zemědělskými produkty ukázaly, že existuje silný vztah mezi hodnotou hrubé zemědělské produkce a vývozem zemědělských produktů. Bylo také zjištěno, že je vysoká korelace a statistická významnost co se týče vztahu mezi státními podporami pro zemědělství a vývozem zemědělských produktů. Rovněž byl prokázán silný vztah mezi světovými cenami potravin a agrárním obchodem. V tomto ohledu je pak vhodné zdůraznit existenci významného vztahu mezi světovými cenami potravin a cenami

ruského zemědělského vývozu. Na tomto základě můžeme říci, že ruské vývozní ceny výrazně sledují vývoj světových cen.

Analýza konkurenceschopnosti ruských zemědělských produktů v teto práci se provádí pomocí několika indexů komparativní výhody (klasický Balassův index, Vollrathův index a Lafayův index) a dále pak také prostřednictvím analytického nástroje „Product mapping" (Mapování výrobků).

Pomocí Balassova indexu byla identifikována skupina výrobků, který mají relativně stabilní komparativní výhodu v průběhu celého období. Mezi těmito produkty jsou obiloviny, olejniny, rostlinné oleje a čokolády.

Analýza podle regionů ukázala, že Rusko má komparativní výhody ve vztahu k Společenství nezávislých států a asijským zemím, díky jejich geografické poloze a dobrým obchodním vztahům .

Analýza výrobků podle stupně zpracování odhalila posun komparativní výhody z polotovarů v letech 1998-2001 na nezpracované produkty v letech 2002-2010 (pšenice, ječmen, slunečnicová semena, atd.). Nebyly zjištěny žádné významné pohyby směrem k růstu komparativní výhody v případě zpracovaných výrobků.

Během "Mapování výrobků", z celkových vývozních toků byla vymezena skupina výrobků, která obsahuje jen 5 % všech exportovaných položek zboží, nicméně z hlediska formování hodnoty agrárního exportu těchto pět procent položek představuje 50 % hodnoty celkových zemědělských vývozů. Položky v této skupině mají komparativní výhodu a pozitivní obchodní bilanci. Byla také identifikována skupinu, která obsahuje cca 80 % všech exportních položek – nicméně tyto pouze 30 % celkové hodnoty všech agrárních vývozů. Na druhou stranu je nutno zdůraznit, že v rámci této skupiny se formuje cca 95-99 % hodnoty všech agrárních dovozů. Tyto položky mají komparativní nevýhodu a celkovou zápornou obchodní bilanci.

Z hlediska vývoje ruského agrárního obchodu je pak v posledních letech velmi důležité, že hodnota té skupiny zboží v rámci které nemá Rusko žádnou komparativní výhodu, se postupně snižuje, zatímco hodnota té skupiny produktů, v rámci které Rusko naopak komparativní výhodou disponuje, se neustále zvyšuje. Tyto trendy lze považovat za posílení komparativních výhod ruského zemědělského vývozu jako celku (obecně lze charakterizovat současný vývoj v oblasti ruského agrárního obchodu tak, že hodnota agrárních exportů roste mnohem dynamičtěji než je tomu v případě agrárních importů). Vedle výše uvedeného byla dále, na základě výsledků analýz, vymezena skupina produktů, které mají komparativní výhody ve vztahu ke konkrétním regionům či zemím navzdory komparativní nevýhodě ve vztahu k celému světu .

Analýza vnitro-odvětvového obchodu ukázala, že rozsah meziodvětvového a vnitro-odvětvového obchodu se zemědělskými produkty v Rusku se významně liší v závislosti na

geografické oblasti. Nejnižší úroveň vnitro-odvětvového obchodu je pozorována ve vztahu k Africe a Jižní Americe, nejvyšší - ve vztahu k SNS.

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List of abbreviations

AoA - Agreement on Agriculture
BSECO - The Black Sea Economic Cooperation Organization
CIS – Commonwealth of Independent States
CRB – Commodity Research Bureau
CWE - Carcass-Weight Equivalent
EC – European Commission
EU – European Union
FAO – Food and Agriculture Organization of the United Nations
FAPRI – Food and Agricultural Policy Research Institute
GATT - General Agreement on Tariffs and Trade
GDP – Gross Domestic Product
HA – Hectares
HIIT - Horizontal intra-industry trade
IIT – Intra-industry trade
HS – Harmonised System
MT - Metric Tone
MY - Marketing Year (July to June, except for corn which follows an October to September calendar)
NAFTA - North American Free Trade Agreement
OECD – Organization for Economic Cooperation and Development
PSE - Producer Support Estimate
Rosstat - Russian Federal State Statistics Service
SCO - Shanghai Cooperation Organization
TRQ - Tariff-rate quota
TY - Trade Year (July to June for wheat and October to September for coarse grains)
UN – United Nations
UNECE – United Nations Economic Commission for Europe
URAA - Uruguay Round Agreement on Agriculture
USA - United Stated of America
VIIT - vertical intra-industry trade
WTO – World Trade Organization

1. Introduction

Throughout its history, Russia was a major agrarian country. The essential role of agriculture in the Russian economy is determined by vast territory, natural environment, land suitable for agricultural production, national traditions and other factors. Despite the fact that only about 7 percent of Russia's enormous territory is an arable land, this is more than enough to create an effective system of food supply in the country.

Agriculture plays an important role in the Russian economy. It produces food for the population, raw materials for the processing industry, and provides many other needs of society. About 27% of the total population of Russia lives in rural areas. The share of people employed in agriculture is about 8%.

The dissolution of the Soviet Union in 1991 marked the beginning of a transition from centrally-planned to market-oriented economy. Due to the transformation processes, Russian agriculture has experienced a recession in all sectors. For example despite the government support and the steady growth in the last decade, the Russian livestock production still has not reached the level of 1990.

Economic reforms that have started in Russia in the early 1990s have stimulated major changes in the structure and volume of the country's agricultural production and trade.

The process of Russian agri-food sector's integration in the world economy is accelerating and Russia is becoming an active player in a number of food markets.

During the 2000s, Russian agricultural import was growing considerably. This import growth has made Russia the second largest agricultural importer among emerging markets, after China (Liefert, 2009).

Russia's agri-food export was growing alongside the increase in imports. Currently, Russia has a significant share in the world markets of certain products, such as wheat and sunflower oil.

Over the last few years, Russian Federation has employed import-substitution policy in relation to agriculture. In 2010, Russian President approved the Food Security Doctrine of the Russian Federation. The Doctrine sets the following goals regarding the minimum share of domestic production in the total supply of basic food products: grain – 95%, sugar – 80 %, vegetable oil – 80%, meat and meat products– 85 %, milk and dairy products – 90 %, fish products – 80 %, potatoes – 95%, edible salt – 85 %. These goals should be achieved by 2020. (Doctrine of Food Security of RF, 2009)

Furthermore, Russia is seeking not only to achieve a high level of self-sufficiency in basic agricultural products, but also claims to be a major exporter of agricultural products and

foodstuffs. To achieve all these goals Russian agricultural products must be competitive both in the domestic and global market.

However, in Russia, as in any other country, the different branches of agriculture have different efficiency, due to historical or natural geographical factors. Therefore for the effective development of Russian exports it is necessary to focus on the areas of agriculture that are competitive and have comparative advantages in the world market.

That is why the issue of the competitiveness of the Russian agricultural products is becoming so important in the current situation.

Another factor that determines the need to improve the competitiveness of the Russian agricultural products is Russia's accession to the World Trade Organization. In terms of WTO accession, agriculture is at the most adversely affected industry in the country's economy. Reduction of budgetary support and restrictions custom tariffs will affect the competitiveness of Russian agricultural and food products in both domestic and international markets.

To be able to develop the country's strategy for the upcoming decades it is necessary to have a clear idea in relation to the competitiveness of Russian agricultural exports. It is necessary to identify markets in which Russian products have comparative advantage, and therefore they have prospects for further development.

2. Objectives

The paper seeks to contribute to the scientific literature in the following ways.

The idea of this paper is to specify the current position of the Russian Federation in the global market of agricultural products and foodstuffs with accent on product structure and competitiveness of Russian agricultural exports in relation to specific regions and countries.

This main objective can be divided into separate sub-objectives:

- Specify the theoretical background for the research of international trade in agricultural products
- Examine Russia's economic performance, role of agriculture in the economy, structure of agricultural production
- Investigate the product and territorial structure of Russian foreign trade in agricultural products and foodstuffs
- Analyze factors affecting country's agricultural trade
- Disaggregate the total trade flows into individual segments and identity the most important segments where Russian agricultural products has a comparative advantage

- Identify the most important countries in relation to which Russian agricultural products are more competitive
- Identify and describe significant changes over the analyzed period.

In order to meet these aims, the thesis is structured as follows. The first part provides an overview of the literature and recent empirical studies of the topic. Then there will be an overview of Russian economy, agricultural production and foreign trade in agricultural products and foodstuffs. The next part will be devoted to the regression analysis of different factors affecting Russian agricultural foreign trade.

Next, a variety of methods will be applied in order to examine the patterns comparative advantages, inter- and intra-industry in Russian foreign trade in agricultural products and foodstuffs in relation to individual regions and the most important countries

As it's expected, the fulfillment of these objectives would provide a clear picture of the competitive performance of the Russian agricultural exports over the period 1996-2012.

3. Methodology

In order to achieve the objectives, a number of methods and analytical tools have been used in this paper. These are different methods of quantitative and qualitative analysis, time series analysis, classical statistical methods for processing numerical data, such as time-series analysis, trend functions etc. To identify changes in studied data there were used fixed-base index, chain base index and geometric mean of chain indices.

A fixed-base index is an index number for which the base period for the calculations is selected and remains unchanged during the lifetime of the index.

A chain base index is an index number in which the value at any given period is related to a base in the previous period. It measures changes in volume from period to period.

A geometric mean (GM) of chain indices shows the average change in the value of export or import over the analyzed period.

During the review of Russian economy, the following indicators were calculated:

Self-sufficiency ratio (SSR). The level of self-reliance for certain types of agricultural products is determined as a percentage of agricultural production to the consumption of the country.

Self-sufficiency in agricultural products reflects the extent to which domestic production in the country is able to meet the domestic consumption of the country or its regions. The self-sufficiency ratio expresses the magnitude of production in relation to domestic utilization.

In general, the algorithm for calculating the food self-sufficiency ratio can be represented by the following formula:

$$SSR = \frac{Production}{Amounts\ of\ domestic\ supply} * 100 \qquad (1)$$

Amounts of Domestic Supply = Amounts of Domestic Production + Amounts of Imports- - Amounts of Exports + Changes in Stock.

Amount of domestic supply is equal domestic consumption. Domestic consumption includes industrial consumption, private consumption, and loss of production. Industrial consumption reflects the use of products for farmer's needs: seed, fed to livestock and poultry, eggs for hatching. Personal consumption of the population includes production volumes, going to the nutrition of the population.

Import dependency ratio (IDR). In the course of analysis of the food situation of a country, an important aspect is to know how much of the available domestic food supply has been imported and how much comes from the country's own production. The IDR answers this question.

It is defined as:

$$IDR = \frac{Imports}{Amounts\ of\ domestic\ supply} * 100 \qquad (2)$$

The complement of this ratio to 100 would represent that part of the domestic food supply that has been produced in the country itself.

In the analysis of Russia's foreign trade, the following indicators were calculated.

The foreign trade coverage ratio is the ratio between the value of exports and that of imports between two countries. It may concern a product or a set of exchanges of products (goods and services).

The difference between these two values is called the **foreign trade balance**.

The normalized trade balance of goods and services is defined as the trade balance (total exports minus total imports) divided by total trade value.

Apart from the general analysis of Russian foreign trade in agricultural products and foodstuffs, trade flows have been divided to explore the territorial structure, product structure and its change over time.

As sources of numerical data, Rosstat, Federal Customs Service of Russia, FAOSTAT and Comtrade databases were used.

Depending on the needs of a particular analysis, a variety of product grouping were used. The structure of Russian foreign trade is analyzed using 2-digit level of the Harmonized System (HS) where agricultural products and foodstuffs are collected in Chapters 1-24.

Another classification of agricultural commodities used in the paper is the FAOSTAT Commodity List (FCL) that is based on the Standard International Trade Classification of the UN. It includes about 600 commodities (Appendix 1) and covers crops and livestock, both primary and derived products.

During the analysis of the revealed comparative advantages, the commodities were first grouped into 19 groups according to their origin: Meat, Cereals and their preparations, Fats and offals, Fruits and nuts, Vegetables and mushrooms, Milk and milk products, Hides, skins and wool, Pulses and corn, Root crops, Tea and coffee and spices, Beverages, Cigarettes and tobacco, Live animals, Sugar, Vegetable oils and oil crops, Cotton and fibres, Eggs, Chocolate and Others.

Then the same goods were reshuffled into 3 groups depending on the degree of processing: primary products, processed or manufactured products and by-products.

Primary products are basic raw materials and goods without a manufacturing process.

Processed products are products that have undergone transformation in form of manufacturing, processing. In this case, the processing does not include primary treatment, such

as drying, sorting, activities associated with the storage of products. Products, affected only by the primary treatment, are included in the group of primary products.

A by-product is a secondary product derived from a manufacturing process. This group also includes the waste products, suitable for sale and further use.

Regression analysis

When examining the relationship between a quantitative outcome and a single quantitative explanatory variable, simple linear regression is the most commonly considered analysis method. Linear regression uses the values from an existing data set consisting of measurements of the values of two variables, X and Y, to develop a model that is useful for predicting the value of the dependent variable, Y for given values of X.

To perform a regression analysis we should make one of the variables as an independent variable, then the manner in which this independent variable is associated with changes in the dependent variable can be estimated.

In this paper, the Russian foreign trade in agricultural products and foodstuffs will be a dependent variable and the number of parameters that could have a significant impact on it will be chosen as independent variables.

Therefore, the analysis will be performed as follows. We will formulate several hypotheses about the relationship between value of Russian foreign trade in agricultural products and foodstuffs (as a dependent variable) and studied independent variables and then we will construct a separate simple regression equation for each variable in order to test these hypotheses. This analysis is a time-series analysis, i.e. we investigated the relationship between the same parameters, but in process of time.

In order to provide a systematic estimate of the line, statisticians have devised procedures to obtain an estimate of the line that fits the points better than other possible lines. The procedure most commonly used is the least squares criterion, and the regression line that results from this is called the least squares regression line.

Every regression model must be tested to see if it is "significant," meaning would the relationship we found actually exist in the population or is the result due to sampling error (our sample did not represent the true population). Statisticians follow a formal process to determine whether to reject a null hypothesis, based on sample data. This process, called **hypothesis testing**, consists of four steps.

1. State the hypotheses. The first step of hypothesis testing is to convert the research question into null and alterative hypotheses. The hypotheses are stated in such a way that they are mutually exclusive. That is, if one is true, the other must be false.

Null hypothesis. The null hypothesis, denoted by H_0, is usually the hypothesis that sample observations result purely from chance.

Alternative hypothesis. The alternative hypothesis, denoted by H_1, is the hypothesis that sample observations are influenced by some non-random cause.

2. Formulate an analysis plan. The analysis plan describes how to use sample data to evaluate the null hypothesis. The evaluation often focuses around a single test statistic.

3. Analyze sample data. Find the value of the test statistic (mean score, proportion, t-score, z-score, etc.) described in the analysis plan.

4. Interpret results. Apply the decision rule described in the analysis plan. If the value of the test statistic is unlikely, based on the null hypothesis, reject the null hypothesis.

Methods of hypothesis testing

Hypothesis testing is the use of statistics to determine the probability that a given hypothesis is true. There is a wide range of statistical tests available, depending on the nature of the investigation.

The least squares estimates of the regression coefficients, their standard errors, the t-tests for testing that the corresponding coefficient is zero, f-statistic and the p-values are given as part of the regression output by statistical packages. In this analysis a statistics and analytics software package „STATISTICA" will be used for hypotheses testing.

The P-value Method of Hypothesis Testing

A P-value (or probability value) is the probability of getting a value of the the sample test statistic that is at least as extreme as the one found from the sample data, assuming that the null hypothesis is true.

In other words, a small P-value indicates that observation of the test statistic would be unlikely if the null hypothesis is true. Being a probability, *P* can take any value between 0 and 1. Values close to 0 indicate that the observed difference is unlikely to be due to chance, whereas a *P* value close to 1 suggests there is no difference between groups other than that due to random variation. The lower the P-value, the more evidence there is in favor of rejecting the null hypothesis. Alpha (α) is a probability threshold for a decision. If $P \leq \alpha$, we will reject the null hypothesis. The aim of hypothesis testing is not to 'accept' or 'reject' the null hypothesis. Rather, it is simply to gauge how likely it is that the observed difference is genuine if the null hypothesis is true.

The F-test in Regression

A significant result for the F statistic means that a relationship exists as described by the straight line model. This test is very important in the regression analysis, and essentially it is a special case of constraint checking.

Accordingly, if the value of this statistic is more than the critical value (from above ANOVA table) at a given level of significance, the null hypothesis is rejected, which means the statistical significance of regression. Otherwise, the model was deemed significant. If F-calculated is larger than F-critical thus we have to reject the hypothesis.

The T- test in Regression

The t-statistic is the regression coefficient (of a given independent variable) divided by its standard error. The standard error is essentially one estimated standard deviation of the data set for the relevant variable. To have a very large t-statistic implies that the coefficient was able to be estimated with a fair amount of accuracy.

If the t-stat is more than critical value, it can be concluded that the variable in question has a significant impact on the dependent variable. High t-statistics (over critical value) mean the variable is significant.

The t-tests are used to conduct hypothesis tests on the regression coefficients obtained in simple linear regression. A statistic based on the t distribution is used to test the two-sided hypothesis that the true slope, β_1 equals some constant value, $\beta_{1,0}$.

The test statistic used for this test is:

$$T_0 = \frac{\hat{\beta}_1 - \beta_{1,0}}{se(\hat{\beta}_1)} \qquad (3)$$

Where $\hat{\beta}_1$ is the least square estimate of β_1, and $se(\hat{\beta}_1)$ is its standard error.

The test statistic (T_0) follows a t-distribution with (n-2) degrees of freedom, where n is the total number of observations. The null hypothesis (H_0) is accepted if the calculated value of the test statistic is such that:

$$-t_{\frac{\alpha}{2},n-2} < T_0 < t_{\frac{\alpha}{2},n-2} \qquad (4)$$

Where $t_{\alpha/2,n-2}$ and $-t_{\alpha/2,n-2}$ are the critical values for the two-sided hypothesis. $t_{\alpha/2,n-2}$ is the percentile of the *t* distribution corresponding to a cumulative probability of $(1-\alpha/2)$ and α is the significance level.

If the value of $\beta_{1,0}$ used is zero, then the hypothesis tests for the significance of regression. In other words, the test indicates if the fitted regression model is of value in explaining variations in the observations or if you are trying to impose a regression model when no true relationship exists between X and Y. Failure to reject H_0: $\beta_1 = 0$ implies that no linear relationship exists between X and Y.

The Coefficient of Determination - r-sqrd (Goodness of Fit)

The coefficient of determination (R^2) indicates how well data points fit a line or curve. The R^2 value is equal to the square of the simple correlation of x and y in simple regression. R^2 can be

interpreted as the fraction (or percent if multiplied by 100) of the total variation in the outcome that is "accounted for" by regressing the outcome on the explanatory variable. R^2 -value varies from 0 to 1.

This statistic is also called the goodness of fit of the regression line. The most general definition of the coefficient of determination is:

$$R^2 = 1 - \frac{SS_{res}}{SS_{tot}} \qquad (5)$$

where SS_{tot} is the total sum of squares (proportional to the sample variance);

$$SS_{tot} = \sum_i (y_i - \bar{y})^2 \qquad (6)$$

and SS_{res} is the sum of squares of residuals, also called the residual sum of squares.

$$SS_{res} = \sum_i (y_i - f_i)^2 \qquad (7)$$

R^2 -value varies from 0 to 1. The value of the coefficient of determination of zero means that no benefit is gained by doing regression.

"Revealed" comparative advantage analysis

The paper contains a detailed analysis of Russian foreign trade through the three basic indices Balassa index, Vollrath index and Lafay index of "revealed" comparative advantage.

These indices are selected for this study for the following reasons. Firstly, they allow us to conduct analysis using available data. Secondly, these indices complement each other. Classic Balassa index (Balassa, 1965) estimates export flows of Russia and the world in general. Vollrath index (1991) allows us to assess trade flows not only in term of export values, but also taking into account values of import. Therefore, both supply and demand balances are embodied in the index. Using the Lafay index we can analyze bilateral trade relations between countries and regions.

Comparative advantage from observed data is named "revealed" comparative advantage (RCA). In practice, this is a commonly accepted method for analyzing trade data. The Balassa index tries to identify whether a country has a "revealed" comparative advantage rather than to determine the underlying sources of comparative advantage.

The index is calculated as follows:

$$RCA = (X_{ij} / X_{it}) / (X_{nj} / X_{nt}) = (X_{ij} / X_{nj}) / (X_{it} / X_{nt}) \qquad (8)$$

where *x* represents exports, *i* is a country, *j* is a commodity and *n* is a set of countries, *t* is a set of commodities .

RCA is based on export performance and observed trade patterns. It measures a country's exports of a commodity relative to its total exports. If RCA>1, then a comparative advantage is revealed.

However, since first suggested by Balassa, the definition of RCA has been revised and modified such that an excessive number of measures now exist.

Evaluating the shortcomings of Balassa's index, Vollrath (1991) suggests that the revealed competitiveness (RC) index is preferable since supply and demand balances are embodied in the index. It is important to point out that Balassa and Vollrath indices are based on different concepts and thus are not strictly comparable. (Seymen, Utkulu, 2010)

The revealed competitiveness is calculated as the difference between relative export advantage (RXA), which is the equivalent to the original Balassa index (RCA), and its counterpart, relative import advantage (RMA).

$$RMA = (M_{ij} / M_{it}) / (M_{nj} / M_{nt}) \qquad (9)$$

Where M accounts for imports.

$$RXA = RCA = (X_{ij} / X_{it}) / (X_{nj} / X_{nt}) \qquad (10)$$

The measure of Vollrath is the revealed competitiveness (RC), expressed as:

$$RC = \ln RXA - \ln RMA \qquad (11)$$

A positive RC reveals a comparative advantage, while a negative value reveals a comparative disadvantage. (Vollrath, 1991)

The next index used in the paper is Lafay index. Using this index we consider the difference between each item's normalized trade balance and the overall normalized trade balance. Thereby LFI index is used to eliminate the influence of cyclical factors, which can affect the magnitude of trade flows in the short run and to focus on the bilateral trade relations between the countries and the regions. (Zaghini, 2003)

For a given country, *i*, and for any given product *j*, the Lafay index is defined as:

$$LFI_j^i = 100\left(\frac{x_j^i - m_j^i}{x_j^i + m_j^i} - \frac{\sum_{j=1}^{N}(x_j^i - m_j^i)}{\sum_{j=1}^{N} x_j^i + m_j^i}\right)\frac{x_j^i + m_j^i}{\sum_{l=1}^{N} x_j^i + m_j^i} \qquad (12)$$

where x^i_j and m^i_j are exports and imports of product *j* of country *i*, towards and from the particular region or the rest of the world, respectively, and *N* is the number of items.

Positive values of the Lafay index indicate the existence of comparative advantages in a given item; the larger the value the higher the degree of specialization. On the contrary, negative values points to de-specialization. (Zaghini, 2003)

In this dissertation work, several indices of comparative advantage have been applied. Each of these indices has advantages and disadvantages. We can assume that the result of the analysis of the most reliable when the results of application of several indices for the same data set are aligned.

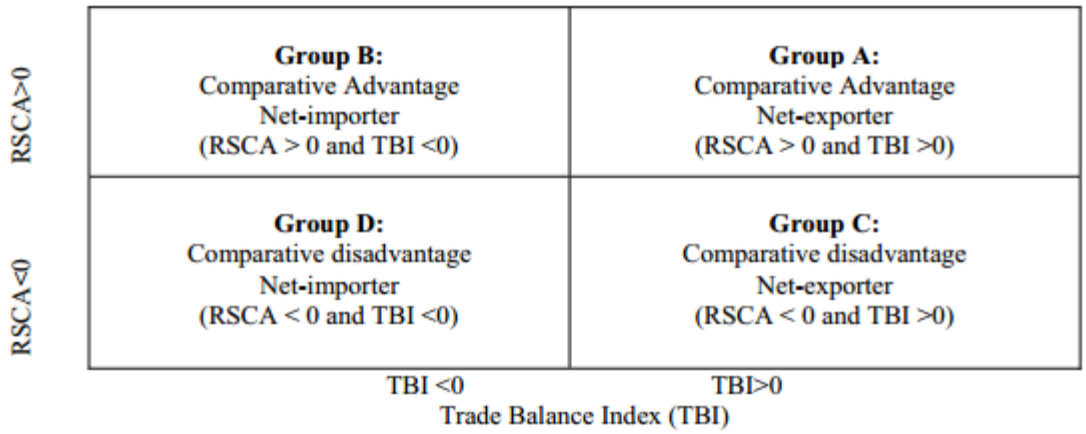
The analysis is performed in relation to individual regions (European Union, Commonwealth of Independent States, Africa, Asia and North and South America) as well as in relation to selected important countries.

These are Germany, USA, Ukraine, Brazil, Egypt and China. The share of each of these countries is not less than 4% of the total value of Russian trade flows in agricultural products. So we selected the one the most important trading partner (according to its share in the total amount of exports and imports) from every continent.

Product mapping

The next part of the analysis presented in this paper was conducted using the analytical tool, named "products mapping". This tool enables to assess leading exported products from two different points of view, i.e. domestic trade-balance and international competitiveness. (Widodo, 2009)

Figure 1- Product mapping scheme



Source: Widodo T. (2009)

The figure 1 represents a matrix for the distribution of the entire set of exported products into 4 groups according to the two selected indicators.

The Revealed Symmetric Comparative Advantage (RSCA) by Dalum et al.(1998) and Laursen (1998) is the indicator of comparative advantage and Trade Balance Index (TBI) by Lafay (1992) is the indicator of export-import activities.

The RSCA index is a simple decreasing monotonic transformation of Revealed Comparative Advantage (RCA) or Balassa index.

RSCA index is formulated as follows:

$$RSCA = (RCA_{it} - 1)/(RCA_{ij} + 1) \qquad (13)$$

The values of $RSCA_{ij}$ index can vary from minus one to one. $RSCA_{ij}$ greater than zero implies that country *i* has comparative advantage in group of products *j*. In contrast, RSCAij less

than zero implies that country *i* has comparative disadvantage in group of products *j*. (Dalum et al.,1998)

Trade Balance Index (TBI) is employed to analyze whether a country has specialization in export (as net-exporter) or in import (as net-importer) for a specific group of products. TBI is simply formulated as follows:

$$TBI_{ij} = (x_{ij} - m_{ij})/(x_{ij} + m_{ij}) \qquad (14)$$

where TBIij denotes trade balance index of country *i* for product *j*; x_{ij} and m_{ij} represent exports and imports of group of products *j* by country *i*, respectively. (Lafay, 1992)

Values of the index range from -1 to +1. Extremely, the TBI equals -1 if a country only imports, in contrast, the TBI equals +1 if a country only exports. Indeed, the index is not defined when a country neither exports nor imports. A country is referred to as "net-importer" in a specific group of product if the value of TBI is negative, and as "net-exporter" if the value of TBI is positive. (Widodo, 2009)

Measurement of Intra-Industry Trade

This analysis provides a systematic decomposition of Russia's foreign trade in agricultural products into three trade types: inter-industry, intra-industry in horizontally and vertically differentiated products, over the period 1996–2012.

Disaggregated Russian and worldwide trade data have been collected from the UN Comtrade database. We used 4-digit level data classified according to the Harmonized System Classification (HS). The classification includes about 200 commodity groups.

The paper adopts a range of methods for broader and more comprehensive analysis of the subject.

Firstly, the traditional Grubel-Lloyd index was calculated. Then we applied The Fontagne and Freudenberg (1997) methodology as well as Greenaway's method (1995) for the analysis of the bilateral trade with individual regions and countries. This methodology allows elementary trade flows to be broken down into three categories according to similarity in unit values and trade overlap: inter-industry trade (insignificant overlap between exports and imports); horizontal intra-industry trade (significant overlap and limited differences in unit values); vertical intra-industry trade (significant overlap and large differences in unit values).

The results of these methods are compared.

The Grubel-Lloyd Index

Several alternative measures have been developed in the literature to estimate the degree of intra-industry trade (IIT). To measure the extent of IIT, this study uses the most widely preferred index, Grubel-Lloyd (G-L).

This index measures intra-industry trade as a percentage of a country's total trade which is assumed to be balanced, that is exports equal imports. For an individual product group or industry i the share of IIT is formulated as:

$$GL_j = \left[1 - \frac{|X_j - M_j|}{(X_j + M_j)}\right] \times 100 \qquad (15)$$

where X_i and M_i stand, respectively, for the exports and imports of industry *i*. If all trade was balanced GL_i would equal 1. On the other hand, if all trade was one-way, GL_i would equal zero. Thus, the closer GL_i is to 1 (that is, $X_i = M_i$), the more trade in industry *i* is intra-industry trade. The closer GL_i is to zero (that is, either $X_i = 0$ or $M_i = 0$), the more trade in industry *i* is inter-industry trade. Therefore, the index of intra-industry trade takes values from 0 to 1 as the extent of intra-industry trade increases, that is, $0 \leq GL_i \leq 1$.

The GL index in this equation can be modified to obtain the average level of intra-industry trade for a country j. Grubel-Lloyd proposed calculating a weighted mean, using the relative size of exports and imports of a particular product group as weights. The formula written as:

$$GL_i = \Sigma\, GL_i\, (X_i + M_i) \,/\, \Sigma(X_i + M_i) \qquad (16)$$

where the sigma (Σ) refers to all the GL_i is weighted by total trade (X + M) of that industry (or product group). J stands for the *j*-th country and *i* is the *i*-th of n industries. For simplicity, the Grubel-Lloyd measure may be written as follows:

$$GL = \left[1 - \frac{\sum_{j=1}^{N} |X_j - M_j|}{\sum_{j=1}^{N} (X_j + M_j)}\right] \times 100 \qquad (17)$$

for n set of industries.

Since the share of some products are higher than others within total exports and imports, taking the simple average of all GL_i's would give misleading results; hence the GL formula is a weighted mean.

However, several authors criticized the GL-index, for five main reasons:

1) aggregate or sectorial bias,

2) trade imbalance problem,

3) geographical bias,

4) inappropriateness to separate horizontal and vertical intra-industry trade,

5) inappropriateness for treating dynamics. (Jambor, 2013)

Therefore, a few more methods for calculating intra-industry trade have been applied in this paper.

Horizontal and vertical intra-industry trade

The literature on intra-industry trade increasingly emphasizes the importance of differentiating between horizontal and vertical intra-industry trade. Horizontally differentiated products are homogenous (perfect substitutes) and of the same quality, while vertically differentiated products have different prices reflecting different quality (Falvey, 1981).

As far as the GL index is given by the joint treatment of trade flows we cannot use it to separate horizontal and vertical intra-industry trade. Literature suggests several possibilities for solving this problem. Among these solutions, the most widespread one is based on unit values developed by Greenaway et al. (1995).

According to the method of Greenaway, a product is horizontally differentiated if the unit value of export compared to the unit value of import lies within a 15% range. If this is not true, the GHM method is talking about vertically differentiated products. Formally, this is expressed for bilateral trade of horizontally differentiated products as follows:[1]

$$1 - a \leq \frac{UV_{ijt}^{X}}{UV_{ijt}^{M}} \leq 1 + a \qquad (18)$$

where UV means unit values, X and M means exports and imports for goods *i.*

Relative unit values (UV) of exports and imports are used to disentangle horizontal from vertical IIT. Unit value indexes are considered as a proxy for prices, assuming that prices properly reflect quality differences. Thus, vertical IIT is defined as two-way trade of item whose per kilogram unit value of exports relative to its per kilogram unit value of imports (measured c.i.f) falls outside a specific range of ±α. The most of studies use a unit value dispersion of 15 percent, i.e. α = 0,15. (Abd-el-Rahman (1991), Greenaway et al. (1995), Aturupane et al. (1999), Blanes et al. (2000), Algieri (2004) etc.)

There is another method in the literature to distinguish HIIT and VIIT. Fontagné and Freudenberg (FF method, 1997) categorize trade flows and compute the share of each category in total trade. They defined trade to be "two-way" when the value of the minority flow represents at least 10% of the majority flow. Formally:

$$\frac{Min(X_i, M_i)}{Max(X_i, M_i)} \geq 10\% \qquad (20)$$

If the value of the minor flow is below 10%, trade is classified as inter-industry in nature.[2]

[1] Jambor A. (2013) Country-specific determinants of horizontal and vertical intra-industry agri-food trade of the Visegrad Countries. FIW Working Paper N° 104

[2] Wang Jing, Nuno Carlos Leitão & Horácio Faustino (2010) Intra-Industry Trade in Agricultural Products: The Case of China School of Economics and Management. Technical University of Lisbon. Working Papers, ISSN:0874-4548

If the opposite is true, the FF index comes formally as:

$$FF_k^p = \frac{\sum_j (X_{jk}^p + M_{jk}^p)}{\sum_j (X_{jk} + M_{jk})} \quad (21)$$

According to Fontagné and Freudenberg (1997), the FF index tendentiously provides higher values compared to GL-type indices (like the GHM index) as equation 15 refers to total trade, treated before as two-way trade. FF index rather complements than substitutes GL-type indices as they have measured the relative weight of different trade types in total trade. The value of GHM index is usually between the GL and FF index.

The Fontagne and Freudenberg (1997) methodology is useful for the observation of the bilateral trade.

4. Theory of international trade and economic gains from trade

For any country, the role of foreign trade cannot be overstated. Foreign trade is traditional, the oldest and still important part of the external economic relations. International trade exchange is both a prerequisite and a consequence of the international division of labor. It is an important factor in the formation and operation of the world economy. In its historical evolution of international trade has gone from individual trade transactions to large-scale long-term trade cooperation.

International trade can be defined as transactions that involve physical movement of goods or tangible commitment of economic resources between countries (Krugman and Obstfeld, 2003).

International trade in itself stems from the fact that no nation on earth is self-sufficient. Every country is, to some extent, dependent on other countries for their existence, livelihood and quality of life. A country will therefore trade with other counties by exporting to them what it produces or provides and may import from them what it needs. Thus, every country benefits from trading internationally.

With the help of modern production techniques, highly advanced transportation systems, transnational corporations, outsourcing of manufacturing and services, and rapid industrialization, the international trade system is growing and spreading very fast.

The benefits of international trade have been the major drivers of growth for the last half of the 20th century. Nations with strong international trade have become prosperous and have the power to control the world economy. The global trade can become one of the major contributors to the reduction of poverty.

International trade among different countries is not a new a concept. For hundreds of years, at least since Adam Smith's publication of The Wealth of Nations, the majority of economists have been strong supporters of free trade among nations.

A number of international organizations such as World Trade Organisation, the International Monetary Fund (IMF), the Organization for Economic Cooperation and Development (OECD) encourage and promote free international trade.

The original arguments for free trade began to supplant mercantilist views in the early to mideighteenth century. Many of these original ideas were based on simple exchange or production models that suggested that free trade would be in everyone's best interests and surely in the

national interest. During the nineteenth and twentieth centuries, however, a series of objections were raised suggesting that free trade was not in everyone's interest. [3]

4.1 Comparative cost theory

One reason why the amount of goods and services available to a country at a point in time can increase through trade is because it allows the country to buy goods and services from sources where it costs comparatively less to produce them. [4]

The term comparative advantage was first used in England in the early 19th century by economists of the classical school, which dates from the publication of Adam Smith's "An Inquiry into the Nature and Causes of the Wealth of Nations" (1776).

Although Smith's ideas about absolute advantage were crucial for the early development of classical thought for international trade, it is generally agreed that David Ricardo is the creator of the classical theory of international trade, even though many concrete ideas about trade existed before his Principles of Political Economy and Taxation (1817). Ricardo showed that the potential gains from trade are far greater than Smith envisioned in the concept of absolute advantage. His theory holds that a difference in comparative costs of production is the necessary condition for the existence of international trade.

According to this theory, technological differences between countries determine international division of labor and consumption and trade patterns. It holds that trade is beneficial to all participating countries. [5] Trade between two countries can benefit both countries if each country exports the goods in which it has a comparative advantage.

The theory of comparative advantage is built upon the differences in relative commodity prices between two nations, under constant returns to scale and perfect competition. The nation that has lower relative price (opportunity cost) of a commodity has comparative advantage in the production of that commodity.[6]

Ricardian model have several perceived limitations. Leamer and Levinsohn (1996) view the model as too simple for serious empirical analysis. The Ricardian model ignores factors of production besides labor, and has the unrealistic implication that countries specialize in the

[3] Suranovic S. (2010) International Economics: Theory and Policy, v. 1.0 Flat World Knowledge. eISBN: 978-1-4533-2722-7

[4] FAO (2000) Multilateral trade negotiations on agriculture. A resource manual/ Introduction and general topics Part. I

[5] Zhang, Wei-Bin (2008) International Trade Theory Capital, Knowledge, Economic Structure, Money and Prices over Time, 522 p., ISBN 978-3-540-78265-0

6 Gunawardana, Pemasiri J. Khorchurklang, Sukij (2007) An analysis of comparative advantage and competitiveness in dairy products: Australia and other selected countries International Journal of Business Strategy. Volume: 7, Issue: 1, ISSN: 1553-9563

production of tradable goods.[7] Since then several alternative trade models have been hypothesized. Most are elaboration of the theory of comparative advantage.

In the first half of the 20th century, the neoclassical school of thought added its own perspectives to the concept of Ricardian comparative advantage when it was generalized by Gottfried Haberler (1936) and critiqued by two Swedish economists, Eli Heckscher (1949) and Bertil Ohlin (1933). Heckscher and Ohlin postulated that the source of comparative advantage resides in the differential factor endowments of trading countries.[8]

The Heckscher-Ohlin theory became the mainstream theory of trade after World War II.

Empirical tests of the theory of comparative advantage give mixed results. While underlying productivity differences explain a significant share of trade, national differences in factor endowments are less successful in explaining trade patterns.

4.2 Economies of scale and diversification argument

Since the late 1970s, doubts that had been raised about the empirical validity of comparative advantage led some economists to formulate a New Trade Theory that harks back to another source of trade mentioned by Ohlin (1933), economies of scale, and explains why much of the trade between advanced economies consists of differentiated commodities produced under conditions of imperfect competition.

Unlike neo-c1assical Factor Proportions and classical Comparative Advantage theories, New Trade Theory considers scale economies as endogenous and treats them in conjunction with relative factor endowments and relative productivity levels.

Trade models with external economies of scale had been developed by Matthews (1949), Kemp (1964), Melvin (1969), Negishi (1969) and Chipman (1970).[9]

In the late 1970s, several researchers – Krugman (1979a, 1980), Dixit and Norman (1980) and Lancaster (1980) – independently formalized the idea that economies of scale and imperfect competition can give rise to trade even in the absence of comparative advantage.

According to Krugman (1981), much of world trade is between countries with similar factor endowments. This model combines monopolistic competition with the Heckscher-Ohlin

[7] Golub S. and Hsieh C (2000) Classical Ricardian Theory of Comparative Advantage Revisited. Review of International Economics, Vol 8, No 2, pp. 221–234

[8] Kenneth A. et al. (2008) The Princeton Encyclopedia of the World Economy. (Two volume set), ISBN: 9781400830404

[9] Prize Committee of the Royal Swedish Academy of Sciences Trade and Geography (2008) Economies of Scale, Differentiated Products and Transport Costs. Scientific background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

(HO) theory, incorporating factor endowments differences, product differentiation and increasing returns to scale.

The central feature in Krugman's approach is economies of scale that are internal to the firm, i.e., the firm itself can reduce its own average cost by expanding production. Under such conditions, markets cannot be perfectly competitive.

According to Krugman's view, the variety of products produced in any one country is limited by the existence of scale economies in production. Thus similar countries have an incentive to trade; their trade will typically be in products produced with similar factor proportions; and this trade will not involve the income-distribution effects characteristic of more conventional trade.[10]

By having integrated economies of scale into explicit general equilibrium models, Krugman has deepened our understanding of the determinants of trade and the location of economic activity

Models of imperfect competition had often been shunned in trade theory because of their analytical complexity. But Krugman made use of a recent model of monopolistic competition due to Dixit and Stiglitz (1977) that turned out to be well suited for the analysis of trade.

Many trade theorists came up with interpretations of the observed patterns of intra-industry trade by referring to economies of scale.

Econometric attempts to assess the hypothesis that scale economies generate trade have generally proved uninformative (Tybout, 1993). Studies that analyze scale effects typically regress the Grubel-Lloyd (1975) index of intra-industry trade on characteristics of trading partners or industry-specific scale-economy proxy variables. Helpman and Krugman (1985) show that the Grubel-Lloyd index does not vary sufficiently with variations in scale economies or product differentiation.[11]

The diversification argument

A different reason why trade is beneficial is because it makes accessible to national consumers and producers an array of goods and services that would not be available otherwise. Since these include consumer goods as well as capital goods and inputs, trade favors both domestic consumers and the development of the domestic production capacity.

The product-cycle literature (Vernon 1966; Krugman 1979a; Dollar 1986; Segcrstrom et al. 1990; Grossman and Helpman 1991), has suggested a link between export diversification and growth. Innovation in developed economies would result in a larger variety of products. At the

[10] Krugman P. R. (1981) Intraindustry Specialization and the Gains from Trade, The Journal of Political Economy, Vol. 89, No. 5, pp. 959-973.

[11] Lewandowski J.(1998) Economies Of Scale And International Exports of Sic 35 From Us. Metropolitan Areas Middle States Geographer, No 31, pp. 103-110

other side, imitation in the developing countries would also imply a larger diversity of products being produced and exported from these low-wage nations (Amin Gutierrez de Pineres and Ferrantino 1997). [12]

Diversity refers to the availability of goods that cannot be produced in the country or could only be produced under very special and expensive conditions (e.g. mangoes in Scandinavia).

Through **product differentiation** countries do not need to either fully specialize in industries where they have a comparative advantage or totally abandon industries where they do not; they can specialize in industrial niches (e.g. different makes of cars) and carry out mutually beneficial trade in niche products of industries where trading partners also operate. Intra-industry trade of this kind is common in consumer goods industries, but is less characteristic of trade in agricultural products because of the importance of natural resource endowments and their greater homogeneity.[13]

Broda and Weinstein (2004) compute the welfare gains to consumers as a reduction in the overall price index due to the availability of new varieties, a method developed by Feenstra (1994). The higher the share of total spending on a new variety, when it appears on the market, and the higher its degree of differentiation compared with existing varieties, the higher the reduction of the overall price index, i.e. the greater the gains to consumers.

Intra-industry trade

Economies of scale, combined with product differentiation explain the phenomenon of *intra-industry trade* in which countries trade similar, but differentiated, products with each other (e.g. simultaneously importing and exporting different makes of cars).

1. Inter-industry (manufactures for food) trade reflects comparative advantage. The pattern of inter-industry trade is that Home, the capital-abundant country, is a net exporter of capital-intensive manufactures and a net importer of labor-intensive food.

2. Intra-industry trade (manufactures for manufactures) does not reflect comparative advantage. Even if the countries had the same overall capital-labor ratio, their firms would continue to produce differentiated products and the demand of consumers for products made abroad would continue to generate intra-industry trade. It is economies of scale that keep each

[12] Mejia J.F. (2011) Export Diversification and Economic Growth, Contributions to Economics, Springer-Verlag Berlin Heidelberg, ISBN: 9783790827422.

[13] FAO (2000) Multilateral Trade Negotiations On Agriculture - A Resource manual / Introduction and general topics

country from producing the full range of products for itself; thus economies of scale can be an independent source of international trade[14]

Many trade theorists came up with interpretations of the observed patterns of intra-industry trade by referring to economies of scale. In an influential book, Grubel and Lloyd (1975) documented the large amount of intra-industry trade and argued that it could be explained by economies of scale. If the average cost of producing a given good (for instance, a particular make of car) would decline with total production, then it could be optimal to split up production so that countries specialize in different makes of cars. Such specialization would make sense even without differences in factor proportions and technology.

According to the pioneering work of the Falvey (1981), notions of horizontal and vertical product differentiation have come into existence in the literature. Horizontal IIT refers to homogenous products with the same quality but with different characteristics, while vertical IIT means products traded with different quality and price. Following the author's work, three types of bilateral trade flows may occur between countries: inter-industry trade, horizontal IIT and vertical IIT.

The models by e.g., Falvey and Kierzkowski (1987), Falvey (1981), and Flam and Helpman (1987) show how trade in vertically differentiated products takes place between countries with different per capita incomes. In the models by Falvey (1981) and Falvey and Kierzkowski (1987), quality is an increasing function of capital intensity. Capital abundant countries would then have comparative advantage in higher-quality varieties while labour abundant countries have comparative advantage in lower-quality varieties. [15]

Thereby vertical IIT occurs as the capital abundant country exports higher-quality varieties as well as the labour abundant country exports lower-quality products. It is therefore predictable that the share of vertical IIT will increase as countries' income and factor endowments diverge. The predominance of VIIT in IIT is well known (Fontagne et al., 2006).

A large number of theoretical and empirical studies have been conducted to measure the size and importance of IIT, and also to investigate the determinants of it since that time.

Research on the determinants of IIT constitutes another major advance in IIT studies. Researchers have studied various country- and industry-specific determinants, recognizing differences in factor endowments and market size, physical and/or institutional barriers to trade, and foreign direct investment (FDI) as the key elements determining the nature of IIT at the

[14] Krugman P. and Obstfeld M. (2003) International Economics: Theory and Policy (6th Edition). Addison Wesley. 784 p. ISBN: 0-321-11639-9

[15] Hellvin L. (1996) Vertical Intra-Industry Trade between China and OECD Countries OECD Development Centre, Working Paper No. 114

country level. National factors have been commonly proxied by GDP per capita, GDP, distance and tariff rate, FDI amounts, and sales ratio of multinational enterprise, respectively.[16]

4.3 Protectionism: the case for and against restrictions on international trade

Despite all of the aforementioned benefits of international trade, not all scientists as well as political figures agree with unconditional advantage of completely free, unrestricted international trade. Thereby international trade is still restricted protectionist measures.

In general, protectionism is defined as an effort imposed by a country to help its domestic trade in global trade competition through methods such as tariffs, restrictive quotas, and other government regulations.

4.3.2 The main types of trade restrictions

In spite of all gains of free international trade, every country in the world has erected at least some barriers to trade. Trade restrictions are typically undertaken in an effort to protect companies and workers in the home economy from competition by foreign firms. A protectionist policy is one in which a country restricts the importation of goods and services produced in foreign countries.

Interventions include taxes and tariffs, non-tariff barriers, such as regulatory legislation and quotas, and even inter-government managed trade agreements such as the North American Free Trade Agreement (NAFTA) and Central America Free Trade Agreement (CAFTA) etc.[17]

In general, protectionist policies imposed for a particular good always reduce its supply, raise its price, and reduce the equilibrium quantity.

Tariffs

A tariff is simply a tax (duty) levied on a product when it crosses national boundaries. The most widespread tariff is the import tariff, which is a tax levied on an imported product. A less common tariff is an export tariff, which is a tax imposed on an exported product. Export tariffs have often been used by developing nations.

Tariffs can be specific, ad valorem, or compound. A specific tariff is expressed in terms of a fixed amount of money per physical unit of the imported product. An ad valorem (of value) tariff, much like a sales tax, is expressed as a fixed percentage of the value of the imported product. A compound tariff is a combination of specific and ad valorem tariffs.[18]

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[16] Kang, M. and J.D. Lee (*2012)* Vertical intra-industry trade and product quality: the case of South Korea, 1996–2003 *Economics and Business Letters 1(3), 37-47,* ISSN: 2254-4380

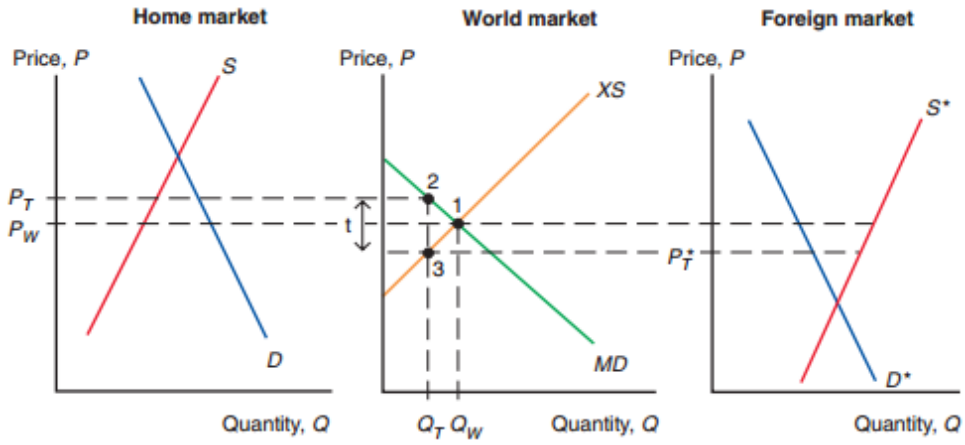
[17] Regine Adele Ngono Fouda (2012) Protectionism and Free Trade: A Country‘s Glory or Doom? International Journal of Trade, Economics and Finance, Vol. 3, No. 5, pp. 351-355, ISSN: 2010-023X

[18] Carbaugh R. (2005) International Economics. Thomson Southwestern. 530 p., ISBN: 0-324-20591-0

In either case, the effect of the tariff is to raise the cost of shipping goods to a country.

A main objective of an import tariff is to protect domestic producers from foreign competition. By increasing the domestic price of an import, a tariff serves to make home-produced goods more attractive to resident consumers.[19] Figure 2 illustrates the effects of a specific tariff.

Figure 2 - Effects of a Tariff



Source: Krugman, Obstfeld, Melitz (2012)

A tariff raises the price in Home while lowering the price in Foreign. The volume traded thus declines. As a result of these price changes, consumers lose in the importing country and gain in the exporting country. Producers gain in the importing country and lose in the exporting country. In addition, the government imposing the tariff gains revenue.

Tariffs are the simplest trade policies, but in the modern world, most government intervention in international trade takes other forms, such as export subsidies, import quotas, voluntary export restraints, and local content requirements.

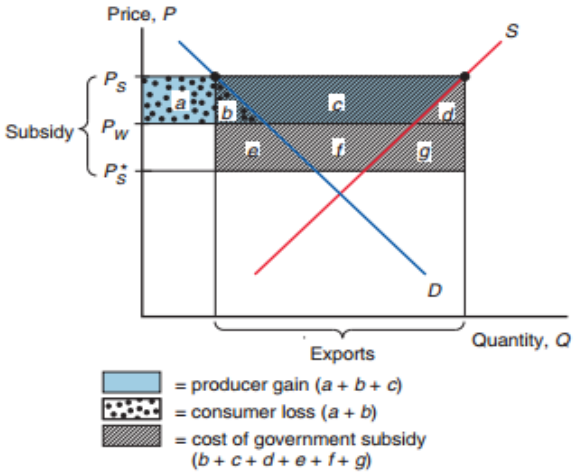
Export Subsidies

An export subsidy is a payment to a firm or individual that ships a good abroad. Like a tariff, an export subsidy can be either specific (a fixed sum per unit) or ad valorem (a proportion of the value exported). When the government offers an export subsidy, shippers will export the good up to the point where the domestic price exceeds the foreign price by the amount of the subsidy.

An export subsidy raises prices in the exporting country while lowering them in the importing country.

[19] Krugman, Paul R. (2012) International economics: theory & policy/R. Krugman, Maurice Obstfeld, Marc J. Melitz.—9th ed., Pearson Addison-Wesley, 701 p., ISBN-13: 978-0-13-214665-4

Figure 3 - Effects of an Export Subsidy



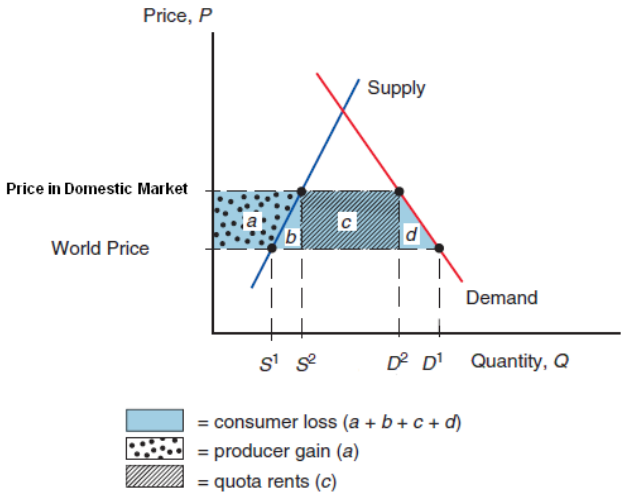
Source: Krugman, Obstfeld, Melitz (2012)

In the exporting country, consumers are hurt, producers gain, and the government loses because it must expend money on the subsidy.

Quotas

A quota is a direct restriction on the total quantity of a good or service that may be imported during a specified period. Quotas restrict total supply and therefore increase the domestic price of the good or service on which they are imposed. Quotas generally specify that an exporting country's share of a domestic market may not exceed a certain limit.

Figure 4 - Effects of Quota



Source: Krugman, Obstfeld, Melitz (2012)

An important distinction between quotas and tariffs is that quotas do not increase costs to foreign producers; tariffs do. In the short run, a tariff will reduce the profits of foreign exporters of a good or service. A quota, however, raises price but not costs of production and thus may increase profits. Because the quota imposes a limit on quantity, any profits it creates in other

countries will not induce the entry of new firms that ordinarily eliminates profits in perfect competition.

Other Barriers

In addition to tariffs and quotas, measures such as safety standards, labeling requirements, pollution controls, and quality restrictions all may have the effect of restricting imports.

Many restrictions aimed at protecting consumers in the domestic market create barriers as a purely unintended, and probably desirable, side effect. These standards tend to discourage the import of foreign goods, but their primary purpose appears to be to protect consumers from harmful chemicals, not to restrict trade. But other nontariff barriers seem to serve no purpose other than to keep foreign goods out.

4.3.2 Justifications for Trade Restriction

There are various reasons why countries use import tariffs and other types of trade policies. Nearly all countries have used these instruments in early stages of their development to foster the growth of domestic industries, in what is called import substitution. Such policies have been heavily criticized for protecting inefficient domestic industries from international competition. Many countries have later switched to an export promotion regime, under which industries are expected to meet international competition through exports.

The conceptual justification for free trade is one of the oldest arguments in economics; there is no disputing the logic of the argument that free trade increases global production, worldwide consumption, and international efficiency. But critics stress that the argument is a theoretical one. In the real world, they say, there are several arguments that can be made to justify protectionist measures.[20]

The infant-industry argument

The infant industry argument is one of the oldest arguments used to justify the protection of industries from international trade. First formulated by Alexander Hamilton and Friedrich List at the beginning of the 19th Century, the case for infant industry protection has been generally accepted by economists over the last two centuries.[21]

The argument claims that protection is justified for new industries especially in less developed countries in order to establish them sufficiently. These infant industries are unable to compete with the old and well established industries located mostly in developed countries. The

[20] Rittenberg L., Tregarthen T. (2009) Principles of microeconomics, Flat World Knowledge, Inc., 551 p
[21] Melitz M.J. (2005) When and how should infant industries be protected? Journal of International Economics, Vol. 66, pp. 177–196, ISSN: 0022-1996

main reasons are differences in efficiency in production, information, knowledge and capital endowment (Suranovic, 2004)

Critics of the infant industry argument say that once protection is in place, it may be very difficult to remove. Inefficient firms may be able to survive for long periods under the umbrella of infant industry protection. The infant industry is probably better aided by production subsidies than by tariffs.

Strategic Trade Policy

The essence of the strategic trade theory, as advanced by James Brander and Barbara Spencer (1983), is that a country can raise its national income at other countries' expense by helping domestic firms, in industries that earn high profits, to obtain a larger share of the world market. The idea is that government assistance provided to a domestic firm — for example through an export subsidy, research and development subsidy or import restriction — may give it a strategic advantage in competing with foreign firms.

The theory shows that under certain conditions, provision of government assistance will enable the opportunity for profitable production to be captured by a domestic firm and will deter production by potential foreign competitors.[22]

Protection-against-dumping argument

Dumping is defined as setting a price in an export market which is different (usually lower) to the price in another market, usually the home market, and thereby causing injury to the domestic producers in the export market. Where dumping is "proven", retaliatory action is usually taken to provide protection to the domestic suppliers in the export market.[23]

To prevent dumping a country can impose an anti-dumping duty. The dumping margin is the difference between the export price and the actual normal value (Farr, 1998). Anti-dumping measures can only be imposed if evidence that the dumping has caused or threatens to cause material injury to the domestic import-competing industry (Hoekman and Kostecki, 2001).

Even though anti-dumping laws were originally intended to address predatory pricing by foreign firms, over time they became a tool of protectionism. Dating back to almost a century ago, (Viner, 1923) cited a number of examples of alleged dumping that were used as an excuse for protectionism.[24]

The effects of antidumping protection are very different for exporters compared to non-exporters. In terms of initial conditions, exporters in our sample are typically larger and on

[22] Bates W. (1990) Strategic Trade Policies: Respectable Interventionism. POLICY Magazine, Vol. 6, No. 4
[23] Ron Sheppardб Catherine Atkins (1994) Dumping, Protectionism And Free Trade, Discussion Paper No.140 Agribusiness & Economics Research Unit. Lincoln University CANTERBURY, ISSN 1170-7607, ISBN 0-909042-01-2
[24] Cheng L.K., Qiu L.D., and Wong K.P. (2001) Anti-dumping measures as a tool of protectionism: a mechanism design approach. Canadian Journal of Economics, Vol. 34, No. 3, ISSN: 1540-5982

average more productive than non-exporters which confirms earlier results (Eaton et al., 2004; Mayer and Ottaviano, 2008; Helpman, Melitz and Yeaple, 2004). While the non-exporters in our sample experience a modest increase in firm-level productivity during protection, exporters' productivity falls during protection.[25]

National security

Opponents of trade liberalization often argue that more open trade creates greater risks to the country´s security. If the country relies on an imported weapon system, or an imported material that is a crucial ingredient of its military equipment, then an enemy could cut off the supplies of these imports and make the country vulnerable to invasion.

Trade may also create economic vulnerability. Consider a country that imports goods essential for the economic life of the country, such as food and fuel. If these imports are cut off, accidentally because of a negative shock either to foreign supply or to international transportation systems, or deliberately by a militarily or economically rival power, then the country´s economic welfare can plummet. Reliance on exports can also increase economic vulnerability.[26]

Job Protection Argument

The protection of jobs argument is closely related to the balance of trade argument. Since a reduction in imports via trade restrictions will result in a similar reduction in exports, the overall employment effects, as found in the OECD (1985) study and many others, are negligible. While the overall effects are negligible, workers (and resource owners) in specific industries are affected differently.[27]

However, empirical researches show that more open markets in goods and services can contribute to creating jobs and increase incomes. Reducing tariffs and non-tariff barriers can help in the short run where the economic crisis has led to significant involuntary unemployment by reducing costs of imported products for consumers and by providing new market opportunities for exporters. Taking a longer term view of a more healthy global economy, lasting gains can be found from reallocation of resources across sector and from productivity growth. Reducing barriers to foreign direct investment in services is found to particularly increase demand for higher skilled labour, while the offshoring of services is not found to shift jobs abroad.(OECD)[28]

[25] Konings J. and H. Vandenbussche (2009) Antidumping Protection hurts Exporters: Firm-level evidence from France, Catholic University of Leuven, Discussion Paper No 17

[26] Dixit A. International Trade, Foreign Direct Investment and Security Department of Economics, Princeton University, Princeton, New Jersey

[27] Coughlin C., Chrystal A. and Wood G.(1988) Protectionist Trade Policies: A Survey of Theory, Evidence and Rationale Federal Reserve Bank of St. Louis Review, pp. 12-29

[28] OECD (2011), "The Impact of Trade Liberalisation on Jobs and Growth: Technical Note", OECD Trade Policy Papers, No. 107, OECD Publishing.

5. Trade Agreements and International Organizations

There are many ways of controlling and promoting international trade today. The methods range from agreements among governments—whether bilateral or multilateral—to more ambitious attempts at economic integration through supranational organizations.

The term trade agreement or commercial agreement can be used to describe any contractual arrangement between states concerning their trade relationships. Trade agreements may be bilateral or multilateral—that is, between two states or between more than two states.[29]

5.1 General Agreement on Tariffs and Trade and World Trade Organization

In many parts of the world, regional trade agreements have been reached in order to increase free trade. The two most important are the General Agreement on Tariffs and Trade, and the World Trade Organization.

General Agreement on Tariffs and Trade

After the Great Depression and World War II, most countries focused on protecting home industries, so international trade was hindered by rigid trade restrictions. To rectify this situation, twenty-three nations joined together in 1947 and signed the General Agreement on Tariffs and Trade (GATT), which encouraged free trade by regulating and reducing tariffs and by providing a forum for resolving trade disputes.

GATT was based on three principles:

1) equal, nondiscriminatory trade treatment for all member nations;

2) the reduction of tariffs by multilateral negotiation; and

3) the elimination of import quotas.

The highly successful initiative achieved substantial reductions in tariffs and quotas, and in 1995 its members founded the World Trade Organization to continue the work of GATT in overseeing global trade.

Agricultural trade liberalization on international level was brought into the GATT in 1986 during the Uruguay round.

The original General Agreement on Trade and Tariffs (GATT) applied to agricultural trade, but did so somehow ineffectively, due to certain exceptions to the disciplines on the use of non-tariff measures and subsidies (Anon, 1999). Agriculture was treated separately in the GATT under a number of headings, of which subsidies and quantitative restrictions were the most

[29] Stryk D.(2000) International Economics: Study Guide and Workbook Routledge; 5 edition, 256 p. ISBN**:** 978-0415228305

important. These exemptions meant that there were few disciplines on agricultural policy, particularly in developed countries.

In the mid-1960s, the Soviet Union was invited to join the GATT. Then, however, the Soviet government did not respond to these calls.

In accordance with the terms of the GATT government activities in the field of foreign trade permitted only if it does not break the rules of free competition. This approach was unacceptable to the Soviet Union policy.

World Trade Organization

The WTO was established on January 1, 1995 by the Final Act of the Uruguay Round of negotiations, replacing the General Agreement on Tariffs and Trade (GATT)

Now it is the most important international trade organization. On 2 March 2013, the WTO had 159 member nations.

Based in Geneva, Switzerland, with nearly 150 members, the World Trade Organization (WTO) encourages global commerce and lower trade barriers, enforces international rules of trade, and provides a forum for resolving disputes.

The WTO oversees trade agreements reached by the member nations and rules on trade disputes among them. It also provides forums for further rounds of trade negotiations. The negotiations are aimed at further reducing tariffs and quotas, as well as agricultural subsidies that distort trade.

WTO has a significant impact on global agricultural production and trade. The organization is working hard at breaking down trade barriers in agriculture. GATT and the WTO have been positive forces in the trend toward liberalized world trade. For that reason and others, the WTO is controversial. Critics are concerned that rules crafted to expand international trade and investment enable firms to circumvent national laws that protect workers and the environment. Proponents of the WTO respond that labor and environmental protections should be pursued directly in nations that have low standards and via international organizations other than the WTO.

Russia and the World Trade Organization

Russia has been trying since 1993 to become a World Trade Organization (WTO) member. Until 2012, Russia was the largest economy outside the World Trade Organization (WTO). And finally after 18 years it has acceded to WTO as the 154th member. On 10th of July 2012 Duma (Parliament) of Russian Federation ratified the Protocol on the Accession of Russian Federation to the World Trade Organization

Thus, on 9th of August 2012 the WTO Protocol on the Accession of the Russian Federation came into effect.

The WTO accession means that Russian Federation accepts the rules of numerous WTO agreements which regulate trade barriers, as well as state support to specific sectors. The domestic support to agriculture is regulated by the Agreement on Agriculture which was negotiated during the Uruguay Round in 1986-1994.[30]

The WTO accession means that Russian Federation accepts the rules of numerous WTO agreements which regulate trade barriers, as well as state support to specific sectors. The domestic support to agriculture is regulated by the Agreement on Agriculture which was negotiated during the Uruguay Round.

The Agreement on Agriculture indicates the general rules of domestic support and export subsidies to agricultural products, the measures of support which are subject to reduction commitments, and the basis for exemption from the reduction commitments.[31]

The level of agricultural support permitted has become a major point of controversy for Russia, which is attempting to negotiate a high permitted Aggregate Measure of Support (AMS). However, despite the increase in Russian agricultural subsidies in recent years, the de minimis level of subsidies under WTO rules should allow Russia to subsidize at its present levels or higher.[32]

An important part of Russia's commitments relate to market access for agricultural goods and food. In general, the average bound tariff rate for agricultural goods and food should be 10.8 percent. This is 20 percent less than the 2010 protection level of 13.5 percent (Kiselev, Romashkin, 2012).

The average final legally binding tariff ceiling for the Russian Federation will be 7.8% compared with a 2011 average of 10% for all products. For agriculture products, the average tariff ceiling will be 10.8%, lower than the current average of 13.2%.

Russia agreed to bind tariffs on a range of products either at current rates or at lower rates. Some of the products where tariffs will be reduced (average duties) after full implementation of tariff reductions:

- 14.9% for dairy products (tariff before accession 19.8%)
- 10.0% for cereals (tariff before accession 15.1%)
- 7.1% for oilseeds, fats and oils (tariff before accession 9.0%)

[30] Stupak N. (2012) WTO Accession by Russian Federation: Risks, Outcomes and Possible Solutions for the Agricultural Sector of Tyumen Province. Humboldt University Berlin. Working Paper, 26 p

[31] Gorter H., Ingco M. (2002) The AMS and Domestic Support in the WTO Trade Negotiations on Agriculture: Issues and Suggestions for New Rules, Working paper, World bank, Washington, DC

[32] Tarr, D., Volchkova N. (2010) Russian Trade and Foreign Direct Investment Policy at the Crossroads. Working Paper. World Bank Policy Research

• 8.0% for wood and paper (tariff before accession 13.4%)

• US$ 223 per ton for sugar (tariff before accession US$ 243 per ton)[33]

Russia's tariff-rate quota on pork will be 400,000 tonnes, and its TRQ on poultry imports will be 350,000 tonnes. Russia will set its quota on beef imports at 530,000 tons. Some quotas are subject to specific WTO member allocations. According to the WTO, Russia will set and bind its tariff on:

• beef at 15% within the TRQ and 55% outside the TRQ;

• pork at 0% within the TRQ and 65% outside the TRQ (and would replace the TRQ with a flat 25% tariff on January 1, 2020);

• selected poultry products at 25% within the TRQ and 80% outside the TRQ; and

• some whey products at 10% within the TRQ and 15% outside the TRQ.[34]

As a result of the negotiations, Russia would be allowed a $9 billion cap and would reduce these subsidies to $4.4 billion by 2018. Russia will also be required to limit product-specific subsidies to 30% of allowable trade-distorting subsides. Russia has also agreed to eliminate all agricultural export subsidies.

Table 1 - Russia's domestic support commitments after the WTO accession (USD billion)

Years	2012	2013	2014	2015	2016	2017	2018 and beyond
USD billion	9.0	9.0	8.1	7.2	6.3	5.4	4.4

Source: S. Kiselev, R. Romashkin – Possible Effects of Russia's WTO Accession on Agricultural Trade and Production (2012)

Although trade-distorting subsidies (subsidies that are dependent on exports or production) are constrained by the WTO, the WTO allows without any constraints publicly funded subsidies to agriculture that are not trade-distorting (Green Box subsidies).

It is still too early to judge the impact of WTO accession for the Russian economy and agriculture. However, based on operational data of customs statistics, we can draw preliminary conclusions about changes in the Russian foreign trade.

For this purpose, let us compare the data of customs statistics quarterly to reflect changes in the structure of foreign trade in agricultural products after WTO accession.

[33] Rensburg G. (2012) Country Market Study: Russian Federation. National Development Agency. Department of Agriculture, Forestry and Fisheries, 110 p.

[34] Cooper H. (2012) Russia's Accession to the WTO and Its Implications for the United States Congressional Research Service Report

Table 2 - The value of Russian foreign trade in agricultural products after the WTO accession (quarter in the first quarter of 2013 compared to the first quarter of 2012), million USD and %

Commodity group	Export				Import			
	I qr. 2012		I qr. 2013		I qr. 2012		I qr. 2013	
	value	share in total export	value	share in total export	value	share in total import	value	share in total import
Total	131277.8	100.0	124430.6	100.0	68696.3	100.0	70430.2	100.0
Agricultural and food products	3461.7	2.6	2948.3	2.4	9072.0	13.2	9607.3	13.6

Sources: Federal Customs Service of Russia (2013)

As we can see from the table 2, in the first quarter of 2013, there was a decrease of agricultural exports compared to the first quarter of 2012. At the same time, imports of agricultural products increased by 5.9%. However, the growth of imports of agricultural products was observed in previous years too, so that the changes cannot be considered as a direct consequence of the accession to the WTO.

Table 3 - The value of Russian foreign trade in agricultural products after the WTO accession (quarter in the second quarter of 2013 compared to the second quarter of 2012) , million USD and %

Commodity group	Export				Import			
	II qr. 2012		II qr. 2013		II qr. 2012		II qr. 2013	
	value	share in total export	value	share in total export	value	share in total import	value	share in total import
Total	129821.5	100.0	127557.8	100.0	76998.0	100.0	78357.5	100.0
Agricultural and food products	4092.4	3.2	3046.2	2.4	10112.9	13.1	10321.7	13.2

Sources: Federal Customs Service of Russia (2013)

Comparing 2nd quarter of 2013 to the 2nd quarter 2012, we can see that import growth was only 2.1%. But export was 25% lower than for the same period in 2012.

Generally speaking, after Russia's accession to the World Trade Organization, the massive influx of cheap imports, which had been predicted by experts, did not happen. This is evidenced by customs statistics.

According to the preliminary data of the Federal Customs Service of Russia, in January-July 2013 increase in imports of goods to Russia amounted to 3.5% (almost two times less than in January-July 2012).

With the accession of Russia to the WTO, tariffs on pork imports have been reduced from 15% to zero within quotas and from 75% to 65% in case of exceeding the quota. As a result of cheap imports of pork from Europe increased, and prices for these products in Russia declined. Pork producers suffered losses.

However, consumers did not feel a significant reduction in food prices. The fall in pork prices in the domestic market, which happened due to lower import duties, reflected in the price for the consumer through its reduction by only 1%

A similar situation was observed in rice production. After the rate on the import of this crop to Russia fell by almost three times, there was an influx of cheap rice from countries such as China and Thailand, which threatened Russian farmers.

With the exception of the examples mentioned, neither business nor consumers have noticed significant changes after the WTO accession. However, some experts believe that Russia's membership in the World Trade Organization has not brought the expected economic benefits.

5.2 Trading Blocs

The integration of countries is important has a significant influence on the development of trade relations on a global scale.

A trade bloc can be defined as a 'preferential trade agreement' between a subset of countries, designed to significantly reduce or remove trade barriers within member countries

The North American Free Trade Association (NAFTA) is an agreement among the governments of the United States, Canada, and Mexico to open their borders to unrestricted trade. The effect of this agreement is that three very different economies are combined into one economic zone with almost no trade barriers. From the northern tip of Canada to the southern tip of Mexico, each country benefits from the comparative advantages of its partners: each nation is free to produce what it does best and to trade its goods and services without restrictions.[35]

The major aim of NAFTA is to eliminate barriers to trade in and facilitate the cross border movement of goods and services between the member countries. Other objectives include the promotion of fair competition in Norm America, the increase of investment opportunities among the member countries, and the provision of adequate and effective protection and enforcement of intellectual property rights in Canada, the USA and Mexico. [36]

[35] Collins K. (2009) Exploring Business, v. 1.0 Flat World Knowledge p. 521 eISBN: 978-1-4533-2683-1
[36] S Mumme S. P. and Lbecker D. (2002) *North American Free Trade Association and the Environment* Conventions, Treaties And Other Responses To Global Issues - Vol. II – 354 p. *ISBN: 978-1-84826-234-8*

NAFTA together with Canada-United States Free Trade Agreement agreements were expected to create a more competitive economy in Canada through increased competition and open access to a larger export market.[37]

Other countries have also opted for economic integration.

European Free Trade Association (EFTA) is a free-trade area established in EFTA was founded in 1960 on the premise of free trade as a means of achieving growth and prosperity amongst its Member States as well as promoting closer economic cooperation between the Western European countries. EFTA was founded by the following seven countries: Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the United Kingdom. Finland joined in 1961, Iceland in 1970 and Liechtenstein in 1991. In 1973, the United Kingdom and Denmark left EFTA to join the EC. They were followed by Portugal in 1986 and by Austria, Finland and Sweden in 1995. Today the EFTA Member States are Iceland, Liechtenstein, Norway and Switzerland.[38]

Central Europe Free Trade Area (CEFTA) is an agreement originally signed by the countries of the Visegrad group (the Czech Republic, Hungary, Poland and the Slovak Republic) on 21 December 1992 and effective since July 1994. Slovenia (1996), Romania (1997) and Bulgaria (1999) have since joined CEFTA. The agreement provides for the gradual establishment of a free trade area for industrial goods and a gradual reduction of certain, but not all, barriers to trade in agro-food products.[39]

The Agreement covers agricultural products and other goods and services. The agreement is harmonized with the GATT and WTO agreements and calls for a reduction in customs duties and trade barriers for agricultural products.

Asia-Pacific Economic Cooperation (APEC) is the Forum for Economic Co-operation of 21 countries, formed in 1989, to promote free trade and investment flows, economic growth and stability in the Asia Pacific region The Agricultural Technical Cooperation Working Group attempts to develop cooperation among member nations on agricultural technology issues and other matters including trade in agriculture.[40]

Association of Southeast Asian Nations (ASEAN) was established in 1967 by the Bangkok Declaration to promote regional economic growth and today has 10 member countries: Indonesia, Malaysia, Philippines, Singapore, and Thailand. Brunei Darussalam, Vietnam, Laos, Myanmar, and Cambodia.

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[37] Helliwell, J.F. (1999) Perspectives on North American free trade Effects of the Canada-United States free trade agreement on interprovincial trade The Industry Canada Research Publications Program 48 p., ISBN 0-662-64197-3

[38] *The European Free Trade Association* Official website http://www.efta.int

[39] Agricultural Policies in OECD Countries: Monitoring and Evaluation 2000: Glossary of Agricultural Policy Terms, OECD

[40] OECD (2000) Agricultural Outlook: 2000-2005

The ASEAN Declaration states that the aims and purposes of the Association are: (1) to accelerate the economic growth, social progress and cultural development in the region through joint endeavors in the spirit of equality and partnership in order to strengthen the foundation for a prosperous and peaceful community of Southeast Asian nations, and (2) to promote regional peace and stability through abiding respect for justice and the rule of law in the relationship among countries in the region and adherence to the principles of the United Nations Charter. [41]

The Bankok Declaration calls for ASEAN member nations to cooperate in expanding trade in agriculture. This mandate has been broadened over the years and most recently the Strategic Plan of Action on Cooperation in Food, Agriculture and Forestry was announced with a focus on enhancing the international competitiveness of ASEAN agricultural products.

Common Market for Eastern and Southern Africa (COMESA) was created by the Common Market for Eastern and Southern Africa Treaty in 1994 by 21 member states in pursuit of a free trade area, removal of internal trade barriers, a common external tariff, trade liberalization, and customs co-operation. The Treaty outlines specific undertakings in the field of agriculture and specifically emphasizes cooperation in various areas including co-operation in agricultural exports. COMESA is attempting to increase agricultural trade by making trade in agricultural products

Southern African Development Community (SADC) was formed by the Declaration and Treaty of the Southern African Development Community, signed by 14 member states in 1992. The liberalization and promotion of agricultural trade is one goal of the SADC. The Protocol on Trade calls for trade liberalization, the elimination of trade barriers and of import and export duties, harmonization with the trading practices of the WTO and SPS measures. One of the main functions of the Directorate of Food, Agriculture and Natural Resources is to promote trade in agriculture.

Economic Community of West African States (ECOWAS) is a regional group of fifteen countries formed in 1975 to promote integration in agriculture and other fields. The goals of the organization are to suppress customs duties and barriers, to establish a common external tariff, to harmonize economic and financial policies and to create a monetary zone. [42]

[41] Martin J. (2012) Association of Southeast Asian Nations (ASEAN). Inventory of International Nonproliferation Organizations and Regimes, Center for Nonproliferation Studies

[42] Lee F. Peoples, (2004) *International Trade in Agricultural Products: A Research Guide,* 29 Oklahoma City University Law Review, pp 683-724

5.3 Russia in international organizations and trading blocs

Commonwealth of Independent States (CIS)

The Commonwealth of Independent States (CIS) was formally established by the Treaty of Almaty in December 1991 right after the dissolution of the Soviet Union to maintain economic and security integration between the majority of the former Soviet republics.

Upon its foundation, members adopted the Alma-Ata Declaration, which confirmed the promise of the former republics to cooperate in various fields of external and internal policies, and announced the guarantees for implementation of the international commitments of the former Soviet Union. Georgia joined the Commonwealth in December 1993.

On 26 June in Minsk, eight CIS countries (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan) signed the agreement on the coordination of work related to the issues of export control over raw materials, materials, equipment, technologies, and services used or capable of being used for the manufacture of weapons of mass destruction and missiles as their means of delivery. The States Parties agreed to pursue coordinated export control policies, including the application of sanctions against all economic entities that violate the export control requirements.

Turkmenistan never ratified the CIS charter but considered itself a member until 2005, after which, in order to be consistent with its UN-recognized status of 'perpetual neutrality', it received associate observer status.

The treaty envisioned the creation of a common economic space with free movement of goods, services, capital and labour through a multistage process starting with a multilateral free trade area and culminating in monetary union. The CIS Agreement on the Creation of an Economic Union was a framework agreement which required separate agreements in specific areas of economic activity to become effective. However, no free circulation of goods, services, capital or manpower had yet been implemented on the basis of this agreement.

CIS members decided to strengthen traditional economic links by setting out a series of economic and policy goals in the Statute of the CIS of 1993. Furthermore, a host of institutional arrangements has been implemented in order to consult and co-ordinate not only economic policies.

A large number of regional trade arrangements have been signed among the member states of the CIS since the demise of the USSR.

Nearly all CIS countries have signed bilateral free trade agreements (FTAs) with each other. These FTAs are generally concerned with the granting of mutually advantageous terms and conditions for trade and economic co-operation. Under these agreements, the parties undertake to

refrain from applying quantitative restrictions to the import and export of goods. They generally include all goods and services but sometimes they include a list of products exempted from the free trade regime. Often such exemptions are made for agricultural products. Quantitative restrictions generally aim to limit non-authorized re-exports of goods or to protect the internal market or the balance of payments.

On October 18, 2011, Prime Ministers of eight former Soviet republics, including Russia, Ukraine, Belarus, Kazakhstan, Armenia, Kyrgyzstan, Moldova and Tajikistan, signed an FTA.

According to FTA, all import tariffs, except those on sugar, will be eliminated by January 1, 2015. Pending a future agreement, Belarus, Kazakhstan, Moldova, and Russia will maintain imports duties on Ukrainian sugar, and Tajikistan will maintain import duties on sugar from Belarus, Kazakhstan, and Russia.

The 2011 CIS FTA will cover only trade in goods and replace a 1994 deal that some CIS states, including Russia, never ratified, as well as some other multilateral and about a hundred bilateral agreements in the CIS. The FTA will eliminate export and import duties on a host of goods, but it also contains a number of exemptions, some of which will be phased out.

The CIS agreement is not expected to liberalize the unofficial quota regime managing bilateral trade of meat, poultry, dairy, and sugar products between Russia and Belarus[43]

In 1994 negotiations on a Common Agrarian Market (CAM) began and the agreement was signed at a CIS Summit in Moldova in October 1997. However, to date, the creation of a Common Agrarian Market within the CIS countries has not started yet and is another example of a de jure agreement among CIS countries.[44]

Eurasian Economic Community

Eurasian Economic Community (EEC) was created in 2000 at the initiative of Kazakh President Nursultan Nazarbayev and inspired by the model of the European Union.

Eurasian Economic Community was established with the aim of developing economic cooperation and trade, to effectively further the process for forming the Customs Union and Common Economic Space, and to coordinate the actions of Community states during integration into the world economy and international trading system.

It includes five founding states, Russia, Belarus, Kazakhstan, Kyrgyzstan and Tajikistan. Uzbekistan joined in 2006 and then suspended its participation in November 2008. Three states have observer status: Moldova and Ukraine since 2002, and Armenia since 2003. EEC is the legatee of the first Customs Union signed between Russia and Belarus in 1995, to which

[43] USDA (2012) Commonwealth of Independent States FTA, USDA Foreign agricultural service, FAIRS Subject Report

[44] Roberts M. and Wehrheim P. (2001) Regional Trade Agreements and WTO Accession of CIS Countries. Intereconomics, ISSN: 1613-964X

Kazakhstan and Kyrgyzstan adhered later, and of the second Customs Union and Common Space agreements signed in 1999, both of which are dead letters.

Key objectives of Eurasian Economic Community include the following: attaining a free trade regime; creating a unified customs tariff and a unified system of non-tariff regulation measures; forming a common financial market; coordinating the principles and conditions for transition to a common currency; opening a common market for transportation services and a unified transport system; and shaping a common energy market. EEC is also supposed to ensure free movement for its citizens, and to coordinate social policy with the aim of providing a common labor market, a common educational space and coordinated approaches to healthcare and labour migration.

The Basic List of the common customs tariffs and minimal rates of excisable goods manufactured on and imported into the customs territories of the Community member states were approved (the Interstate Council meeting, May 31, 2002).[45]

Table 4 – Trade flows in agricultural products and foodstuffs between Russia and countries of Eurasian Economic Community, USD

Years	Export	Import
2000	264962891	643521108
2001	270908295	402978880
2002	236272664	242139854
2003	334815761	412002427
2004	424726685	757345459
2005	604838407	680127186
2006	856290976	1031922777
2007	1326117255	966891332
2008	1654696184	1064120055
2009	1406385249	890713147
2010	331304206	789322692
2011	526861187	475124192
2012	2490314897	2191810823
2012 by 2000 (%)	939,9	340,6
GM of chain indices (%)	120,5	110,8

Source: Comtrade database (2013)

Thus, we can see that since 2000, trade flows between Russia and the countries of the EEC increased rapidly. In these 12 years, exports have grown by almost 10 times, imports - by 3.5 times. The average annual export growth was 20%, import growth - 10%.

The integration process gained political momentum in November 2009 when Belarus, Kazakhstan and Russia signed an agreement establishing a Customs Union and started applying a common import tariff.

[45] Razumkov Centre Eurasian Economic Community (2002) The Principles of Activity and Prospects of Development National Security & Defence, Vol. 12, No 36

The Customs Union (CU) and the Common Economic Space (CES)

Under Russia's leadership, some EEC members pushed for a new phase of integration.

The first phase of the project, the Customs Union (CU), involving three states – Belarus, the Russian Federation and Kazakhstan – began in July 2010. These states have adopted unified rules and procedures regulating mutual trade and established a single customs tariff (SCT) and unified customs area. They also agreed to establish unified non-tariff protection measures, anti-dumping legislation and compensatory tariffs in their trade with other countries. In July 2011, they abolished customs controls at their common borders. [46]

The second phase of the integration project began in January 2012 with the creation of the Common Economic Space (CES). Its mission is to develop an effectively functioning common market in goods, services, capital and manpower; to conduct coordinated tax, monetary and credit, currency and finance, trade, customs and tariff policies; to develop unified transport, energy and information systems; and to create a unified system of measures for state support in developing priority branches of the economy and cooperation in production, science and technology. Since 2009, Russia has adopted the ruble in its trading with Kazakhstan and Belarus, and debates about the possible creation of a monetary union have been recently revived.

The Union is open to other countries provided that they share a common border with the existing members. Within the CIS, this stipulation currently precludes Armenia, Moldova and Tajikistan, but the Kyrgyz Republic is considering membership and Ukraine has been invited to join. [47]

Over the past two decades, Russia and CIS countries signed a number of agreements, but not all are really implemented. The absence of implementation mechanisms is particularly critical in the case of regional organizations with an economic raison d'être. Most regional trade agreements exist only on paper and their impact on trade regimes has been limited. In 1994, the CIS Agreement on the Establishment of a Free Trade Area was signed but never implemented. By 1999, a list of common exemptions from the free trade regime was established but never applied. In 2000, Russia, Belarus, Kazakhstan, Kyrgyzstan and Tajikistan agreed to adopt a Common External Tariff Schedule (CETS), but the objective was never achieved. At the end of 2005, only Russia, Belarus and Kazakhstan had managed to agree to the CETS, which involves only 63 percent of the lines of EEC's commodity classification.

The Black Sea Economic Cooperation Organization (BSEC) was formed in 1992 and consists of Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, the Russian Federation, Turkey and Ukraine.

[46] Chufrin G. (2012) Difficult Road to Eurasian Economic integration Russian Analytical Digest No. 112

[47] ERBD (2012) Regional Trade Integration and Eurasian Economic Union. The European Bank for Reconstruction and Development. Transition Report

The founders of the organization were Turkey, Romania, and Bulgaria who have borderlines to the Black Sea. The Russian Federation, Ukraine, Azerbaijan, Moldova, Georgia, and Armenia joined after the dissolution of the Soviet Union. Greece and Albania participated as well later, even though they have no coasts to the Black Sea. The first meeting was held in Ankara on December 19, 1990.[48]

The ultimate goal is to promote the Black Sea region as an area of peace, cooperation and wealth. The purpose of the BSEC initiation was to gradually obtain a "free trade zone", but later meetings and summits led to negotiations on an "economic cooperation". While economic cooperation among its members is an important activity of BSCE, there are no immediate plans for establishing an FTA.

In contrast, the ***Shanghai Cooperation Organization (SCO)***, of which China is a member, along with Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan and Uzbekistan, could have an important impact. The rapidly growing Chinese economy may stimulate the development of the Central Asian republics, while China itself could benefit from the rich natural resources of these countries. However, the SCO has so far limited commitments in the economic area and has largely focused on security cooperation. [49]

United Nations and The Food and Agriculture Organization. Russia is also an permanent member on the Security Council in the United Nations after the dissolution of the Soviet Union in 1991 and an official member of the Food and Agriculture Organization.

The Food and Agriculture Organization of the United Nations (FAO) was founded on October 16, 1945 to tackle world food problems. Forty-six states were its founders, including the USSR, which held back from joining the organization for a number of political and economic reasons, among them the confidentiality of agricultural statistics.

Russian Federation has officially joined this organization as of April 3, 2006. Membership of the FAO has a great significance for Russia also from the vantage point of negotiations on our entry into the World Trade Organization (WTO).

In addition to the above organizations, Russia holds membership in Group 8, European Bank of Reconstruction and Development, Counsel of the Baltic Sea States and others.

Not all of them have a direct impact on trade in agricultural products. Many of them are elements of political cooperation between the countries and they affect trade relations only indirectly.

[48] Dikkaya M., Orhan M (2003) Economies of the Black Sea Economic Cooperation (BSEC) Countries and their Bilateral Trade Journal of Economic and Social Research. Vol. 6, No 2, pp. 63-86

[49] UNESCAP (2005) Experiences with Regionalism and Bilateralism in Asia and the Pacific with Focus on Central Asia United Nations Economic and Social Commission for Asia and the Pacific, Moscow

6. International trade in agricultural products: theoretical framework and global trends

Agricultural production and trade in agricultural products are vital components of any economy. It is closely related to such important elements as food security, employment, and social stability, the development of new territories, environmental safety.

From a theoretical point of view, agricultural foreign trade operates in accordance to the same economic laws as the foreign trade in non-agricultural products (industrial products, fuel and energy resources). It is also affected by government policies, trade barriers, price changes, etc.

The study of international trade in agricultural products has developed rapidly over the past fifty years. During this time, the main areas of research were influence the government trade policies and trade barriers on country's welfare and development; influence of international economic events on domestic markets and policies; the impact of climate change mitigation and adaptation on trade etc.. Tools were advanced to explain the trends and variations in world prices and the implications of market imperfections.

Researcher's attention to the subject increases every year and there are a number of reasons for this.

International trade in agricultural products has expanded more rapidly than global agricultural GDP. Nevertheless, the increasing importance of agricultural trade relative to agricultural output has not prevented agricultural trade from losing its relative importance as a component of international trade.

The share of agricultural products in world exports in the last decade has been steadily declining: in relation to foodstuffs, from 13% in 1970 to 9% in 1999, with respect to the agricultural raw materials - from 7 to 2.5%. This decrease can be explained by the increase in food self-sufficiency in Western and Central Europe.

The past four decades have also seen major changes in geographical patterns of agricultural trade. The role of agricultural trade in the overall trade patterns has changed in both developed and developing countries.[50]

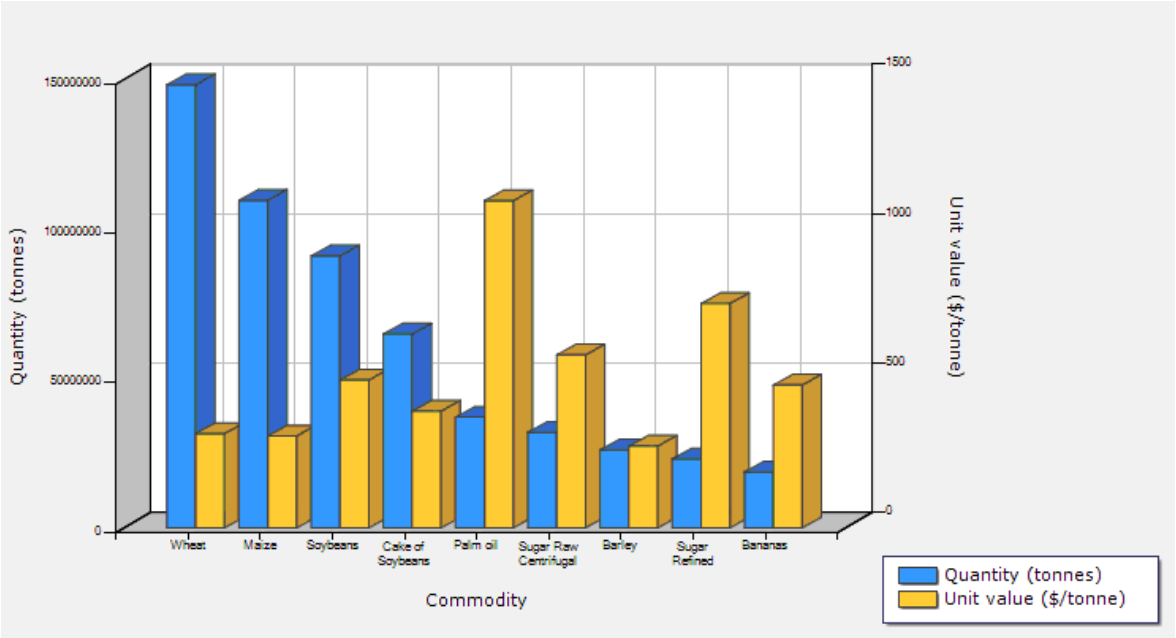
The development of global supply chains results in an increased dependency on international trade, for both net food-exporting countries and for net food-importing countries.

Trade in agricultural products is perhaps the most volatile of trade issues.

The greatest impact on agricultural trade has grain market because cereal grains are the most widespread food commodity in the world market, and they are also used as feed for livestock and raw materials for industrial processing.

[50] Agricultural trade and poverty: can trade work for the poor? The state of food and agriculture, 2005

Figure 5 - Top world exports of agricultural products in 2011



Source: FAOSTAT (2013)

Key positions on the world market for food and agricultural raw materials belong to: grains and products of their processing, oilseeds, vegetable oils, fats, meal, vegetables and fruits, meat and meat products, dairy products, coffee, cocoa, tea, sugar, fish and seafood.

In addition, in recent decades there has been an upward trend of trade ready-to-eat food products.

6.1 Globalization and trade liberalization in agriculture

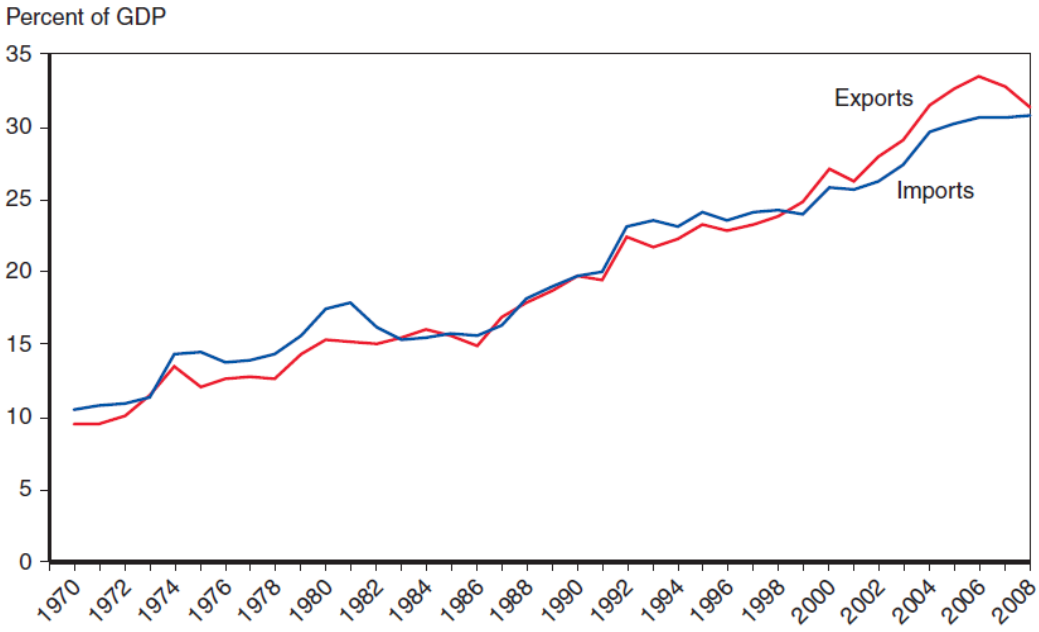
Period from the beginning of the 1980s have been marked by increasing moves towards global economic liberalization. Globalization has been spurred by growing trends towards reduced trade barriers, integration in world financial markets, and advances in telecommunications and information technology which facilitate trade and investment decisions and transactions – even at a distance.[51]

The worldwide dismantling of the barriers to international trade and investment is seen as the way to enhanced global prosperity, based on specialized production in areas of comparative advantage. This applies in particular to developing countries.

Trade liberalization in developing countries had two clear effects. One was a dramatic increase in the volume of trade.

[51] Coote, Claire, Gordon, Ann and Marter, Alan (2000) International Trade in Agricultural Commodities: Liberalization and its Implications for Development and Poverty Reduction in the ACP States. Policy Series 5.Chatham, UK: Natural Resources Institute. ISBN: 0 85954 518 0

Figure 6 - The Growth of Developing-Country Trade



Source: Paul R. Krugman, International economics: theory & policy (2012)

The other effect was a change in the nature of trade. Before the change in trade policy, developing countries mainly exported agricultural and mining products. But after 1980 the share of manufactured goods in developing-country exports surged, coming to dominate the exports of the biggest developing economies.[52]

Agricultural exports have grown modestly compared to those of manufactured goods, resulting in a dramatic decline in the share of agricultural exports in total traded merchandise, from about 50 percent in the early 1960s to about 6 percent by the year 2000.

The agricultural sector in many developing countries has been particularly adversely affected by the inward-oriented industrial development strategies of the 1950s and 1960s. In some countries the anti-agriculture bias remained a policy feature throughout the 1970s and 1980s (Schiff and Valdes, 1997). Import substitution policies for manufactures restricted capital good imports for agriculture, raised input costs and resulted in often significant negative effective rates of protection. This held back real investment levels in agriculture and slowed export performance in many developing countries.

In some developing countries, industrial protection and restrictions on capital good imports for agriculture were accompanied by direct taxation of agricultural exports, placing agriculture at a disadvantage both relative to other sectors and vis-à-vis developed country competitors.

[52] Krugman, Paul R. (2012) International economics: theory & policy/R. Krugman, Maurice Obstfeld, Marc J. Melitz.—9th ed., Pearson Addison-Wesley, 701 p., ISBN: 978-0-13-214665-4

Agricultural trade liberalization on international level was brought into the GATT in 1986 during the Uruguay round. The Uruguay Round was in every sense a revolution in the liberalization of agricultural trade.

Uruguay Round

The Uruguay Round of trade negotiations that concluded in December 1993 represents the eighth round of multilateral trade negotiations that has occurred over the past 50 years. The breadth of consensus reached by over 150 nations was previously thought unattainable. The Uruguay Round of the General Agreement on Tariffs and Trade (GATT) covers a much broader range of transactions than was the case in prior agreements. While earlier rounds focused primarily on control and reduction of tariff barriers, the Uruguay Round disciplines many non-tariff barriers.[53]

The Agreement in Agriculture (AoA) is one of the most remarkable agreements negotiated in the General Agreement on Tariffs and Trade (GATT)/World Trade Organization (WTO) Uruguay Round. The AoA was designed to remove agricultural trade barriers, open up markets, cut subsidizes and bring the highly protected agricultural sector into the free market. Its long term objective was to establish a fair and market-oriented agricultural trading system through substantial progressive reductions in agricultural support and protection.

The Agreement sets out specific commitments undertaken by WTO members to improve market access and reduce trade distorting subsidies in trade in agricultural products. The application of these agreed commitments started in 1995 with an implementation period for developed countries of 6 years, and 10 years for developing members. The Uruguay Round made a decisive move towards increased market orientation in global agricultural trade.

The original General Agreement on Trade and Tariffs (GATT) applied to agricultural trade, but did so somehow ineffectively, due to certain exceptions to the disciplines on the use of non-tariff measures and subsidies (Anon, 1999). This is why the inclusion of agriculture in the Uruguay Round through the Agreement on Agriculture marked a major turning point in the area of trade negotiations. The Uruguay Round Agreement on Agriculture, administered by the WTO, brings agricultural trade more fully under the GATT.[54]

[53] Mutti J., Sampson R., Yeung B. (2000) The Effects of the Uruguay Round: Empirical Evidence from US Industry. Contemporary Economic Policy, Vol. 18 No. 1, ISSN: 1465-7287

[54] Ngqangweni S., Kandiero T., Gebrehiwet Y, Kirsten J. (2004) The Uruguay Round Agreement On Agriculture: A Review Of Progress And Challenges In The Sadc Region1. Working paper. Department of Agricultural Economics, Extension and Rural Development, University of Pretoria

Doha Round

The Doha Round of WTO negotiations, also called Doha Development Agenda, were launched in November 2001 in Doha, Qatar.

The Doha Development Agenda (DDA) emphasizes the importance of the integration of developing countries and the support of the least developed among them. The main aspects of the new round of negotiations were: the reduction, with a view to phasing out, of the export subsidies, the improvement of market accesses, and the substantial reduction of the trade distorting domestic support.

Agriculture is a cornerstone of the Doha Round, not least because of the unprecedented level of developing countries' involvement. Negotiations on agriculture cover three areas or pillars: domestic support (subsidies), market access (import regime, including tariffs), and export competition (export refunds, export credits, food aid and state-trading enterprises).[55]

Benefits of globalization

Historically, the exchange of food and agricultural products has been a key driver of globalization, as was the case with salt, spices, and sugar in earlier centuries. Today, the globalization of the agrifood system is far different in nature: it is more pervasive and deeper, less driven by raw materials, more service- and technology-intensive, and more integral to economic and societal change.[56]

Economists have been asserting for a long time that trade liberalization is good for economic development, particularly in developing countries. The benefits from openness are assumed to arise from the efficiency gains that flow from superior resource-allocation decisions in more open markets (Bhagwati and Srinivasan, 1999). The result is an increase in economic growth. More recently there have also been numerous empirical studies that suggest that openness to trade and investment flows has had a positive effect not only on economic growth but also in helping to fight poverty. Among the most influential empirical studies are those by Edwards (1998) and by the World Bank (Dollar and Kraay, 2000, 2001).[57]

According to most studies, complete liberalization of agricultural trade could produce valuable overall welfare gains, but some groups would win while others would lose. Bussolo

[55] European Commission (2008) High prices on agricultural commodity markets: situation and prospects. A review of causes of high prices and outlook for world agricultural markets. European Commission Directorate-General for Agriculture and Rural Development, Brussels

[56] Braun J., Díaz-Bonilla E. (2008) Globalization of food and agriculture and the poor. IFPRI International Food Policy Research Institute. Issue 52

[57] FAO (2002) World agriculture: towards 2015/2030. Summary report. Rome, ISBN 92-5-104761-8

(2011) finds that liberalization of agriculture and food could increase global extreme poverty by 0.2 per cent and lower moderate poverty by 0.3 per cent.[58]

According to FAO (2002) the benefits would go mainly to consumers and taxpayers in industrial countries, where agriculture is most protected, and to developing country agricultural exporters. In contrast, urban and landless rural consumers in developing countries might end up paying higher prices for some foodstuffs, especially cereals, milk, meat and sugar. One reason for this, according to FAO, is that many developing countries have become net importers of agricultural products, and modest increases in world prices are unlikely to turn them into net exporters. In the importing developing countries, consumers stand to lose more from freer trade than domestic producers are likely to gain.

Teignier (2012) argues that international trade in agricultural goods can accelerate the structural transformation of countries with low agricultural productivity.[59]

Timothy A. Wise (2008) concludes that the promise of agricultural trade liberalization is overstated, while the costs to small-scale farmers in developing countries are often very high. that rich countries are the main beneficiaries of agricultural trade liberalization, gaining markets in both the global North and South. Only a limited number of developing countries – for example, Argentina and Brazil – can compete effectively in global markets. Most developing countries are left out of the export boom but suffer the negative effects of rising imports, as they reduce their own tariffs and farm supports. Meanwhile, farm prices do not remain high for long after liberalization, as supplies, fed by rising yields and new land under cultivation, catches up to rising demand.[60]

Baudasse (2009) have found that for countries where the share of alimentary products in the consumption basket is small, liberalization of agriculture tends to increase inequality as oppose to those where such share is larger, in which case liberalization tends to diminish income inequality.[61]

The basic critique of the consensus view is that the link between openness and growth is one of correlation but not, or at least not necessarily, one of causation.

Simply put, openness is essentially an economic outcome, captured (in the case of the World Bank study) by the ratio of trade to GDP, but not an input, i.e. a policy tool to arrive at higher growth.

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[58] Bussolo, M. (2011) Free Trade in Agriculture and Global Poverty. World Economy. Vol. 34 Issue: 12, ISSN: 0378-5920

[59] Teignier M. (2012) The Role of Trade in Structural Transformation. Working paper Universidad de Alicante, 50 p.

[60] Timothy A. (2008) Wise The Limited Promise of Agricultural Trade Liberalization, Discussion Paper Number 19, The Working Group on Development and Environment in the Americas

[61] Baudasse, T (2009) Trade integration of the agricultural sector and economic inequality in developing countries Investigacion Economica, Volume: 68 Issue: 269, pp. 37, ISSN: 0185-1667

When focusing on the causal relationship between trade policy, growth and poverty reduction, the critics of the consensus view claim that it appears to be an upside-down version of reality (Rodrik, 2001 and Oxfam, 2002). In fact, they stress that some of the most successful globalizers are anything but radical liberalizers, while many of the most radical liberalizers have actually achieved very little in terms of economic growth and poverty reduction. They claim that no country has ever developed simply by opening itself up to foreign trade and investment and that practically all of today's developed countries embarked on their growth behind tariff barriers, and reduced protection only subsequently (Rodrik, 2001).

Thus, the results of studies on the impact of agricultural trade liberalization vary according to the assumptions they make.[62] Recent that liberalization is not always the economically optimal policy, that different levels of import protection are appropriate at different levels of development (Morrison and Sarris 2007).

Moon, W (2011) concludes that agriculture-related problems are too diverse and complex to be left to free trade. When the global community is too much preoccupied with the illusive mission of agricultural trade liberalization, the great danger is that such preoccupation may distract it from effectively addressing the agriculture-related problems of the 21st century in a timely manner that pose imperative challenges to humanity. The governance for global agriculture should prioritize managing/taming such global problems rather than squandering time for unworkable liberalization of agricultural trade.[63]

6.2 Factors affecting international trade in agricultural products

There are a number of fundamental economic factors affecting international trade. In this chapter, we consider those that are directly related to trade in agricultural products and foodstuffs.

All the factors are divided into three groups: factors affecting demand, factors affecting supply and factors affecting the prices of agricultural products and foodstuffs.

6.2.1 Factors affecting world agricultural demand

Although global demand for agricultural products has continued to rise, it has done so less rapidly in recent decades. Between 1969 and 1989 demand grew at an average of 2.4 percent a year, but this fell to only 2 percent in the decade from 1989. [64]

[62] FAO (2002) World agriculture: towards 2015/2030. Summary report. Rome, ISBN 92-5-104761-8
[63] Moon, W (2011) Is agriculture compatible with free trade? Ecological Economics Vol.71, pp. 13-24
[64] FAO (2002) World agriculture: towards 2015/2030 Summary report Rome, ISBN 92-5-104761-8

Apart from temporary factors (foremost among them a decline in consumption in the transition economies in the 1990s), several variables are significant drivers of growth in the global demand for agricultural goods. They are:

- continued world population growth
- swift increase in the demand for bio-energy
- sustained per capita income growth and changes in dietary patterns.

These factors are discussed further in more detail.

World population growth

The number of people on earth is rising by about 75 million (1.1 percent) per year. This rising population adds to the global demand for agricultural products and energy.

The annual increment to world population during 2000-2005 has been estimated at 76 million persons. Six countries account for nearly half of that amount: India (22 per cent); China (11 per cent); and Pakistan, Nigeria, the United States of America and Bangladesh (about 4 per cent each). As a result of India's relatively rapid growth, it is expected to overtake China as the most populous country in the world by 2030. (FAO, 2002)

Next to the absolute population growth, urbanization is an important factor that influences agricultural markets. Urbanization has major impacts on markets due to the high population density and better infrastructure (ports, roads, airports). Consumers are closely integrated into international food markets which results in more food trade and in changes in diets with a greater demand for meat and convenience food and less for traditional diets (Müller, 2007). Moreover, in extreme cases urbanization might affect the quantity of labor available for agriculture and thus limiting agricultural production

. Many developing countries have rapidly rising incomes, again particularly important for agricultural demand due to diet-diversification.[65]

Sustained per capita income growth and changes in dietary patterns

Between 1990 and 2010, real per capita incomes grew by nearly 2 percent per year globally, though with major differences among countries and between decades.

Growth rates for all groups of developing countries were more rapid in the 2000s than in the 1990s. The most rapid growth rates occurred in East Asia and the Pacific. Growth rates for high-income countries slowed in the 2000s.[66]

The 2 percent per annum increases in real per capita incomes between 1990 and 2010 resulted in increased demand for dietary energy.

[65] Trostle R. (2008) Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices. Economic Research Service. USDA. WRS-0801

[66] FAO, WFP and IFAD. (2012) The State of Food Insecurity in the World 2012. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition. Rome, FAO. ISBN 978-92-5-107316-2

Income driven changes in dietary patterns (mostly demand for meat) are most notable in Asia and Latin America. An example of changing dietary patterns related to higher incomes coupled with urbanization is China and its demand for meat and dairy products. [67]

A growing consumption of animal products also implies a significant increase in the demand for feed grains and protein feed (Braun, 2007).

While rural population relies on a traditional diet and backyard farming, for a variety of reasons the majority of urban population purchases its meals, many of which are meat based, ready. These changes tend to be structural in nature and in general drive demand. [68]

Swift increase in the demand for bio-energy

Exponential growth in bio-energy production is mainly policy driven growth rates for aggregate use of grains and oilseeds.

Biofuels emerged as an alternative market outlet for agricultural commodities. The rise in demand for biofuels and current biofuel support policies have been sometimes suggested as key factors in food price increases.

Biofuels have been produced and used in small amounts in several countries in recent decades. Production generally grew slowly until after the turn of the century. U.S. ethanol production began to rise more rapidly in 2003; EU biodiesel production began to increase more rapidly in 2005.

Brazil and the United States account for most of the world's ethanol production. Brazil uses sugarcane as a feedstock, while the United States uses nearly all corn. A number of other countries have policy initiatives designed to increase ethanol production, but so far the total augmentation in production capacity has been small relative to the combined capacity of Brazil and the United States. In 2006, China reversed its decision to invest in facilities to produce more ethanol from grain. Given its food policies, China is now focusing on using cassava and sweet potatoes as feedstocks for future increases in ethanol production.[69]

The growing demand for bio-energy has both negative and positive effect on agriculture. Higher food prices can increase food insecurity among the urban poor and the rural landless population. On the other hand higher prices and more marketable production can stimulate the

[67]Trostle R. (2008) Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices. Economic Research Service. USDA. WRS-0801

[68] European Commission (2008) High prices on agricultural commodity markets: situation and prospects. A review of causes of high prices and outlook for world agricultural markets. European Commission Directorate-General for Agriculture and Rural Development, Brussels

[69] Trostle R. (2008) Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices. Economic Research Service. USDA. WRS-0801

agricultural sector and creating new opportunities for rural communities. At the national level it can offer development opportunities for countries with significant resources.[70]

6.2.2 Factors affecting world agricultural supply

Various elements affect supply-side conditions. First of all, supply conditions are strongly related to location and the policy variables. The size of the country, which also determines the size of the internal market, together with the internal geography of the country are the structural variables that could have an effect on the supply capacity of a country. Economic policy could also affect supply capacity by affecting factor prices.[71]

Historically, growth in agricultural supply has passed through stages. As long as it was possible to bring new areas under cultivation at low cost, increased agricultural supply was achieved primarily through the expansion of cultivated area. As low-cost land-conversion possibilities became exhausted, higher-cost sources of growth were exploited, notably investments in irrigation and drainage. Investments in agricultural research and extension systems have also produced growth in agricultural supply, as documented by a large number of economic studies.[72]

Global supply of agricultural products will not keep pace with the growth in demand. The main reasons are:

- natural resource constraints (i.e. limited availability of water and agricultural land)
- weather conditions (droughts)
- technology constraints

Natural resource constraints

Land availability. Globally, around 7.2 billion ha of land has potential for rain fed production. After discounting areas already in production, under forest cover or put to other uses and land that is only marginal suitable, some 1.4 billion ha of prime land remains that could be brought into cultivation. Much of this, however, would come at the expense of pastures, and would require considerable investment.

Spare land is often not readily accessible due to lack of infrastructure; it may be distant from markets, or characterized by high incidence of disease. Such factors can make production

[70] Müller A., Schmidhuber J., Hoogeveen J., Steduto P. (2007) Some insights in the effect of growing bio-energy demand on global food security and natural resources. Food and Agriculture Organization of the United Nations

[71] Fugazza M. (2004) Export Performance And Its Determinants: Supply And Demand Constraints United Nations New York and Geneva, ISBN 92-1-112627-4 ISSN 1607-8291

[72] Judd A. M., James K. Boyce and Robert E. Evenson (1986) Investing in Agricultural Supply: The Determinants of Agricultural Research and Extension Investment *Economic Development and Cultural Change*. Vol. 35, No. 1, pp. 77-113

uneconomical. As much of the spare land is concentrated in a small number of countries, constraints may be very pronounced in other countries and regions.[73]

Water

Water is another critical resource, and irrigation has played a strong role in contributing to past yield and production growth. World area equipped for irrigation has doubled since the 1960s to 300 million ha, but the potential for further expansion is limited. While water resources are globally abundant, they are extremely scarce in the Near East and North Africa, and in northern China, where they are most needed. (FAO, 2002)

Yield

Yield growth has been the mainstay of historic production increases and will continue to play this role into the future. Average cereal yields have been growing in a nearly linear fashion for the past five decades, implying a falling growth rate. Some regions, notably sub-Saharan Africa and Latin America, may grow faster than the linear trend, provided that economic and institutional conditions are conducive. Local constraints to increasing yields remain a significant concern in many countries, threatening improvements in local food supplies in countries where they are most needed.

In addition, it is sometimes argued that the expansion of organic farming also contributes to a decline in the growth of supply, as organic farming is rather land intensive.

Technology constraints

New technology is needed for areas with shortages of land or water, or with particular problems of soil or climate. These are frequently areas with a high concentration of poor people, where such technology could play a key role in improving food security.[74]

Reduced agricultural research and development by governmental and international institutions may have contributed to the slowing growth in crop yields. Although private sector funding of research has grown, private sector research has generally focused on innovations that private companies could sell to producers. These have often been cost-reducing rather than yield enhancing technological developments. Publicly-funded research might be more likely to focus on innovations that would crease yields and production, particularly in parts of the world where farmers are unable to pay royalties for new varieties of seeds.

Apart from abovementioned constraints, there are other factors that affect supply response whose omission generally brings about omitted variable bias. One set of such factors is public inputs: irrigation and some type of human and physical capital - i.e., adult literacy, life expectancy, road density and roads paved. Adult literacy, by helping individuals to assimilate or to adopt technical

[73] Alexandratos, N. and J. Bruinsma. (2012) World agriculture towards 2030/2050: the 2012 revision. ESA Working paper No.12-03. Rome, FAO.
[74] FAO (2002) World agriculture: towards 2015/2030 Summary report Rome, ISBN 92-5-104761-8

advance faster, is positively related to agricultural output. An increase in life expectancy represents a measurement of health which affects output through productivity.[75]

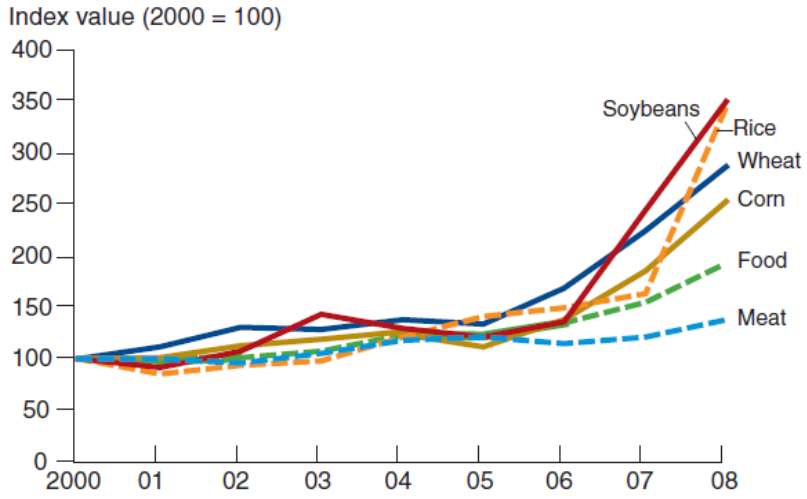
The relative importance of these factors depends on the situation faced by a particular country.

6.2.3 Main drivers of agricultural world market prices

The world is experiencing a dramatic rise in food prices. The upturn began gradually in 2006 and has now escalated into a massive surge of food price inflation around the world.

Almost all agricultural commodities have been affected, with the most dramatic increases in the prices of wheat, rice and maize, and to a lesser extent in the prices of dairy products and meat. International wheat and maize prices, for example, more than doubled in the last year. The prices of tropical products and agricultural raw materials have increased less.

Figure 7 - World agricultural prices (Food Price Indices)



Source: Liefert, Food and Agriculture Organization, International Monetary Fund (2009)[76]

The FAO food price index rose by 7 percent in 2006 and 27 percent in 2007, and that increase persisted and accelerated in the first half of 2008. Since then, prices have fallen steadily but remain above their longer-term trend levels. For 2008, the FAO food price index still averaged 24 percent above 2007 and 57 percent above 2006.

World prices of wheat, coarse grains (in particular corn), rice and oilseed crops nearly doubled between 2005 and 2007 and continued to rise in early 2008. These prices, along with

[75] Nlandu Mamingi (1996) How Prices and Macroeconomic Policies Affect Agricultural Supply and the Environment Policy Research Working Paper World Bank 50 p.
[76] Liefert W. (2009) Russia's Growing Agricultural Imports Causes and Outlook A Report from the Economic Research Service. United States Department of Agriculture, WRS-09-04

those of meat, sugar and dairy products, are likely to ease somewhat in the next 10 years, but are likely to stay well above the average of the past decade.

These high prices drive up the cost of food and will hit poor and hungry people hardest, particularly the urban poor in low-income countries. Food-importing developing countries overall will have to spend an even higher share of their limited income on food.[77]

Large increases in some commodity prices point also to increased volatility and uncertainty in the current market environment. Although the food market situation differs from commodity to commodity and country to country and although the future evolution remains highly uncertain, best projections suggest that food prices are likely to remain high in the next few years and high prices are expected to affect most developing country markets (OECD-FAO, 2008).[78]

Changes in prices stem from shifts in supply and demand. In food and agricultural markets, the responsiveness of supply and demand strongly depends on the time frame in which these shifts take place. In the short run, supply and demand for agricultural products are inelastic
and do not respond much as prices change, so supply and demand shocks can produce considerable swings in prices. The most frequent shocks in agriculture are produced by the vagaries of weather; the effects of these shocks are particularly pronounced where the dependency on weather is highest, i.e. in marginal agricultural production systems. Typical long-term supply shifts result from productivity gains, while long-term demand shifts mainly stem from population and income growth, urbanization or changes in food consumption patterns.

Many factors contributed to these price increases. Long-term trends that led to slower growth in production and rapid growth in demand contributed to a sharp downward trend in world aggregate stocks of grains and oilseeds that began in 1999. Recent factors that have further tightened world markets include increased global demand for biofuels feedstocks and adverse weather conditions in 2006 and 2007 in some major grain- and oilseed-producing areas.

Food commodity prices were affected by further restricting available supplies or increasing demand for food commodities. The factors of supply and demand were described in the previous chapter.

Besides these there were other drivers of the world agricultural food prices, such as the devaluation of the U.S. dollar, rising energy prices, increases in agricultural costs of production, growth in foreign exchange holdings by major food-importing countries, and protective policies adopted by some exporting and importing countries.

All of these factors have contributed to higher world prices for food commodities.

Stock levels

[77] OECD 2008 Rising Agricultural Prices: Causes, Consequences and Responses OECD Policy Briefs
[78] OECD-FAO (2008). OECD-FAO Agricultural Outlook 2008-2017. OECD, Paris

Stocks of storable commodities have long played a buffering role; mitigating discrepancies in short term demand and supply of commodities, helping to smooth prices and reduce their volatility. Expectations of future price developments affect purchases for and sales from stocks held primarily for transaction purposes. Stockholding by private and public agents may also have differing objectives. In some OECD countries for example, lower stocks of certain commodities have resulted from the partial dismantling of price support and intervention programs following reforms aimed at increased market orientation.

The ratio of end of season world cereal stocks to global utilization appears to have decreased considerably between 2000 and 2008. For two of the major cereal commodities (maize and rice) this decline can be accounted for by the decline in the stocks of China. However, whether including or excluding China, world cereal stock ratios for most cereal commodities have not changed appreciably in the last 20 years. Nevertheless, several major cereal producing and trading countries experienced secular declines in end of season stocks. Irrespective of the source of the decline, however, it is a fact that when commodity markets face lower end of season stocks, they react much stronger to any negative shocks.[79]

Energy prices

Energy prices are an important cost factor in agricultural production, with two key elements being fertilizer and transportation costs. OECD/FAO analysis (OECD/FAO, 2008, 2009, 2010) has confirmed that a close relationship exists between rising energy prices and the costs of agricultural production. If oil prices had not increased so substantially in the period before 2008, it is likely that the prices of agricultural products would not have risen so significantly.

The price spikes of 2006-08 were characterized by a simultaneous surge in prices for commodities and energy, and in particular, crude oil. Petroleum prices started rising in 2004, and continued rising all throughout the past few years, before sharply declining in late 2008.

The oil price increase, apart from pushing costs of agricultural production and transport higher, induced a demand for alternative fuels. (FAO, 2009).

Energy prices can have both short and long term impacts on agricultural commodity prices. Agriculture is becoming increasingly industrialized in many parts of the world, relying more heavily on petroleum-based products for fuels and fertilizers. Price increases of oil and petroleum impact the short-run costs of running farm machinery and irrigation systems, as well as the costs of processing, handling and transporting food along the value chain. Higher in-land and ocean freight costs can significantly affect both import and consumer prices. The longer term impact of energy prices is observed in a typical one year lagged response of agricultural production to price,

[79] Sarris A. (2009) Evolving structure of world agricultural trade and requirements for new world trade rules. Food and Agriculture Organization of the United Nations. *Expert Meeting on How to Feed the World in 2050* , Rome

reflecting producer decisions related to the costs of petroleum-based products, such as fertilizers and pesticides.[80]

Exchange rates, depreciation of the U.S. dollar

The interactions between macroeconomic factors and agricultural markets have come under increased focus in recent years, with currency movements in particular having the potential to impact food security and competitiveness around the world. Given that most commodity prices are expressed in US dollars, fluctuations in exchange rates affect domestic commodity prices (in local currency) in countries that are highly integrated into world markets.

An appreciating currency relative to the US dollar reduces an exporting country's price competitiveness. To compensate and maintain international market shares, domestic prices may fall. For net exporting countries, such a decrease in the domestic price would normally trigger a decline in production over time. For net importing countries, commodities become relatively less expensive and demand would normally rise. Higher demand combined with a reduction in supply can be expected to result in higher world prices, holding other factors constant.

Rising inflationary pressures

The upturn in food prices swiftly triggered a surge in food price inflation around the world. Again, the poorest consumers and countries have been hardest-hit. As poorer consumers spend a larger share of their disposable incomes on food, they are particularly vulnerable to increases in food prices.[81]

In the next ten years the global demand for food will continue to grow at rapid rates for mainly two reasons: continued swift growth in population – mainly in developing and newly industrializing countries and a sustained per-capita income growth in these countries with a corresponding increase of per-capita food consumption.

The global food supply growth will be limited as land available for agricultural production is limited in scale. The best and most productive land is already being farmed today. In many parts of the world, there are no major land reserves which could be used for farming; or where there are such land reserves existing, they often should not be claimed as farm land for environmental reasons. Consequently, the necessary growth in production to meet the needs of the rapidly growing world population will have to come predominately from productivity gains on the land already being farmed. However, this will be difficult to accomplish, as the annual growth rates in productivity are in decline since the Green Revolution of the 20th century.

Moreover, the growth in bio-energy production diverts agricultural land and other production

[80] OECD/FAO (2011), OECD-FAO Agricultural Outlook 2011-2020, OECD Publishing and FAO

[81] Diouf J. (2008) High Food Prices: Causes and Possible Actions Food and Agriculture Organization of the United Nations (FAO)

factors away from food production and influences market developments.[82]

6.3 Protectionism in agricultural trade

Protectionism in agriculture is deeply entrenched and widespread. It is also complex and controversial. The need for protectionist interventionism in agriculture arises from the specific qualities of agricultural production.

Increasing the efficiency of domestic programmes of support to the agricultural sector, e.g. supporting market prices and keeping them at a higher level than those in international markets requires the use of import control measures. Subsidizing of agriculture is associated with increased degree of food self-sufficiency (Swinnen, 1994).

Tariffs on agricultural products are on average much higher than those on industrial products, although there is considerable diversity from country to country

Recent years have seen increased use of export restrictions, notably for agriculture and food products during 2007 and 2008. While these measures may have temporarily increased supply to the domestic markets, they prevented domestic producers from benefitting from higher world prices and put increased pressure on prices in importing countries. (OECD, 2009)[83]

The process of agricultural trade liberalization is described in the next chapter in more detail.

Buffeted by drought and protectionism, agriculture is emerging as a key issue in the politics of international trade. Because international agriculture cannot be divorced from domestic farm programs, foreign trade officials and others in the diplomatic community are being forced to confront issues beyond their normal purview.

The complex nature of agricultural protectionism has long served as a barrier to popular and political understanding—a state of affairs useful to the special interests that benefit the most from this protection.

An international economy in which trade occurs falls between two extremes-no trade on one end and free trade on the other. A discussion of protectionism involves analyzing where on the spectrum between these extremes actual trade falls. Economic theory offers insights into why trade occurs and also indicates under what specific set of assumptions free trade may exist. Trade theory, beginning with Ricardian comparative advantage, indicated that international exchange, in general, could be beneficial to the participants therein. The work' of Mill further specified the conditions under which exchange could occur. Subsequent developments continued to refine the

[82] Witzke H., Noleppa S. and Schwarz G. (2008) Global agricultural market trends and their impacts on European Union agriculture. Working Paper 84 Humboldt-Universität Zu Berlin

[83] Love, Patrick and Ralph Lattimore (2009), "Protectionism? Tariffs and Other Barriers to Trade", in International Trade: Free, Fair and Open?, OECD Publishing.

theory of international trade to a stage where a specific set of assumptions was derived which demonstrated that, if the single goal of maximizing world income through the optimum utilization of world resources was postulated, this could only be achieved under the abstract conditions of free trade

6.3.1 Objectives and consequences of agricultural protectionism

As it results from the presentation of the evolution of agricultural protection, the foreign trade policy in the agricultural sector is the derivative of domestic situation, disproportions and development difficulties.

In the beginning, there were ad hoc interventional actions in foreign trade, which protected producers' income from lower prices and prevented food shortages or surpluses bringing destabilization of the market.

That type of protectionism in agricultural trade was applied until the 1930s. In the interwar period programmes of constant and joint control of agriculture and agricultural trade were developed. It is possible to say that with time the state's influence on trade became an integral component of the agricultural policy and a widely understood interventionism in agriculture. Since that time, both on foreign and domestic markets, protectionist measures have assisted agricultural production; they have been applied selectively and flexibly. The abandonment of customs duties increases the significance of non-tariff measures of protection in agricultural trade. [84]

Conditions which influence the state of agriculture in industrialized countries are far from uniform. Consequently, the formal objectives of their agricultural policies vary. The main objectives of these policies are discussed below.

The need for intervention in agricultural trade is justified by recounting numerous arguments. The most significant and convincing premises of protectionism in the agricultural sector include [Houck 1986; Sumner 1995; Koo & Kennedy 2005]:

1) Provision of government revenue. Until the moment of introduction of a general system of income taxation in developed countries and initiation of world agricultural trade liberalization processes in the WTO forum the customs tariffs imposed on imported commodities, and sometimes also on exported products, were the chief source of income for the budget of the countries actively involved in the world trade;

2) Domestic food security. One of the main justifications of protectionism in agriculture is a provision of domestic food security and protection of national security. This is particularly

[84] Pawlak K. 2011. *The evolution of the agricultural protectionism and its measures.* Zeszyty Naukowe SGGW w Warszawie - Problemy Rolnictwa Światowego, t. 11(26): 78-87

important for the countries which are big importers of food and which may lose the capacity to generate an appropriate supply of food necessary for the internal market due to conflicts with the foreign suppliers, military conflicts or disturbed distribution channels. In order to avoid this situation appropriate intervention steps are taken and domestic producers are encouraged to generate enough agricultural products, at least to balance the demand, even if they are not effective and the agricultural sector is not internationally competitive.[85]

Because of the uncertainty of imported food supplies, whether real or perceived, a politically desirable degree of food self-sufficiency is a major goal of agricultural policy for many countries.

4) Infant industry protection. If country provides a temporary protection to branches of the food industry which are at an initial stage of economic development they are given an opportunity to gain production experience and to make profit corresponding to the scale of production and sales;

5) Improving the international purchase process. This argument applies to countries having a potential to influence the level of world prices. Agricultural policy is often directed specifically at the objective of either expanding exports or reducing imports. The application of an "optimum tariff" could improve its trade balance, i.e. reduce its deficit.

6) Increasing the efficiency of domestic programmes of support to the agricultural sector. For example, supporting market prices and keeping them at a higher level than those in international markets requires the use of import control measures.

7) Farm income support. Support of farm incomes is the most usual objective for protection of the agricultural sector in industrialized countries. The continuous movement of people out of agriculture reflects, among other things, technological progress and the income differential between industrial and agricultural wage levels. Agricultural policies frequently aim at seeking some degree of parity between farm and non-farm incomes.

8) Consumer price support. Programmes aiming at maintaining food consumption levels are usually targeted at selected groups of people, although national level market interventions have been used at times to prevent sharp price increases. While the use of agricultural policies for broad social welfare considerations is very significant for specific groups of people or regions within a country, the overall importance of this objective in industrialized countries has been less than the other objectives discussed.

[85] Pawlak K. (2011) *The evolution of the agricultural protectionism and its measures.* Zeszyty Naukowe SGGW w Warszawie - Problemy Rolnictwa Światowego, t. 11(26): 78-87

Instruments of Agricultural Policy

Governments intervene in agricultural trade by means of direct and indirect instruments

Direct protection instruments affect commodities as they enter international trade either as imports or exports. The most common ones are tariffs, import and export quotas and export taxes and subsidies, sanitary and phytosanitary restrictions. These tools are used in agriculture, in the same way as in other sectors, in accordance with the mechanism described in the chapter 4.3.

In addition to instruments of trade regulation, government policy can be aimed at the domestic market and expressed in the regulation of prices, inventory levels, etc. The various instruments of agricultural policy in can be used to affect producer or domestic consumer. Such instruments, for example, are:

- Guaranteed producer prices. Most industrialized countries provide price support, whereby the government is prepared to buy produce at a guaranteed price. This price guarantees a minimum return to farmers for their produce and consequently is instrumental in influencing their level of production.

- Production quotas. Production quotas can be introduced when price support measures become too costly for government budgets. Such quotas set a quantitative ceiling on how much can be produced. In general, production quotas grant farmers the right to sell their output up to the specified quota level at a guaranteed price.

- Storage programmes. These programmes take various forms. Stocks can be accumulated deliberately in connection with price stabilization or food security objectives. In addition, industrialized countries sometimes pay subsidies to farmers for on-farm storage of produce.

- Subsidized inputs and services. Subsidization of the factors of production can cover a wide range of items (for example, transport, crop insurance, farm credit, fertilizers, water, and various tax concessions). Subsidies reduce farmer’s costs of production but may lead to misallocation of resources.

- Input subsidies and tax exemptions. Input subsidies aim at reducing the cost of production by lowering the price of inputs. They usually take the form of subsidies directly applied to inputs (e.g. reduction in the price of fertilizer), exemptions from indirect taxes on inputs (e.g. tax exemptions for fuel used by agricultural machinery), concessionary domestic credit for production loans (e.g. subsidized interest rate for seasonal loans to farmers), government special insurance programmes for farmers (e.g. crop insurance), free or subsidized extension services, no or partial cost recovery of irrigation water, and others. Another way of supporting farmers' incomes is by exempting farms from profit taxation or giving them a special tax treatment more favorable than that of other businesses. (FAO, 2000)

- Long-term investment assistance. Long-term investment supports aim at increasing the productivity and profitability of the farming sector. The main components are investments in agricultural research and in farm-related infrastructure, such as irrigation and drainage systems.

Governments support producers in many other ways, not having a direct relationship with the price farmers pay for their inputs or the price they receive for their produce. These include basic research and development of more efficient production techniques, infrastructure development such as transport and marketing facilities, as well as timely market intelligence on which better decisions can be made. Although this support cannot be easily apportioned to individual commodities, by and large, farmers in industrialized countries receive more support through these largely invisible aids than their developing country counterparts.

The consequences of agricultural protectionism [86]

A large and growing number of studies have analyzed the effects of agricultural protectionism with regard to both international trade and the domestic economies of the countries concerned.

Generally the studies find that protectionist policies depress world market prices and reduce the volume of international trade. The main losers are the low-cost exporting countries, which find their foreign exchange earnings and their overall welfare reduced. However, high-cost countries which protect their agriculture lose too, since such policies lead to an inefficient use of their resources. Moreover, production in these countries replaces production in low-cost countries: this means that resource allocation in world agriculture is strongly distorted and the world on balance probably loses welfare, a situation which is reinforced by widespread protectionism in non-agricultural sectors. The only countries potentially gaining are net agricultural importers which, even with higher world market prices which could result from trade liberalization, would not become self-sufficient or exporters.

Beyond the purely static effects of protectionist policies on price levels, trade flows, balance of payments and welfare, some studies have also looked into the effects on the variability of world market prices. It was found that agricultural support policies significantly increase world price variability. Protection of domestic agricultural markets in developed countries reduces the size of the market volume which could buffer fluctuations in world production. Counter-cyclical policies in rich countries tend to increase resource transfers to farmers when world commodity prices decline, leaving producers in developing countries to bear the brunt of fluctuations (OECD, 2002).

[86] Agricultural Policies, Protectionism and Trade: Selected Working Papers (1968) FAO economic and social develorment paper. ISBN 92-5-102781-1

The most obvious external effects of agricultural protectionism are that it can lead to surpluses and overcapacity in the countries pursuing such policies. That results in depressed international prices and losses in export revenues for low-cost producing countries, and distorts the geographical pattern of production. As well as the detrimental effects on international trade, several domestic consequences of protectionist agricultural policies are identifiable.

In countries applying protectionist policies, the losers tend to be consumers, who often have to pay for overpriced food, and taxpayers who bear the burden of rapidly increasing government expenditure on agricultural policies. Governments tend to justify the consumer and taxpayer burden by arguing that income needs to be redistributed towards farmers, in order to provide them with an equitable standard of living and to protect the farming industry against undesired social consequences of structural adjustment. In order to achieve these objectives, incomes are commonly transferred to farmers through price support and other government measures, particularly border measures. However, it has become increasingly clear that present agricultural policies are unable to reach these domestic objectives at acceptable costs. In particular, the effectiveness of price policies in terms of their ability to transfer income to agriculture is very low in a number of countries.

One of the negative consequences of protectionism is the aggravation of interstate conflicts. It can hardly be expected that the policy of protectionism pursued by one country will not cause a response from its trading partners. In other words , the consequence of reduction in imports as a result of the introduction of tariff or non-tariff country restrictions on foreign trade is likely to cause a reduction of its exports. Economic differences between countries can escalate to such an extent that the trade war that will have very serious negative consequences for all parties involved in them. Trade wars concerning trade in agricultural products between Russia and Ukraine are vivid examples of such consequences.

Moreover, protectionist policies lead to higher domestic consumer prices, poor consumers bear a proportionally higher burden than rich consumers.

Thus, the policy of protectionism can have both positive (food and national security, infant industry development, higher and more stable farmer’s income etc.) and negative (consumer loses, world price volatility, etc.) consequences. Therefore, during each step of such a policy should be carefully deliberated and well established. All the possible consequences should be analyzed. In reality, the political appeal of protectionism is so great that outweighs the arguments of economic common sense when making decisions.

6.3.2 Government regulation of the market of agricultural products and foodstuffs in the Russian Federation

Foreign trade policy

Dramatic fluctuations in the prices of basic agricultural commodities in recent years have led to renewed interest in the functioning of these markets and the policy instruments that can be used to influence them.

Russian foreign trade policies developed in two directions: (1) control of agricultural export and protecting domestic producers from unfair competition and (2) rigid control of agri-food exports.

Import Measures

Agri-food foreign trade regulation from the import side primarily focused on protection of several domestic markets: those of sugar and beef, pork and poultry meat

As mentioned above, Russia is a big meat importer, has a high import dependency ratio in relation to meat and meat products.

The aim of this policy is to increase the competitiveness of Russian meat products and to provide the import substitution in the domestic market of meat.

During the 2000s, the Government has taken strong measures to reduce meat imports. In 2003, Russia created **tariff rate quotas** (TRQs) for imports of beef and pork (from the non-CIS area) and a **pure quota** for poultry (see Appendix 2).

A TRQ combines two policy instruments of import restriction: quotas and tariffs. Imports entering under the quota portion of a TRQ are subject to a lower tariff rate. Imports above the quota's quantitative threshold subject much higher tariff.

In 2003-2005, the low in-quota tariff for beef and pork was kept tariff rate of 15 percent, while the out-of-quota tariffs were set at 60 and 80 percent, respectively. The tariff for quota poultry imports was at 25%.

In 2005-06, the Government liberalized the meat import policy moderately by converting the pure quota for poultry to a TRQ and allowing the low tariff quota volumes for beef and pork to rise and the out-of-quota tariff rates to fall gradually over time.

The growing demand for beef in Russia, in the face of limited capacity for domestic production and import substitution, fuelled the further expansion of beef import volumes in 2008-2011.

The low tariff quota volume for poultry was reduced from 1.252 to 0.952 million metric tons and the out-of-quota tariff rate was raised from 40 to 95 percent, whereas the out-of-quota

tariff for pork was increased from 40 to 75 percent. The out-of-quota tariff for beef imports, however, was lowered to 30 percent. (Liefert, 2009)

In addition to tariff protection, Russia actively employs restrictions on meat imports on sanitary, veterinary, or technical grounds. These, for example concerned imports of US poultry, meat products (along with some plant products) from Poland, and dairy and meat products from Ukraine. (OECD, 2011)

Recent developments in this TRQ regime concerned the procedures for the allocation of the quotas. Before 2010, a large part of the quotas were allocated based on a country principle. From mid-2010, the Russian authority managing quota allocations has the discretion to re-allocate the country-specific quotas for all meats to other suppliers. Furthermore, as of 2011 the country principle will no longer be applied to the poultry quota. This provision may lead to the origin of Russian meat imports shifting further away from "historic" to "new" suppliers (OECD, 2011).

In the milk market, protective measures were activated as a result of increased imports and falling producer prices of milk in 2008. The specific component of the compound rate of import duty on butter was increased from €0.22 to €0.35 per kilogram in early 2009, while the ad valorem rate was kept at 15 percent. The duty on milk powder was increased from 15 to 20 percent of its customs value. At the end of September 2009, Russia increased the import duties on cheese.

In August 2010, the Commission of the Customs Union of Russia, Belarus and Kazakhstan decided to increase the import duty on milk powder to 25 per cent of customs value, butter from €0.35 per kilogramme to €0.4 per kilogramme, and cheese (processed and other varieties) from €0.5 per kilogramme to €0.6 per kilogramme. These increases meant that protection against imports of certain types of dairy products could be provided in spite of the fall in the value of the euro against the Russian ruble in 2010.

Import duties on certain types of tropical oils used in the food industry instead of milk fat were raised from zero to ten percent of customs value in mid-June 2009. This was due to the expansion of the milk market.

Most of the milk powder imported by Russia from the CIS countries has been subject to a duty-free regime. In early June 2009, Russia proposed amending the so-called forecast balances for milk in order to restrict import of milk powder from Belarus. As a result, the consignments of Belarusian milk powder were reduced (from 110 thousand tonnes to 70 thousand tonnes), and cheese and curd consignments were expanded (from 100 thousand tonnes to 132 thousand tonnes) (Kiselev, Romashkin, 2012).

Import of sugar is a significant component of Russia's sugar supply. Sugar is imported because domestic production is insufficient.[87]

Russia is a net importer of raw sugar. Therefore, government regulation plays a special role in the sugar trade. However, there is a downward trend in raw sugar imports. The raw sugar import volume was 51.8 percent in calendar year 2009 compared with the volume in 2008. This drop was caused by the increase in import prices and by Russia's seasonal duty on raw sugar imports. At the same time, imports of white sugar grew by 56.8 percent. The import of raw sugar in 2010 exceeded the 2009 volume by 1.7 times (2086.3 thousand tonnes instead of 1,253.3 thousand tonnes). The import of white sugar increased slightly in 2010 compared to 2009.

Since January 2010, Russia's import duties on raw sugar have been determined by the price fluctuations of raw sugar at the New York Mercantile Exchange (NYMEX) in the range of USD 286.60 – 396.83 per tonne. When the raw sugar price exceeds the level of USD 396.83 per tonne the import duty is USD 140 per tonne. The import duty increases if prices decline. The maximum value of import duty is USD 270 per tonne. It is used if the price for raw sugar does not exceed the level of USD 286.60 per tonne.

Agricultural exports restraints

As already mentioned, Russia's agro-food exports have been growing alongside the increase in imports. Since 2002, Russia has become one of the largest suppliers of grain to the world market. However, in 2008 and 2010 exports of grain were significantly below the potential volumes due to Russia's application of export restrictions.

Generally, countries who have used export restraints recently have primarily been net exporters. By limiting exports, the government partially isolates itself from the global market. It increases domestic grain supply and lowers domestic prices.

There is a direct interdependence between the policies for grain exports and the availability of grains in the domestic market. Russia implemented export restraints to ensure adequate supply and to keep domestic prices low.

Prohibitive duties on exports of wheat and meslin (40 percent, but not less than €105 per tonne) and a ban on export to Belarus and Kazakhstan were applied between 1 February and 30 June 2008. Earlier, in November 2007, restrictive duties on exports of barley (30 percent, but not less than €70 per tonne) and on wheat and meslin (ten percent, but not less than €22 per tonne) from Russia to countries other than Belarus and Kazakhstan were established (Kiselev, Romashkin, 2012)

[87] OECD (2011) Agricultural Policy Monitoring and Evaluation 2011: OECD Countries and Emerging Economies, ISBN 978-92-64-10637-6

Due to abnormal drought and the associated significant decrease in grain yields, Russia introduced a ban on exports of wheat and meslin, rye, barley, maize, and wheat flour from 15 August 2010 to 31 December 2010. In October 2010 the ban on the export of wheat and meslin, rye, barley, and maize was extended until 30 June 2011.

However, the ban did not bring down food prices inside Russia. Food prices generally continued to rise after the ban was imposed. Flour prices went up by 18% from July to December and bread went up by 10%.

In addition, export bans damage Russia's reputation as a good supplier.[88]

Export ban is having a positive impact on the livestock, preventing the rise in price of feed-stuff, but seriously damages grain producers.

Moreover, the export restraints also limit global supply and push up international prices.[89]

Domestic policy

The federal government is now making efforts to improve agricultural efficiency, with more assistance being put into capital and technological improvements. A new Federal Law on Development of Agriculture is being put in place to provide a more stable legal and regulatory framework for the sector.

Agriculture is now benefiting from an improved Russian economy and a return to pre-crisis levels of policy support. Federal programs are being implemented during 2006-10 to emphasize sustainable farming, rural development, and quality of agricultural labour and life in rural areas, including the two-year 2006-07 National Priority Project for Development of Agro-Industrial Complex. [90]

Regarding tax preferences, agricultural producers (i.e. farmers and enterprises which's agricultural output comprises at least 70% of total output) can choose between two schemes of tax payments. If they choose the Single Agricultural Tax (SAT) regime, they have to pay a unified tax of 6% on their net income (the difference between the value of gross receipts and expenses), but they do not have to pay income tax, property tax, Single Social Tax, and apart from specific cases neither VAT.

Agricultural support in Russia is driven by the orientation of policies towards import substitution, stimulating growth of livestock production through border protection and investments and to improve agricultural efficiency. The recent food price surges have increased Russian concerns on import dependency, which was also reflected by the export ban on grains during the 2010/11 season.

[88] Welton G. (2011) The Impact of Russia's 2010 Grain Export Ban, Oxfam Research Report

[89] Dollive K. (2008) The Impact of Export Restraints on Rising Grain Prices. U.S. International Trade Commission. Working paper No. 2008-09-A

[90] Melyukhina O., Tanguay L. (2008) Russia Agriculture Policy Review Agriculture and Agri-Food Canada ISBN 978-0-662-47669-6

The main instrument of price support in Russia is border protection, but there are also several domestic policies such as market interventions and per tonne payments.

The main idea of government regulations in Russian domestic market agricultural and food products is to improve the competitiveness of the Russian agricultural and food products, and to maintain profitability of domestic agricultural producers.

Government interventions are also aimed to increase the share of Russian agricultural and food products in the domestic market, smooth seasonal fluctuations in prices as well as to create conditions for increasing exports of agricultural products.[91]

Market interventions

Mechanism of implementation was based on government purchase and trade interventions, as well as the implementation of secured transactions. Purchase interventions on the grain market are to be carried out in order to smooth down price fluctuations.

Market interventions can be implemented for grains (feed and milling wheat, feed barley, rye and maize), whereby the government can withdraw or purchase this product if the market price moves outside the established band between minimum and maximum prices. When market prices fall below the lower band level, the government begins withdrawals of grain from the market (a purchase intervention).

When prices rise above the upper band level, the grain is released onto the market from the state intervention fund (formed in the course of government purchase interventions). This is a commodity intervention.

Price levels and volumes of government intervention are determined by the Ministry of Agriculture of the Russian Federation in coordination with the Federal Tariff Service.

Russian Ministry of Agriculture first initiated market interventions in 2001. Since 2001, there were several purchasing interventions (in 2001/02, 2002/03, 2005/06, 2008/09, 2009/10, 2010/11, 2011/12) and product interventions (in 2003/04, 2007/08 and 2010/11).

Government trade interventions in the grain market are carried out through trading on commodity exchanges.

Per tonne payments are provided from regional budgets for marketed meat, milk, eggs and wool, with milk accounting for 80% of the total payments provided for livestock products in 2009-10. In the crop sector, producers of flax and hemp receive per tonne payments as part of the federal programme to revive this sector, while some regions also provide support for grains, potatoes and other crops. Per tonne payments have relatively small importance in the overall support, accounting for 2% of the total PSE[92] and 7% of the budgetary transfers in the PSE in

[91] State Program for Development of Agriculture and Regulation of Agricultural Commodities Markets in 2008-2012
[92] Producer Support Estimate (PSE) is the annual monetary value of gross transfers from consumers and

2008-10. These payments are also a small share of support based on commodity output, the largest part (97%) coming from market price support (OECD, 2011).

Per animal and hectare payments are available only for a few specific activities. The shares of this support in the total PSE and its budgetary part constituted respectively 1% and 3% in 2008-10.

Support per animal raised is directed to breeders and purchasers of pedigree livestock (within a general programme) and sheep (within a specific programme for that sector). Per head payments are also available to producers of reindeer and horse meat. In the crop sector, per hectare support is provided for maintaining and establishing permanent plantations. All these payments were suspended in 2010 due to budget constraints which re-allocated spending to other activities. This support, however, was reinstated in the 2011 budget (OECD, 2011).

Concessional credit is one of the most important agricultural support measures. One of the most important agricultural support measures in Russia are concession credits, which are paid in the form of subsidies on interest payments and are co-financed from federal and regional budgets.
The subsidy rate is set at a fraction of the central bank refinancing rate, with the fraction varying by type of beneficiary and type of loan.

Originally, concessional credit programme was focused mainly on subsidizing short-term loans to large-scale farms, usually for sowing and harvesting works, and short-term loans to processors.

Since the mid-2000s the programme has been substantially expanded in scope and scale: smallholder agricultural producers, their co-operatives, and new types of downstream operations have become beneficiaries; smallholders can also receive subsidies on loans to develop nonagricultural activities.

In addition, interest subsidies were made available not only for short-term but also medium and long-term credit. In 2010 the broadening of the scope of concessional credit continued, with several new investment activities becoming eligible for support (investments in grain handling and storage and plants to produce sugar beet seeds). The amount of new concessional loans provided each year increased substantially compared to the period preceding the State Programme – from RUR 114 billion (USD 4.1 billion) in 2005 to RUR 530 billion (USD 17.4 billion) in 2010. About 90% of those amounts in 2008-10 were directed to large-scale farms and downstream borrowers, with about two-thirds representing short-term loans.

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taxpayers to agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income (according to OECD)

The total amount (including all types of borrowers, all types of credit, and federal and regional funds) rose from RUR 44 billion (USD 1.4 billion) in 2008, RUR 76 billion (USD 2.5 billion) in 2009, to RUR 81 billion (USD 2.7 billion) in 2010.

The main part of subsidies originates from the federal budget. In 2008-10 it financed 82% of subsidies destined to large-scale producers and downstream borrowers, and 94% of subsidies to smallholders, with the rest covered by the regional budgets.

In 2013, Russian government will provide interest subsidies to farmers in the amount of 11.2 billion rubles.

7. The overview of Russian economy

7.1 Russia's economic performance during the transitional period

Russia is the largest country in the world, covering more than one-eighth of the Earth's inhabited land area. It is an upper middle income country with GNI per capita as of US$ 10 730 in 2011. Russia is the fifth largest world economy in GDP terms, with per capita (PPP) income more than doubling since the mid-1990s. By per capita PPP (gross domestic product at purchasing power parity per capita), the country ranks 43th in the world. (World Bank, 2012).

Table 5 - Basic indicators of Russian economy

	1990	1995	1998	2000	2003	2005	2007	2008	2009	2010	2011	2012	GM
GDP in current prices (billion USD)	516.8	395.5	271.0	259.7	430.3	764.0	1299.7	1660.9	1222.7	1487.5	1857.8	2015	106.4
GDP (constant 2005, billion US$)	843.0	523.7	484.8	567.4	670.1	764.0	896.8	943.9	870.1	909.2	948.3	980.9	100.7
GDP per capita (current US$)	3485	2670	1844	1775	2976	5337	9146	11700	8616	10481	13089	14037	106.5
GDP per capita (constant 2005 US$)	5685	3535	3300	3878	4634	5337	6311	6649	6131	6385	6633	6834	100.8
Inflation, consumer prices (annual %)	x	197.5	27.67	20.78	13.68	12.68	9.01	14.11	11.65	6.86	8.44	5.06	76.3
Population (million)	148.3	148.3	147.8	146.8	145.0	143.5	142.2	142.0	141.9	141.9	142.8	143.5	99.9
Life expectancy at birth (years)	69	65	67	65	65	65	67	68	69	69	69	69	100.0

Source: World Bank (2013)

The first seven years of Russia’s transition from the Soviet central planned economy (1991-1998) were not easy. During this period, Russia lost about 30% of its real gross domestic product (GDP).

The period from 1992 to 1998 was marked by a collapse in economic output and waves of very high inflation, a pattern experienced by many countries making the transition to a market-oriented economy. Russia also suffered very high rates of inflation– over 2,000% in 1992 and over 800% in 1993– before it declined to more tolerable, but still high, levels of around 20% by the end of the 1990s.

Stabilization ambitions were pursued through a highly risky policy of massive capital imports and steep real appreciation. The expected political and economic costs of devaluation were high and growing because public and private external debts were on the rise (Süppel, 2003).

Foreign economic shocks that hit a financially vulnerable Russia largely explain the suddenness of the 1998 financial crisis. When the East Asian financial crisis break out, prices for Russia's two most valuable sources of capital flows, energy and metals.[93]

On 17 August 1998, Russian government floated the exchange rate, devalued the ruble, defaulted on domestic debt, halted payment on ruble-denominated debt and declared a 90-day moratorium on payment to foreign creditors.[94] Most of the reserve were waste in a failed attempt to hold ruble.

In the fourth quarter 1998 real income per capita was 23.4% lower than a year ago, led by real wages, which contracted by 34.4%.[95] The crisis has reduced demand for food and lowered food consumption.

Period 1999-2008 was marked by the surprisingly fast recovery of the economy and stabilization of monetary and fiscal conditions. Stabilization and growth after crisis obviously benefited from the surge in oil prices and the lagged impact of the 1998 devaluation.

In 1999-2008, Russia was one of the fastest growing economies in the world. Unemployment went down by more than half—from 12.9 percent in 1999 to 6.3 percent in 2008. The poverty rate (percent of population below the official minimum living standard) went down from 29 percent in1999 to 13 percent in 2008 (Guriev, 2010).

In 2000, 29% of the Russian population was living below the officially calculated poverty line. By 2007, the rate had dropped to 13%. In addition, private consumption increased–another sign of improved living standards—from 44.9% of Russian GDP in 1992 and to 49.0% of Russian GDP in 2008 (Cooper, 2009).

During the 2008-2009, Russian economic growth was severely affected by the global economic crisis.

Russia experienced a sharp recession from the third quarter of 2008 through the second quarter of 2009. The crisis brought an abrupt end to the decade's long (1999-2008) economic growth with real gross domestic product (GDP) increasing 6.9% annually on average. Russian

[93] Feridun, M. (2004) Russian Financial Crisis of 1998: An Econometric Investigation. International Journal of Applied Econometrics and Quantitative Studies. Vol.1-4, 113 p.
[94] Abbigail J. Chiodo and Michael T. Owyang (2002) "A Case Study of a Currency Crisis: The Russian Default of 1998", Review, pp.7-18
[95] Süppel Ralph (2003) Russia's Financial Markets Boom, Crisis and Recovery 1995–2000: Lessons for Emerging Markets Investors SUERF, Vienna, ISBN 3-902109-19-X

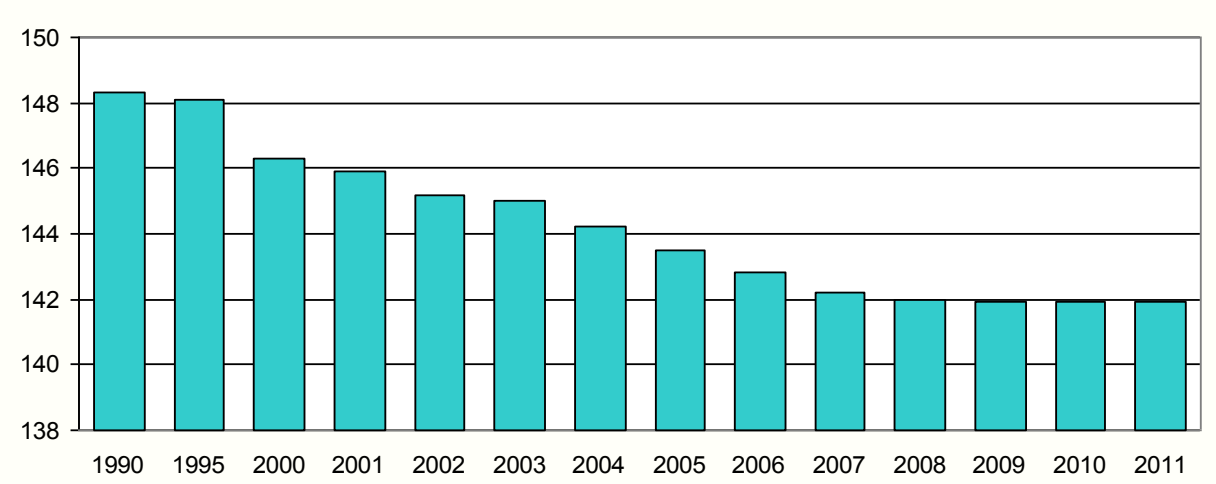
GDP fell by 8 percent in 2009, more than any other economy in the Group of Twenty (G-20) — the group of the world's largest economies.[96]

Russia experienced negative growth in 2009 and only modest growth at best in 2010. Growth since then has been at a slower pace than during the pre-crisis boom, notwithstanding the major increase in oil prices since early 2009. According to the World Bank report, Russia's economy grew 4.0 percent in 2010, driven largely by a sharp rebound in investment demand and inventory restocking, in particular.[97]

Real GDP in the third quarter of 2011 was still nearly 2% below its pre-crisis peak more than three years earlier.[98] Although consumer price inflation has been on a long downtrend since 1998, Russia still experiences inflation rates that are well above those in advanced countries and relatively high among middle-income economies. (OECD, 2011)

The population of the Russian Federation peaked in 1992 at 148.3 million and it has been shrinking ever since. This has been caused by a falling fertility rate and relatively low birth rate coupled with a high death rate.[99]

Figure 8 – The population of the Russian Federation



Source: Rosstat (2013)

Russia's population since 1995 decreased from 148.3 million to 141.9 million people, or by 6.4 million. Despite Russia's enormous territory, the majority of Russia's population lives in the Western edge of the country.

[96] Åslund A., Guriev S. and Kuchins A. (2010) *Russia after the Global Economic Crisis*, 288 pp. ISBN 978-0-88132-497-6

[97] The World Bank in Russia (2011) Russian Economic Report. № 24

[98] OECD (2011) Modernisation of the Russian economy: how full is the glass? OECD Economic Surveys: Russian Federation 2011, OECD Publishing.

[99] Popovich L, Potapchik E, Shishkin S, Richardson E, Vacroux A, and Mathivet B. (2011) Russian Federation: Health system review. Health Systems in Transition, Vol 13, No 7, pp. 1–190. ISSN 1817-6127

7.2 The role of agriculture in Russian economy

After a period of rapid growth and recovery immediately after the 1998 crisis, agriculture in the last years has demonstrated a fairly low rate of growth. The growth occurs mostly due to the increase in crop production, however in recent years livestock has also demonstrated some animation. Agriculture has recovered by about 80% compared with the pre-reform level. Imports recovered speedily after a short period of fall after 1998, although trade balance remained negative. This means that the major factor behind the rapid growth in 1999–2001 has been exhausted[100]

During the period from 1999 to 2012, the favorable economic environment affected Russia's agriculture. The average growth rate of gross agricultural production for 1999-2012 amounted to 2.4 percent per year. During this period a decline in agricultural production was observed only in 2010 due to abnormal drought. (ICTSD, 2012)

Table 6 - Basic indicators of the role of agriculture in Russian economy

	1995	2000	2002	2004	2006	2008	2009	2010	2011
Share of agriculture in GDP (%)	6.3	5.8	5.3	4.5	3.6	3.6	3.9	3.3	3.4
Population in rural areas(%)	27	27	27	27	27	27	27	27	27
Share of agriculture in employment (%)	15.7	13.0	11.8	10.2	10.0	8.6	8.4	7.9	7.9
Average share of food in households' consumer expenditures (%)	49.0	47.6	41.7	36.0	31.6	29.1	30.6	29.6	29.5
Agricultural area (million ha)	210.0	197.0	195.0	193.0	192.0	191.0	191.0	191.3	190.7
Arable land (million ha)	128.0	119.7	118.4	116.8	116.0	115.0	116.0	115.5	115.3
Land sown to crops (1000 ha)	55.0	46.0	48.0	44.0	43.0	47.0	47.6	43.2	43.6

Source: World Bank (2013)

Russia has an enormous territory but only about 7 percent of its land is arable. A significant part of country's territory is in unfavorable soil, climatic and weather conditions. The territory of Russia is characterized by great variability of soil-climatic and weather conditions: the lack of heat and water in the main agricultural zones complicates agricultural production. The duration of the frostless period varies in the eco-agricultural zones of Russia within a range of 50 to 190 days.

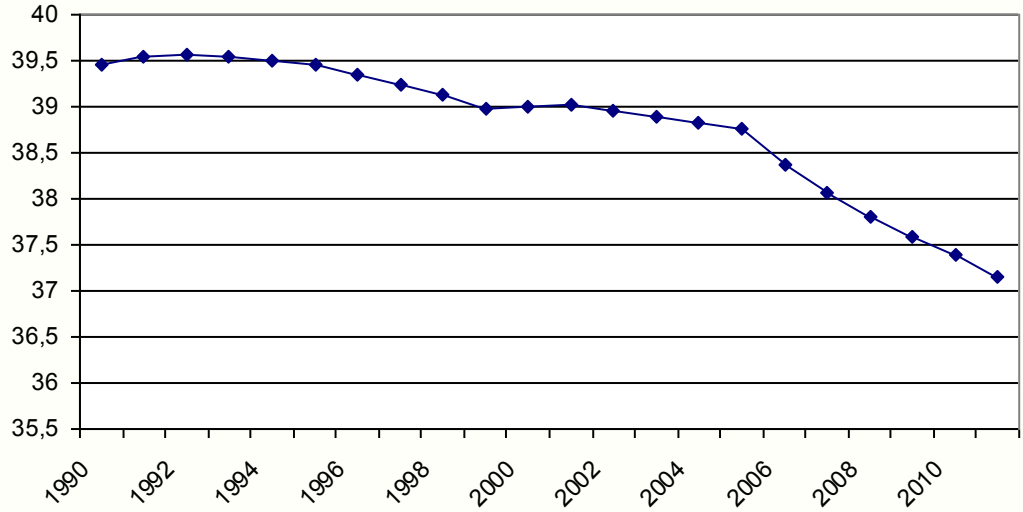
Considerable areas of arable land are characterized by diversity of soil cover. The long-term potential increase of arable land in Russia has been estimated at 45 to 70 million hectares. However the major part of these lands lies in cold and moderately cold climatic zones, as well as

[100] FAO (2009) Russian Federation: Analysis of the Agribusiness Sector in Southern Russia. Report Series - N. 13

in insufficient water-supply zones. The influence of uncontrollable environmental factors (droughts and dry winds, frosts, short vegetation period, etc.) on crop yield quantity and quality in the unfavorable soil-climatic conditions is sharply increasing. [101]

About 27% of the total population of Russia lives in rural areas. However, many rural areas facing economic and social decline and depopulation. A sharp decline in the share of young, able-bodied population in rural areas is observed. Birth rate is declining in rural areas more rapidly than in urban, and these two tendencies lead to a rapid ageing of rural population. In the recent years, there was greater population mobility than in the Soviet era and more people have been moving from rural to urban areas (Wegren, 2007).

Figure 9 - The rural population of the Russian Federation (in millions)



Source: Rosstat (2013)

Since 1996, working places have been decreasing in number, the quality of life of the rural population has been reducing, depopulation of villages has been progressing (out of 155 000 villages 13 000 were liquidated, 35 000 have a population below 10 and 37 000 less than 50 people). 60 % of village homesteads have an average income that is below the subsistence level. (FAO, 2007)

In 1995, about 15 % of the country's population was engaged in agriculture. By 2010, the share of people employed in agriculture had fallen to 8%.

Agricultural sector of the Russian economy numbers 300 large and medium-size agricultural enterprises and 267.5 thousand farmer households. (FAO, 2007)

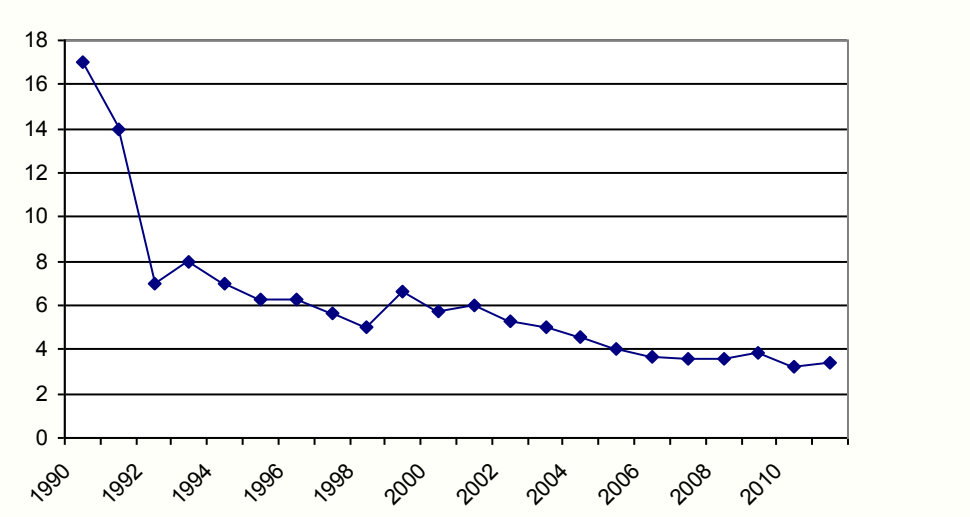
[101] Zhuchenko A. (2007) Area Studies - Regional Sustainable Development: Russia, Encyclopedia of Life Support Systems (EOLSS),- Vol. II, 407 p. ISBN: 978-1-84826-075-7 (eBook)

Over half of all agricultural production comes from the population-owned kitchen gardens and farmer households, though they occupy only 6.1% of all agricultural land. The share of households in gross agricultural output equals 52%, while that of agricultural enterprises is 42%. Households are mainly aimed at self-sufficiency and market-oriented production of agricultural products. About 9.3 millions of them (58%) are engaged in unstable small-scale commodity production.

Such a structure is evidence that Russian agriculture is sliding towards small-scale commodity production and becomes less competitive. The share of products with extremely low marketability produced using manual labor, primitive technologies, with minimum mechanization of labor-consuming processes, keeps growing.

At the beginning of the transition period, agriculture accounted for 16.4% of the Russian Federations' Gross Domestic Product (GDP), and was a large and very important sector in the national economy. By 1998, the share of agriculture in GDP had fallen below 6% and recovered only slightly in 1999, when it reached 6.8%. In 2000 the share of agriculture grew to 7.5% of GDP.

Figure 10 – Share of agriculture in GDP in Russian Federation, %



Source: World Bank national accounts data, and OECD National Accounts data files (2013)

According to official figures, there was a 61.2% decline of the Gross Agricultural Output (GAO) in constant prices in 2000 compared to 1990. Decline of the sector's share in GDP was accelerated by a notable change in relative prices in favor of the input sector, i.e. a negative development of sectoral terms of trade.[102]

[102] Csaba Csáki (2002) Food and Agricultural Policy in Russia: Progress to Date and the Road Forward World bank technical paper No 523, ISBN:0-8213-5177-X, ISSN: 0253-7494

In Russia, agricultural sector provides over 15% of national income, and accumulates 15.7% of capital assets.

7.3 Structure of agricultural production

Since reform began in the early 1990s, agriculture has experienced major commodity restructuring — that is, major changes in the commodity mix and volume of agricultural production, consumption, and trade. The main feature of the restructuring has been a substantial drop in agricultural production, especially in the livestock sector.

When reforms of the agricultural sector in Russia began in 1992, many analysts predicted that farmers would become profit maximizers and, consequently, improve the productivity and efficiency of their operations. (Osbornea - Trueblood, 2006)[103]

The reform of the agricultural sector has resulted in a widely spread privatization. Government intervention via subsidies or other instruments were greatly reduced. The restructuring process in the country created uncertainties for farmers and resulted in fragmentation of farms or farm ownership. Compounding the problem was the shortage of technical and business management skills for successful private farming that had been absent under the previous system. Previous linkages between farms and the up- and downstream industries broke down. The whole set of problems was worsened by the lack of agricultural finance and credit (Trzeciak-Duval, 1999).

Since 1999 agricultural output has been growing, mostly due to crop production. Russia has two internal drivers of increase in agricultural production. They are substitution of imported agricultural products (sugar, livestock products and milk), and emerging opportunities to increase export of cereals, particularly wheat. Domestic agricultural producers are also able to take advantage of currency devaluation in Russia due to the recent global financial crisis and any related increases in prices of imported agricultural commodities. The Russian federal government stimulates crop production through minimum purchase prices of grain (wheat, barley, rye, and maize), fixed domestic prices on mineral fertilizers, development of animal husbandry, subsidized credits, and decreased taxes. During the last years, the Russian grain market has gained the spotlight as officials are increasingly aware of apparent competitive advantages.[104]

[103] Osbornea S., Trueblood M. (2006) An examination of economic efficiency of Russian crop production in the reform period. Agricultural Economics. No 34, pp. 25–38

[104] Nosov V. and Ivanova S. (2009) Progress in Wheat, Sunflower, and Sugar Beet Cultivation in Russia. Better Crops, Vol. 93, No. 3

The farm structure is dual, with large-scale commercial operations co-existing with small household units. The latter dominate in potato and vegetable production and account for over one half of total milk output, but are mostly oriented at self-consumption. These two sectors contribute roughly equal shares to total agricultural output. Households spend around one-third of their final consumption expenditures on food. (OECD, 2011).

Product structure of agricultural production

Let us first consider the structure of agricultural production in general, and then every important product separately.

Table 7 - Product structure of Russian agricultural production, %

	1995	1997	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	GM
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Crop production	53.1	55.5	54	52.9	49.6	51.8	51.9	48.5	48.7	51.9	53.1	49.2	45.1	98.9
including:														
grain crops	12.5	17.1	12.1	16.6	13.2	14	17.5	13.8	14.9	18.9	20.3	14.7	10.5	98.8
industrial crops	3.3	1.8	3.1	2.5	3.3	3.9	4.3	4.3	4.7	5	4.5	4.7	5.6	103.6
potatoes	17.9	15.4	18.9	14.4	14.3	14.5	11.7	11.9	11.5	10.4	11.4	12	10.7	96.6
vegetables and melons	9.9	10.4	11.7	10.7	10.6	10.8	9.5	9.9	9.7	9.2	9.1	9.7	10.5	100.4
fruit and berries	2.8	3.6	3.7	4.1	4.1	4	4	4	3.7	4	3.6	2.9	2.8	100.0
forage crops	5.4	6.6	3.6	3.6	3.7	3.6	3.5	3.4	3.2	2.7	2.7	4.2	4.2	98.3
Livestock products	46.9	44.5	46	47.1	50.4	48.2	48.1	51.5	51.3	48.1	46.9	50.8	54.9	101.1
including:														
meat and poultry	20.2	19.9	20.7	23.3	25.1	22.7	23.3	26.6	27.6	25.2	24.5	28.6	30.2	102.7
milk	18.8	16.9	18.2	17	18	18.4	17.6	17.8	17.3	16.9	16.7	16.2	18.4	99.9
eggs	4.8	4.8	4.8	4.7	4.9	4.8	5	4.9	4.4	4.2	4.1	4.1	4.2	99.1
wool	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	89.8

Source: Rosstat (2013)

As a result, for the period from 1995 to 2010, there was a slight increase in the share of livestock products (an average of 1% per year). There is also an increase in the share of industrial crops against decrease of the share of grain cereals and potatoes.

An industrial crop is a crop grown to produce goods to be used in the production sector, rather than food for consumption. The most important industrial crops cultivated in Russia are sunflower seeds, sugar beet and flax, etc.

Prices of agricultural products

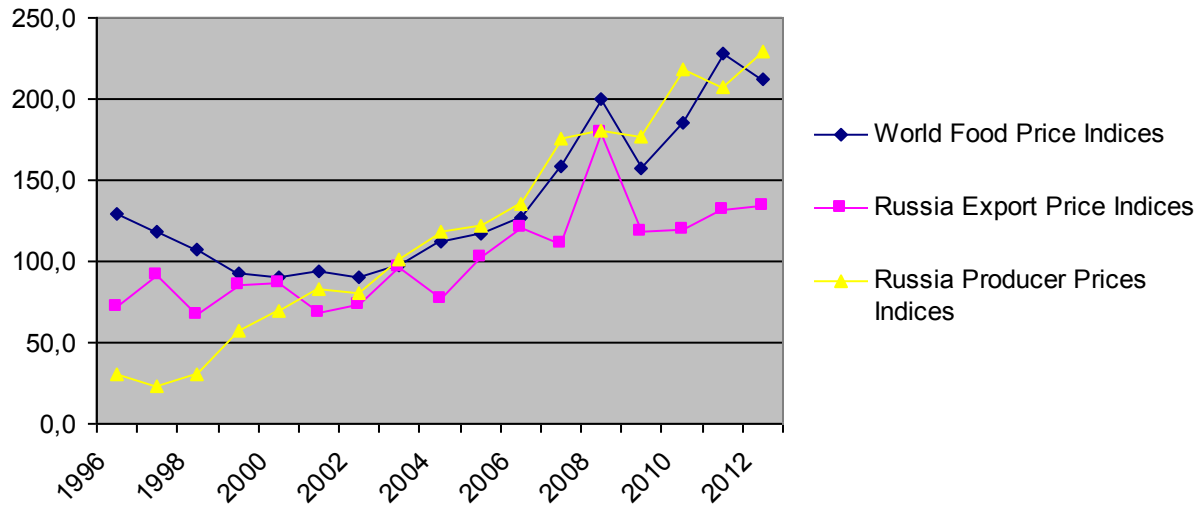
After the collapse of the Soviet Union, in the period from 1992 input prices grew much more rapidly than the prices of agricultural products. As a result, there are price distortions in the cross-sectoral level.

Agriculture, more than any other industry, is suffering from the dictates of the prices of natural monopolies, communications, transportation, energy, etc.

As a result of increase of price disparity and the formation of prices of agricultural products at a lower level with respect to the non-agricultural products, the profitability in agriculture is much lower compared to non-agricultural industries.

Changing petroleum prices, crop yields, food stock levels and exchange rates trade policies are driving the agricultural price volatility. Some of the factors that influenced the prices of agricultural and food products, were generated by imperfections rather chaotic market environment in Russia.

Figure 11 – World food price indices and Russia's price indices for agricultural products (2002-2004=100)



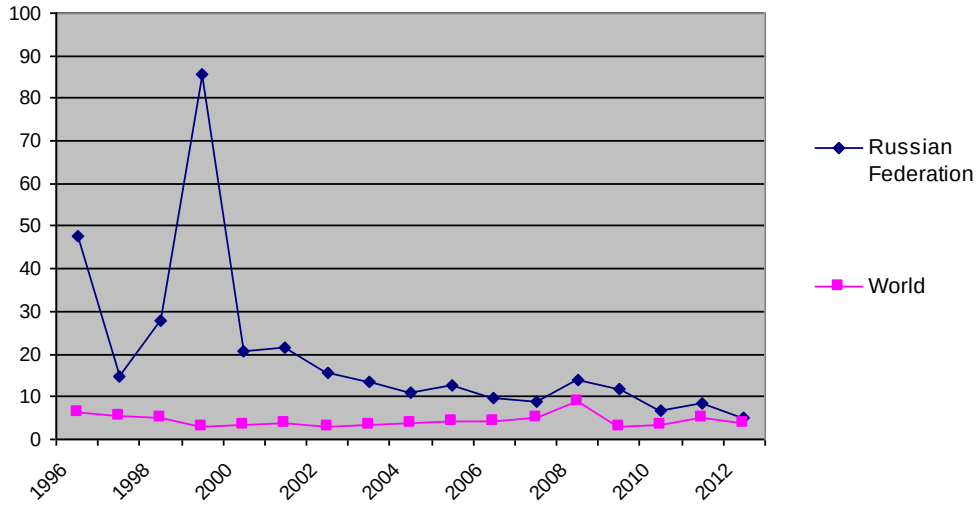
Sources: Federal Customs Service of Russia, FAOSTAT (2013)

As we can see in the figure 11, Russian trend in prices of agricultural production follows the world trends.

World Food Price Index consists of the average of 5 commodity group price indices mentioned above weighted with the average export shares of each of the groups for 2002-2004: in total 55 commodity quotations considered by FAO commodity specialists as representing the international prices of the food commodities noted are included in the overall index.

Agricultural Producer Price Indices measure annual changes in the selling prices received by farmers (prices at the farm-gate or at the first point of sale). The indices are constructed using price data in Standardised Local Currency (at 2004-2006 prices).

Figure 12 – Inflation, consumer prices (annual %)



Sources: Federal Customs Service of Russia, FAOSTAT (2013)

On the graph you can see the jump in prices after the 1998 crisis. The crisis has had a strong negative impact on a financially vulnerable Russian economy. Inflation for 1998 was 84.4%

On 17 August 1998, Russian government floated the exchange rate and devalued the ruble.[105]

During the period from 1990 to 1997 in the prices of food commodities significantly increased the proportion of intermediaries (banks, stock exchanges, commercial structures) - from 3.5 to 19.7%. At the same time, the share of direct producers decreased from 49.3 to 37.3%, including agriculture - from 25.5 to 18.4%.

Food consumption

According to FAO experts, there are no deficits in calorie and macro-nutrient consumption during the transition process in Russia.

[105] Abbigail J. Chiodo and Michael T. Owyang (2002) "A Case Study of a Currency Crisis: The Russian Default of 1998", Review, pp.7-18

Table 8 - Per capita consumption of major food items in Russia, kg

	Recommended intake	Average consumption (for 1995-2011)	2011 as % of 1995
Meat and meat products	70-75	55.5	129.1
Milk and milk products	320-340	233.2	96.9
Eggs and egg products	260	240.2	125.5
Fish and fish products	18-22	12.0	171.1
Sugar	24-28	36.2	125.0
Vegetable oil	10-12	10.9	180.0
Potatoes	95-100	111.5	88.7
Vegetables and melons	120-140	86.2	139.5
Fruits and berries	90-100	41.7	206.9
Grain products	95-105	119.4	97.5

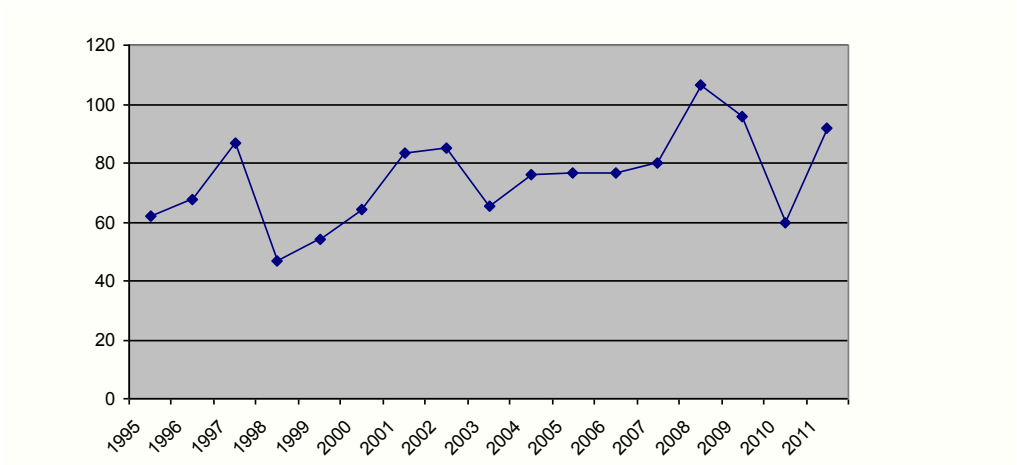
Source: Russian Federal Service for Supervision of Consumer Rights Protection and Human Welfare (2012)

The average diet of Russians has changed since 1990 due to decreases in milk, meat and fat consumption and a rising share of starchy staples like bread and potatoes. [106]

Crop production in Russian Federation

Crop production in Russian Federation is considered to be in a better condition than animal production. However, according to Rosstat, in the period from 1990 to 2007, the areas under crops declined steadily. Only in 2008-2009, there was a slight increase in the industry performance

Figure 13 – Grain production in Russian Federation, millions tones



Source: Rosstat (2013)

[106] Sedik D., Sotnikov S., Wiesmann D. (2003) Food security in the Russian Federation, FAO, Rome, ISSN 0259-2460

The industry depends strongly on the natural and climate conditions which determine grain crops productivity. Fluctuations in crop production are due primarily to yields oscillation.

Let's consider the production of the most important crops separately.

Wheat

Wheat is the most important grain crop in Russia, which makes a great contribution to the grain stocks of the country.

Table 9 - Russian wheat supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/ 1991	1995/ 1996	1998/ 1999	1999/ 2000	2000/ 2001	2002/ 2003	2004/ 2005	2006/ 2007	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	GM
Area Harvested	23540	21570	19950	19820	21300	24,30	22920	22960	26100	26690	21750	24814	100.5
Beginning Stocks	14395	7500	8050	1062	1257	7623	4818	5998	4269	10944	14722	13736	99.6
Production	49596	30100	27012	30995	34455	50609	45434	44927	63765	61770	41508	56240	101.1
MY Imports	10849	5316	2490	5083	1604	1045	1225	928	203	164	89	550	76.3
Total Supply	74840	42916	37552	37140	37316	59277	51477	51853	68237	72878	56319	70526	99.5
MY Exports	1200	206	1,652	518	696	12621	7951	10790	18393	18556	3983	21627	130.1
Feed and Residual	32960	17969	11150	11800	11500	15000	13600	14100	16200	16800	16000	15500	93.4
Total Consumption	57260	39810	34838	35365	35158	38320	37400	36400	38900	39600	38600	38000	96.3
Ending Stocks	16380	2900	1062	1257	1462	8336	6126	4663	10944	14722	13736	10899	96.4
Total Distribution	74840	42916	37552	37140	37316	59277	51477	51853	68237	72878	56319	70526	99.5
Yield	2.11	1.40	1.35	1.56	1.62	2.07	1.98	1.96	2.44	2.31	1.91	2.27	101.0

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

Wheat accounts for over half of Russia's grain production with average annual output of about 40 million tons. The areas under wheat exceed those under all other cereals and grain legumes put together. Planted area typically ranges from 23 to 26 million hectares. Winter wheat comprises about one-third of total wheat area but half of total production because of higher yield. Roughly 70 percent of Russia's wheat is classified as food-grade, or milling quality, and 30 percent as feed-grade.[107]

Barley

Barley is the second most important crop of the Russian Federation. Barley grain is now widely used for various purposes. Part of the barley is processed to produce a pearl barley or ground barley. However, in Russia, 70% of barley is used for feeding purposes.

[107] USDA (2003) Russia: Agricultural Overview, Production Estimates and Crop Assessment Division Foreign Agricultural Service

Table 10 - Russian barley supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/ 1991	1995/ 1996	1998/ 1999	1999/ 2000	2000/ 2001	2002/ 2003	2004/ 2005	2006/ 2007	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	GM
Area Harvested	13210	12530	7110	7450	8460	9490	9570	9600	9440	7720	4970	7695	95.2
Beginning Stocks	1175	2400	3259	376	326	4435	2316	933	1153	3813	2395	1386	101.5
Production	27235	15800	9797	10602	14078	18738	17180	18155	23148	17881	8350	16938	95.8
MY Imports	3055	666	335	839	413	251	272	246	56	8	408	368	82.5
Total Supply	31465	18866	13391	11817	14817	23424	19768	19334	24357	21702	11153	18692	95.4
MY Exports	70	800	115	91	573	3132	1089	1547	3444	2657	267	3544	142.9
Feed and Residual	25180	12774	8500	8950	8800	10700	11700	11800	12300	12150	5500	9800	91.8
Total Consumption	30530	17566	12900	11400	12700	15500	16500	16400	17100	16650	9500	14300	93.3
Ending Stocks	865	500	376	326	1544	4792	2179	1387	3813	2395	1386	848	99.8
Total Distribution	31465	18866	13391	11817	14817	23424	19768	19334	24357	21702	11153	18692	95.4
Yield	2.06	1.26	1.38	1.42	1.66	1.97	1.80	1.89	2.45	2.32	1.68	2.20	100.6

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

In Russia, average production of barley is about 16 million tons from 10 million hectares or 1/4 of the country's total grain yield. Spring barley accounts for 95 percent of barley area and 90 percent of production. Under conditions of Russia, this is primarily a fodder crop used as a basis for producing mixed fodders. As a food crop, it is used for beer brewing, peeled barley and concentrated foods production, etc. An expanding brewing industry has boosted the demand for malting barley. Russia produces roughly 500,000 tons of malting barley against brewers' demand of about 1.2 million tons per year.

Corn

In Russian Federation, corn is used for food, industrial and feed purposes. It is cultivated for grain, silage, green fodder and haylage. Corn is also used for the production of flour, cornflakes, starch, glucose, alcohol and other products.

Table 11 - Russian corn supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/ 1991	1995/ 1996	1998/ 1999	1999/ 2000	2000/ 2001	2002/ 2003	2004/ 2005	2006/ 2007	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	GM
Area Harvested	780	590	490	520	700	530	840	970	1730	1120	1020	1604	105.6
Beginning Stocks	2356	155	500	101	160	90	53	121	52	254	122	72	92.0
Production	2451	1700	800	1034	1489	1499	3373	3510	6682	3963	3075	6962	108.4
MY Imports	6,050	112	524	870	150	99	226	108	51	32	112	50	80.4
Total Supply	10857	1967	1824	2005	1799	1688	3652	3739	6785	4249	3309	7084	100.8
MY Exports	400	0	13	0	1	12	44	77	1331	427	37	2027	x
Feed and Residual	7520	1000	1450	1510	1300	1200	3000	3100	4500	3200	2800	3900	100.3
Total Consumption	8600	1800	1710	1845	1700	1600	3500	3600	5200	3700	3200	4600	100.1
Ending Stocks	1857	167	101	160	98	76	108	62	254	122	72	457	98.7
Total Distribution	10857	1967	1824	2005	1799	1688	3652	3739	6785	4249	3309	7084	100.8
Yield	3.14	2.88	1.63	1.99	2.13	2.83	4.02	3.62	3.86	3.54	3.01	4.34	101.1

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

Russia plants millions of hectares of corn, but less than 20 percent is harvested for grain. The remainder is chopped for silage, usually in August. The area of silage corn declined by about 60 percent during the 1990's. In the period from 2004 to 2010, corn area harvested increased. Corn-for-grain area can fluctuate from year to year depending on the weather, with lower area during dry years. Growth of corn yield associated with the development of intensive agriculture.

Sunflower seeds

Sunflower seed is Russia's chief oilseed crop, and Russia is one of the world's top producers.

Table 12 - Russian sunflower seeds supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/ 1991	1995/ 1996	1998/ 1999	1999/ 2000	2000/ 2001	2002/ 2003	2004/ 2005	2006/ 2007	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	GM
Area Harvested	2750	3960	3570	5000	4350	3798	4650	5900	6000	5600	5550	7200	109.1
Beginning Stocks	0	50	15	20	45	5	273	246	290	575	283	113	107.7
Production	3427	4200	3000	4150	3915	3685	4800	6750	7350	6425	5350	9627	109.8
MY Imports	0	5	35	10	5	7	10	10	12	23	43	28	117.0
Total Supply	3427	4255	3050	4180	3965	3697	5083	7006	7652	7023	5676	9768	110.0
MY Exports	105	1,200	890	847	729	186	45	162	160	20	8	332	111.0
Crush	2350	2300	1860	3000	3020	3300	4389	5980	6210	6065	5045	8600	112.5
Food Use Dom. Cons.	0	268	190	165	100	101	184	200	215	220	220	250	99.4
Feed Waste Dom. Cons.	972	130	90	123	81	85	239	350	492	435	290	495	94.0
Total Dom. Cons.	3322	2698	2140	3288	3201	3486	4812	6530	6917	6720	5555	9345	109.9
Ending Stocks	0	357	20	45	35	25	226	314	575	283	113	91	88.3
Total Distribution	3427	4255	3050	4180	3965	3697	5083	7006	7652	7023	5676	9768	110.0

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

Following the breakup of the Soviet Union in 1991, sunflower seed yields dropped due to a sudden and sharp reduction of heavy State subsidies for agriculture and a 90-percent reduction in fertilizer application rates. Yields stabilized by the mid-1990's, however, and during the period of steady sunflower area expansion of the past ten years yields have exhibited no downward trend in Russia, despite financial constraints that have restricted farmers' use of fertilizer and plant-protection chemicals.[108]

In the last 20 years, Russia's production of oilseeds grew steadily. Farmers were improving agronomy and were using better seeds, but most of the increase in production was attributed to an increase in sown area. Now the outputs of sunflower seeds above the Soviet period level. (USDA, 2011)

Because of a combination of high price and low cost of production relative to wheat (with the lower cost of production based in part on less application of fertilizers and chemicals), sunflowers have become one of the most consistently profitable crops. Prices of sunflower seeds are less volatile and demand for them is more predictable than demand for grain.

Sunflower oil

Sunflower oil is a dominant type of vegetable oil produced in Russian Federation.

Table 13 - Russian sunflower oil supply and distribution (in 1000 MT)

Attribute	1990/ 1991	1995/ 1996	1998/ 1999	1999/ 2000	2000/ 2001	2002/ 2003	2004/ 2005	2006/ 2007	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	GM
Beginning Stocks	48	30	80	30	80	40	45	95	177	59	99	84	105.2
Production	987	920	750	1240	1250	1365	1815	2465	2565	2505	2082	3552	112.3
MY Imports	220	220	260	190	236	192	134	115	37	55	149	14	77.8
Total Supply	1255	1170	1090	1460	1566	1597	1994	2675	2779	2619	2330	3650	110.2
MY Exports	105	25	55	195	130	103	226	711	802	504	181	1427	126.8
Industrial Dom. Cons.	50	50	65	195	270	293	315	350	330	320	330	330	118.7
Food Use Dom. Cons.	1017	850	930	980	1066	1156	1363	1469	1553	1666	1705	1740	105.0
Feed Waste Dom. Cons.	0	9	10	10	30	20	35	35	35	30	30	30	111.6
Total Dom. Cons.	1067	909	1005	1185	1366	1469	1713	1854	1918	2016	2065	2100	106.3
Ending Stocks	83	236	30	80	70	25	55	110	59	99	84	123	103.6
Total Distribution	1255	1170	1090	1460	1566	1597	1994	2675	2779	2619	2330	3650	110.2

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

[108] USDA (2004) Sunflowerseed Production in Ukraine and Russia. Report of the United States Department of Agriculture.

Country's crushing capacities continue to grow. Domestic production of sunflower oil continues to increase from 98.7 thousand tons in 1990 to 355.2 thousand tons in 2010 due to the fast modernization and construction of new crushing facilities in 2005-2010.[109]

Production exceeds domestic demand and the country has successfully increased exports of sunflower oil. In 2011, a record harvest allows to export more than 1 million tons of sunflower oil.

Sugar

In relation to sugar industry, the following trends are observed. Russian Federation, after a decade of declining sugar production, halted the long-term trend when sugar production from domestically cultivated sugar beet began to increase.

The sugar yields of the Russian Federation are more than 45% lower that the European average and about three times lower than yields in the most advanced sugar producing countries in Western Europe. This is mainly due to the lower availability of sugar beet, inadequate agricultural technology (cultivars, crop management, and machinery) and constrained access to investments. However, the recent seasons have been characterized by a considerable improvement in beet and sugar yields.[110]

Table 14 - Russian sugar supply and distribution (in 1000 MT CWE)

Attribute	1990/ 1991	1995/ 1996	1998/ 1999	1999/ 2000	2000/ 2001	2002/ 2003	2004/ 2005	2006/ 2007	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	GM
Total Production	2600	2060	1300	1500	1550	1580	2250	3150	3481	3444	2996	5500	107.0
Raw Imports	0	1450	5200	5000	5350	3700	3600	2650	1850	1949	2260	500	90.8
Refined Imports	0	1350	200	170	300	300	700	300	300	274	250	250	85.8
Total Imports	0	2800	5400	5170	5650	4000	4300	2950	2150	2223	2510	750	88.7
Total Supply	7310	6135	7805	9320	10200	7710	6990	6570	6181	6148	5905	6600	99.1
Raw Exports	0	10	10	10	10	10	10	0	0	0	0	0	x
Total Exports	120	100	160	190	260	260	110	180	200	34	17	300	108.7
Human Dom. Consumption	6350	5000	4995	6130	6840	6400	6300	5950	5500	5700	5523	5885	101.5
Ending Stocks	840	1035	2650	3000	3100	1050	580	440	481	399	350	400	93.5
Total Distribution	7310	6135	7805	9320	10200	7710	6990	6570	6181	6148	5905	6600	99.1
Total Sugar Production	2600	2060	1300	1500	1550	1580	2250	3150	3481	3444	2996	5500	107.0
Raw Imports	0	1450	5200	5000	5350	3700	3600	2650	1850	1949	2260	500	90.8

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

Russia increased 2011 planted area of sugar beets to a record 1.29 million hectares (11.2 percent growth). Considering the growth of sugar beet area, good weather conditions, and reported

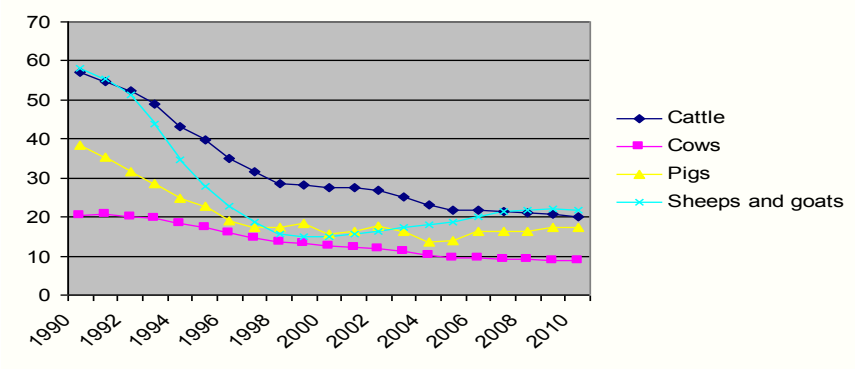
[109] USDA (2011) Oilseeds and Products Annual Report No RS1115
[110] FAO (2009) Agribusiness Handbooks - Sugar Beets / White Sugar, 53 p.

harvest yields to date, a new record for sugar beet production of 55.0 MMT is now well within reach and far exceeds state targets.

Livestock sector

In the livestock sector the situation is noticeably worse than in crop production. Around 1970, the Soviet government expanded the livestock sector to improve consumer's standard of living by increasing meat and dairy consumption. Using large budget subsidies to both livestock producers and consumers along with controlled prices and trade, the regime succeeded in raising meat production by over 60% between 1970 and 1990 (Liefert, 2001).

Figure 14 Livestock inventories in Russia, million heads



Source: Rosstat (2013)

The decreased production is attributable to a lack of professional livestock specialists which are needed to service new, modern beef and dairy farms, populated with highly productive domestic and imported cattle. Moreover, the share of cattle inventories on private household farms is also decreasing because younger farming generations are moving to towns and cities and are not staying in the business of livestock farming. (USDA, 2012)

Since 1992 till 2008 the number of cattle decreased from 52.2 to 21.5 million heads, pig livestock – from 31.5 to 16.5 million heads, sheep and goat livestock - from 51.4 to 20.7 million heads.

The move to a market economy in the 1990s reversed the expansion of the livestock sector during the earlier planned period. Because of budget stringency, the huge government support to agriculture, and especially the livestock sector which received the bulk of subsidies, was largely eliminated. Also, integration into world markets revealed that Russia was a high cost producer of livestock goods, making it difficult to compete with lower priced imports. Put in other words, the country had a large comparative disadvantage in the livestock sector (Liefert, 2002).

The drop in consumption of livestock goods is lower than the decrease in domestic output, given that during transition Russia has become a major importer of meat (in particular poultry from the United States). [111]

Table 15 - Russian meat (beef and veal) supply and distribution, (1000 MT CWE)

Attribute	1990	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	GM
Production	3635	2295	1890	1740	1595	1580	1650	1680	1640	1520	1450	1430	1490	1460	1435	1360	93.7
Imports	1424	697	738	782	425	671	751	766	791	1054	1033	1115	1228	1053	1075	1065	98.1
Total Supply	5059	2992	2628	2522	2020	2251	2401	2446	2431	2574	2483	2545	2718	2513	2510	2425	95.2
Exports	0	5	7	3	7	7	7	10	9	11	8	8	11	8	5	8	103.2
Domestic Consumption	5059	2987	2621	2519	2013	2244	2394	2436	2422	2563	2475	2537	2707	2505	2505	2417	95.2
Total Distribution	5059	2992	2628	2522	2020	2251	2401	2446	2431	2574	2483	2545	2718	2513	2510	2425	95.2

Source: Foreign Agricultural Service, Official USDA Estimates

Output of meat plunged, falling from 10.1 mmt in 1990 to 4.4 mmt in 2000. Meat imports in turn began to rise since 1990s.

Russian beef cattle inventories have grown significantly over the last three years, supported by subsidized live cattle imports in accordance with State beef production programs. Beef consumption remained flat due to a small decrease in beef production compared to previous years and a slight increase in imports as a result of increased tariff-rate quota (TRQ) volumes for "high-quality" beef". (USDA, 2012)

Table 16 - Russian poultry supply and distribution, (1000 MT CWE)

Attribute	1990	1995	1998	1999	2000	2002	2004	2006	2008	2009	2010	2011	GM
Production	810	455	365	375	410	565	770	1180	1680	2060	2310	2575	111.1
Imports	307	856	1048	935	948	1215	1030	1199	1166	929	656	504	104.6
Total Supply	1117	1311	1413	1310	1358	1780	1800	2379	2846	2989	2966	3079	109.7
Exports	0	2	3	1	3	1	1	2	5	7	5	35	129.7
Dom. Consumption	1117	1309	1410	1309	1355	1779	1799	2377	2841	2982	2961	3044	109.5
Total Distribution	1117	1311	1413	1310	1358	1780	1800	2379	2846	2989	2966	3079	109.7

Source: Foreign Agricultural Service, Official USDA Estimates

Russian poultry meat output which increased slightly in 1998 due to low feed prices, increased regional government support and higher levels of investment in the industry. Besides government support, Russian financial groups, foreign companies and meat processing plants are making investments in the poultry industry.

[111] Liefert W. (2009) Russia's Growing Agricultural Imports Causes and Outlook. A Report from the Economic Research Service United States Department of Agriculture, WRS-09-04

Table 17 - Russian pork supply and distribution (1000 MT CWE)

Attribute	1990	1995	1998	1999	2000	2002	2004	2006	2008	2009	2010	2011	GM
Production	2958	1586	1279	1310	1341	1367	1433	1444	1736	1844	1920	2000	96.5
Total Imports	440	550	592	600	307	822	638	889	1107	876	916	971	107.5
Total Supply	3398	2136	1871	1910	1648	2189	2071	2333	2843	2720	2836	2971	98.8
Total Exports	0	0	0	0	0	0	0	0	0	1	1	0	x
Total Dom. Consumption	3398	2136	1871	1910	1648	2189	2071	2333	2843	2719	2835	2971	98.8
Total Distribution	3398	2136	1871	1910	1648	2189	2071	2333	2843	2720	2836	2971	98.8

Source: Foreign Agricultural Service, Official USDA Estimates

After the sharp decrease in the beginning of 1990s, swine production in Russia stabilized. In the last decade, growth of pork production was modest. However, production reached 2 million tons in 2011 as a result of State support.

One positive trend in the livestock sector is the stable rise in animal productivity, reflecting to a certain degree rational downsizing, investment inflows and technical improvements in successfully restructuring farms. This is accompanied by re-location of production to areas with more favorable conditions. Points of growth of intensive milk, poultry and pig meat production are emerging in the Central, Southern, Volga and Siberian regions of Russia. [112]

Import Dependency Ratio (IDR)

The country's dependence on imported grain is usually a basic needs indicator of food security. Food insecurity is widely used in the Russian Federation as an argument for government intervention in agriculture in the form of price supports, import tariffs or quantitative import restrictions.

[112] OECD (2007) Agricultural Policies in Non- OECD Countries: Monitoring and Evaluation, ISBN 978-92-64-03121-0

Table 18 – Import dependency ratio in Russia, %

Year	Grain	Potato	Vegetables	Meat and meat products	Milk and milk products	Eggs and egg products
1990	13.3	3.3	19.9	13.2	12.4	3.2
1991	16.7	3.4	23.8	14.0	11.6	1.7
1992	27.2	1.1	22.9	15.0	6.3	0.5
1993	11.4	0.6	12.8	15.6	11.3	0.1
1994	3.9	0.3	15.0	18.9	11.1	0.0
1995	4.8	0.2	10.6	27.2	14.2	0.3
1996	4.9	0.3	13.8	27.7	11.1	0.8
1997	4.6	0.6	15.0	40.0	15.7	1.5
1998	2.4	0.8	14.6	32.4	13.0	2.6
1999	10.5	1.0	18.3	32.0	12.9	3.2
2000	7.4	1.9	17.1	31.5	12.9	3.3
2001	2.6	0.9	17.8	37.1	13.2	2.4
2002	2.2	1.4	16.7	36.9	13.1	1.8
2003	2.4	2.2	20.5	35.2	14.7	2.0
2004	4.2	1.7	21.9	35.0	16.7	2.5
2005	2.2	1.9	24.6	39.0	19.0	2.4
2006	3.3	1.8	26.6	38.2	19.3	2.3
2007	1.6	2.3	23.8	36.0	18.4	2.2
2008	1.4	2.9	16.0	34.2	18.8	2.1
2009	0.6	2.2	17.1	30.5	17.8	1.9
2010	0.6	4.0	19.1	28.5	20.6	2.2
2011	1.0	5.3	18.1	26.4	20.3	2.8

Source: Rosstat, author's calculations (2013)

Import dependency ratios show that, during the analyzed period, there were visible trends toward increasing food import dependency in relation to milk products and meat and meat products. Russia imports about 30 percent of meat consumed. Low import-dependency ratios are observed in relation to eggs and potato.

For a clearer picture, we calculate the import to export for each product group. When the import value exceeds the export value, country is a net importer. When the export value exceeds the import value, country is a net exporter.

Table 19 - Import to Export ratio of Russian foreign trade in agricultural products

Year	Grain	Potato	Vegetables	Meat and meat products	Milk and milk products	Eggs and egg products
1990	8.5	3.2	11.2	25.6	24.0	7.6
1991	51.8	4.1	19.6	16.5	47.6	3.0
1992	-	1.6	22.8	17.7	17.5	0.4
1993	-	1.5	16.4	46.8	64.0	0.1
1994	3.7	3.2	50.7	77.7	7.1	0.2
1995	1.7	1.3	9.3	173.1	16.0	2.5
1996	6.0	1.9	78.1	60.4	9.2	5.0
1997	1.6	4.8	96.7	68.5	27.1	10.3
1998	0.8	9.4	95.5	106.7	15.0	10.1
1999	6.8	28.0	28.5	125.1	22.7	4.5
2000	3.6	21.8	13.4	61.6	9.3	3.6
2001	0.5	9.6	7.8	67.2	8.0	3.3
2002	0.1	29.5	9.3	79.3	11.1	3.6
2003	0.1	22.7	4.7	74.1	11.9	2.3
2004	0.5	15.5	3.5	62.9	13.2	4.3
2005	0.1	16.4	3.9	46.2	14.7	4.5
2006	0.2	6.6	3.9	55.7	13.9	2.3
2007	0.1	4.8	5.1	48.1	12.1	2.2
2008	0.1	7.7	3.5	36.2	11.9	2.9
2009	0.0	7.6	3.4	44.8	13.5	2.6
2010	0.0	13.2	5.8	29.3	17.7	3.7
2011	0.0	31.4	3.7	35.6	29.2	4.3

Source: Rosstat, author's calculations (2013)

The Russian Federation today is virtually self-sufficient in grain. However grain imports still occurs in specific cases where the product is inefficient production due to climatic conditions or other factors (for example, durum wheat, malting barley, etc.) For the remaining product groups, imports still exceed exports.

Table 20 - Food import dependency ratios: international comparisons, %

	World	Africa	Americas	Asia	Europe	Oceania	Russia
Cereals	15.5	28.1	11.9	12.8	21.6	7.8	**0.6**
Vegetables	5.9	4.3	15.2	1.6	30.5	19.1	**17.1**
Potatoes	7.8	4.1	12.4	3.0	12.4	17.7	**2.2**
Meat	12.8	7.9	7.2	7.8	33.2	10.9	**30.5**
Milk	13.2	15.9	7.0	7.4	25.7	10.7	**17.8**
Eggs	2.8	1.8	0.8	0.6	14.2	2.1	**1.9**

Source: FAOSTAT (2009)

A comparison of the food import dependency of the Russian Federation with other countries using FAO food balance data shows that the level of import dependence in the country is not high by international standards (Table 20).

Import dependency ratios for the Russian Federation in relation to cereals, eggs and potatoes are much smaller than the world average ratio as well as compared to most of the regions. However, the Russian meat import dependency ratio is significantly higher than in other countries.

Table 21 – Self-sufficiency ratio in basic food products in Russian Federation, %

	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2011	GM
Meat	87.0	88.3	78.7	70.0	65.0	66.6	64.2	64.4	62.1	65.9	71.5	73.4	98.5
Milk	86.2	95.2	86.9	87.5	87.3	88.3	88.0	84.6	82.4	83.2	80.5	80.8	99.4
Eggs	96.9	100.4	99.5	98.7	97.6	97.5	98.7	98.4	98.9	98.9	98.3	98.0	100.1
Potato	95.8	103.1	92.5	100.2	87.1	99.6	94.9	99.1	101.3	100.0	75.9	113.0	101.5
Vegetables	78.1	81.1	87.7	86.9	81.8	85.6	85.4	85.4	82.8	86.8	80.5	93.2	101.6
Grain	91.5	96.9	84.8	94.3	66.1	102.5	116.6	113.4	113.3	148.2	93.4	135.9	103.7

Source: Rosstat, author's calculations (2013)

One of the priority targets of Russia's social and economic policies is the development of national agri-food sector.

In 2010, Russian President approved the Food Security Doctrine of the Russian Federation. The doctrine calls for extensive import substitution.

The Doctrine establishes the following minimum production targets as the share of domestic production in the total supply of basic agricultural commodities: grain – 95%, sugar – 80 %, vegetable oil – 80%, meat and meat products– 85 %, milk and dairy products – 90 %, fish products – 80 %, potatoes – 95%, edible salt – 85 %. These goals should be achieved by 2020. (Doctrine of Food Security of RF, 2009)

Food Security Doctrine of the Russian Federation was developed over 12 years ago, but President Boris Yeltsin refused to sign it. Russia at the time, in his opinion, could not provide the necessary support for the execution of the Doctrine.

Russian Government officials stated that they believe Russian production will be able to satisfy most of Russia's beef needs by 2018-2020. To accomplish this, Russia's Ministry of Agriculture announced it will fund large support projects for agriculture (especially for beef and poultry production).

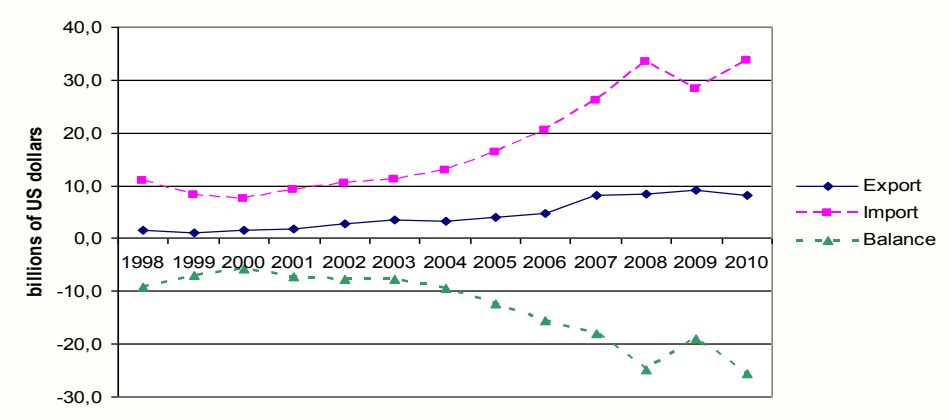
8. Russian foreign trade in agricultural products and foodstuffs: current situation and key trends

Russia has the largest area in the world, with considerable diversity in natural, economic, and social conditions across regions and a combination of federal and regional policies (OECD, 2011).

Before we start to analyze the specialization and comparative advantages of Russian agricultural exports, it will be useful to conduct a brief overview of the current situation in the field of Russian foreign trade in agricultural products and foodstuffs. The process of Russian agri-food sector's integration in the world economy in recent years is accelerating and the country is becoming an active player in a number of food markets.

Considering the dynamics of Russia's foreign trade in agricultural products and foodstuffs, the following trends can be revealed. There is the significant growth of foreign trade turnover due to the expansion of both imports and exports. The negative trend in the dynamics of agrifood foreign trade deficit value appeared in 2000.

Figure 15 - Russia's foreign trade flows in agricultural products and foodstuffs



Source: Federal State Statistics (2013)

Fig. 15 illustrates that the growth in imports value far exceeded growth in exports value, so Russia still retains on the traditional position of a net importer of agricultural products and foodstuffs.

Table 22 - Russia's foreign trade in agricultural products and foodstuffs (billions USD)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	GM
Export	1.2	0.8	1.3	1.5	2.2	2.7	2.5	3.9	4.8	8.3	8.4	9.3	7.6	11.3	16.7	x
Import	10.3	7.7	7.0	8.7	9.8	11.3	12.8	16.3	20.4	26.2	25.2	32.7	22.5	28.9	41.2	x
Balance	-9.1	-6.9	-5.7	-7.3	-7.7	-8.6	-10.3	-12.4	-15.5	-17.9	-25.0	-19.1	-26.1	-27.9	-23.8	x
Normalized trade balance	-79.3	-81.9	-68.6	-71.4	-63.7	-61.6	-67.6	-61.5	-61.6	-52.0	-59.8	-50.7	-63.3	-55.1	-41.6	x
Foreign trade coverage ratio	11.6	10.0	18.6	16.7	22.1	23.8	19.3	23.8	23.8	31.6	25.2	32.7	22.5	28.9	41.2	x
Chain index of export flows	X	64	170	112	149	124	92	157	125	170	102	111	81	150	147	121
Chain index of import flows	X	75	91	125	113	115	113	127	125	128	127	85	119	117	103	110

Sources: UN Commodity Trade Statistics Database. author's calculations (2013)

As can be seen in the table 22, average growth rate of exports (an average of 21% per year) is higher than imports (an average of 10% per year).

The main reason for the growth of imports during the analyzed period was the sustained growth of consumer demand in the situation of slow increase in the domestic production capacities (Gaidar, 2011). GDP growth increased consumer's income and demand for food and increased demand for imports.

In the economic crisis period (1998-1999), the ruble depreciated sharply in both nominal and real terms. It can explain why imports fell in those years. Agricultural exports grew primarily due to the increase in exports of wheat and sunflower oil.

Foreign trade coverage ratio shows us, that if in 1999 only 10% of imports were covered by exports, in 2012 - already 41%. Thus, the ratio of exports to imports has increased significantly. This is evidence of the positive changes in the structure of Russian foreign trade in agricultural products and foodstuffs.

The normalized foreign trade balance is measured as the foreign trade balance related to total trade. Throughout the whole period trade balance was negative, but the ratio of the negative balance to the whole trade has declined, which is also a favorable trend.

Table 23 - The share of Russian Federation in the world market of agricultural products, %

	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	GM
The share in world exports	0.4	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.6	0.9	0.7	0.8	0.5	0.7	104.5
The share in world imports	2.3	2.3	1.7	2.0	2.0	2.0	1.9	2.3	2.6	2.7	2.8	2.7	2.9	2.8	101.3

Source: FAOSTAT (2013)

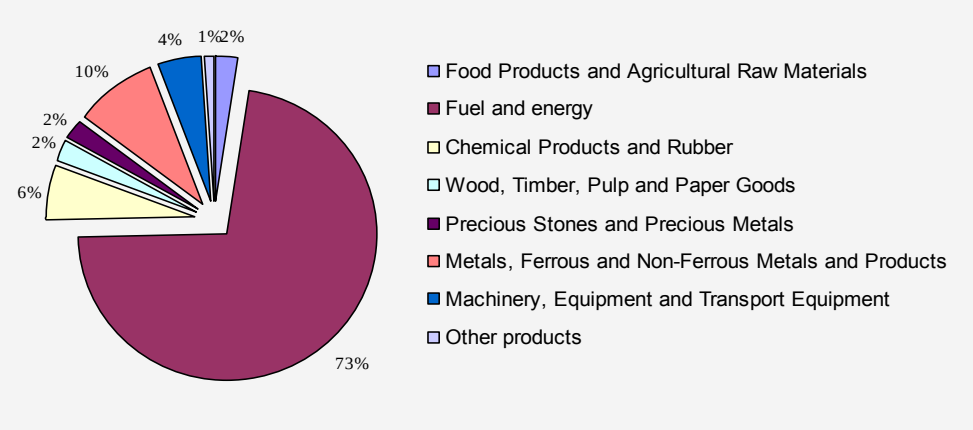
As it can be seen in the table 23, the share of Russian Federation in the global market of agricultural products is very small. During the whole analyzed period it was less than 1%. Nevertheless, it tends to increase and even faster than the share of Russia in the world agricultural imports.

On the import side, the share of Russian Federation in the world market is more significant and reaches nearly 3%.

The share of agriculture in Russian foreign trade

The product structure of Russian exports has a strong fuel and raw material orientation and reflects the low value of mechanical engineering, light industry, food and agricultural products.

Figure 16 - The Structure of Russian Export in 2011

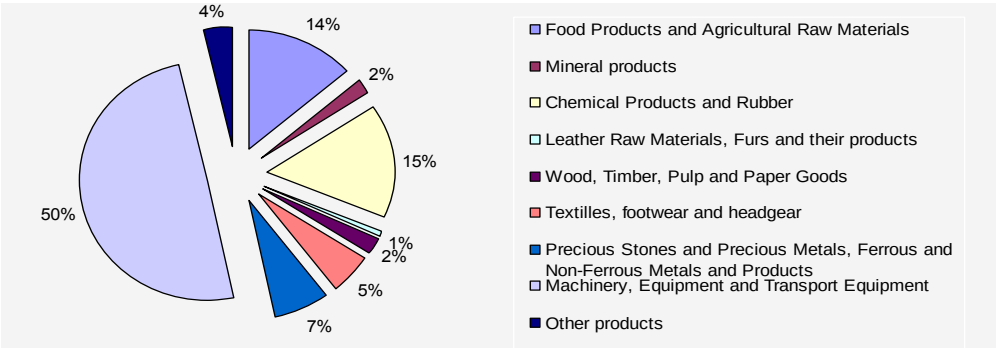


Source: Rosstat (2013)

The main exports of the Russian Federation are fuel and energy that is the crude oil, petroleum products and natural gas (their share in the exports of the country is about 76 %).

It is followed by Metals, Ferrous and Non-Ferrous Metals and Products (about 10%), Chemical Products and Rubber (over 6%), Machinery, Equipment and Transport Equipment (about 4%), food and agricultural products (2.4%), textiles and textile products (less than 1%), etc.

Figure 17 - The Structure of Russian Import in 2011



Source: Rosstat (2013)

The share of agricultural products in Russian import is more significant and amounts to 14%.

8.1 Product structure of Russian foreign trade in agricultural products and foodstuffs

Considering the product structure of Russia's foreign trade in agricultural and food aggregation, the most important product groups as well as key trends in this structure can be identified.

Table 24 - Product structure of Russian agricultural and food export by aggregations (% of total trade)

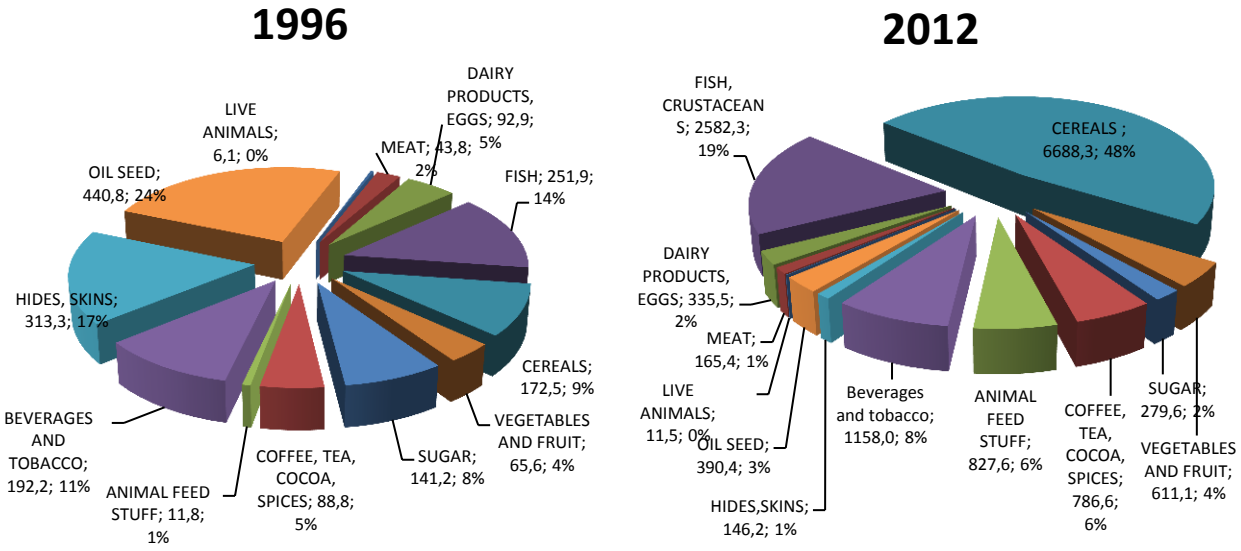
		1996	1998	2000	2002	2004	2006	2008	2010	2012	GM
01	Live animals	0.4	0.3	0.3	0.2	0.3	0.1	0.1	0.1	0.1	90.1
02	Meat and edible meat offal	1.8	1.1	0.3	0.1	0.1	0.1	0.2	0.4	0.4	90.4
03	Fish, aquatic invertebrates	12.1	29.2	24.8	17.6	13.2	10.9	5.6	28.5	15.0	101.3
04	Dairy products, eggs, honey	5.3	4.0	7.3	2.8	4.0	3.7	3.5	1.4	1.7	93.2
05	Products of animal origin, nes	0.3	0.2	0.8	0.3	0.4	0.4	0.3	0.3	0.3	100.6
06	Live trees, plants, bulbs, roots	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.8
07	Edible vegetables and tubers	1.4	1.1	1.5	1.3	2.1	1.4	0.9	0.8	2.0	102.2
08	Edible fruit, nuts, melons	1.1	2.5	2.8	1.5	3.6	2.1	0.8	0.3	0.6	96.7
09	Coffee, tea, mate and spices	1.2	1.0	0.6	0.3	1.2	1.2	1.2	1.0	0.8	97.5
10	Cereals	7.0	13.7	7.4	45.8	26.1	32.0	38.8	31.7	37.4	111.1
11	Milling products, malt	2.6	1.7	3.2	1.1	1.7	1.7	3.3	1.1	0.9	93.7
12	Oil seed, oleagic fruits, etc.	26.4	20.8	15.1	1.2	2.2	1.9	1.2	1.1	2.4	86.1
13	Lac, resins, vegetable extracts	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	97.2
14	Vegetable plaiting materials	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	157.8
15	Animal, vegetable fats, oils	2.7	2.7	6.6	2.6	5.3	9.8	11.1	9.0	13.5	110.6
16	Meat, fish and seafood prep	3.6	3.0	5.2	2.6	2.6	2.3	2.3	1.0	1.1	92.8
17	Sugars	8.4	3.8	4.9	3.6	3.2	2.6	1.6	1.3	1.7	90.4
18	Cocoa and cocoa preparations	3.3	3.2	3.9	3.5	5.8	4.5	4.1	3.4	3.3	100.0
19	Cereal, milk preparations	1.0	1.7	2.9	2.3	5.3	4.5	4.6	2.5	2.6	106.4
20	Vegetable, fruit, food prep.	1.4	0.8	0.8	0.7	1.4	1.5	1.2	0.6	1.0	98.3
21	Miscellaneous edible prep.	1.7	2.5	3.4	3.0	6.6	5.4	5.3	3.2	2.9	103.5
22	Beverages, spirits and vinegar	16.5	4.6	4.7	5.1	5.8	6.2	5.5	3.8	3.2	90.2
23	Residues, wastes of food	0.7	1.9	1.9	1.3	4.3	2.6	3.2	4.1	4.9	113.0
24	Tobacco and tobacco subst.	1.1	0.4	1.5	3.1	4.9	5.0	5.1	4.4	4.0	108.6

Sources: UN Commodity Trade Statistics Database. author's calculations (2013)

During the analyzed period, there were significant changes in the structure of Russian exports.

For example, the share of "Beverages, spirits and vinegar" significantly decreased (from 16.5% to 3.2%). There was also observed a reduction of the share of such product groups as "Oil seed, oleagic fruits, grain, seed, fruit" (from 26.4% to 2.4%), "Dairy products, eggs, honey, edible animal product nes" (from 5.3 to 1.7%), "Meat, fish and seafood food preparations" (from 3.6% to 1%) and "Sugars and sugar confectionery" (from 8.4 to 1.7%).

Figure 18 - Product structure of the Russian agricultural export (%)



Sources: UN Commodity Trade Statistics Database. author's calculations (2013)

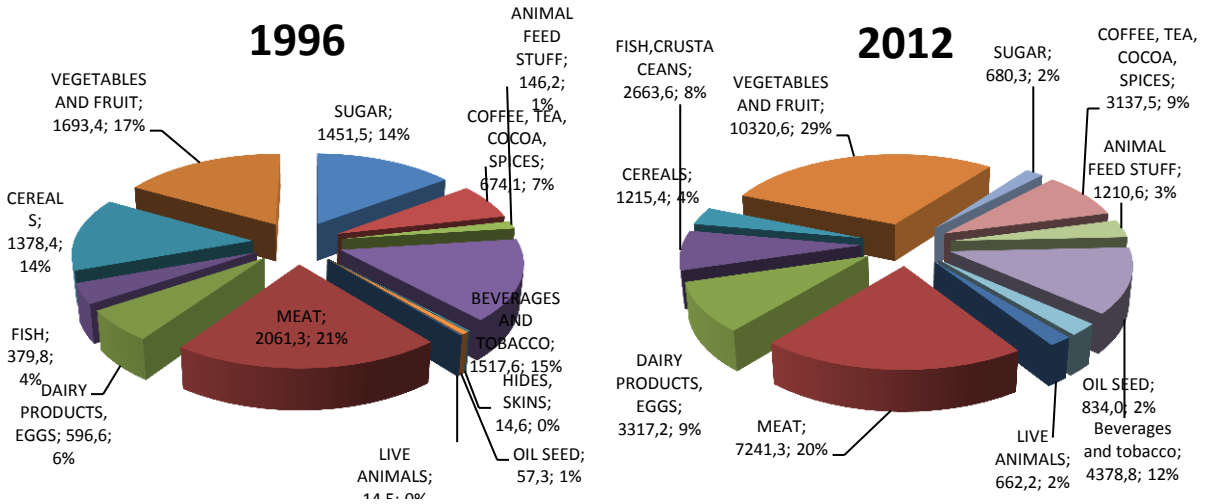
On the other hand, there was observed significantly increase in exports of Cereals from 7 to 34.7%, and "Animal, vegetable fats and oils, cleavage products, etc." (due to the increase in the exports of sunflower and rapeseed oil).

Table 25 - Product structure of Russian agricultural and food import by aggregations (% of total trade)

		1996	1998	2000	2002	2004	2006	2008	2010	2012	GM
01	Live animals	0.1	0.1	0.2	0.3	0.4	1.2	1.3	1.0	1.6	117.1
02	Meat and edible meat offal	15.3	18.5	14.5	23.5	17.5	22.1	21.6	17.3	18.2	101.1
03	Fish, aquatic invertebrates	2.5	1.7	1.8	3.2	5.0	5.9	6.1	6.0	5.9	105.6
04	Dairy products, eggs, honey	4.8	4.4	3.5	4.3	5.9	4.5	4.7	6.2	8.1	103.3
05	Products of animal origin, nes	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.4	0.3	101.6
06	Live trees, plants, bulbs, roots	0.3	0.5	0.6	1.0	1.4	1.8	2.3	2.3	2.4	113.2
07	Edible vegetables and tubers	3.0	3.3	4.5	2.6	3.6	4.6	5.3	6.6	6.1	104.5
08	Edible fruit, nuts, melons	8.2	7.0	9.2	8.3	12.2	14.6	13.4	16.3	15.5	104.1
09	Coffee, tea, mate and spices	2.3	3.3	3.9	2.8	2.8	2.5	2.4	2.9	3.1	101.8
10	Cereals	6.4	2.4	7.9	1.7	3.6	1.8	1.4	0.6	1.2	90.0
11	Milling products, malt	3.1	1.6	2.4	1.9	1.7	0.5	0.5	0.3	0.4	88.4
12	Oil seed, oleagic fruits, etc.	0.9	0.9	1.3	1.1	1.3	1.4	2.6	3.0	2.7	106.9
13	Lac, resins, vegetable extracts	0.2	0.2	0.3	0.4	0.3	0.3	0.4	0.4	0.4	105.6
14	Vegetable plaiting materials	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	86.5
15	Animal, vegetable fats, oils	4.0	5.0	5.6	6.2	4.3	3.2	4.9	4.0	3.2	98.6
16	Meat, fish and seafood prep	4.4	2.8	1.3	1.4	1.1	1.1	1.1	0.9	1.6	93.8
17	Sugars	13.0	13.0	12.8	10.1	5.7	6.3	3.7	4.5	1.6	87.8
18	Cocoa and cocoa preparations	3.0	2.4	2.8	4.1	3.9	3.0	3.2	3.8	3.4	101.0
19	Cereal, milk preparations	3.9	2.9	1.2	1.3	1.7	1.5	1.8	1.9	2.5	97.2
20	Vegetable, fruit, food prep.	4.1	3.7	3.4	4.4	4.7	4.8	4.4	4.1	3.8	99.5
21	Miscellaneous edible prep.	4.4	5.1	3.9	4.5	5.0	4.1	4.1	4.4	4.0	99.4
22	Beverages, spirits and vinegar	9.0	7.6	5.8	6.4	8.8	7.4	7.8	6.7	7.6	99.0
23	Residues, wastes of food	1.3	1.7	2.1	2.7	2.9	2.7	3.3	2.8	3.0	105.3
24	Tobacco and tobacco subst.	5.5	11.6	10.4	7.7	5.9	4.4	3.6	3.6	3.2	96.7

Sources: UN Commodity Trade Statistics Database. author's calculations (2013)

Figure 19 - Product structure of the Russian agricultural import (%)



Sources: UN Commodity Trade Statistics Database. author's calculations (2013)

Considering the commodity structure of Russian imports of the following trends can be identified. There was decrease in the share of sugar, cereals and milling products in favor of increasing in the shares of dairy products, meat and edible meat offal as well as edible fruits and vegetables.

Table 26 –Balance of Russian agricultural foreign trade by aggregations (millions USD)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	-8.4	-10.9	-6.8	-20.9	-39.8	-245.3	-440.0	-314.7	-650.9
02	Meat and edible meat offal	-1672.6	-1882.2	-1011.2	-2307.8	-2246.1	-4494.5	-7177.7	-5804.4	-7326.1
03	Fish, aquatic invertebrates	-68.9	**166.8**	**193.6**	**71.0**	-316.4	-677.2	-1558.0	**144.1**	**132.7**
04	Dairy products, eggs, honey	-443.2	-407.7	-149.8	-365.0	-658.2	-741.5	-1268.1	-1965.7	-2980.4
05	Products of animal origin, nes	-20.4	-14.0	-10.6	-14.1	-18.2	-27.7	-35.5	-112.6	-68.8
06	Live trees, plants, bulbs, roots	-36.9	-50.7	-41.7	-94.1	-184.5	-363.5	-752.8	-757.4	-986.6
07	Edible vegetables and tubers	-312.8	-330.5	-293.8	-227.3	-414.7	-866.0	-1682.1	-2160.8	-2145.7
08	Edible fruit, nuts, melons	-891.3	-689.3	-608.3	-781.8	-1477.6	-2869.0	-4396.2	-5449.4	-6173.2
09	Coffee, tea, mate and spices	-235.8	-325.6	-267.1	-272.6	-331.8	-447.7	-696.1	-884.7	-1111.6
10	Cereals	-595.1	-86.3	-455.1	**831.6**	**185.8**	**1176.4**	**2786.9**	**2179.1**	**5767.3**
11	Milling products, malt	-303.2	-143.2	-123.3	-167.7	-169.6	-26.9	**108.4**	-24.5	-19.5
12	Oil seed, oleagic fruits, etc.	**341.4**	**157.3**	**103.3**	-79.3	-114.1	-185.1	-773.4	-919.3	-710.3
13	Lac, resins, vegetable extracts	-17.4	-17.7	-22.8	-39.9	-41.0	-57.3	-129.3	-133.8	-154.1
14	Vegetable plaiting materials	-9.0	-1.8	-3.7	-2.6	-4.0	**0.5**	**4.2**	**3.4**	**9.7**
15	Animal, vegetable fats, oils	-402.7	-478.9	-308.1	-548.7	-414.1	-182.0	-689.0	-678.6	**946.7**
16	Meat, fish and seafood prep	-424.2	-252.8	-23.9	-77.3	-79.3	-105.8	-169.3	-241.6	-452.6
17	Sugars	-1306.6	-1289.1	-831.8	-918.8	-648.2	-1154.4	-1091.4	-1408.0	-382.7
18	Cocoa and cocoa preparations	-273.1	-208.4	-146.5	-330.6	-357.4	-390.9	-735.2	-1024.4	-835.9
19	Cereal, milk preparations	-419.8	-276.8	-47.9	-75.8	-81.7	-90.5	-220.8	-460.9	-566.7
20	Vegetable, fruit, food prep.	-436.3	-371.5	-228.8	-417.8	-563.1	-911.0	-1358.1	-1332.0	-1381.1
21	Miscellaneous edible prep.	-466.4	-497.0	-225.5	-374.7	-476.8	-584.3	-928.6	-1240.2	-1151.4
22	Beverages, spirits and vinegar	-723.3	-730.0	-345.1	-516.0	-988.8	-1210.0	-2150.1	-1952.0	-2563.8
23	Residues, wastes of food	-134.3	-156.2	-121.0	-236.4	-265.8	-428.1	-836.6	-643.9	-384.3
24	Tobacco and tobacco subst.	-590.8	-1182.1	-704.5	-688.0	-636.2	-656.2	-769.0	-875.0	-621.2

Sources: UN Commodity Trade Statistics Database. author's calculations (2013)

From the table 26 we can see that in most product groups there was a negative balance of trade. In the beginning of the period, positive trade balance was observed in the group “Oil seed, oleagic fruits, grain, seed, fruit, etc.”, however, due to decrease in exports of sunflower seeds, since 2002 it has become negative.

Since 2002 until today, the export of grain was significantly higher than imports. Furthermore, during the analyzed period, trade surplus was observed in the group of “Fish, crustaceans, molluscs, aquatic invertebrates nes”

Let us consider further the most important of the products making a basis of Russia's foreign trade in agricultural products and foodstuffs.

The most important agricultural trade items

Considering the commodity structure of Russian agri-food trade, the list of top ten most important agricultural products consists of the following items (Tab. 27).

Table 27 - Top export and import commodities of Russian Federation in 2010

	Export			Import		
Rank	Commodity	Value (1000 $)	share in total agricultural export (%)	Commodity	Value (1000 $)	share in total agricultural export (%)
1	Wheat	2069121	35.4	Pork	1924941	6.1
2	Sunflower oil	379106	6.5	Meat-Cattle Boneless	1620276	5.1
3	Food Prep	306094	5.2	Cheese of Cow Milk	1256247	4.0
4	Chocolate Prsnes	288454	4.9	Sugar Raw	1158735	3.6
5	Cigarettes	278133	4.8	Tobacco	1032564	3.2
6	Barley	197095	3.4	Food Prep Nes	968251	3.0
7	Beverages Alc.	159172	2.7	Beverages Alc.	957442	3.0
8	Soybean oil	144653	2.5	Wine	822924	2.6
9	Pastry	132807	2.3	Chicken meat	779840	2.5
10	Sunflower Cake	111534	1.9	Tomatoes	773582	2.4

Source: FAOSTAT (2012)

In the early 2000s, Russia became one of the major suppliers of wheat in the world market: it was the third after the US and the EU in exports of wheat. Wheat has become the basic item of Russian agri-food export leaving behind even such traditional items as fish, sea products and alcoholic beverages.

A major reason explaining why Russia has become a grain exporter is the reduction in the livestock sector during transition period that substantially reduced domestic demand for feed grain (Liefert, 2009). Therefore, Russia exports mainly feed wheat, while imports high quality wheat and seeds.

Let us consider trends in the value and quantity of the most important segments of Russian exports and imports of agricultural products.

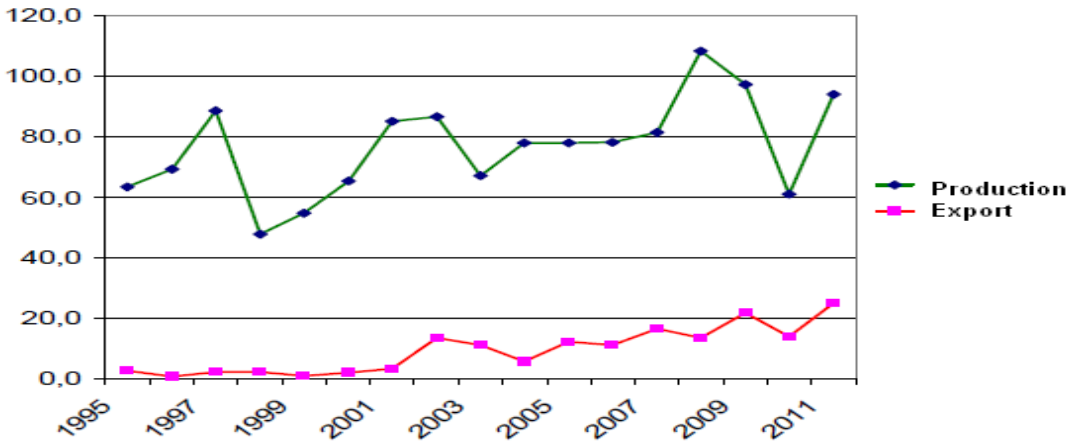
Table 28 - Quantity of the most important agricultural commodities exported by Russian Federation (million USD)

Item	1998	2000	2002	2004	2005	2006	2007	2008	2009	2010	2011	GM
Wheat	1524	419	10259	4672	10319	9705	14444	11720	16821	11848	15186	119.3
Sunflower oil	35	195	74	145	314	685	614	490	724	398	493	122.7
Food Prep Nes	10	28	53	103	137	168	197	208	198	171	144	123.1
Chocolate Prsn.	13	26	35	54	69	69	81	87	79	79	81	114.8
Cigarettes	0.3	0.5	2.6	6.9	12.5	15.6	16.5	17.8	19.7	18.3	21.3	138.8
Barley	347	539	3026	955	1767	1268	1873	1496	3490	1542	2067	114.7
Bever. Dist.Alc	20	26	53	44	59	78	94	102	93	96	103	113.5
Soybean oil	0.3	1.3	3.3	0.5	0.0	1.2	5.2	40.4	161.9	173.5	129	149.0
Pastry	11	34	29	53	63	73	87	91	79	61	85	117.3
Sunflower Cake	7	191	106	485	634	832	904	608	1099	640	734	143.2

Source: FAOSTAT (2013)

As can be seen in the table 28, over the past decade the export of wheat increased significantly. In the post-crisis period there was a sharp decline in export quantity of wheat, from 1523.7 thousand tonnes in 1998 to 419 thousand tones in 2000, but then this decline was followed by the rapid growth of exports. In 2011 export quantity of wheat amounted to 15186 thousand tonnes.

Figure 20 - Production and export of grain in Russia, 1995-2011, million tons



Source: FAOSTAT (2013)

In 2007-2009, increase in production and export of wheat from Russia was observed. This was due to higher yields of wheat, favorable weather conditions, and a more active use of fertilizers and other methods to increase the efficiency of land use. However, in 2010, a severe drought has broken the positive dynamics of grain exports.

A ban on the export of grain from 15 August 2010 to 30 June 2011 has led to a sharp decline in exports.

Since then, Russia holds its position in this market. According to the Food and Agriculture Organization, in 2010, the value of wheat exported by Russian Federation was $2.069 billion that is 35.4% of total exports of the country and a fifth position in the world export of wheat (Gaidar, 2011).

In the structure of foreign trade there is another favorable trend. The share of oilseeds in the export structure fell while that of sunflower oil increased. In 2010, Russia was the fifth largest exporter of sunflower oil, with the value of export amounted to $ 379 million. This trend (originated in 2000s) was conditioned by the expansion of processing facilities and increase in the domestic output of vegetable oils. As a result, in 2005, Russia became a net exporter of sunflower oil while preserving its status of net exporter of sunflower seeds. (Gaidar, 2011)

On the import side there is a following situation.

Table 29 - Quantity of the most important agricultural commodities imported by Russian Federation (in 1000 MT)

Item	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	GM
Meat Cattle	198	105	245	360	399	327	437	401	409	586	459	468	425	106.1
Pork	428	213	370	602	535	455	563	626	672	791	650	642	482	100.9
Cheese	62	36	112	129	178	198	244	202	217	230	215	277	272	112.1
Sugar Raw	3674	4547	5410	4441	4112	2583	2893	2629	3410	2418	1252	2086	2331	96.6
Tobacco	201	276	300	296	281	273	292	272	310	305	256	242	238	101.3
Food Prep Nes	434	255	283	311	538	342	325	316	324	315	249	281	291	97.0
Bever. Dist.Alc	51	38	46	65	105	169	282	220	269	261	196	248	260	113.3
Wine	291	162	257	298	416	505	623	370	400	418	472	693	678	106.7
Chicken meat	617	580	1219	1206	1074	999	1204	1178	1204	1139	912	603	384	96.4
Tomatoes	203	101	134	176	208	291	352	414	551	674	694	699	730	110.4

Source: FAOSTAT (2013)

During the entire post-Soviet period, Russia was among the top ten largest importers of pork, among the ten largest importers of beef and veal (with the exception of 1999 and 2000 when it was ranked 11th and 15th, respectively) and in the top twenty of the largest importers of chicken meat (Gaidar, 2011).

Growth of household income inevitably leads to an increase in the consumption of food, particularly meat. However, the increase in the production (construction of new farms, increase in the number of livestock) did not keep pace with the growing demand. Therefore, there is an imbalance in the food market, so the import of meat to Russia was growing.

The quantity of imported meat is affected by crop yields, which determines the cost of feed, tariff quota rates and other factors. For example, in 2000, import of cattle meat declined due to ban on beef from the main supplier countries because of bovine spongiform encephalopathy (mad cow disease) epidemic.

In the last two decades, Russia was among the five largest importers of raw sugar (in 1997—2004, 2006 and 2007 — the first in the world). However, in recent years, Russia switched from white sugar imports, to mainly imports of raw sugar for refining by domestic mills (OECD-FAO). According to OECD forecast, rapid growth in domestic sugar beet production in Russia, stimulated by higher prices and tariff protection, is expected to lead to further growth in sugar production and export.

8.2 Territorial structure of Russian foreign trade

Briefly describing the territorial structure of international trade in agricultural products and foodstuffs (Tab. 30), the following can be said.

Table 30 – Russian agricultural exports by geographic regions, million USD

	1996	**1998**	**2000**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
World	1688	1187	1301	2177	2690	2479	3881	4849	8257	8390	9281	7562	11337	16705
North America	76	54	24	28	31	33	36	44	74	64	60	75	67	66
CIS	485	317	418	546	944	1065	1573	2006	2899	3496	2895	1765	2335	4504
EU	433	223	243	467	348	304	409	601	831	910	714	781	1328	1725
Asia	429	448	462	680	905	633	1049	1384	2351	2498	3986	3448	4701	6902
South America	5	1	0	3	12	0	0	1	3	22	32	9	47	51
Africa	7	10	42	298	195	254	558	492	1662	1007	1232	1122	2099	2541
Others	253	135	112	156	255	189	256	321	438	393	362	363	760	916

Source: Comtrade database, author's calculations (2013)

As can be seen in the table 30, at the end of 90s, most of Russian agricultural exports went to EU, Asian and CIS countries (in approximately equal proportions). However, by 2010, Asian countries had become the largest partner of Russia in terms of exports. They are followed by CIS and African countries.

However it should be noted that absolute value of export flows to EU was increasing during the whole period (in USD, in current prices). Its share declined due to the growth of exports to other regions.

Table 31 - Territorial structure of the Russian agricultural export, %

	1996	**1998**	**2000**	**2002**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
CIS	28.7	26.7	32.1	25.1	43.0	40.5	41.4	35.1	41.7	31.2	23.3	20.6	27.0
EU	25.6	18.8	18.7	21.4	12.3	10.5	12.4	10.1	10.8	7.7	10.3	11.7	10.3
Asia	25.4	37.7	35.5	31.2	25.5	27.0	28.6	28.5	29.8	42.9	45.6	41.5	41.3
South America	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.3	0.1	0.4	0.3
North America	4.5	4.5	1.9	1.3	1.3	0.9	0.9	0.9	0.8	0.6	1.0	0.6	0.4
Africa	0.4	0.8	3.3	13.7	10.2	14.4	10.1	20.1	12.0	13.3	14.8	18.5	15.2
Others	15.0	11.4	8.6	7.2	7.6	6.6	6.6	5.3	4.7	3.9	4.8	6.7	5.5
World	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Comtrade database, author's calculations (2013)

In the last years the largest importers of Russian agricultural products and foodstuffs are Asian and CIS countries.

The share of export to Africa in the total export value has increased extremely from 0.4% in 1996 to 15.2% in 2012. This was due to the growth of exports of wheat and barley. Among the major Russia's trading partners on the African continent are Egypt, Turkey, Morocco and Tunisia.

In 2010, Egypt and Turkey accounted for 41.5% and 11.6% of Russian exports of wheat respectively. Large supplies of barley are delivered to Saudi Arabia, Libya and Iran. (ICTSD, 2012)

CIS countries are important trading partners of Russia in terms of both exports and imports. Economic relations between Russia and these countries evolved over time of USSR. These facts, as well as their geographical location determine their significant share in Russian foreign trade.

Table 32 – Changes in export value of agricultural products: the chain index (at current prices)

	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**GM**
CIS	86	79	167	114	114	173	113	148	127	144	121	83	61	132	193	115
EU	77	55	198	96	201	75	87	134	147	138	110	78	109	170	130	109
Asia	104	61	170	112	132	133	70	166	132	170	106	160	87	136	147	119
South America	26	67	23	647	201	440	3	136	309	176	849	147	28	518	110	116
North America	94	77	59	143	80	111	106	110	122	170	86	94	125	90	98	99
Africa	122	45	968	137	513	65	130	220	88	338	61	122	91	187	121	145
Others	54	54	154	125	112	163	74	136	125	137	90	92	100	210	121	108
Russian food export	84	64	170	112	149	124	92	157	125	170	102	111	81	150	147	115
World food export	104	95	99	101	107	119	116	108	110	121	122	89	113	125	113	108

Source: Comtrade database, author's calculations (2013)

As can be seen from the above table, there was a significant decline in the value of agricultural exports after the financial crisis of 1998 in relation to all regions. However, after crisis it started to rise in large part due to the increase in prices for agricultural products and foodstuffs.

During the analyzed period, the largest increase in the value of Russian agricultural export was observed in relation to African countries, the lowest - in relation to North American countries.

During the analyzed period, there are noticeable fluctuations of export values due to several factors, primarily due to oscillations of crop yields, as well as government policies related to export support or export restriction.

If we compare the growth rate of Russian agricultural exports with the world growth, we can see that average growth of the world agricultural export is only 8% and two times lower than in Russia.

Next we consider agricultural imports of the Russian Federation by regions.

Table 33 – Russian agricultural imports by geographic regions, million USD

	1996	1998	2000	2002	2004	2005	2006	2007	2008	2009	2010	2011	2012
World	11139	10266	6982	9832	12820	16298	20387	26156	33348	28355	33620	39210	40516
CIS	3380	1620	1669	1221	2463	2742	2309	2855	3587	2844	3407	3281	5097
EU	2923	2919	1841	2919	3480	4063	5692	7511	9264	7622	10040	12013	11674
Asia	1263	1280	855	1389	1714	2345	3124	4129	5494	4811	5868	7137	6751
South America	379	882	683	1729	2142	3523	4763	6029	7179	6233	6803	7505	6928
North America	1193	1289	771	800	803	980	1326	1693	2686	2124	1770	2296	2950
Africa	162	205	209	388	476	577	742	1024	1240	1197	1383	1739	1603
Others	1840	2072	955	1386	1742	2068	2430	2913	3897	3523	4349	5238	5511

Source: Comtrade database, author's calculations (2013)

The largest supplier of food to Russia is the European Union. The country's largest trading partner in the EU is Germany (18% of the total agricultural exports from EU in 2010). Germany supplies Russia with meat and meat products (pork, cattle meat, chicken meat, fat of pigs, offals), cheese of whole cow milk and other products.

In Africa major trading partners of Russian Federation in terms of imports are Morocco and Egypt. They account for about 54% of total trade with this region.

The main supplier of food to Russia from the Americas is Brazil. According to the FAO, in 2010 it accounted for over 85% of Russia's imports of raw sugar, almost 45% of Russia's imports of beef and almost 40% of all Russian imports of pork. Uruguay, Paraguay and Argentina are also large suppliers of meat of bovine animals. (ICTSD, 2012)

Table 34 - Territorial structure of the Russian agricultural import, %

	1996	1998	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
North America	10.7	12.6	11.0	8.1	6.4	6.3	6.0	6.5	6.5	8.1	7.5	5.3	5.9	7.3
CIS	30.3	15.8	23.9	12.4	16.4	19.2	16.8	11.3	10.9	10.8	10.0	10.1	8.4	12.6
EU	26.2	28.4	26.4	29.7	27.5	27.1	24.9	27.9	28.7	27.8	26.9	29.9	30.6	28.8
Asia	11.3	12.5	12.2	14.1	14.0	13.4	14.4	15.3	15.8	16.5	17.0	17.5	18.2	16.7
South America	3.4	8.6	9.8	17.6	17.7	16.7	21.6	23.4	23.1	21.5	22.0	20.2	19.1	17.1
Africa	1.5	2.0	3.0	3.9	3.9	3.7	3.5	3.6	3.9	3.7	4.2	4.1	4.4	4.0
Others	16.5	20.2	13.7	14.1	14.0	13.6	12.7	11.9	11.1	11.7	12.4	12.9	13.4	13.6
World	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Comtrade database, author's calculations (2013)

During the analyzed period there were no significant changes in the structure of Russian agricultural import. Agricultural and food imports from EU are still more than a third of total imports.

The share of Asia countries in the total Russian agri-food import is slowly increasing. Vietnam, Thailand, Pakistan and China are the main Asian suppliers of Russia's market.

Table 35 – Changes in import value of agricultural products: the chain index (at current prices)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	GM
N.America	66	90	133	78	90	111	122	135	127	158	79	83	129	128	105
CIS	83	123	88	82	152	132	111	84	123	125	79	119	96	155	102
EU	74	85	130	121	106	111	116	140	132	123	82	131	119	97	109
Asia	75	88	112	144	114	108	136	133	132	133	87	121	121	94	111
S. America	110	69	183	138	115	106	164	135	126	119	86	109	110	92	119
Africa	85	118	133	139	114	107	121	128	138	121	96	115	125	92	115
Others	57	80	140	103	114	109	118	117	119	133	90	123	120	105	107
Total Russia	74	91	125	112	115	113	127	125	128	127	85	118	116	103	108
Total world	97	98	102	105	119	116	106	111	121	122	88	112	110	99	108

Source: Comtrade database, FAO, author's calculations (2012)

As can be seen from the above table, after the financial crisis of 1998, there was a significant decline in the value of agricultural import as well as agricultural exports in relation to all regions except Asian countries.

During the analyzed period, the largest increase in the value of Russian agricultural import was observed in relation to African countries (just as in the case of export), the lowest - in relation to CIS countries.

During the analyzed period, there are also some fluctuations of import values due to government policies, tariff and quota rates, import restrictions for sanitary reasons and other factors. Average growth of the Russia's agricultural import was the same as the world agricultural imports growth rate (about 8%). During the period 1999-2012, the average export growth was higher than average import growth.

For further analysis, we selected six countries making the largest segment in the Russian international trade in agricultural products and foodstuffs in recent years (one country from each region). In 2012, the share of each of these countries is not less than 4% of the total value of Russian trade flows in agricultural products. Information about Russia's foreign trade with all countries can be found in the Appendix 3.

Table 36 - The share of individual countries in the total value of Russia's agricultural and food exports, %

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	GM1*	GM2**
World	100	100	100	100	100	100	100	100	100	100	100	115.4
Brazil	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	93.3	107.7
China	2.3	5.1	5.7	3.5	4.6	4.3	1.6	12.6	8.5	6.1	106.2	122.6
Germany	5.9	3.8	3.9	2.9	2.7	2.2	2.0	1.6	1.2	1.1	90.3	104.2
Ukraine	3.3	4.0	6.9	8.0	11.0	10.1	9.2	7.6	6.2	4.3	101.8	117.5
Egypt	0.0	0.2	1.2	5.5	5.4	7.3	8.5	11.8	12.0	10.8	181.3	209.2
USA	4.4	4.4	1.7	1.2	1.2	0.8	0.7	0.9	0.5	0.3	85.3	98.4
Total for 6 countries	16.1	17.6	19.4	21.1	24.9	24.7	22	34.6	28.4	22.7	102.2	118.0

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)
Note: * GM1 is the geometric mean of chain indices which represents changes in the share of the country's total trade flows (% of total agricultural trade)
** GM1 is the geometric mean of chain indices calculated for the absolute export values in current prices (in USD)

As we can see in the table 36, significant changes were observed in the structure of trade in agricultural products and foodstuffs between Russia and most important trading partners.

During the analyzed period, there was a decline in the share of Germany in Russian exports from 5.9% to 1.1%, as well as the USA from 4.4% to 0.3%. The absolute value of exports to Germany still increased (by an average of 4% per year), whereas exports to the U.S. declined by an average of 2% per year.

The largest increase in exports was detected in relation to Egypt. At the beginning of the period, its share was very small, less than one percent. Then, the rapid growth began, and the value of exports from Russia to Egypt was doubling every year. By 2012, exports to Egypt reached 10.8% of Russia's agricultural exports.

Table 37 - The share of individual countries in the total value of Russia's agricultural and food imports (%)

	1996	1998	2000	2002	2004	2006	2008	2010	2011	2012	GM1	GM2
World	100	100	100	100	100	100	100	100	100	100	100	108.4
Brazil	1.5	5.6	5.3	12.7	9.7	13.0	12.2	11.4	10.2	6.9	109.9	119.2
China	3.8	3.5	2.1	3.6	3.4	3.9	4.1	4.0	4.4	3.9	100.2	108.7
Germany	6.0	7.1	6.2	7.1	6.0	5.7	5.7	6.4	6.0	5.4	99.3	107.6
Ukraine	16.3	5.0	9.0	6.4	9.0	4.5	5.8	5.9	5.4	5.2	93.1	100.9
Egypt	0.1	0.1	0.0	0.2	0.4	0.4	0.5	0.7	1.1	0.6	112.7	122.1
USA	9.9	11.7	10.6	7.6	5.8	5.3	6.5	4.1	4.3	5.2	96.1	104.1
Total for 6 countries	37.6	33.0	33.2	37.6	34.3	32.8	34.8	32.5	31.4	27.2	98.0	106.2

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Note: * GM1 is the geometric mean of chain indices which represents changes in the share of the country's total trade flows (% of total agricultural trade)
** GM1 is the geometric mean of chain indices calculated for the absolute export values in current prices (in USD)

Considering the same set of countries in terms of import, the following trends were identified. The share of Brazil in the structure of Russian imports increased from 1.5% in 1996 to 13% in 2006, and then fell to 6.9%. In this case, the average increase in the value of imports was 19% per year. The share of Ukraine in Russian imports declined sharply in the late 90s, from 16.3% to 5%. Then, it ranged between 5 and 10% of the total trade of agricultural products and foodstuffs. The share of USA has also declined despite the fact that its absolute value was growing annually by an average of 4%.

Table 38 – Balance of trade between Russia and important countries (millions USD)

	1996	1998	2000	2002	2004	2006	2008	2010	2012	GM
World	-9451	-9079	-5680	-7654	-10342	-15538	-24958	-26057	-23811	105,9
Brazil	-166	-575	-370	-1248	-1248	-2652	-4067	-3835	-2802	119,3
China	-383	-299	-75	-275	-328	-582	-1215	-383	-573	102,5
Germany	-572	-685	-380	-639	-708	-1054	-1744	-2028	-1981	108,1
Ukraine	-1766	-469	-537	-450	-884	-427	-1171	-1403	-1372	98,4
Egypt	-11	-6	14	102	78	265	543	661	1542	x*
USA	-1033	-1151	-716	-717	-714	-1038	-2121	-1299	-2061	104,4

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)
* Note: in this case it is impossible to calculate the geometric mean of chain indices because the time series comprise simultaneously positive and negative values.

As we can see from the table, over the whole period, for the all countries except Egypt the absolute value of the trade balance was negative. An increase in the negative balance of trade was observed with respect to Brazil (on average 19.3% per year), China (2.5% per year) and Germany (8.1%). In relation to Ukraine on the contrary, the negative trade balance had a tendency to some reduction.

The negative trade balance in relations between Egypt and Russia was observed until 1999. But since 1999, export of agricultural products to Egypt began to grow rapidly. Today, Russian trade in food and agricultural products with Egypt is characterized by a positive trade balance.

Table 39 – Normalized balance of trade between Russia and important countries (%)

	1996	1998	2000	2002	2004	2006	2008	2010	2012	GM
World	-73.68	-79.27	-68.58	-63.74	-67.60	-61.57	-59.80	-63.27	-41.61	96.5
Brazil	-95.62	-99.55	-99.97	-99.93	-99.99	-99.93	-99.98	-99.67	-99.12	100.2
China	-82.91	-71.10	-33.73	-64.34	-59.20	-58.08	-81.47	-16.77	-21.82	92.0
Germany	-74.30	-88.36	-78.77	-83.50	-84.13	-83.10	-83.84	-89.08	-83.81	100.8
Ukraine	-94.12	-83.08	-74.92	-56.27	-61.77	-30.46	-43.02	-55.04	-48.57	95.9
Egypt	-99.75	-54.74	85.02	74.70	41.75	59.19	61.13	58.78	74.55	x*
USA	-87.49	-91.60	-94.19	-93.22	-92.32	-92.77	-95.06	-90.43	-94.74	100.5

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)
* Note: in this case it is impossible to calculate the geometric mean of chain indices because the time series comprise simultaneously positive and negative values.

Considering the normalized trade balance (that is the ratio of the trade balance to the total trade), we can see that in relation to China and Ukraine it declined. With respect to Egypt, the

situation has completely changed. In the beginning of the period negative trade balance amounted to 99.75% of the total trade, but today Russia has positive trade balance which amounts 74.55% of the total trade flows in agricultural products and foodstuffs between Russia and Egypt.

In relation to Brazil, Germany and USA there is an opposite situation. There was an increase the values of the normalized trade balance, which indicates an increase in the share of imports in trade between these countries and Russia.

We have chosen Germany, USA, Ukraine, Brazil, Egypt and China as Russia's most important partners in the international trade in agricultural products and foodstuffs. Let us consider all these countries individually in term of the product structure of trade.

Brazil

Brazil is a one of the major suppliers of agricultural products to the world market. Brazilian exports of agricultural products in third place in the world. Its share in world agricultural exports is about 6%. Exports of agricultural products account for nearly one third of total Brazil's exports. Agricultural output is more than 90% of Brazilian exports to Russia.

Table 40 – Product structure of Russian agricultural and food exports to Brazil (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02	Meat and edible meat offal	0.0	0.0	0.0	0.0	0.0	0.0	16.4	0.0	0.0
03	Fish, crustaceans, molluscs	0.0	0.0	0.0	0.0	0.0	88.0	0.0	0.0	0.0
07	Edible vegetables, roots and tubers	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0
10	Cereals	0.0	0.0	0.0	83.6	0.0	0.0	0.0	85.5	0.0
11	Milling products, malt, starches	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
22	Beverages, spirits and vinegar	99.0	96.5	100.0	6.5	34.1	10.6	26.6	10.8	0.5
23	Residues, wastes of food industry	1.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Tobacco and tobacco substitutes	0.0	0.0	0.0	5.9	65.9	1.4	57.0	3.7	0.3

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Brazil is more important partner of Russia in terms of imports than exports. Russian exports to this country are relatively small, and consists mainly of "Beverages, spirits and vinegar" (in 1996-2000 amounted almost 100% of total exports), "Tobacco and manufactured tobacco substitutes" (65.9% and 57% of total exports to Brazil in 2004 and 2008 respectively). Also, in some years, there were exports of cereals and fish.

Table 41 – Product structure of Russian agricultural and food imports from Brazil (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
02	Meat and edible meat offal	1.4	1.5	6.0	52.1	56.1	51.1	72.0	69.2	59.4
04	Dairy products, eggs, honey	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
05	Products of animal origin, nes	0.0	0.0	0.0	0.1	0.3	0.3	0.3	1.9	1.5
08	Edible fruit, nuts, peel of citrus fruit, melons	1.6	0.6	0.5	0.2	0.5	0.3	0.7	0.8	0.7
09	Coffee, tea, mate and spices	2.5	0.1	0.5	0.2	0.3	0.7	1.3	3.2	3.7
10	Cereals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11	Milling products, malt, starches, inulin	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
12	Oil seed, oleagic fruits, grain, seed, fruit, etc.	1.4	0.0	0.0	0.9	0.0	0.2	7.5	7.2	4.0
15	Animal, vegetable fats and oils	0.0	0.0	0.0	1.3	0.6	0.0	1.0	0.0	0.0
16	Meat, fish and seafood food preparations nes	0.1	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0
17	Sugars and sugar confectionery	73.9	74.1	75.7	30.9	26.9	35.6	0.0	0.0	7.9
18	Cocoa and cocoa preparations	2.2	0.3	0.5	0.1	0.0	0.0	0.0	0.0	0.0
19	Cereal, flour, starch, milk preparations	0.5	0.0	0.0	0.0	0.1	0.1	0.3	0.2	0.0
20	Vegetable, fruit, nut, food prep.	1.8	0.8	0.6	2.9	2.6	1.9	2.2	2.9	2.6
21	Miscellaneous edible prep.	13.0	4.0	1.7	2.3	3.4	1.6	1.7	2.2	2.9
22	Beverages, spirits and vinegar	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1
23	Residues, wastes of food industry	1.1	0.6	0.0	0.5	0.5	0.7	3.0	0.9	3.0
24	Tobacco and tobacco substitutes	0.2	17.8	14.3	8.6	8.4	7.2	9.8	11.2	14.0

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

The product structure of Brazilian imports to Russia has changed significantly. The main trends were the growth in the share of meat and the decline of sugar. In 2002, there was a sharp jump in imports of meat. Since then, despite the import restrictions for sanitary reasons, it accounts for over 50% of total agricultural imports.

The share of sugar in agricultural imports value declined sharply. In 1996 this group accounted for 73.9% of the total agricultural imports. This was caused by the growth in domestic production.

Germany

Russia's largest trading partner in the EU is Germany (18% of the total agricultural exports from EU in 2010).

Table 42 – Product structure of Russian agricultural and food exports to Germany (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.2	0.7	0.5	0.1	0.0	0.0	0.0	0.1	0.0
02	Meat and edible meat offal	0.0	0.0	0.0	0.1	0.7	4.4	6.5	10.3	7.3
03	Fish, aquatic invertebrates	5.6	26.7	21.3	33.6	45.8	37.6	15.6	20.8	6.9
04	Dairy products, eggs, honey	1.9	1.2	10.0	1.2	0.0	0.0	0.0	0.0	0.1
05	Products of animal origin, nes	1.3	2.0	4.1	3.1	4.8	5.5	5.6	4.5	4.4
06	Live trees, plants, bulbs, roots	0.0	0.0	0.1	0.3	0.5	0.1	0.1	0.1	0.0
07	Edible vegetables, roots and tubers	3.3	3.8	4.1	1.2	5.9	7.6	6.3	2.5	3.0
08	Edible fruit, nuts, melons	0.2	0.7	2.2	0.3	4.1	3.8	1.4	1.0	2.8
09	Coffee, tea, mate and spices	0.2	2.2	3.7	0.1	0.5	0.5	0.8	1.5	1.0
10	Cereals	12.0	0.4	0.1	9.2	0.5	0.6	5.4	0.0	13.5
11	Milling products, malt, starches	0.1	0.1	0.2	0.1	0.1	0.2	0.8	0.6	0.5
12	Oil seed, oleagic fruits, etc.	34.4	32.9	27.0	3.3	7.6	4.6	6.8	12.1	8.3
13	Lac, resins, vegetable extracts	0.2	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
14	Vegetable plaiting materials	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
15	Animal, vegetable fats and oils	1.9	2.7	0.5	0.3	1.0	3.4	17.7	7.5	13.5
16	Meat, fish and seafood food prep	8.3	8.9	4.4	7.1	2.0	0.8	0.0	0.0	0.3
17	Sugars and sugar confectionery	0.2	1.3	0.8	1.0	2.4	2.4	0.0	0.0	4.9
18	Cocoa and cocoa preparations	0.2	2.5	3.2	3.2	7.6	6.8	0.0	0.0	6.3
19	Cereal, flour, starch, milk prep.	0.8	1.9	2.9	1.7	5.1	5.5	5.1	4.1	2.0
20	Vegetable, fruit, nut, food prep.	10.1	4.8	1.9	0.7	1.2	0.2	2.0	6.7	5.7
21	Miscellaneous edible prep.	0.2	0.3	0.5	0.8	1.2	1.5	1.4	2.2	1.2
22	Beverages, spirits and vinegar	18.9	6.7	9.0	31.6	6.6	7.9	9.7	19.4	12.0
23	Residues, wastes of food industry	0.0	0.0	0.2	0.0	0.4	0.7	5.8	2.1	5.1
24	Tobacco and tobacco substitutes	0.0	0.0	2.0	0.9	1.8	5.5	9.0	4.4	1.1

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

In the beginning of the period, one-third of all agricultural exports from Russia to Germany was a group "Oil seed, oleagic fruits, grain, seed and fruit". However, by the end of the period, its share dropped to 8.3%.

A considerable part of Russian exports are also fish, crustaceans, molluscs, aquatic invertebrates nes. Their share increased from 5.6% in 1996 to 45.8% in 2004, but then began to fall, reaching to 6.9% in 2012. The rest of the structure of exports has remained fairly stable.

Table 43 – Product structure of Russian agricultural and food imports from Germany (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.3	0.3	0.3	0.9	0.8	4.3	4.9	1.6	0.8
02	Meat and edible meat offal	15.4	20.9	21.0	32.0	25.7	26.2	32.4	37.0	25.7
03	Fish, aquatic invertebrates ne	2.4	0.7	0.3	0.2	0.6	0.3	0.2	0.1	0.1
04	Dairy products, eggs, honey	15.2	11.4	12.5	13.9	14.8	17.3	13.7	20.2	16.8
05	Products of animal origin, nes	0.7	0.4	1.2	1.1	1.0	1.6	1.4	1.5	0.8
06	Live trees, plants, bulbs, roots	0.0	0.1	0.1	0.3	1.6	0.3	0.5	0.4	0.3
07	Edible vegetables and roots and tubers	1.0	0.9	1.7	0.3	0.3	1.2	1.3	1.7	1.2
08	Edible fruit, nuts, peel of citrus fruit, melons	0.9	0.3	0.2	0.4	0.4	1.0	1.1	1.2	1.5
09	Coffee, tea, mate and spices	1.4	0.5	0.6	0.4	0.7	0.6	0.7	1.0	1.3
10	Cereals	1.7	0.2	5.1	0.0	1.8	0.7	0.1	0.0	0.1
11	Milling products, malt, starches, inulin	3.3	2.7	9.7	7.9	5.4	1.3	0.9	0.6	1.2
12	Oil seed, oleagic fruits, grain, seed, fruit, etc.	2.2	1.3	3.1	2.5	4.3	3.5	7.1	3.1	3.0
13	Lac, gums, resins, vegetable extracts nes	0.6	0.7	1.4	1.4	0.8	1.0	2.1	1.5	1.1
15	Animal, vegetable fats and oils	4.8	8.6	6.9	7.2	4.0	2.5	1.8	1.3	1.5
16	Meat, fish and seafood food preparations nes	3.9	1.6	0.4	0.5	0.4	0.7	0.0	0.0	1.6
17	Sugars and sugar confectionery	4.5	2.9	3.9	1.2	0.8	0.8	0.0	0.0	1.0
18	Cocoa and cocoa preparations	8.4	3.0	2.1	1.9	4.7	6.0	0.0	0.0	7.5
19	Cereal, flour, starch, milk prep	5.9	5.2	2.7	2.3	3.5	3.6	4.8	5.1	6.1
20	Vegetable, fruit, nut, food prep.	2.4	3.3	2.3	2.8	2.7	2.7	2.5	1.8	1.4
21	Miscellaneous edible prep.	7.4	9.1	9.6	12.7	11.6	11.7	11.5	11.4	15.1
22	Beverages, spirits and vinegar	11.4	7.3	2.2	2.3	2.6	4.7	5.2	4.5	5.3
23	Residues, wastes of food industry	2.6	3.5	3.2	3.0	5.9	3.9	6.3	5.0	5.6
24	Tobacco and tobacco substitutes	3.4	15.2	9.3	4.8	5.7	4.1	1.4	1.0	0.9

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Germany supplies Russia with meat and meat products (pork, cattle meat, chicken), which comprise from 15 to 37 % of the total agricultural imports in 1996 and 2010 respectively.

During the analyzed period there a gradual increase in the share of meat and meat products in the structure of German imports. Dairy products also make up a significant part of the agricultural imports. Their share in the total imports varies from 11.4% to 20.2%.

There was also a decrease in imports of beverages, spirits and vinegar (from 11% to 5%), cereals (from 1.7 to 0.1%), milling products (from 3.3 to 1.2%).

USA

The most important trade partner from the North America is USA. Its share in Russian agricultural imports is significant and amounts up to 12% of Russian agricultural and food import. Exports of food to USA are less significant but it also exists.

Table 44 – Product structure of Russian agricultural and food exports to USA (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.2	0.1	0.5	0.4	0.2	0.0	0.0	0.0	0.0
02	Meat and edible meat offal	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0
03	Fish, aquatic invertebrates	6.3	48.8	14.5	15.5	35.8	27.4	27.8	24.6	4.3
04	Dairy products, eggs, honey	0.0	0.1	1.7	1.8	2.5	2.4	1.4	1.7	1.6
05	Products of animal origin, nes	0.6	0.3	3.1	0.1	0.3	0.7	1.9	1.9	4.2
06	Live trees, plants, bulbs, roots	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
07	Edible vegetables and roots and tubers	0.4	0.0	0.1	0.1	0.1	1.0	0.1	0.3	0.3
08	Edible fruit, nuts, melons	0.4	0.0	0.4	0.5	0.4	0.7	0.1	0.1	0.9
09	Coffee, tea, mate and spices	0.0	0.1	0.1	0.4	0.4	0.4	0.3	0.5	1.1
10	Cereals	3.3	0.1	0.5	0.4	0.2	0.2	0.2	0.2	0.1
11	Milling products, malt, starches, inulin	0.2	0.8	1.3	1.5	2.6	5.7	19.4	16.3	19.5
12	Oil seed, oleagic fruits, seed, fruit, etc.	37.1	4.7	1.0	0.7	0.2	0.3	0.0	0.0	0.0
13	Lac, gums, resins, vegetable extracts	0.2	0.0	0.4	0.2	3.6	1.0	0.8	0.3	0.2
14	Vegetable plaiting materials	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Animal, vegetable fats and oils	0.1	0.1	0.3	0.4	0.8	1.3	2.0	0.7	0.6
16	Meat, fish and seafood food prep.	4.1	15.3	50.2	12.4	2.9	2.7	0.0	0.0	1.3
17	Sugars and sugar confectionery	1.9	0.4	0.8	0.9	4.0	1.7	0.0	0.0	3.1
18	Cocoa and cocoa preparations	0.5	0.9	4.0	5.1	10.4	9.9	0.0	0.0	9.7
19	Cereal, flour, starch, milk prep.	0.0	0.9	1.2	3.7	7.8	7.9	7.7	8.5	7.7
20	Vegetable, fruit, nut, food prep.	0.3	2.8	1.3	1.6	5.8	5.8	8.1	6.8	7.5
21	Miscellaneous edible prep.	0.1	0.8	0.4	2.4	3.4	4.7	3.8	2.6	4.7
22	Beverages, spirits and vinegar	44.4	21.5	18.1	51.7	12.2	26.1	26.2	34.7	32.7
23	Residues, wastes of food industry	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0
24	Tobacco and tobacco substitutes	0.0	0.0	0.0	0.2	6.1	0.1	0.0	0.0	0.5

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Significant changes in the structure of exports of agricultural products to the United States was not observed. Russian exports to the United States alcoholic and non-alcoholic beverages, seafood, wheat gluten and chocolate.

Export of "Oil seed, oleagic fruits, grain, seed, fruit, etc." has completely stopped, although in 1996 it was a significant part of Russian exports (37.1%). The growth in the share of exports was observed in respect of such product groups as "Cereal, flour, starch, milk preparations", "Vegetable, fruit, nuts", "Miscellaneous edible preparations".

There was also a noticeable increase in the share of "Milling products, malt, starches, inulin" (by average 34.5% per year).

Table 45 – Product structure of Russian agricultural and food imports from USA (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.0	0.0	0.1	0.2	0.2	0.2	0.5	1.7	14.6
02	Meat and edible meat offal	40.8	47.7	45.5	65.7	57.7	66.9	66.7	48.9	44.1
03	Fish, crustaceans, aquatic invertebrates	0.8	0.6	0.4	0.6	3.1	4.1	2.2	4.0	1.8
04	Dairy products, eggs, honey	1.4	1.5	3.6	0.1	0.0	0.3	2.7	2.4	1.2
05	Products of animal origin, nes	0.0	0.1	0.1	0.2	0.1	0.2	0.2	1.4	0.4
06	Live trees, plants, bulbs, etc.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2
07	Edible vegetables, roots and tubers	0.9	1.0	1.8	0.3	0.2	0.2	0.1	0.3	0.3
08	Edible fruit, nuts, citrus fruit, melons	3.4	2.3	0.8	1.3	1.3	3.7	6.4	9.6	8.3
09	Coffee, tea, mate and spices	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
10	Cereals	6.6	0.6	21.8	1.6	1.0	0.4	0.5	0.5	0.7
11	Milling products, malt, starches, inulin	0.6	0.7	1.4	1.1	0.5	0.1	0.1	0.0	0.0
12	Oil seed, oleagic fruits, grain, etc.	0.5	0.8	1.8	0.9	1.7	2.8	2.2	4.8	4.8
13	Lac, gums, resins, vegetable extracts	0.1	0.2	0.7	0.1	0.5	0.7	0.8	0.9	1.2
14	Animal, vegetable fats and oils, et	1.4	1.0	2.7	1.2	0.1	0.2	0.1	0.1	0.1
15	Meat, fish and seafood food prep. nes	7.7	4.3	0.7	0.2	0.2	0.5	0.0	0.0	0.4
16	Sugars and sugar confectionery	0.5	0.2	0.6	0.2	0.5	0.5	0.0	0.0	0.6
17	Cocoa and cocoa preparations	0.8	0.4	0.4	0.3	1.4	0.5	0.0	0.0	0.5
18	Cereal, flour, starch, milk preparations	1.1	2.9	0.1	0.1	0.3	0.1	0.1	0.4	0.5
19	Vegetable, fruit, nut, food prep.	1.2	0.8	0.3	0.9	0.7	1.0	0.9	1.3	0.7
20	Miscellaneous edible prep.	5.2	2.4	1.1	2.8	8.2	5.4	6.1	9.8	7.0
21	Beverages, spirits and vinegar	1.4	0.6	0.4	0.9	2.4	2.0	2.4	4.5	5.8
22	Residues, wastes of food industry	0.4	0.7	4.7	4.7	3.7	2.8	3.3	3.4	1.6
23	Tobacco and tobacco products	25.1	31.0	11.1	16.5	15.9	7.6	4.6	5.8	5.3

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

The basis of the agricultural imports from the U.S. to Russia is mainly meat (poultry, beef and pork). It accounts about 50 of total agricultural imports. The important group is also Tobacco and tobacco products that accounted for a quarter of all exports in 1996. Then the share began to decline and in 2012 was only 5%.

China

In recent years, trade and economic relations between Russia and China are developing dynamically. Although agricultural production is not really such a big part of the Russian-Chinese trade flows, it is still of great importance.

Table 46 – Product structure of Russian agricultural and food exports to China (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.1	0.0	0.0	0.2	0.2	0.1	0.2	0.2	0.1
03	Fish, crustaceans, molluscs	26.6	52.6	61.6	85.9	62.8	90.2	91.0	93.9	90.9
04	Dairy products, eggs, honey	6.4	0.2	1.9	0.0	0.0	0.2	0.0	0.0	0.0
05	Products of animal origin, nes	0.2	0.6	5.1	1.0	1.5	0.6	2.8	0.3	0.5
07	Edible vegetables and roots	0.0	0.0	0.2	0.6	0.7	0.3	0.7	0.1	0.1
08	Edible fruit, nuts, melons	0.4	17.9	17.6	9.9	27.9	7.9	2.6	0.4	2.9
09	Coffee, tea, mate and spices	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Cereals	0.5	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1
11	Milling products, malt, starches	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
12	Oil seed, oleagic fruits, etc.	42.9	23.3	11.9	0.2	0.1	0.0	0.8	0.0	2.2
15	Animal, vegetable fats and oil	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
16	Meat, fish and seafood food prep	0.2	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0
17	Sugars and sugar confectionery	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	Cocoa and cocoa preparations	1.8	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
21	Miscellaneous edible prep.	0.0	0.0	0.0	0.0	4.4	0.1	0.0	0.0	0.0
22	Beverages, spirits and vinegar	15.8	0.0	0.1	1.1	0.3	0.2	1.6	0.2	0.3
23	Residues, wastes of food industry	3.2	4.8	1.5	0.8	0.6	0.1	0.0	4.7	2.4

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

In the beginning of the period, Oil seed accounted for almost half (42.9%) of the Russian agricultural and food export to China. Then, the structure of export has changed. Exports of fish and sea products increased and in 2006-2012 amounted to over 90% of total exports. Significant changes in the other groups were not observed.

Table 47 – Product structure of Russian agricultural and food imports from China (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
02	Meat and edible meat offal	50.4	50.7	1.9	29.4	12.1	1.4	0.4	0.5	0.5
03	Fish, aquatic invertebrates	0.2	0.5	0.3	2.4	4.6	11.3	16.2	15.6	14.3
04	Dairy products, eggs, honey	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
05	Products of animal origin, nes	0.8	0.5	0.8	0.6	0.4	0.1	0.0	0.0	0.0
06	Live trees, plants, bulbs, etc.	0.0	0.0	0.0	0.1	0.1	0.4	0.3	0.2	0.1
07	Edible vegetables, roots and tubers	5.7	6.6	13.7	12.2	17.4	18.9	20.6	22.2	20.9
08	Edible fruit, nuts, citrus fruit, melons	13.4	10.3	17.4	11.9	18.3	21.5	23.3	21.1	18.4
09	Coffee, tea, mate and spices	2.5	2.8	2.1	4.0	3.8	2.8	3.2	4.8	4.7
10	Cereals	2.9	4.0	25.2	8.2	5.4	5.6	1.1	0.6	0.2
11	Milling products, malt, starches,	1.8	0.5	0.8	0.1	1.3	0.8	1.2	0.4	0.6
12	Oil seed, oleagic fruits, grain, etc.	4.2	3.2	9.7	6.4	9.0	4.1	3.7	2.9	2.2
13	Lac, gums, resins, vegetable extracts	0.0	0.0	0.1	0.1	0.3	0.5	0.7	1.6	1.7
15	Animal, vegetable fats and oils, et	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.3
16	Meat, fish and seafood food prep. nes	10.6	5.2	1.7	3.2	4.5	5.3	0.0	0.0	4.2
17	Sugars and sugar confectionery	0.4	0.0	0.1	0.3	0.8	0.9	0.0	0.0	3.5
18	Cocoa and cocoa preparations	0.0	0.5	0.1	0.3	0.1	0.1	0.0	0.0	0.3
19	Cereal, flour, starch, milk prep	3.6	1.4	0.3	0.3	0.7	0.7	0.5	0.6	0.7
20	Vegetable, fruit, nut, food prep.	1.3	0.8	2.1	6.6	12.3	20.4	23.0	21.3	19.4
21	Miscellaneous edible prep.	0.3	0.8	2.5	2.6	1.7	1.7	1.8	2.1	2.0
22	Beverages, spirits and vinegar	0.1	0.0	0.1	0.3	0.5	0.5	0.6	0.6	0.5
23	Residues, wastes of food industry	0.1	0.2	0.0	0.1	0.1	0.4	0.6	1.0	1.9
24	Tobacco and tobacco products	1.5	11.9	21.1	11.0	6.6	2.8	2.5	4.2	3.4

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

The structure of Chinese imports has undergone significant changes. In the beginning of the period half of all agricultural imports from China consisted of meat and meat products. However, after 2000 its share has rapidly decline, and in 2010-2012 it was already less than 1%. The reason for this was the ban on meat imports from China imposed in Russia for sanitary reasons.

Imports of fish and seafood increased from 0.2% in 1996 to 14.3% in 2012. In addition, there was a reduction of imports of cereals. In this case, it was also caused by the prohibition to import rice.

Ukraine

Despite the trade wars that have taken place in the relations between Russia and Ukraine in recent years, the volume of agricultural trade between the two countries is significant. Ukraine is the largest trading partner of Russia among the countries of the Commonwealth of Independent States.

Table 48 – Product structure of Russian agricultural and food exports to Ukraine (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.8	0.9	0.1	0.0	0.1	0.0	0.0	0.0	0.0
02	Meat and edible meat offal	4.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
03	Fish, aquatic invertebrates ne	5.8	21.0	11.3	1.5	0.5	1.8	0.9	1.1	2.0
04	Dairy products, eggs, honey	5.8	3.2	3.6	8.9	7.7	9.9	10.3	7.8	4.0
05	Products of animal origin, nes	1.0	1.3	0.4	0.3	0.1	0.2	0.2	0.1	0.1
06	Live trees, plants, bulbs, roots	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
07	Edible vegetables, roots and tubers	1.6	4.1	0.5	0.2	0.1	0.2	0.2	0.3	0.1
08	Edible fruit, nuts, melons	0.2	0.1	0.0	0.0	0.2	0.2	0.2	0.0	0.0
09	Coffee, tea, mate and spices	2.2	4.1	0.5	1.7	7.8	9.1	12.1	12.8	9.3
10	Cereals	12.7	9.2	4.8	14.8	6.1	1.8	3.0	1.1	0.5
11	Milling products, malt, starches,	1.9	1.5	24.9	0.8	1.5	3.3	3.9	1.7	1.9
12	Oil seed, oleagic fruits, fruit, etc.	13.5	3.7	1.2	0.2	0.1	0.1	0.1	0.1	0.1
15	Animal, vegetable fats and oils	7.7	2.1	2.7	2.6	2.3	2.3	3.9	5.3	6.1
16	Meat, fish and seafood food prep	4.5	4.9	4.8	4.2	6.3	8.3	0.0	0.0	4.8
17	Sugars and sugar confectionery	7.2	2.4	5.3	6.5	2.1	1.4	0.0	0.0	6.0
18	Cocoa and cocoa preparations	5.3	11.8	10.4	7.5	10.9	10.5	0.0	0.0	13.6
19	Cereal, flour, starch, milk prep.	2.2	3.3	6.2	5.3	11.6	7.8	12.2	12.0	8.5
20	Vegetable, fruit, nut, food prep.	1.8	1.5	2.4	2.2	3.2	6.6	5.5	2.6	2.6
21	Miscellaneous edible prep.	4.6	8.3	3.5	6.2	12.7	12.7	16.7	17.5	13.3
22	Beverages, spirits and vinegar	10.6	3.2	3.2	6.5	6.7	8.0	6.8	6.7	7.7
23	Residues, wastes of food industry	0.5	11.2	3.9	4.3	5.1	5.0	4.0	6.4	4.9
24	Tobacco and tobacco products	5.4	1.3	10.3	26.2	15.0	10.7	20.1	24.5	14.3

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Bilateral trade in agricultural products and foodstuffs between Russia and Ukraine includes a wide variety of products, and is characterized by the inconstancy of the structure. Large

fluctuations in the structure of exports occur as a result of the impact of trade restrictions, trade wars, changes in political positions of countries and a number of other factors contributing to the growth of export in some product groups and a decrease in others.

Among the trends we can identify increase in the shares of "Cereal, flour, starch, milk preparations and products", "Coffee, tea, mate and spices", "Vegetable, fruit, nut, food prep." and the decline in the shares of cereals, meat and dairy products.

Table 49 – Product structure of Russian agricultural and food imports from Ukraine (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.1
02	Meat and edible meat offal	16.0	30.7	31.3	30.9	15.3	0.7	3.9	3.1	10.9
03	Fish, aquatic invertebrates	0.1	0.1	0.1	0.3	0.1	0.0	0.1	0.1	0.0
04	Dairy products, eggs, honey	6.1	9.1	11.6	13.1	26.1	15.4	23.7	26.6	16.7
05	Products of animal origin, nes	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1
06	Live trees, plants, bulbs, roots	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0
07	Edible vegetables, roots and tubers	0.7	0.9	1.4	0.1	0.3	1.4	2.7	5.3	4.4
08	Edible fruit, nuts, melons	0.5	2.7	1.4	0.2	1.0	2.7	2.5	6.7	2.0
10	Cereals	4.3	1.0	0.6	1.7	5.6	3.5	6.2	0.5	0.5
11	Milling products, malt, starches	8.5	3.4	0.7	0.6	0.5	0.8	2.0	1.5	1.0
12	Oil seed, oleagic fruits, etc.	0.2	0.5	1.2	0.2	0.3	0.5	1.4	2.4	1.3
15	Animal, vegetable fats and oils	4.6	5.0	10.7	12.2	7.1	10.7	23.8	18.3	3.0
16	Meat, fish and seafood food prep.	5.2	11.0	2.8	1.7	2.1	1.2	0.0	0.0	2.6
17	Sugars and sugar confectionery	34.3	12.5	13.3	6.7	2.3	2.6	0.0	0.0	3.9
18	Cocoa and cocoa preparations	0.5	3.7	9.3	14.2	11.1	15.9	0.0	0.0	21.4
19	Cereal, flour, starch, milk prep.	0.8	2.0	3.1	2.2	3.0	4.1	4.6	5.4	6.7
20	Vegetable, fruit, nut, food prep.	1.8	3.2	1.8	3.2	4.5	6.7	6.4	8.5	8.3
21	Miscellaneous edible prep.	0.5	0.6	1.0	1.3	2.2	1.5	1.5	1.7	3.1
22	Beverages, spirits and vinegar	13.1	8.1	2.5	7.0	16.6	29.8	20.4	19.3	13.9
23	Residues, wastes of food industry	1.6	1.1	0.3	1.1	0.4	0.3	0.2	0.1	0.2
24	Tobacco and tobacco substitutes	1.1	4.0	6.7	3.3	1.2	2.1	0.3	0.2	0.0

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

In term of imports, state regulations, quotas, tariffs, import bans, etc. also has a significant impact on bilateral trade flows between Russia and Ukraine.

Russia often introduced restrictions or complete bans on the import of Ukrainian agricultural products. It was most often applied to such products as meat and meat products, sugar and chocolate. This was the reason for the decline of their shares in the import structure in recent years.

The most important product groups in the structure of Ukrainian imports are Beverages, and spirits, Meat and meat offals, Dairy products, eggs, etc. Significant increase was observed in respect of the product groups as: "Dairy products, eggs and honey" (from 6.1 in 1996 to 26.1% in 2010), "Edible vegetables and certain roots and tubers" (from 0.5 in 1996 to 6.7% in 2010)

Egypt

The major trade partner of Russia among African countries is Egypt. Agricultural production is the basis of the Russian-Egyptian bilateral trade relations.

Table 50 – Product structure of Russian agricultural and food exports to Egypt (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
01	Live animals	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
03	Fish, aquatic invertebrates ne	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
04	Dairy products, eggs, honey	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
05	Products of animal origin, nes	66.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
06	Live trees, plants, bulbs, roots	33.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
07	Edible vegetables, roots and tubers	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.6
10	Cereals	0.0	0.0	1.5	98.3	91.1	87.7	98.6	96.5	83.8
12	Oil seed, oleagic fruits, etc.	0.0	0.0	4.5	0.0	0.0	0.4	0.7	0.0	0.1
15	Animal, vegetable fats and oils	0.0	99.3	92.4	1.7	2.7	11.2	0.3	3.1	14.7
23	Residues, wastes of food industry	0.0	0.0	0.8	0.0	6.2	0.7	0.2	0.3	0.4
24	Tobacco and tobacco substitutes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

In recent years, the structure of trade between Egypt and Russia has undergone a number of significant changes.

In the late '90s, "Animal, vegetable fats and oils, cleavage products, etc." or "Products of animal origin, nes" accounted for the largest portion of the agricultural exports from Russia, however in the early 2000s, cereals came to dominate in the structure of exports. Now, main trade flows between Russia and Egypt are made up of wheat exports, which in 2010 accounted for 41.5% of Russian exports of wheat.

Table 51 – Product structure of Russian agricultural and food imports from Egypt (%)

		1996	1998	2000	2002	2004	2006	2008	2010	2012
03	Fish, aquatic invertebrates ne	0.0	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0
04	Dairy products, eggs, honey	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
05	Products of animal origin, nes	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
06	Live trees, plants, bulbs, roots	0.0	0.0	0.8	0.3	0.0	0.0	0.0	0.0	0.0
07	Edible vegetables, roots and tubers	2.1	53.1	2.1	16.3	15.5	23.7	38.0	29.7	24.6
08	Edible fruit, nuts, melons	43.3	23.7	12.7	66.4	66.0	71.1	57.2	67.0	72.5
09	Coffee, tea, mate and spices	1.2	0.1	0.1	2.7	1.3	0.1	0.2	0.4	0.2
10	Cereals	6.2	8.3	0.0	0.1	12.2	2.6	0.9	0.2	0.0
11	Milling products, malt, starches	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Oil seed, oleagic fruits, fruit, etc.	1.1	6.9	50.4	4.0	2.4	1.9	3.0	2.6	2.4
15	Animal, vegetable fats and oils	7.0	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0
17	Sugars and sugar confectionery	5.4	0.9	1.6	0.9	0.0	0.0	0.0	0.0	0.1
18	Cocoa and cocoa preparations	1.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	Cereal, flour, starch, milk prep.	10.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	Vegetable, fruit, nut, food prep.	0.5	0.4	0.0	0.0	0.0	0.0	0.4	0.0	0.0
21	Miscellaneous edible prep.	21.2	2.1	26.9	9.1	2.4	0.2	0.1	0.0	0.1
24	Tobacco and tobacco substitutes	0.0	2.8	4.5	0.1	0.1	0.1	0.1	0.0	0.1

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

The share of miscellaneous edible preparations has sharply declined from 21.2% in 1996 and 26.9% in 2000 almost to zero by the end of the period.

Currently, imports from Egypt to Russia consists of two main product groups namely “Edible vegetables and certain roots and tubers” (24.6% of total agricultural imports) and “Edible fruit, nuts, peel of citrus fruit, melons” (72.5%). The greatest part of the first group is potato, the second group - citrus fruits.

Thus, this analysis shows that the structure of Russia's foreign trade in agricultural products varies considerably depending on the regions or countries with which it occurs. There are many factors that affect the territorial structure, including the territorial remoteness, transport costs, differences in climatic conditions, political relations between the countries, and many others. Foreign trade restrictions imposed by both Russia and its trading partners also have a significant impact on the geographical and product structure of foreign trade.

9. Factors affecting Russian agricultural foreign trade: simple regression analysis

This chapter provides the analysis of general hypotheses about the relationship between value of Russian foreign trade in agricultural products and foodstuffs (as a dependent variable) and several factors (as independent variables).

Our analysis will consist of several parts:

- The formulation of hypotheses;

- Construction of simple regression equations to determine the connection;

- Hypothesis test to determine whether there is a significant relationship between an independent variable *X* and a dependent variable *Y*.

- Interpretation of results and conclusions

9.1 Hypothesis formulation

We'll start with the formulation of hypotheses and their feasibility study, which will give us a basis for the further construction of the regression model. While many connections among these variable could be hypothesized, in this regression models we considered five hypotheses.

Gross agricultural and food production and foreign trade

The relationship between foreign trade and production of agricultural products is the most logical and the most probable. It is obvious that more country produces, the more it is able to export.

Hypothesis I: Gross agricultural and food production affects country's agricultural export.

The null hypothesis is the gross agricultural and food production does not affect Russian foreign trade in agricultural products.

Value of gross production has been compiled by multiplying gross production in physical terms by output prices at farm gate. Thus, value of production measures production in monetary terms at the farm gate level. Since intermediate uses within the agricultural sector (seed and feed) have not been subtracted from production data, this value of production aggregate refers to the notion of "gross production".

Table 52 - Gross Value of Agricultural Production and foreign trade in agricultural products in Russian Federation (1000 USD)

	Gross Production Value	Export Value
1996	41252000	1697976
1997	39689000	1423363
1998	25781000	1034278
1999	22278000	610533
2000	24226000	1076535
2001	29147000	1117711
2002	28388000	1839763
2003	32885000	2339450
2004	41179000	2197106
2005	45741000	3451314
2006	53489000	4367401
2007	67699000	7734804
2008	88709000	7900781
2009	69204000	7530653
2010	69455000	5832416
2011	96202000	9215159

Source: FAOSTAT (2013)

Value of gross production is provided in current term and is expressed in US dollars. The **current** value of production measures value in the prices relating to the period being measured. Thus, it represents the market value of food and agricultural products at the time they were produced.

US dollar figures for value of gross production are converted from local currencies using official exchange rates as prevailing in the respective years. Expressing data series in one uniform currency is useful because it avoids the influence of revaluation in local currency, if any, on value of production.

Government support for agriculture and agricultural exports

In the days of the Soviet Union, the government was inclined to consider the high levels of production as something desired, regardless of cost, and referred to the self-sufficiency as the ultimate goal. Therefore, subsidizing of agricultural enterprises was carried out in large volume, even in relation to the economically inefficient entities.

Large share of industry support was provided by the cheap material and technical resources for agriculture, particularly fertilizer and fuel, leading to inefficient use (overspending and wastage), which did not give a proportional increase in production volume.

These subsidies were sharply reduced after the 1991. Agricultural enterprises were not ready for such changes. The result was a sharp decline in agricultural production, the effects of which we can observe to this day.

In the recent years, funds allocated from the federal budget of the Russian Federation to support agriculture, currently do not comply with its contribution to the formation of the gross domestic product (GDP) of the country. The support of agricultural production is a small fraction of the total expenditure budget (about 1-2% of total government expenditures).

Increased government support for agriculture stimulates the development of agricultural production, and therefore potentially has a positive impact on the volume of agricultural exports.

Hypothesis II: Government support for agriculture affects the agricultural exports.

The null hypothesis is the government support for agriculture does not affect Russian foreign trade in agricultural products.

Table 53 - Government expenditures on agriculture and rural development in Russian Federation (1000 USD)

	Consolidated budget	Federal Budget
1996	4921074	1659886
1997	5376127.2	1711372
1998	2503842.5	484282,3
1999	1441923	357434,4
2000	1955265.9	476373,9
2001	2310709.9	812519,7
2002	1907588.3	886805,3
2003	2218817.4	1032842
2004	2727865.1	1207757
2005	2778912.9	669064,4
2006	4074884	960955
2007	5723032.1	1058505
2008	9588427.9	2335407
2009	8793221.5	2619121
2010	8637405.5	1163215
2011	9145594.8	4814087

Sources: Rosstat, World Bank database (2013)

Russian government expenditures on agriculture consist of Federal Budget and the budgets of subjects of the Russian Federation. For the purposes of this analysis only total consolidated budget expenditures are used.

Exchange rate and foreign trade

Our next hypothesis will address the influence of the exchange rate of the ruble on changes in the volume of country's foreign trade in agricultural products and foodstuffs.

According to the economic theory, increasing in the real exchange rate will lead to depreciation of domestic currency; thus, it was found to encourage exports.

The exchange rate plays an important role in a country's trade performance. The fact that the Russian economy began to grow after the plunge of the ruble in 1998 proves that the strong ruble had been hampering the country's economic growth and made Russian products more competitive.

There is huge number of studies that investigate the impact of exchange rate on foreign trade, including agricultural exports and imports. The most of them investigates the impact of the exchange rate volatility. However, there will be examined only direct relationship between the official ruble exchange rate and the Russian foreign trade (exports and imports separately).

Hypothesis III:

a) There is a relationship between the ruble exchange rate and Russian agricultural exports.

b) There is a relationship between the ruble exchange rate and Russian agricultural imports.

The null hypotheses are the exchange rate does not affect Russian foreign trade in agricultural products.

Table 54 - Official exchange rate of Russian ruble and country's foreign trade in agricultural products (LCU per US$, period average, 1000 USD)

	Official exchange rate	Import Value	Export Value
1996	5.120833	10934964	1697976
1997	5.784833	12448930	1423363
1998	9.705083	10496568	1034278
1999	24.6199	7913562	610533
2000	28.12917	7233760	1076535
2001	29.16853	8709335	1117711
2002	31.34848	9360263	1839763
2003	30.69203	10993983	2339450
2004	28.81374	12363270	2197106
2005	28.28444	15460680	3451314
2006	27.19096	19304657	4367401
2007	25.58085	24535164	7734804
2008	24.85288	31390865	7900781
2009	31.74036	26682992	7530653
2010	30.36792	31843086	5832416
2011	29.38234	37233201	9215159

Sources: World Bank database, FAOSTAT (2013)

Official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (ruble units relative to the U.S. dollar).

World Food Prices and Russian agricultural exports

In order to discuss the relationship between world prices and country's foreign trade it is necessary to explain their relations from an economic point of view.

As the world price level rises, foreign made goods become relatively more expensive so that the demand for imports decreases. In the same situation, the country's exports will grow.

Therefore, we expect the positive correlation between international food prices and country's agricultural exports.

Hypothesis IV: There is a relationship between World Food Prices and Russian agricultural exports

The null hypothesis is there is no relationship between World Food Prices and Russian agricultural exports.

In this analysis, World Food Price Index was used as an indicator of price changes. World Food Price Index consists of the average of 5 commodity group price indices (Meat, Dairy, Cereals, Oil and Fat and Sugar Price Indices) weighted with the average export shares of each of the groups for 2002-2004: in total 55 commodity quotations considered by FAO commodity specialists as representing the international prices of the food commodities noted are included in the overall index.

World Food Prices and Russia's export prices

In addition to the analysis of factors affecting the volume of Russian trade in agricultural products and foodstuffs, this chapter will examine the relationship between the prices of Russian agricultural exports to world prices of agricultural products. So we can test to what extent the Russian export prices follow the worldwide prices, or they change as a result of the impact of domestic factors.

Hypothesis V: there is a relationship between World Food Prices and Russia's export prices

Data for the analysis are presented in the table below.

Table 55 - World Food Price Index and Russia's food export price index

	World Food Price Index	Russia's export price index
1996	129.1	72.2
1997	118.5	91.6
1998	107.1	67.6
1999	92.4	85.7
2000	90.4	86.6
2001	93.4	68.7
2002	89.9	73.2
2003	97.7	96.1
2004	112.4	76.7
2005	117.3	102.5
2006	126.7	120.9
2007	158.7	110.4
2008	199.8	179.7
2009	156.9	118.5
2010	185.3	119.3
2011	227.6	131.6

Sources: FAO, author's calculation (2013)

Russia's Export Price Index is calculated as Laspeyres index for country's trade in agricultural products according to export unit values of 400 items (4-digit code in Harmonized System) weighted with the average export shares of each of the groups for 2002-2004.

9.2 Interpretation of results

1) Gross agricultural and food production and exports

After analyzing of the regression we can draw the following conclusions about the nature of the relationship between the value of agricultural and food production in Russia and the value of country's foreign trade in agricultural products and foodstuffs.

The p-value of the F-statistic for agricultural production is greater than 0.05, so this term is significant at the 5% significance level given the other terms in the model. $P \leq \alpha$

The p-value ($p = 0.0000$) is greater than the common alpha level of 0.05, which indicates that it is statistically significant. Hence, we will reject the null hypothesis.

$F(1,14)=184.4590$, that is more than the critical value (4.6) at a given level of significance. It means that the regression is deemed significant.

Another way to test the regression for significance is to test the b1 term (slope term which shows the effect of X on Y). This is done via a t-test. The t-value is -4.594. The t-value will be negative if the first mean is smaller than the second one. The p-value for a negative t-value is the

same as that for the positive version of that t-value. That is, the minus sign does not affect the results of it cannot be ignored. Therefore t=4.594 is more than t_{crit} =2.1448. It means that regression is statistically significant. The two tests give the same results.

Adjusted R^2 measures the proportion of the variance in the exchange rate that was explained by variations in the independent variables. In this case, the adjusted R^2=0.92441763 shows that 92.4% of the variance was explained. The correlation coefficient is 0.964 that is very close to 1.

R-Square measures the proportion of the variation in the exchange rate that was explained by variations in the independent variables. Therefore, the "R-Square"' tells us that 13.2% of the variation (and not the variance) was explained.

Therefore, the empirical results of the directly support the hypothesis I. The results of the analysis show that there exists a relationship among the variables of the gross agricultural production value and exports of agricultural products. An increase in the agricultural production value has a significant and positive impact on export trade flows. The hypothesis I can be **accepted**.

2) Government support for agriculture and agricultural exports

Testing the hypothesis about the relationship between government expenditures for agriculture and country's exports of agricultural products showed the following results.

The p-value (0.000014) is greater than the alpha level of 0.05, which indicates that the regression is statistically significant.

F statistic (F = 42.04544) is more than the critical value (Fcrit = 4.60) at a given level of significance, the null hypothesis is rejected, which means that the statistical significance of regression.

Adjusted R2=0.73236005 shows that 73.2% of the variance was explained by the regression. R-Square is equal 0.75020272 and it means that 75.0% of the variation was explained by the regression.

According to t-statistic analysis, the value of t=4.594 is more than critical (2.1448). The t value is in the region of rejection, so that b is enough different from 0 to reject the hypothesis of no relationship between X and Y. It means that regression is statistically significant.

There is evidence the relationship between the government support for agriculture and agricultural exports. The hypothesis II can be **accepted**. Null hypothesis can be rejected.

3) Exchange rate and foreign trade

The regression analysis of the impact of ruble exchange rate on the Russian foreign trade was conducted both in relation to export and import flows.

Exchange rate and exports

Having analyzed the relationship between the exchange rate of the ruble on the volume of country's exports of agricultural products and foodstuffs, the following results was obtained.

The p-value (0.16644) is greater than the common alpha level of 0.05, which indicates that it is not statistically significant.

In regression, the t-stat, coupled with its p-value, indicates the statistical significance of the relationship between the independent and dependent variable. The value of t=0.3222 is less than critical (2.1448) and therefore regression is not statistically significant.

F(1,14)=2.1308, that is less than the critical value (4.6) at a given level of significance. It means that the regression is deemed insignificant.

The adjusted R^2=0.07010118 shows that only 7.0% of the variance was explained. The "R-Square"' tells us that 13.2% of the variation was explained by the regression. Hereby, hypothesis IIIa can be **rejected** and the regression can be deemed insignificant.

Exchange rate and imports

In the relations between the ruble exchange rate and Russian agricultural import we observe the similar situation as in the case of exports.

The p-value (0.2784) is greater than the alpha level of 0.05. It means that it is not statistically significant. The value of t=1.3222 is less than critical (2.1448) and therefore regression is not statistically significant.

F(1,14)= 1.271897 that is more than the critical value (4.6) at the level of significance α=0.05. It means that the parameter can be deemed significant. Adjusted R^2=0.01780374 shows that only 1.7% of the variance was explained by this parameter. According to the value of R^2, 8.3% of the variation was explained by the regression.

Thus, hypothesis IIIb can be also **rejected** the regression can be deemed insignificant.

4) World Food Prices and Russia's agricultural export

Analyzing the relationship between international food prices and country's agricultural exports we obtained the following results.

The p-value (p = 0.000001) is less than the common alpha level of 0.05, which indicates the significance of the regression.

The F-value of the regression is significant and equals 68.99479. It is much more than critical value (4.6). In this case, the explained variation (due to regression) is 68.99479 times greater than the unexplained (residual) variation. This is why we reject the null hypothesis.

The coefficient of determination, r^2, is 83.1%. It means that 61% of the variation in the proportion of pollen removed can be explained by the regression. The adjusted R^2=0.81926576 shows that 81.9% of the variance was explained by the regression. The correlation coefficient, r, is 0.912 that is very close to 1.It means that the relationship of these two parameters is very strong.

Therefore, the results of the analysis support the hypothesis about the relationship between world food prices and agricultural exports. The hypothesis IV can be **accepted**. Null hypothesis can be rejected.

5) World Food Prices and Russia's export prices

The last hypothesis tested is the one about relationship between World Food Prices and Russia's export prices.

According to results of the regression analysis, p-value is equal 0.000198. This value is greater than the alpha level (0.05). Therefore, the regression is statistically significant.

F statistic (F = 24.90199) is more than the critical value at a given level of significance, which also means that the statistical significance of regression.

However, according to t-statistic analysis, the value of t=1.7415 is less than critical (2.1448). So according to this criterion the regression is statistically insignificant.

Adjusted R^2=0.61441564 shows that 61.4% of the variance was explained by the regression. R-Square is equal 0.,64012126. It means that 64.0% of the variation was explained by the regression. The correlation coefficient is 0.8.

Thus, p-value, f- statistic and high value of correlation coefficient can be considered as evidences of the relationship between world food prices and Russia's agricultural export prices. However, according to t-statistic the regression is statistically insignificant. Nevertheless, the hypothesis V can be **accepted**.

Results of the regression calculations can be found in the Appendix 4.

From the above regression analysis the following conclusions can be drawn. Therefore, the empirical results of the directly support the hypotheses I, II, IV and V. Thus, there exists a strong relationship among the variables of the gross agricultural production value and agricultural exports. An increase in the agricultural production value has a significant and positive impact on export trade flows. There are also high correlation and statistical significance in relations between government support for agriculture and agricultural exports. The results of the analysis support the hypothesis about the relationship between world food prices and agricultural exports. There is

evidence the significant relationship between world food prices and Russia's agricultural export prices. So it can be said with some certainty, that Russian export prices substantially follow the worldwide prices.

In addition, in the regression analysis two hypotheses were rejected. These are hypotheses about relationships between ruble exchange rate and country's agricultural exports and imports. In both cases, the regressions were deemed insignificant. From the import side it can be explained by fairly low price elasticity of demand for agricultural products compared to other products. As mentioned earlier, Russia is not self-sufficient in agricultural products. Since foods are goods of first priority, the demand for them is less exposed to fluctuations in the exchange rate.

From the export side it is possible to explain by product and territorial structure of Russian exports. It is dominated by unprocessed foods In addition, a large share of Russian foreign trade is trade with the CIS countries, where transactions with which can be made in local currency.

10. Revealed comparative advantages of Russian agricultural exports

10.1 The comparative advantages and its importance for the Russian economy

The comparative advantage theory emphasizes the relative differences in productivity between countries as the reason for international trade and hence for gains from trade. The larger the differences in underlying sources of comparative advantage across countries, the larger the gains from trade.

As such, the concept of comparative advantage had a strong influence on economic policy making, most notably the trade liberalization initiatives under the auspices of the GATT and the WTO, regional integration initiatives as well as unilateral trade reforms, all of which placed emphasis on removing remaining trade barriers and facilitating trade-related structural adjustment, so that countries can benefit from comparative advantage-driven trade.

Taking into account the Russia's accession to the WTO, relative competitiveness will play an important role in determining changes in trade patterns and flows between Russia and its trading partners.

During the next few years, Russia expects further changes associated with country's accession to the World Trade Organization. Reduction of some kinds of budgetary support and restrictions (tariff and non-tariff) will affect the competitiveness of Russian agricultural and food products in both domestic and international markets.

To be able to develop the country's strategy for the upcoming decades it is necessary to have a clear idea in relation to the competitiveness of Russian agricultural exports. It is necessary to identify markets in which Russian products have comparative advantage, and therefore they have prospects for further development.

However, in Russia, as in any other country, the different branches of agriculture have different efficiency, due to historical or natural geographical factors. Therefore for the effective development of Russian exports it is necessary to focus on the areas of agriculture that are competitive and have comparative or absolute advantages in the world market.

Revealed comparative advantage (RCA) is a type of economic theory designed to provide some insight into the export activity of a given nation or industry, based on how that activity compares to the activity of one or more similar entities.

The idea behind this approach is to gain some understanding of how that export performance accounts for the total exports of certain products in the world market and how they compare to others who also engage in the same type of exports. Conducting a revealed

comparative advantage analysis can provide information that can aid in reversing an unfavorable trend, improve the flow of trade, and also help to stabilize the economy of a nation or industry.

Therefore, revealed comparative advantage can provide valuable data that helps to determine how its major exports are faring in terms of infiltration in the world market. Looking closely at the data can provide clues to how to generate more attention and capture more business for key industries within the nation, making it possible to increase exports and generate more money for the economy. By identifying which nations are currently more dominant in terms of the export of certain products, it is possible to then move on to analyze how that dominance came about and become more competitive in the marketplace, hopefully leading to increased exports that in turn mean more income for residents who are employed by the firms making those goods for export.

At its best, identifying the revealed comparative advantage of a given nation or industry will indicate whether or not that trade flow is increasing or decreasing in comparison with past periods. In the event of a decrease, the data may also provide some insight into which other entities are increasing exports even as the subject entity is losing ground. Information of this type can often be used to slow the rate of decline and eventually reverse the trend completely, allowing the entity to once again grow its share of the world market.

10.2 The overview of previous researches on Russian comparative advantage

There are a number of studies that examined the issue of comparative advantage in the case of Russian Federation.

Tabata (2006) investigated changes in Russia's comparative advantage in 1994-2005 by Revealed Comparative Advantage index, Revealed Comparative Disadvantage index, and Trade Specialization Index.

The results of his work show the increasing competitiveness of oil and gas exports (and secondarily those of armaments, selected base metals, round wood, and fertilizers) and declining competitiveness in (and increasing imports of) meat, plastics, and automobile production and stagnation in the machinery sectors.

Westin (1998) has examined the pattern of revealed comparative advantage of Russia in its trade with the EU using the Balassa index, and an index based on import-export ratios.

Russian exports are showing a healthy development in terms of a broader variety of goods being traded in 1995 compared to 1992. His findings show that Russia reveals a comparative advantage in primary products and that there is no sign of change in terms of manufacturing

export, which is still suffering from being unsalable on Western markets due to weakness in quality.

Ahrend (2004) argues that international competitiveness of Russian Federation - as measured by revealed comparative advantage remains limited to a small number of sectors that mainly produce primary commodities (particularly hydrocarbons) and energy-intensive basic goods.

A noted British economist Cooper (2006) compares Russia's scores in 2000 on the Balassa Index of Revealed Comparative Advantage with those of 2004, and also for that year with a selected list of international competitors (Brazil, India, China, Turkey, and the United States) as well. He argues that Russia possesses some very large non-competitive sectors, in particular the motor industry, civil aviation, shipbuilding, tractor and agricultural machine building, and light industry (i.e., textiles, clothing, and footwear).

Savin and Winker (2009) calculated Russian revealed and prospective comparative advantages, analyzed their dynamics during the last five years, and suggested that the Russian Federation has prospective advantages in some medium and high technological industries like pharmaceutical industry, electronic equipment, machinery building and railway transport as well as in some other industries like production of clothes.

Liefert (2002) assess this issue of Russia's comparative advantage vis-a-vis the world market in terms of the domestic resource cost and social cost-benefit ratio. The results of his researches indicated that Russia has a *disadvantage* in agricultural outputs compared with its agricultural inputs. The country also has a disadvantage in meat compared with its bulk crops (grain and sunflower seed, the country's main oilseed), which provide animal feed. A comparative advantage in energy is indicated, as well as an advantage in fertilizer compared to crops. Thus Liefert concludes that Russia's trade behavior during this period was rational since it was a major importer of meat but a major exporter of energy products.

Thus, research, concentrating directly on the issue of international trade in agricultural products and foodstuffs in Russia, are very few.

10.3 Index Analysis of comparative advantage

How it comes up from the analysis by Balassa's index (RCA), calculated on the basis of trade flows between Russia and the whole world, in a modern Russia's agricultural export, the comparative advantage belongs mostly to crops (Wheat, Barley), their by-products (Bran of Wheat) and products of their processing, such as Barley Pearled, Pot Barley, Barley Flour and Grits, Cereal Preparations, Rice Flour, Flour of Mixed Grain, Flour of Sorghum etc.

Over the period, comparative advantages in oil crops and oils, mainly sunflower seeds and cake, and sunflower oil were also observed.

It is not possible to present in this paper results of calculations for all 683 agricultural commodities, exported or imported by Russian Federation. Therefore, we present the values of Balassa's index by products groups according to their origin (Tab. 56).

Table 56 - The values of Balassa's index by products groups of Russian agricultural foreign trade (according to their origin)

	1998	2000	2002	2004	2005	2006	2007	2008	2009	2010
Meat	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Cereals and prep	**1.7**	**1.5**	**4.9**	**3.4**	**4.2**	**3.8**	**4.9**	**3.8**	**4.1**	**4.1**
Fats and offals	0.2	0.4	0.2	0.7	0.7	0.8	0.7	0.8	1.0	**1.3**
Fruit and nuts	0.3	0.4	0.2	0.4	0.2	0.3	0.1	0.1	0.1	0.1
Vegetables and mushrooms	0.2	0.4	0.1	0.4	0.3	0.3	0.2	0.2	0.2	0.1
Milk and milk products	0.8	**1.4**	0.6	0.7	0.6	0.7	0.5	0.6	0.5	0.5
Hides, skins and wool	**10.2**	**5.5**	**2.1**	**1.9**	**1.4**	**1.5**	0.7	1.0	0.8	0.9
Pulses and corn	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.4
Root crops	**1.2**	0.3	0.2	0.7	0.5	0.7	0.8	**1.1**	0.8	**1.2**
Tea and coffee and spices	0.4	0.2	0.2	0.6	0.5	0.5	0.4	0.5	0.4	0.5
Beverages	0.6	0.6	0.6	0.4	0.4	0.5	0.4	0.5	0.5	0.6
Cigarettes and tobacco	0.1	0.3	0.8	**1.4**	**1.6**	**1.5**	**1.2**	**1.7**	**1.8**	**2.0**
Live animals	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.1
Sugar	0.8	**1.7**	**1.2**	**1.1**	0.7	0.7	0.7	0.5	0.5	0.5
Vegetable oils and oil crops	**6.4**	**7.4**	**1.4**	**2.5**	**2.6**	**3.3**	**2.3**	**2.6**	**2.7**	**2.8**
Cotton and fibres	0.4	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Eggs	**1.7**	**2.0**	0.9	1.1	0.6	1.0	0.6	0.6	0.5	0.6
Chocolate	**1.1**	**1.6**	**1.1**	**1.8**	**1.5**	**1.4**	**1.1**	**1.3**	**1.0**	**1.3**
Others	0.3	0.5	0.4	0.8	0.7	0.6	0.5	0.6	0.5	0.6

Source: FAO, author's calculations (2012)

Bold indicates the cases where RCA is greater than one, which means this product group has a comparative advantage. Despite the grouping, RCA confirmed the initial results. Cereals and their preparations, vegetable oils and oil crops, chocolate and cocoa products are groups that have comparative advantages. At the beginning of the period, the high value of the RCA index was observed in the group "Hides, skins and wool". But later their exports significantly decreased and they lost a comparative advantage. It likely happened because of the continued decline in the livestock sector and because in 1998 the licensing for export of hides and skins of cattle, sheep and other animals was established.

Analyzing the same set of products using Vollrath's index, we observe approximately the same patterns. However, using this index, one interesting trend was found. For the analyzed period, the number of products that have revealed competitive advantage has grown steadily and

increased from 13 to 46 items. This trend can be seen as increasing total competitiveness of the Russian agricultural exports. Then, we present the values of Vollrath's index by products groups according to their origin (Tab. 57).

Table 57 - The values of Vollrath's index by products groups of Russian agricultural foreign trade (according to their origin)

	1998	2000	2002	2004	2005	2006	2007	2008	2009	2010
Meat	-2.1	-1.8	-3.1	-2.6	-2.5	-2.8	-3.0	-2.7	-2.8	-2.6
Cereals and prep	**1.1**	**0.7**	**2.5**	**1.8**	**2.4**	**2.4**	**2.8**	**2.7**	**2.8**	**2.7**
Fats and offals	-2.5	-1.3	-2.4	-1.0	-1.1	-1.2	-1.0	-1.0	-1.0	-1.0
Fruit and nuts	-1.0	-1.0	-1.7	-1.1	-1.9	-1.8	-2.5	-2.6	-2.6	-2.7
Vegetables and mushrooms	-1.6	-1.0	-1.8	-1.0	-1.3	-1.3	-2.1	-1.8	-2.2	-2.7
Milk and milk products	**0.0**	**0.9**	-0.3	-0.3	-0.5	-0.1	-0.4	-0.3	-0.4	-0.8
Hides, skins and wool	**4.7**	**3.8**	**7.2**	**3.1**	**2.8**	**2.8**	**2.3**	**2.4**	**2.4**	**2.1**
Pulses and corn	**0.4**	-1.2	-1.2	-0.7	-0.7	-0.8	-1.0	-0.8	**0.4**	**0.2**
Root crops	**1.7**	**0.1**	**0.1**	**1.0**	**0.6**	**1.1**	**1.3**	**1.5**	**1.0**	**1.3**
Tea and coffee and spices	-1.0	-1.9	-2.1	-1.1	-1.1	-1.0	-1.2	-0.9	-1.1	-0.9
Beverages	-0.5	-0.2	-0.3	-1.0	-1.1	-0.5	-1.0	-0.8	-0.7	-0.5
Cigarettes and tobacco	-3.5	-1.8	-0.7	-0.0	**0.2**	**0.2**	-0.0	**0.4**	**0.3**	**0.6**
Live animals	**0.8**	**0.9**	-0.1	-0.1	-1.7	-2.8	-3.7	-3.0	-2.8	-2.2
Sugar	-1.4	-0.8	-1.0	-0.6	-1.0	-0.9	-0.9	-1.0	-0.6	-1.0
Vegetable oils and oil crops	**2.3**	**2.2**	**0.7**	**1.6**	**1.7**	**2.2**	**1.7**	**1.9**	**2.0**	**1.8**
Cotton and fibres	-0.6	-4.0	**1.8**	-3.1	-3.2	-3.6	-4.3	-5.2	-4.8	-2.7
Eggs	**0.1**	**2.9**	**0.9**	**0.7**	-0.2	**0.2**	-0.3	-0.3	-0.3	-0.5
Chocolate	**0.4**	**0.4**	-0.2	**0.3**	**0.2**	**0.3**	-0.0	**0.1**	-0.1	**0.1**
Others	-0.6	**0.1**	-0.4	**0.2**	**0.1**	0.0	-0.4	-0.2	-0.4	-0.3

Source: FAO, author's calculations (2012)

In the table 57, blue cells represent product groups, where both indices (classical Balassa's and Vollrath's index) identified comparative advantages. The use of the two indices for the same set of data reduces the likelihood of random error.

Throughout the whole analyzed period, cereals and their preparations, vegetable oils and oil crops, as well as hides and skins had comparative advantage. Furthermore, in the calculation of the index by groups of products, there are some additional groups that revealed comparative advantages. Those are root crops and eggs. But individual components of these groups didn't show comparative advantages in the analysis by Vollrath's index. We can assume that Vollrath's index is not suitable for the analysis of groups.

Anyway, these two indexes are not enough for a full, well-designed analysis. Further analysis is performed using the Lafay index and based on the geographical structure of foreign

trade. Calculation of the LFI index identified comparative advantages in the following groups (Tab 58).

Table 58 – Values of LFI index by product groups of Russian agricultural trade and by geographical area of foreign trade

	EU			CIS			Africa			Asia			Americas		
	1998	**2010**	**AM**	**1998**	**2010**	**AM**	**1998**	**2010**	**AM**	**1998**	**2010**	**AM**	**1998**	**2010**	**AM**
Meat	-3.5	-1.4	-3.0	-2.2	**0.3**	-1.3	0.0	-0.0	0.0	-3.5	-0.2	-1.2	-0.6	-0.9	-0.7
Cereals and prep	**0.2**	**0.2**	**3.1**	**3.5**	**6.7**	**8.2**	**6.8**	**46.3**	**32.8**	**11.7**	**22.7**	**20.8**	0.0	**0.2**	**0.3**
Fats and offals	-0.7	-0.6	-0.9	-0.0	**1.7**	**0.6**	x	x	-0.0	-0.0	**0.2**	-0.0	-0.1	-0.0	-0.0
Fruit and nuts	-0.5	-0.7	-0.8	-3.1	-11.5	-7.3	-4.5	-21.7	-15.6	0.1	-10.9	-7.4	-0.1	-0.3	-0.3
Vegetables and mushrooms	-1.0	-0.5	-0.5	-1.6	-5.6	-3.6	-0.9	-2.2	-1.3	-0.8	-6.2	-3.8	**0.1**	0.0	**0.1**
Milk and milk products	-0.7	-1.4	-1.1	**2.1**	-1.8	**0.3**	-0.1	-0.0	0.0	**0.6**	**0.2**	**0.4**	-0.0	-0.0	**0.0**
Hides, skins and wool	**7.2**	**0.6**	**3.3**	**0.2**	0.0	-0.0	**1.0**	0.0	**0.3**	**0.4**	**0.4**	**1.0**	**1.1**	**0.1**	**0.7**
Pulses and corn	-0.3	**1.7**	-0.1	0.0	-0.2	-0.4	-0.0	1.1	**0.5**	**0.4**	**0.7**	**0.6**	-0.0	-0.2	-0.1
Root crops	-0.2	**0.1**	-0.1	**0.9**	-0.2	**0.1**	-0.0	-1.5	-0.9	**0.1**	**0.0**	-0.2	-0.0	-0.0	0.0
Tea and coffee and spices	-0.2	-0.1	-0.4	**1.2**	**2.1**	**1.2**	-0.5	-2.9	-1.8	-7.4	-4.1	-7.0	-0.0	-0.1	-0.0
Beverages	-1.3	-0.4	-0.6	-3.7	-2.9	-4.7	**0.1**	-0.4	-0.1	**0.3**	**0.2**	**0.2**	**0.9**	**1.3**	**1.0**
Cigarettes and tobacco	-1.7	-0.0	-0.8	-1.8	**6.5**	**2.2**	-1.4	-6.5	-6.1	-2.5	-1.7	-3.0	-0.5	-0.1	-0.3
Live animals	0.0	-0.3	-0.3	**0.1**	0.0	0.0	-0.0	-0.0	-0.0	**0.1**	**0.1**	**0.1**	0.0	-0.0	0.0
Sugar	-0.7	**0.1**	-0.2	**1.6**	**0.3**	**2.1**	-1.4	-0.0	-0.5	**0.2**	**0.6**	-0.0	-0.9	-0.3	-0.6
Vegetable oils and oil crops	**5.1**	**4.1**	**4.1**	**1.3**	**0.4**	**0.2**	**7.7**	**1.9**	**5.5**	**0.3**	-0.4	**1.2**	**0.1**	0.0	-0.1
Cotton and fibres	**0.3**	**0.0**	**0.0**	-2.4	-2.1	-3.7	-0.0	-0.0	-0.2	-0.0	-0.1	-0.0	-0.0	0.0	-0.0
Eggs	-0.0	-0.1	-0.1	**0.4**	**0.1**	**0.2**	x	x	0.0	**0.1**	**0.1**	**0.1**	-0.0	-0.0	-0.0
Chocolate	0.2	-0.1	-0.1	**1.6**	**0.3**	**1.6**	-6.7	-4.0	-10.6	0.0	-0.3	-0.6	0.0	**0.1**	**0.1**
Others	-2.3	-1.0	-1.5	**1.7**	**5.9**	**4.1**	-0.1	-10.0	-1.9	-0.0	-1.4	-1.1	-0.0	-0.1	0.0

Sources: FAO, author's calculations (2012)

* AM is an a arithmetic mean of the values of LFI index during the analyzed period

The detailed analysis of revealed comparative advantage identified differences depending on the geographical areas of foreign trade. Table 58 shows that Russia has comparative advantages in larger amount of products in trade relations with CIS countries and Asian countries. This mainly occurs due to the geographical location of these regions, and hence lower transportation costs, as well as due to the well-established trade relations.

During the analyzed period, “Cereals and their preparations” have had a positive values of LFI index in relation to all regions as well as a noticeable increase over time.

It is very important group in Russian agricultural exports. This group makes up a large share of the total export value of the country and shows high growth rates in recent years. In 1998, its share in the total volume of Russian agricultural exports accounted for 19.9%, and at the end of the period it was already 46% of all exports.

Cereals and their preparations significantly strengthened its position in relation to the countries of Africa.

The reduction in values of the LFI index for analyzed period occurred in the following groups: “Milk and milk products” (in relation to all regions), “Hides, skins and wool” (most notably in relation to EU), “Vegetable oils and oil crops” (in relation to all regions).

For further analysis Russian exports and imports, have been regrouped into three groups depending on the degree of processing.

Considering the overall foreign trade of the Russian Federation from the point of view of this classification, the following trends can be identified (Tab. 59).

Table 59 - The values of Balassa’s index by products groups depending on the degree of processing

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary products	**1.2**	0.8	0.9	1.0	**1.4**	**1.4**	**1.1**	**1.2**	**1.1**	**1.4**	**1.1**	**1.2**	**1.2**
Processed products	0.5	0.9	1.0	1.0	0.6	0.7	1.0	0.9	0.9	0.7	0.9	0.9	0.9
By-products	**4.3**	**5.1**	**2.5**	**1.6**	0.6	0.5	0.6	0.4	0.3	0.3	0.5	0.4	0.6

Source: FAO, author’s calculations (2012)

At the beginning of the period from 1998 to 2001, the comparative advantages were observed in group of by-products (for example, bran of wheat, sunflower cake).

In 1998 and during the period from 2002 to 2010, the positive value of the index was indicated in the group of primary products (for example, wheat, barley etc.). Processed products have had a comparative disadvantage during the whole period.

The results of calculations indicated that Russia has a comparative disadvantage in processed products compared with primary products. But this is generally in relation to the whole world. Next, we calculate the Lafay index for individual regions.

LFI index by regions

According to results, it can be argued that primary products have the significant comparative advantage in EU countries, countries of the Commonwealth of Independent States and in Asian countries. In trade with the countries of North, Central and South America on the contrary the processed products have comparative advantages, while the most of primary products have comparative disadvantage.

Table 60 - The values of LFI index by products groups depending on the degree of processing in relation to CIS countries

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary products	-1.3	-7.6	-5.6	-3.2	-6.2	0.2	-4.4	-1.9	-10.6	-7.4	-10.3	-12.2	-11.3
Processed products	0.6	7.4	5.4	3.0	6.3	-0.5	3.4	1.2	9.8	6.3	9.1	10.8	9.7
By-products	0.7	0.2	0.2	0.2	-0.1	0.3	0.9	0.6	0.8	1.1	1.3	1.4	1.6

Sources: FAO, author's calculations (2013)

In the trade with CIS countries primary products generally have comparative disadvantage. However, it is worth noting that some of the products in this group have a comparative advantage. For example, such products are wheat (6.2% of total export, LFI=3.37), whole cow milk (0.67% of total export, LFI=0.31), sunflower seed (0.2% of total export, LFI=0.24), etc. In parentheses there are the shares of each commodity in the total exports of the country for 2010 and the value of LFI index.

Processed products have significant comparative advantages in relation to CIS countries. They are cereal preparations (for example, flour of wheat (0.55%, LFI=1.02), infant food (1.36%, LFI=0.37)), beer of barley (2.28% of total export, LFI=0.84), cigarettes (11.6%, LFI=2.46), tobacco products (3.19%, LFI=1.06) sugar refined (0.82%, LFI=1.62), sausages of pig meat (1.38%, LFI=0.75), food preparations nes. (11.2%, LFI=3.21)

Table 61 - The values of LFI index by products groups depending on the degree of processing in relation to European Union

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary products	3.4	-3.1	-1.6	0.9	7.1	5.8	3.4	3.6	2.1	4.0	-0.0	-0.4	-0.6
Processed products	-8.9	-3.4	-4.4	-4.5	-7.7	-5.9	-3.1	-2.9	-1.2	-3.4	0.6	1.2	0.9
By-products	5.5	6.5	6.0	3.7	0.6	0.1	-0.3	-0.7	-0.8	-0.6	-0.6	-0.8	-0.3

Sources: FAO, author's calculations (2013)

In relation to the European Union, at the beginning of the analyzed period, the comparative advantage was observed in the group of by-products. In 1998, as well as in 2001-2007, primary products showed positive values of LFI. In the last three years of the analyzed period, processed products have had revealed comparative advantages.

Positive values of the LFI index were observed in cases of following primary commodities: furs skin (4.7% of total export, LFI=1.05), barley (0.3%, LFI=0,63), peas (2.8%), rapeseed (2.7%,

LFI=0.35); and following processed products: sunflower oil (7.4%, LFI=1.46) and rapeseed oil (11%, LFI=0.34).

Table 62 - The values of LFI index by products groups depending on the degree of processing in relation to Africa

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary products	-0.2	-2.0	-20.2	-3.3	14.9	9.1	-2.2	1.5	-2.3	0.3	3.8	7.9	8.8
Processed products	-0.5	1.2	19.7	2.7	-15.2	-9.3	2.0	-1.6	2.3	-0.3	-3.9	-7.8	-8.5
By-products	0.7	0.7	0.5	0.6	0.3	0.3	0.1	0.1	-	0.0	0.1	-0.1	-0.3

Sources: FAO, author's calculations (2013)

In trade with Africa, we can observe noticeable fluctuations in the values of the index caused by volatile trade flows between Russia and this region. In recent years, the comparative advantages of primary products have strengthened because of growth in exports of wheat.

In 2010, the comparative advantages were found in the cases of only 3 items: wheat (90.3% of total export, LFI=29.85), barley (2.4% of total export, LFI=2.71) and sunflower oil (3.7% of total export, LFI=4.32).

Table 63 - The values of LFI index by products groups depending on the degree of processing in relation to Asia

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary products	2,6	6,5	1,6	6,1	8,4	12,3	2,4	7,5	6,7	11,3	10,7	7,6	2,6
Processed products	-2,9	-7,3	-3,7	-9,8	-8,6	-12,5	-3,5	-8,0	-7,1	-11,8	-11,3	-8,1	-3,7
By-products	0,4	0,7	2,2	3,7	0,2	0,2	1,1	0,6	0,4	0,5	0,6	0,4	1,1

Sources: FAO, author's calculations (2013)

In relation to the Asian countries, there is a strong revealed comparative advantage in the group of primary products. The group of by-products also shows the positive value of the LFI index throughout the whole period.

The list of products with comparative advantage includes primary products (wheat (52.3% of total export, LFI=14.76), barley (10.8%, LFI=6.14)), manufactured goods (flour of wheat (1.44% of total export, LFI=0.92), sunflower oil (8.26%, LFI=1.89)) as well as by-products (bran of wheat (1.28%, LFI=0.29), sunflower cake (2.67%, LFI=0.61) etc.)

Table 64 - The values of LFI index by products groups depending on the degree of processing in relation to Americas

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary products	-0.2	-2.4	-0.0	-0.4	-0.5	0.0	-0.4	-0.4	-0.3	-0.6	-0.3	-0.4	-0.4
Processed products	-0.5	-0.9	0.0	0.5	0.5	0.1	0.4	0.4	0.4	0.7	0.4	0.4	0.5
By-products	0.7	3.3	-0.0	-0.1	-0.1	-0.1	-0.0	-0.1	-0.0	-0.1	-0.1	-0.1	-0.1

Sources: FAO, author's calculations (2013)

In trade with the countries of North, Central and South America processed products have had comparative advantages since 2000. These products are, for example, beverages (both alcoholic (21.5% of total export, LFI=0.83) and non-alcoholic (1.7%, LFI=0.04)), cereal preparations (0.97%, LFI=0.02), oils of vegetable origin (0.21%, LFI=0.004)) etc.

Thus, LFI index allowed us to form a clearer picture of the specialization and comparative advantages of Russian agricultural exports in bilateral relations with individual regions. The index showed that the processed products have a comparative advantage in the American market. But even there, this advantage is weak (values of LFI are close to zero).

According to results, it can be argued that primary products have the significant comparative advantage in EU countries, countries of the Commonwealth of Independent States and in Asian countries. In trade with the countries of North, Central and South America on the contrary the processed products have comparative advantages, while the most of primary products have comparative disadvantage.

According to results, it can be argued that primary products have the significant comparative advantage in EU countries, countries of the Commonwealth of Independent States and in Asian countries. In trade with the countries of North, Central and South America on the contrary the processed products have comparative advantages, while the most of primary products have comparative disadvantage.

LFI by countries

The next step in this research will be to identify comparative advantages in relation to the individual important countries.

As already mentioned, the most important trade partners of the Russian Federation with regard to foreign trade in agricultural products are Germany, China, Ukraine, Brazil, the United States and Egypt.

This analysis is carried out by aggregations according to the 2-digit code in Harmonized System classification.

Table 65 - The values of LFI index for Russian trade in agricultural products and foodstuffs in relation to China

		1998	2000	2002	2004	2006	2008	2009	2010	2011	2012
01	Live animals	-0.0	-0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1
02	Meat and edible meat offal	-12.5	-0.8	-8.6	-3.9	-0.5	-0.1	-0.6	-0.2	0.0	-0.2
03	Fish, aquatic invertebrates	12.9	27.1	24.5	18.9	26.2	13.3	37.1	38.5	38.5	36.5
04	Dairy products, eggs, honey	0.0	0.8	-0.0	-0.0	0.1	-0.0	-0.0	-0.0	-0.0	-0.0
05	Products of animal origin, nes	0.0	1.9	0.1	0.4	0.2	0.5	0.1	0.1	0.3	0.2
06	Live trees, plants, bulbs, roots	-0.0	-0.0	-0.0	-0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
07	Edible vegetables and tubers	-1.6	-6.0	-3.4	-5.4	-6.2	-3.6	-9.8	-10.9	-12.0	-9.9
08	Edible fruit, nuts, melons	1.9	0.1	-0.6	3.1	-4.5	-3.7	-10.8	-10.2	-7.4	-7.4
09	Coffee, tea, mate and spices	-0.7	-0.9	-1.2	-1.2	-0.9	-0.6	-2.0	-2.4	-2.1	-2.2
10	Cereals	-0.9	-11.2	-2.4	-1.7	-1.8	-0.2	-0.8	-0.3	-0.3	-0.1
11	Milling products, malt	-0.1	-0.4	-0.0	-0.4	-0.3	-0.2	-0.1	-0.2	-1.3	-0.2
12	Oil seed, oleagic fruits, etc.	5.0	1.0	-1.8	-2.9	-1.4	-0.5	-1.5	-1.4	-1.1	0.0
13	Lac, resins, vegetable extracts	-0.0	-0.0	-0.0	-0.1	-0.2	-0.1	-0.6	-0.8	-0.9	-0.8
14	Vegetable plaiting materials	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0
15	Animal, vegetable fats, oils	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.1	-0.1	-0.0
16	Meat, fish and seafood prep	-1.2	-0.7	-0.9	-1.5	-1.7	x	x	x	X	-2.0
17	Sugars	-0.0	-0.0	-0.1	-0.3	-0.3	x	x	x	X	-1.7
18	Cocoa and cocoa preparations	-0.1	-0.0	-0.1	0.4	-0.0	x	x	x	X	-0.1
19	Cereal, milk preparations	-0.3	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.3	-0.3	-0.3
20	Vegetable, fruit, food prep.	-0.2	-0.9	-1.9	-4.0	-6.8	-4.1	-9.8	-10.5	-10.0	-9.2
21	Miscellaneous edible prep.	-0.2	-1.1	-0.8	0.9	-0.5	-0.3	-0.7	-1.0	-0.9	-0.9
22	Beverages, spirits and vinegar	-0.0	0.0	0.3	-0.1	-0.1	0.2	-0.1	-0.2	-0.1	-0.1
23	Residues, wastes of food	1.1	0.6	0.2	0.1	-0.1	-0.1	1.7	1.8	-0.3	0.2
24	Tobacco and tobacco subst.	-2.9	-9.3	-3.2	-2.1	-0.9	-0.5	-1.9	-2.1	-2.0	-1.6

Source: Comtrade database, author's calculations (2013)

In accordance with the results of calculation of the index can be seen that Russia has a comparative advantage in relation to China in the following groups of products:

HS-03 Fish, molluscs, aquatic invertebrates

HS-05 Products of animal origin, nes.

During the analyzed period, there was also the comparative advantage in relation to the group HS-23 "Residues, wastes of food industry, animal fodder" although in some years the value of the index in this group was negative.

There is a clear upward trend in comparative advantage in the group of fish, molluscs and aquatic invertebrates. The other products have a comparative disadvantage with respect to China.

The most negative value of the index are obtained in such groups as HS-20 "Vegetable, fruit, nut, etc. food preparations", HS-08 "Edible vegetables and certain roots and tubers" and HS-10 "Cereals".

Table 66 - The values of LFI index for Russian trade in agricultural products and foodstuffs in relation to Brazil

		1998	2000	2002	2004	2006	2008	2009	2010	2011	2012
01	Live animals	0.0	x	x	x	x	x	x	x	x	x
02	Meat and edible meat offal	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.3	-0.1	-0.5
03	Fish, aquatic invertebrates	-0.0	-0.0	-0.0	-0.0	0.1	x	x	-0.0	-0.0	-0.0
04	Dairy products, eggs, honey	-0.0	x	-0.0	x	-0.0	-0.0	x	x	x	x
05	Products of animal origin, nes	x	x	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
06	Live trees, plants, bulbs, roots	x	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
07	Edible vegetables and tubers	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
08	Edible fruit, nuts, melons	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
09	Coffee, tea, mate and spices	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
10	Cereals	x	x	0.1	-0.0		-0.0	-0.0	0.4	-0.0	-0.0
11	Milling products, malt	x	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
12	Oil seed, oleagic fruits, etc.	-0.0	x	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
13	Lac, resins, vegetable extracts	x	x	-0.0	x	-0.0	-0.0	x	-0.0	-0.0	-0.0
14	Vegetable plaiting materials	x	x	-0.0	x	x	x	x	x	x	x
15	Animal, vegetable fats, oils	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
16	Meat, fish and seafood prep	-0.0		-0.0	-0.0	-0.0	x	x	x	x	x
17	Sugars	-0.3	-0.0	-0.0	-0.0	-0.0	x	x	x	x	-0.1
18	Cocoa and cocoa preparations	-0.0	-0.0	-0.0	-0.0	-0.0	x	x	x	x	0.0
19	Cereal, milk preparations	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	0.1	0.8
20	Vegetable, fruit, food prep.	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
21	Miscellaneous edible prep.	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
22	Beverages, spirits and vinegar	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	Residues, wastes of food	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
24	Tobacco and tobacco subst.	-0.1	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.1

Source: Comtrade database, author's calculations (2013)

Considering the trade flows between Russia and Brazil, we obtained the following results. Russian agricultural products has comparative disadvantage in almost all product groups.

The maximum value for the index was observed in the group HS-22 Beverages, spirits and vinegar, but even there it was close to zero.

Table 67 - The values of LFI index for Russian trade in agricultural products and foodstuffs in relation to Egypt

		1998	2000	2002	2004	2006	2008	2009	2010	2011	2012
01	Live animals	x	0.2	x	x	x	x	x	x	-0.0	x
02	Meat and edible meat offal	x	x	x	x	x	x	x	x	x	x
03	Fish, aquatic invertebrates	x	-0.0	-0.1	-0.0	-0.0	x	x	x	-0.0	x
04	Dairy products, eggs, honey	-0.0	x	0.1	x	x	x	x	x	x	x
05	Products of animal origin, nes	0.2	x	-0.0	x	x	x	x	-0.0	x	x
06	Live trees, plants, bulbs, roots	0.1	x	-0.1	-0.1	x	-0.0	-0.0	-0.0	-0.0	-0.0
07	Edible vegetables and tubers	-0.0	-18.6	-0.3	-3.6	-6.4	-7.7	-7.3	-11.9	-6.6	-9.7
08	Edible fruit, nuts, melons	-0.1	-8.3	-1.8	-14.7	-27.3	-23.1	-13.0	-17.9	-20.3	-21.9
09	Coffee, tea, mate and spices	-0.0	-0.0	-0.0	-0.6	-0.5	-0.0	-0.0	-0.1	-0.1	-0.1
10	Cereals	-0.0	-2.9	0.2	21.7	32.6	27.6	19.2	30.6	26.8	31.5
11	Milling products, malt	-0.0	x	x	-0.0	x	x	x	x	x	x
12	Oil seed, oleagic fruits, etc.	-0.0	-2.4	-6.4	-0.9	-1.0	-0.5	-0.4	-0.7	-0.9	-0.8
13	Lac, resins, vegetable extracts	x	x	x	x	x	x	x	x	x	x
14	Vegetable plaiting materials	x	-0.0	x	x	-0.0	-0.0	-0.0	x	x	x
15	Animal, vegetable fats, oils	-0.0	34.8	12.8	0.4	1.0	3.6	1.5	0.1	1.1	1.0
16	Meat, fish and seafood prep	x	0.0	0.0	x	x	x	x	x	x	x
17	Sugars	-0.0	-0.3	-0.2	-0.2	x	-0.0	x	x	x	x
18	Cocoa and cocoa preparations	-0.0	-0.2	0.0	x	x	-0.0	x	x	x	x
19	Cereal, milk preparations	-0.0	-0.4	-0.0	x	x	-0.0	x	-0.0	x	x
20	Vegetable, fruit, food prep.	-0.0	-0.2	0.0	x	x	-0.0	-0.0	-0.1	-0.1	-0.0
21	Miscellaneous edible prep.	-0.1	-0.7	-3.7	-2.0	-1.0	-0.1	-0.0	-0.0	-0.0	-0.0
22	Beverages, spirits and vinegar	-0.0	x	0.0	x	x	-0.0	x	-0.0	x	0.0
23	Residues, wastes of food	x	x	0.1	x	2.6	0.2	0.1	0.1	0.2	0.1
24	Tobacco and tobacco subst.	x	-1.0	-0.6	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0

Source: Comtrade database, author's calculations (2013)

In relation to Egypt, the highest level of revealed comparative advantage has been identified in the group of Cereals (HS-10). This can be explained by the large volume of wheat exports from Russia to Egypt (mainly feed wheat). Since 2002, the index of comparative advantage significantly increased.

Positive values of LFI index was also observed in the group HS-15 "Animal, vegetable fats and oils, cleavage products, etc." on account of exports of sunflower oil as well as in the group "HS-23 Residues, wastes of food industry, animal fodder" because of exports of wastes from the production of cereals.

Table 68 - The values of LFI index for Russian trade in agricultural products and foodstuffs in relation to USA

		1998	2000	2002	2004	2006	2008	2009	2010	2011	2012
01	Live animals	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1	-0.3	-0.7
02	Meat and edible meat offal	-3.8	-2.6	-4.3	-4.3	-4.7	-2.9	-3.3	-4.0	-2.6	-2.3
03	Fish, aquatic invertebrates	3.9	0.8	1.0	2.4	1.6	1.1	0.7	1.7	0.2	0.1
04	Dairy products, eggs, honey	-0.1	-0.1	0.1	0.2	0.1	-0.1	0.1	-0.1	0.0	0.0
05	Products of animal origin, nes	0.0	0.2	-0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2
06	Live trees, plants, bulbs, roots	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
07	Edible vegetables and tubers	-0.1	-0.1	-0.0	-0.0	0.1	-0.0	-0.0	0.0	-0.0	0.0
08	Edible fruit, nuts, melons	-0.2	-0.0	-0.1	-0.1	-0.2	-0.3	-0.3	-0.8	-0.6	-0.4
09	Coffee, tea, mate and spices	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
10	Cereals	-0.0	-1.2	-0.1	-0.1	-0.0	-0.0	0.0	-0.0	-0.0	-0.0
11	Milling products, malt	0.0	-0.0	0.0	0.2	0.4	0.9	1.3	1.4	1.1	1.0
12	Oil seed, oleagic fruits, etc.	0.3	-0.0	-0.0	-0.1	-0.2	-0.1	-0.2	-0.4	0.5	-0.2
13	Lac, resins, vegetable extracts	-0.0	-0.0	0.0	0.2	0.0	0.0	-0.0	-0.0	-0.0	-0.1
14	Vegetable plaiting materials	-0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
15	Animal, vegetable fats, oils	-0.1	-0.1	-0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0
16	Meat, fish and seafood prep	0.9	2.8	0.8	0.2	0.2	x	x	x	x	0.0
17	Sugars	0.0	0.0	0.0	0.3	0.1	x	x	x	x	0.1
18	Cocoa and cocoa preparations	0.0	0.2	0.3	0.7	0.7	x	x	x	x	0.5
19	Cereal, milk preparations	-0.2	0.1	0.2	0.6	0.5	0.3	0.4	0.7	0.4	0.4
20	Vegetable, fruit, food prep.	0.2	0.1	0.0	0.4	0.3	0.3	0.3	0.5	0.4	0.4
21	Miscellaneous edible prep.	-0.1	-0.0	-0.0	-0.4	-0.1	-0.1	-0.1	-0.6	-0.3	-0.1
22	Beverages, spirits and vinegar	1.7	1.0	3.3	0.7	1.7	1.1	1.5	2.5	1.6	1.4
23	Residues, wastes of food	0.1	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	-0.3	-0.1	-0.1
24	Tobacco and tobacco subst.	-2.5	-0.6	-1.1	-0.7	-0.5	-0.2	-0.3	-0.5	-0.3	-0.2

Source: Comtrade database, author's calculations (2013)

Consdering the values of LFI index in relation to Germany the following results was obtained. During the whole period, there were positive values of LFI index product groups:

HS-03 "Fish, molluscs, aquatic invertebrates"

HS-19 "Cereal, flour, starch, milk prep."

HS-20 "Vegetable, fruit, nut, etc. food preparations"

HS-22 "Beverages, spirits and vinegar"

During the study period there has been increasing comparative advantage in the group HS-11 Milling products. In the other groups, there were not significant changes.

Table 69 - The values of LFI index for Russian trade in agricultural products and foodstuffs in relation to Ukraine

		1998	2000	2002	2004	2006	2008	2009	2010	2011	2012
01	Live animals	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
02	Meat and edible meat offal	-4.6	-6.9	-10.5	-4.7	-0.3	-1.6	-2.2	-1.1	-3.1	-4.2
03	Fish, aquatic invertebrates	3.2	2.5	0.4	0.1	0.8	0.3	0.3	0.3	0.8	0.7
04	Dairy products, eggs, honey	-0.9	-1.8	-1.4	-5.7	-2.5	-5.4	-6.8	-6.6	-8.4	-4.9
05	Products of animal origin, nes	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0
06	Live trees, plants, bulbs, roots	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
07	Edible vegetables and tubers	0.5	-0.2	0.0	-0.1	-0.6	-1.0	-2.9	-1.8	-1.7	-1.6
08	Edible fruit, nuts, melons	-0.4	-0.3	0.0	-0.3	-1.1	-1.0	-2.6	-2.3	-0.8	-0.8
09	Coffee, tea, mate and spices	0.6	0.1	0.6	2.4	4.1	4.9	5.5	4.5	4.6	3.5
10	Cereals	1.3	0.9	4.5	0.2	-0.8	-1.3	0.0	0.2	0.1	0.0
11	Milling products, malt	-0.3	5.3	0.1	0.3	1.1	0.8	0.3	0.1	0.5	0.3
12	Oil seed, oleagic fruits, etc.	0.5	0.0	0.0	-0.1	-0.2	-0.6	-0.4	-0.8	-0.5	-0.4
13	Lac, resins, vegetable extracts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	Vegetable plaiting materials	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Animal, vegetable fats, oils	-0.4	-1.8	-3.3	-1.5	-3.8	-8.1	-3.5	-4.5	-3.1	1.2
16	Meat, fish and seafood prep	-1.0	0.5	0.9	1.3	3.2	x	x	x	x	0.9
17	Sugars	-1.6	-1.8	0.0	-0.1	-0.5	x	x	x	x	0.8
18	Cocoa and cocoa preparations	1.3	0.3	-2.3	-0.1	-2.4	x	x	x	x	-3.0
19	Cereal, milk preparations	0.2	0.7	1.1	2.7	1.6	3.1	1.8	2.3	1.7	0.7
20	Vegetable, fruit, food prep.	-0.3	0.1	-0.3	-0.4	0.0	-0.4	-1.7	-2.1	-2.5	-2.2
21	Miscellaneous edible prep.	1.2	0.5	1.7	3.2	5.1	6.2	5.3	5.5	5.3	3.9
22	Beverages, spirits and vinegar	-0.7	0.2	-0.2	-3.1	-9.9	-5.5	-8.5	-4.4	-3.0	-2.4
23	Residues, wastes of food	1.6	0.8	1.1	1.4	2.1	1.5	2.0	2.2	3.4	1.8
24	Tobacco and tobacco subst.	-0.4	0.8	7.8	4.3	3.9	8.0	13.3	8.5	6.9	5.5

Source: Comtrade database, author's calculations (2013)

In relation to Ukraine, a large number of product groups have comparative advantages. Among them are:

HS-11 "Milling products, malt, starches, inulin",

HS-03 "Fish, molluscs, aquatic invertebrates",

HS-09 "Coffee, tea, mate and spices",

HS-21 "Miscellaneous edible preparations",

HS-23 "Residues, wastes of food industry, animal fodder",

HS-24 "Tobacco and tobacco products".

Strengthening of comparative advantage was observed in the groups "Coffee, tea, mate and spices" and "Tobacco and tobacco products", that is, products that Russia does not produce but re-exports. The comparative advantages of the "Fish, molluscs, aquatic invertebrates" decreased. Also, during the analyzed period, there was weakening of comparative advantage of "Cereals" but strengthening of "Cereal, flour, starch and milk preparations".

Table 70 - The values of LFI index for Russian trade in agricultural products and foodstuffs in relation to Germany

		1998	2000	2002	2004	2006	2008	2009	2010	2011	2012
01	Live animals	0.0	0.0	-0.1	-0.1	-0.7	-0.7	-0.6	-0.2	-0.2	-0.1
02	Meat and edible meat offal	-2.3	-4.0	-4.8	-3.7	-3.4	-3.7	-3.7	-2.7	-2.7	-2.7
03	Fish, aquatic invertebrates	2.9	4.0	5.1	6.6	5.8	2.2	3.9	2.1	1.8	1.0
04	Dairy products, eggs, honey	-1.1	-0.5	-1.9	-2.2	-2.7	-2.0	-1.9	-2.0	-1.7	-2.5
05	Products of animal origin, nes	0.2	0.5	0.3	0.6	0.6	0.6	0.2	0.3	0.4	0.5
06	Live trees, plants, bulbs, roots	0.0	0.0	0.0	-0.2	0.0	-0.1	0.0	0.0	0.0	0.0
07	Edible vegetables and tubers	0.3	0.5	0.1	0.8	1.0	0.7	0.5	0.1	0.4	0.3
08	Edible fruit, nuts, melons	0.0	0.4	0.0	0.5	0.4	0.1	0.1	0.0	0.2	0.2
09	Coffee, tea, mate and spices	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Cereals	0.0	-0.9	1.4	-0.2	0.0	0.8	0.2	0.0	0.1	2.0
11	Milling products, malt	-0.3	-1.8	-1.2	-0.8	-0.2	0.0	0.0	0.0	0.0	-0.1
12	Oil seed, oleagic fruits, etc.	3.5	4.5	0.1	0.5	0.2	0.0	0.6	0.9	0.7	0.8
13	Lac, resins, vegetable extracts	-0.1	-0.1	-0.2	-0.1	-0.2	-0.3	-0.3	-0.1	-0.1	-0.2
14	Vegetable plaiting materials	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Animal, vegetable fats, oils	-0.7	-1.2	-1.0	-0.4	0.1	2.3	0.0	0.6	0.7	1.8
16	Meat, fish and seafood prep	0.8	0.8	1.0	0.2	0.0	x	x	x	x	-0.2
17	Sugars	-0.2	-0.6	0.0	0.2	0.3	X	x	x	x	0.6
18	Cocoa and cocoa preparations	-0.1	0.2	0.2	0.4	0.1	x	x	x	X	-0.2
19	Cereal, milk preparations	-0.4	0.0	-0.1	0.2	0.3	0.0	-0.2	-0.1	-0.3	-0.6
20	Vegetable, fruit, food prep.	0.2	-0.1	-0.3	-0.2	-0.4	-0.1	0.4	0.5	0.6	0.6
21	Miscellaneous edible prep.	-1.0	-1.7	-1.8	-1.5	-1.6	-1.5	-0.8	-0.9	-1.1	-2.1
22	Beverages, spirits and vinegar	-0.1	1.3	4.4	0.6	0.5	0.6	1.2	1.5	1.4	1.0
23	Residues, wastes of food	-0.4	-0.6	-0.4	-0.8	-0.5	-0.1	-0.8	-0.3	-0.3	-0.1
24	Tobacco and tobacco subst.	-1.7	-1.4	-0.6	-0.6	0.2	1.1	1.2	0.3	0.0	0.0

Source: Comtrade database, author's calculations (2013)

The highest comparative advantages in relation to Germany were found in the group of "Fish, molluscs, aquatic invertebrates".

Also, the positive value of the index was observed with respect to "Products of animal origin, nes.", "Beverages, spirits and vinegar" as well as "Oil seed, oleagic fruits, grain, seed, fruit" (due to exports of sunflower and rapeseed oil)

In addition to the most important countries in this analysis the comparative advantages of the Russian agricultural production has been considered in relation to all countries with which the country has trade relations in this sphere. In 2012, countries in relation to which the Russian agricultural products have comparative advantage are:

Table 71 – Top 15 countries in term of comparative advantage of Russian agricultural products in 2012 (according to LFI index)

	Country	LFI index
1	Egypt	4.19
2	Turkey	3.24
3	Kazakhstan	3.14
4	Rep. of Korea	2.49
5	Saudi Arabia	1.38
6	Azerbaijan	1.09
7	Iran	1.01
8	China	0.91
9	Georgia	0.71
10	Latvia	0.65
11	Japan	0.63
12	Libya	0.58
13	Yemen	0.53
14	Iraq	0.50
15	Kyrgyzstan	0.42

Source: Comtrade database, author's calculations (2013)

As can be seen in the table, the most significant comparative advantage was observed in relation to Egypt, Turkey and Kazakhstan. The complete list of countries with the values of LFI index can be found in the Appendix 5.

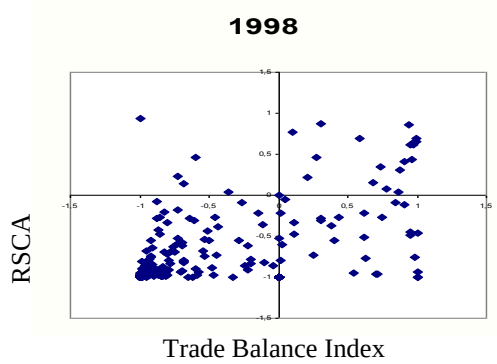
10.4 "Product mapping" of Russian agricultural exports

The analysis of the comparative advantage and specialization of Russian foreign trade in agricultural products and foodstuffs is conducted by the distribution of the whole range of the exported and imported commodities in accordance with the methodology described before.

From the domestic point of view, leading exported products are supposed to be the products that can give bigger amount of foreign exchange for domestic economy. It means that the higher the share of a specific product in the total domestic exports, the more significant the contribution of the exported product to the domestic economy becomes. Such product can be considered as foreign exchange creator for domestic economy. (Widodo, 2009)

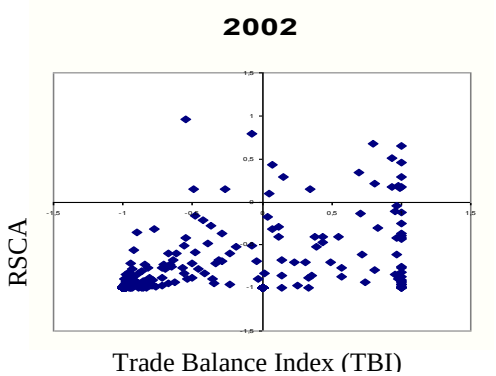
From international competition point of view, a specific exported product becomes leading exports if its share in the total world export is dominant. This way we distinguish from the total export flows a group that creates the foundation of the country's exports, the group that contains the best products in term of their comparative advantage and trade balance. We also separate a group that has no revealed comparative advantage and keep negative trade balance as opposed to the first group. (Widodo, 2009). The remaining two groups can be considered as a transient from group D to group A, or vice versa.

Figure 21- Products mapping of Russian export (1998-2010)



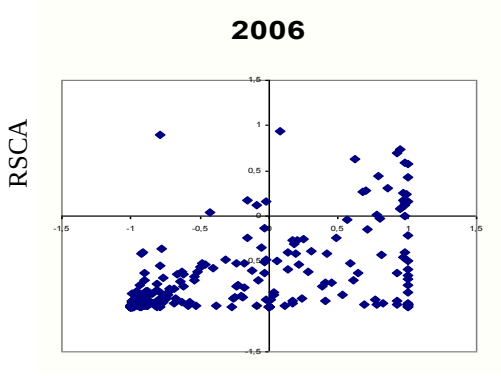
Group A*

1) Chicory roots (659, 0.06%)
2) Sunflower seed (214013, 20.69%)
3) Pot Barley (314, 0.03%)
4) Skins Wet Std Calves (23210, 2.24%)
5) Walnuts (9508, 0.92%)
6) Hides Wet Salted Horses (1147, 0.11%)
7) Hides Nes (6722, 0.65%)
8) Millet (2736, 0.26%)
9) Hides Wet Salted Cattle (150638, 14.6%
10) Hidesdry S.Cattle (3529, 0.34%)
11) Bran of Rice(570, 0.06%)
12) Beeswax (1209, 0.12%)
13) Rye (2602, 0.25%)
14) Cereals, nes (856, 0.08%)
15) Molasses (9060 ,0.88%)
16) Skin Furs (23993, 2.32%)
17) Peas,green (1446, 0.14%)
18) Meat nes (1437, 0.14%)



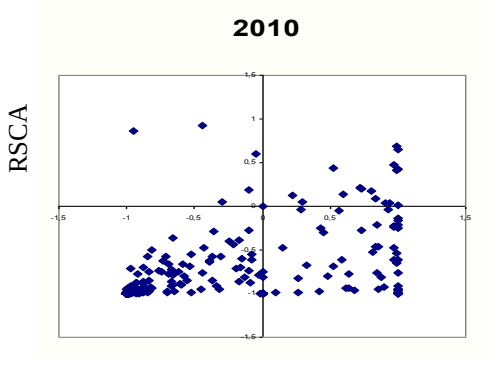
Group A

1) Barley (214316, 11.65%)
2) Bran of Rice (1763, 0.1%)
3) Wheat (773067, 42.02%)
4) Skins wet Sltd. Pigs (228, 0.01%
5) Wafers (7063, 0.38%)
6) Flour of Cereals (3184, 0.17%)
7) Hemp Tow Waste (183, 0.01%)
8) Sunflower Cake (7522, 0.41%)
9) Peas, dry (14241, 0.77%)
10) Mustard seed (2496, 0.14%)
11) Skin Furs (35805, 1.95%)
12) Millet (1143, 0.06%)
13) Nuts, nes (8045, 0.44%)
14) Sunflower seed (16772, 0.91%)
15) Milk Whole Cond. (5304, 0.29%)



Group A

1) Tomatojuice Concentrated (2948, 0.07%)
2) Barley Flour and Grits (404, 0.01%
3) Sunflower Cake (54915, 1.26%)
4) Sunflower oil (385315, 8.82%)
5) Mustard seed (10394, 0.24%)
6) Buckwheat (4728, 0.11%)
7) Wheat (1368457, 31.33%)
8) Beet Pulp (17586, 0.4%)
9) Flour of Cereals (6192, 0.14%)
10) Barley (158077, 3.62%)
11) Butterm.,Curdl,Acid.Milk (52699 1.21%)
12) Blueberries (7857, 0.18%)
13) Flour of Rye (953, 0.02%)
14) Pot Barley (112, 0.0%)
15) Barley Pearled (240, 0.01%)
16) Skin Furs (104674, 2.40%)
17) Linseed (9399, 0.22%)
18) Milk Whole Cond (13110, 0.3%)
19) Millet (2492, 0.06%)
20) Meat Dried Nes (4091, 0.09%)
21) Milk Whole Evp (27591, 0.63%)



Group A

1) Sunflower Cake (111534, 1.91%)
2) Beet Pulp (41059, 0.70%)
3) Linseed (45480, 0.78%)
4) Sunflower oil (379106, 6.5%)
5) Hair Coarse Nes (497, 0.01%)
6) Wheat (2069121, 35.48%)
7) Barley (197095, 3.38%)
8) Pot Barley (162, 0.01%)
9) Bran of Wheat (20567, 0.35%)
10) Rice Flour (1173, 0.02%)
11) Cereal Prep., Nes (13944, 0.24%)
12) Barley Flour and Grits (596, 0.01%)
13) Offals Liver Chicken (9445, 0.16%)
14) Milk Whole Cond (15517, 0.27%)
15) Barley Pearled (267, 0.01%)
16) Butterm.,Curdl,Acid.Milk (46137, 0.79%)

Source: FAO, author's calculation (2012)

* note: The right part of the fig. 21 represents products in Group A, in decreasing order of the index RSCA. In brackets next to the name of the product its value is specified (in thousands of U.S. dollars), as well as its share in total Russian export.

Figure 21 presents the products mapping for 1998-2010. As we can see, the lower left area of the chart is the most filled with dots representing exported products. This is a group D that has no comparative advantage and keeps negative trade balance. The upper left area of the chart is the emptiest one. This is a group B. Items in this group have comparative advantage but negative trade balance. On the right of the chart there is a list of commodities included in the group A. These products are considered as the best products in term of their comparative advantage and trade balance. They are in the position of having comparative advantage in the international trade and the country has positive trade balance in this products.

Next, consider these groups in more detail.

Table 72 – The share of individual groups in total number of agricultural products* exported by Russian Federation (%)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Group A	5.8	4.7	4.7	4.3	4.8	4.4	4.0	5.3	5.8	5.9	5.6	5.3	5.3
Group B	1.5	1.2	0.9	1.6	1.3	1.9	2.0	1.4	1.4	1.1	0.8	1.1	1.1
Group C	8.6	8.7	12.5	13.0	17.5	13.8	12.4	14.6	15.5	15.8	14.3	18.2	15.8
Group D	84.0	85.4	81.9	81.1	76.4	79.9	81.6	78.7	77.3	77.1	79.2	75.4	778

Source: FAO, author's calculation (2012)
*the term "total number of agricultural products" here means the set of 683 commodities according to FAOSTAT Commodity List

From 1998 to 2010, the number of products in each group did not change significantly.

The most of the products is part of the group D. They have no revealed comparative advantage and keep negative trade balance. However, this is a normal phenomenon for any country, where different branches of agriculture have different efficiency, due to economic, historical, natural or geographical factors. Such products are for example tropical fruits (bananas, apricots, coconut, etc.), meat, and most of the meat products, tea, coffee etc.

During the analyzed period, there was a decrease of number of products in group D, and the increase in the group C.

Group C contains the part of the products, not having comparative advantage according to the RCSA index, but having a positive trade balance. The comparative disadvantage in this case, may occur in relation to the whole world, while in bilateral trade with individual regions or countries comparative advantages quite possibly exist.

Group B consists of products, which have comparative advantage but the country is a net-importer of these products. For example, in 2010 this group included Flour of Sorghum, Tomato juice Concentrated, Flour of Mixed Grain, Fat Preparations Nes., and Cheese Processed.

The existence of this group can be explained as follows. The total volume of global trade in these commodities is rather insignificant. Meanwhile, in this small-scale market Russia plays a

significant role both as the exporter and the importer. This determines the comparative advantages of the country in these items. However, imports of these products exceed exports. There are very few such small-scale markets. These cases can be considered as specific, unusual for the system as a whole. Otherwise, this group is a transitional group for goods which is obtaining or losing their comparative advantages over time.

Generally, the higher the comparative advantage of a specific product, the higher the possibility of a country to be a net-exporter.

The export value of each group

To rationally judge about any changes in the structure of Russian exports, in the context of this grouping, we must investigate not only the number of products included in each group, but primarily their values and their share in the total value of foreign trade in agricultural products. Table 73 shows the share of each group in the total agri-food export value of the Russian Federation.

Table 73- The share of individual groups in the total value of Russian agricultural export (%)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Group A	43.8	35.3	32.9	30.8	59.3	56.9	40.8	53.1	51.0	65.7	59.1	59.4	50.6
Group B	1.3	0.8	6.9	5.0	4.5	5.3	8.3	3.6	4.1	0.4	0.5	0.4	2.2
Group C	20.4	6.4	15.4	18.7	11.7	7.2	11.3	13.0	12.2	9.5	9.9	15.0	15.7
Group D	34.5	57.5	44.8	45.6	24.4	30.6	39.6	30.3	32.7	24.3	30.5	25.2	31.5
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: FAO, author's calculation (2012)

Considering the value of products in each group instead of the number of products, we have got completely different results. According to the results of calculations, much of the export value is concentrated in Group A.

In 1998, the Group A comprised 43.8% of the total value of agricultural exports, in 2002-2003 increased to almost 60%, in 2007 reached its maximum of 65.7% and in 2010 it was 50.6%.

Since 2002, wheat has the greatest weight in the group A and amounted to 42.02% of total exports in 2002, 31.3% in 2006 and 35.5% in 2010, while the whole group A represented 59.3%, 51% and 50.6% of total exports respectively.

At the beginning of the period, in 1998, wheat had no comparative advantage and Sunflower seed (20.7% of the total export) and Hides Wet Salted Cattle (14.6%) constituted the basis of group A. Later they have lost their relevance. In the case of sunflower seed it was likely caused by increase in production capacity for oilseed processing and by increase of the export of vegetable oils instead of raw materials (sunflower seeds), as it was in the 90's. In relation to Hides

Wet Salted Cattle, the reduction of export performance was caused by the continued decline in the livestock sector.

Moreover, in October 1998, Russian Government established a licensing for export of hides and skins of cattle, sheep and other animals (The Decree of the government of the Russian Federation "On establishment of licensing export of cattle, sheep and other raw hides from Russian Federation" October 31, 1998 № 1267). These export restrictions were aimed at protecting domestic leather industry.

At the same time, there is a reduction in the value of groups D and C. These trends can be considered as a strengthening of the comparative advantages of the total Russian exports.

To avoid fluctuations in the time series we calculate a fixed-base index and a chain base index for the series of the values of exports and imports.

Table 74 – Changes in export value of agricultural products in each group: the fixed-base index (at current prices, %)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Group A	100	48	78	76	241	294	198	404	492	1121	1030	986	651
Group B	100	36	561	421	628	929	1383	935	1367	247	302	227	974
Group C	100	18	78	99	102	79	117	213	251	348	371	536	432
Group D	100	99	135	143	126	201	244	294	400	528	675	533	516

Source: FAO, author's calculation (2012)

According to the results of calculation of the fixed-base index, we can see that the decline in international trade in Russia after the economic crisis of 1998 affected all product groups, but most of all the group C.

Group A had been growing until 2008, when due to another economic crisis and the low yields of wheat, the value of its exports, and consequently, the cost of the whole group A decreased.

For clarity, we also calculate a chain-base index and a geometric mean of chain indices.

A chain base index is an index number in which the value at any given period is related to a base in the previous period. It measures changes in volume from period to period.

A geometric mean (GM) of chain indices is the average change in the value of export or import. GM1 is a geometric mean of chain indices for the period from 1999 to 2010; GM2 is a geometric mean of chain indices for the period from 2000 to 2010. We calculated two geometric means for the following reason. In 1999, after the crisis, there was a strong decline in exports. It significantly affected the value of geometric mean. So the second geometric mean was calculated for the period 2000-2010, to avoid the impact of the crisis.

Table 75 – Changes in export value of agricultural products in each group: the chain index (at current prices, %)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	GM_1	GM_2
Group A	48	164	97	317	122	67	204	122	228	92	96	66	117	127
Group B	36	1551	75	149	148	149	68	146	18	122	75	430	121	135
Group C	18	426	126	103	78	148	181	118	139	106	145	81	113	133
Group D	99	137	106	88	159	121	120	136	132	128	79	97	115	116
Total Russian agricultural export	59	176	104	165	127	94	157	127	177	102	95	77	116	123
Total world agricultural export	95	99	101	107	119	116	108	110	121	122	89	113	108	109

Source: FAO, author's calculation (2012)

During the analyzed time period, the value of each group fluctuated considerably. The possible reasons for such oscillations are following. Firstly, the index is calculated at current prices. Prices for agricultural products were fluctuating and the chain index was changing respectively. In addition, contents of the groups had been changing over time, creating fluctuations in their value.

For example, in 2000-2004 sunflower oil belonged to group B. It created a large part of the value of the group. Then, in 2005, it moved to group A. The value of group A rose. The value of group B decreased.

In 2002-2006, tobacco products were in group B (before they were in the group D). Then, in 2007, tobacco products moved to group A causing a sharp decline in the value of group B.

The average annual increase in the value of group A is 17%, group B – 21%, group C – 13% and group D – 15%, that can be described as quite proportional growth along with the overall increase in exports.

In the post-crisis period, the growth of each group was even higher. The average annual increase in the value of group A was 27%, group B – 35%, group C – 33% and group D – 16%. Thus the growth of Russian agricultural export is much higher than the global rate of 9%.

The import value of each group

Next, we consider the value of imports in the context provided by the methodology.

Table 76 - The share of individual groups in the total value of Russian agricultural import, (%)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Group A	0.2	0.3	0.2	0.8	0.8	1.3	2.6	1.9	1.5	1.8	1.5	0.7	0.6
Group B	0.8	0.5	1.3	1.3	2.0	3.2	3.2	1.2	1.2	0.2	0.2	0.2	0.6
Group C	1.6	0.2	1.2	1.3	1.0	0.5	1.0	1.5	1.4	1.1	0.9	1.4	0.8
Group D	97.4	99.1	97.2	96.6	96.2	95.0	93.2	95.5	95.9	96.8	97.4	97.7	98.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: FAO, author's calculation (2012)

Here we can see that the first three groups of products for the entire investigated period have not exceeded the share of 3-4% of the total import (with the exception of 2003 and 2004 when the share of groups A, B and C for a total was 5-7%, which in fact is also not a big amount).

Group D accounts 95-99% of the total imports. Production of these commodities is ineffective for any reason within the Russian Federation, so country has to import them.

Table 77 – Changes in import value of agricultural products in each group: the fixed-base (at current prices, %)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Group A	100	82	68	272	302	587	1307	1159	1175	1790	1932	801	804
Group B	100	45	119	137	234	434	488	219	293	73	91	65	219
Group C	100	10	52	70	54	33	72	140	159	170	168	222	159
Group D	100	77	69	82	88	102	113	144	181	232	299	255	305

Source: FAO, author's calculation (2012)

In the case of imports, there are also visible negative effects of the crisis in 1998 in relation to the total foreign trade.

There is also a visible increase in the value of group A. The main reason is the growth in the import of wheat.

Since 2002, wheat has been in the group A. Despite the comparative advantage and significant share of wheat in the total value of Russian agricultural export, the country imports this product. Russia imports mainly high quality wheat and seeds. For example, durum wheat does not yield in the climatic conditions of the most of Russia but it is the main raw material for the production of pasta. Therefore, country has to import it. (Gaidar, 2009)

Thus the value of group A grew and fell along with the value of wheat imports.

Table 78 – Changes in import value of agricultural products in each group: the chain index (at current prices, %)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	GM_1	GM_2
Group A	82	83	400	111	194	223	89	101	152	108	41	100	119	123
Group B	45	263	116	171	185	113	45	134	25	125	72	336	107	115
Group C	10	529	135	78	61	217	196	114	107	99	132	72	104	129
Group D	77	90	120	107	116	110	128	125	128	129	389	120	110	113
Total Russian agricultural import	75	91	120	107	117	112	125	125	127	128	85	119	110	113
Total world agricultural import	97	98	102	105	119	116	106	111	121	122	88	112	108	109

Source: FAO, author's calculation (2012)

During the whole analyzed period, the average annual increase in the import value of group A is 19%, group B – 7%, group C – 4% and group D – 15%.

If we do not take into account the post-crisis year 1999, the average annual increase in the value of group A is 23%, group B – 15%, group C – 29% and group D – 13%. The growth of Russian agricultural import is also higher than the global rate of 9%.

However, during the period 2000-2010, the average export growth was higher than average import growth.

The balance of trade in each group

Then we calculate the balance of trade of each group as the difference between exports and imports of agricultural products.

Table 79 - The trade balance of each group (differences in the values of Russian exports and imports of agricultural products), 1000 USD

	1998	2000	2002	2004	2006	2008	2010
Group A	428 614	337 376	1 016 425	572 652	1938756	4 193 719	2 752 874
Group B	-68 546	-22 822	-108 605	-216 220	-58857	-34 715	-50 347
Group C	45 968	80 297	125 966	129 515	267283	504 869	649 816
Group D	-9 868 326	-6 552 076	-8 554 286	-10 652 111	-17 084 438	-28 153 957	-29 363 013

Source: FAO, author's calculation (2012)

Considering the balance of trade in each group, it can be seen that in groups A and C these figures constantly increased. The absolute changes in import values are higher in comparison with exports. In group D, on the contrary absolute changes in import values are lower in relation to absolute changes in exports value.

Considering the current picture as a whole, we can see that 5% of the exported goods, belonging to group A, account for about 50% total agricultural export value. In turn, the group D includes about 80% of items, but it accounts for only about 30% of total export value, but 95-99% of the total import value of agricultural products and foodstuffs.

On this basis, we can consider the contents of the group A as the foundation of the Russian agri-food export.

It should be noticed that Group C products are also important. They do not have comparative advantages, but have a positive trade balance. The comparative disadvantage in this case, may occur in relation to the whole world, while in bilateral trade with individual regions or countries comparative advantages quite possibly exist.

To test this hypothesis, we analyzed bilateral trade flows between Russia and individual regions. In this case, LFI index, which is used exactly for the analysis of comparative advantage on bilateral level, is the most suitable.

A detailed analysis of this group using the LFI index shows that some products actually have revealed comparative advantages in relation to particular regions.

Table 80 - Values of LFI index of individual products in the group C in relation to specific regions in 1998

	Asia		Africa		Americas		CIS		EU	
	LFI	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**
Anise. badian. fennel	-0.065	16.8	x	0	x	0	**0.013**	4.4	-0.115	79.1
Barley	**0.016**	41.0	x	0	x	0	-1.677	7.4	-13.081	46.8
Bran of Wheat	-0.047	76.3	x	0	x	0	-0.034	2.0	-0.684	21.7
Broad beans	-0.002	0	x	0	x	0	x	0	**0.087**	100
Cocoahusks;Shell	x	0	x	0	x	0	**0.092**	100	x	0
Cocoon Unr.&Waste	0.000	10.7	x	0	x	0	-0.020	0	**0.200**	89.3
Food Wastes	x	0	x	0	x	0	**0.006**	100	x	0
Grease	-0.011	0	x	0	x	0	**0.001**	50.0	x	0
Hair Carded/ Combed	-0.004	0	x	0	x	0	x	0	**0.040**	100
Hair Fine	**0.005**	99.2	x	0	x	0	-0.023	0	-0.233	1.0
Lard	-0.006	0.2	x	0	x	0	**0.021**	2.8	-0.830	97.0
Lard Stearine Oil	x	0	x	0	x	0	**0.005**	100	x	0
Mushrooms and truffles	0.000	0.3	x	0	x	0	x	0	-0.472	99.7
Mustard seed	0.000	30.2	x	0	x	0	**0.375**	68.9	**0.004**	0.9
Nuts. Nes	-0.289	99.9	-0.336	0	x	0	-0.008	0	-0.314	0
Oilseeds. Nes	**0.009**	84.9	x	0	x	0	-0.004	0.7	**0.070**	14.4
Rapeseed	**0.008**	6.6	x	0	x	0	**0.079**	0.8	**5.426**	68.2
Raspberries	-0.007	0	-0.067	0	x	0	x	0	**0.229**	100
Skins Goats	x	0	x	0	x	0	x	0	**0.028**	100
Skins Sheep	**0.015**	77.4	x	0	x	0	-0.036	13.8	**0.012**	8.8
Soybeans	**0.059**	99.4	x	0	x	0	**0.076**	0.6	-0.664	0
Strawberries	-0.224	0	-3.800	0	x	0	-0.001	0	-2.338	0
Tapioca of Cassava	x	0	x	0	x	0	0.009	100	-0.004	0
Veg.in Tem. Pres.	-0.136	61.2	x	0	x	0	-0.000	0.2	-1.660	38.6
Wheat	**0.660**	48.7	**4.204**	4.5	x	0	**1.356**	29.6	**8.904**	15.0
Wool Degreased	**0.008**	12.4	x	0	x	0	**0.856**	30.3	**2.591**	57.3
Wool. greasy	**0.009**	17.7	x	0	x	0	-1.169	2.8	**2.444**	67.4
Wool;Hair Waste	x	0	x	0	x	0	**0.084**	17.2	**0.362**	82.8

*x means that there was no trade in this commodity with this particular region
Source: FAOSTAT. author's calculations (2013)

In 1998 there was 28 items in the group C. As we can observe in the table, each product (with rare exceptions) has a comparative advantage in relation to at least one region. For example, rapeseeds have comparative disadvantage in relation to African and American countries, but it have positive values of LFI index in relations to CIS, Asian countries and especially to EU. The export of rapeseed in Europe is important and promising area for Russia, since European countries use it for bio-fuel production. Exports of rapeseed in the EU amount to 68.2% of the total Russian exports of this commodity.

Wheat has a comparative advantage in relation to all regions with the exception of America. Barley has a positive value of LFI in relation to Asian countries, etc.

Nine out of twenty-eight products included in this group have a comparative advantage in relation to Asian countries, thirteen products in relation to CIS as well as EU countries and only one product in relation to Africa.

Table 81 - Values of LFI index of individual products in the group C in relation to specific regions in 2002

	Africa		Americas		CIS		EU		Asia	
	LFI	% of export	LFI	% of export	LFI	% of export	LFI	% of export	LFI	% of export
Homogen.Meat Prp.	x	0	-0.193	0	**0.067**	95.6	-0.111	0.7	x	0
Cotton lint	x	0	x	0	X	0	**0.040**	100	x	0
Leather Use&Waste	x	0	x	0	X	0	**0.001**	100	x	0
Cereals. Nes	x	0	x	0	0.000	100	x	0	x	0
Meat Extracts	x	0	x	0	0	0	x	0	x	0
Tapioca of Cassava	x	0	x	0	x	0	**0.001**	66.7	x	0
Grease incl. Lanolin Wool	x	0	x	0	**0.006**	100	x	0	x	0
Skins Wet Salted Goats	x	0	x	0	x	0	**0.003**	100	x	0
Jute	x	0	x	0	**0.005**	100	x	0	x	0
Hides Nes	x	0	x	0	x	0	**0.034**	100	x	0
Roots and Tubers. Nes	x	0	x	0	x	0	**0.020**	100	x	0
Cotton Waste	x	0	x	0	**0.007**	23.0	**0.104**	77.5	x	0
Skins With Wool Sheep	x	0	x	0	**0.003**	2.5	**0.004**	0.9	**0.294**	96.7
Wool. Greasy	x	0	x	0	x	0	**1.857**	94.2	**0.070**	5.2
Coffee Subst. Cont.Coffee	x	0	x	0	**0.005**	72.7	x	0	x	0
Cake of Rapeseed	x	0	x	0	x	0	**0.718**	100	x	0
Wool Degreased	x	0	x	0	**0.100**	10.1	**2.166**	52.7	**1.031**	37.1
Flax Tow Waste	x	0	x	0	**0.002**	2.7	**0.267**	73.0	**0.060**	24.1
Hair Fine	x	0	x	0	x	0.0	**0.046**	16.5	**0.157**	83.8
Flax fibre and tow	x	0	x	0	**0.002**	0.5	**1.111**	68.3	**0.343**	31.2
Hair Coarse Nes	x	0	x	0	x	0	x	0	**0.089**	100
Hides Wet Salted Cattle	x	0	x	0	**0.108**	1.5	**28.174**	91.8	**0.959**	4.6
Peas. Green	-0.906	0	x	0	**0.007**	33.6	**0.061**	66.4	x	0
Milk Whole Evp	x	0	x	0	**2.015**	99.0	-0.128	1.0	**0.002**	0
Broad beans, horse beans	x	0	x	0	x	0	**0.307**	100	x	0
Rye	x	0	x	0	**0.006**	1.5	**1.625**	92.7	**0.068**	5.7
Chick peas	x	0	x	0	**0.015**	5.0	-0.000	0.9	**1.011**	94.1
forage Products	x	0	x	0	-0.002	0	**0.322**	99.6	**0.001**	0.4
Bread	**0.531**	0.02	**4.570**	6.6	-0.198	87.7	-1.851	3.2	-0.439	4.4
Cow milk. whole. Fresh	x	0	**0.265**	0.5	-0.168	36.1	-0.532	0.5	**1.016**	62.7
Currants	x	0	x	0	x	0	**0.003**	100	x	0
Dried Mushrooms	x	0	**0.248**	1.4	-0.002	0	**0.482**	86.0	-0.953	5.2
Flour of Rye	x	0	x	0	-0.036	39.6	-0.001	0	**0.014**	15.9
Flour of Wheat	-2.417	0	-7.626	0.3	-2.836	13.8	-2.653	0.2	**6.556**	85.6
Ice Cream and Edible Ice	x	0	**2.660**	1.8	**1.145**	79.3	-2.674	3.7	**0.209**	11.5
Juice of Grapefruit	x	0	-0.005	0	-0.110	92.4	-0.095	5.5	-0.023	2.1
Juice of Pineapples	-3.323	0	**0.032**	0.4	-0.118	82.9	-0.109	4.2	**0.011**	12.3
Leguminous vegetables	x	0	x	0.0	-0.007	0	**0.031**	100	x	0
Lentils	x	0	**0.164**	3.8	**0.024**	30.0	**0.035**	25.2	-0.057	39.0
Meat of Beef.Drd	x	0	x	0	**0.001**	75	-0.002	0	x	0
Milk Skimmed Dry	x	0	-0.563	0	-1.055	13.5	**2.089**	60.4	**0.724**	22.2
Milk Whole Dried	**14.875**	0.8	**0.860**	1.5	-1.988	77.3	-0.512	2.5	**0.202**	12.1
Molasses	x	0	x	0	-0.538	8.7	**0.588**	41.0	**0.488**	50.3
Oats	x	0	x	0	-0.030	0	-0.006	0	**0.017**	21.4
Oil Essential Nes	-0.604	0	-1.609	0	**0.022**	1.4	-1.268	4.0	**3.763**	94.6
Preparations of Beef Meat	x	0	-0.008	0	-1.242	93.5	-0.424	0	**0.004**	3.3
Pulses. Nes	x	0	x	0	-0.020	0	**0.014**	100	-0.004	0
Rapeseed	x	0	x	0	-0.002	0.0	**2.053**	95.9	**0.066**	4.0
Straw Husks	x	0	x	0	x	0	**0.001**	100	x	0
Strawberries	-31.115	0	**0.506**	0.7	-0.008	0	**1.982**	99.4	-0.084	0
Sugar Refined	-7.854	0	**0.264**	0.0	**3.043**	97.7	-27.086	0.2	-15.982	2.0
Veg.in Tem. Preservatives	**30.813**	2.0	-0.037	0	-0.036	0.2	**0.427**	25.0	**0.559**	69.1
Yogh Conc.Or Not	x	0	**0.199**	0.1	**1.630**	96.5	-7.321	0	**0.089**	1.9

Source: FAOSTAT. author's calculations (2013)

Considering the group C in 2002, we see that the largest number of the products have a comparative advantage in relation to EU (31 items out of 55), Asian countries (26 items) and CIS countries (22 items).

In regard to the Africa and the Americas, Russia's foreign trade with these regions in the most of the investigated products simply do not exists.

Some of the products are exported only in one direction and have comparative advantages in relation to the region. Thus, for example, straw husks, pulses nes., leguminous vegetables nes., currants, hides nes., cake of rapeseed and several other products Russia exported only to EU countries and this items have positive values of LFI index in relation to this region.

Table 82 - Values of LFI index of individual products in the group C in relation to specific regions in 2006

	Africa		Americas		CIS		EU		Asia	
	LFI	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**
Apple juice.	**0.164**	0.0	0.432	0.4	-0.586	93.5	-1.308	0.1	0.184	5.8
Berries Nes	x	0	-0.179	0	x	0	**1.591**	100	-0.001	0
Bran of Pulses	x	0	x	0	x	0	x	0	-0.002	100
Bran of Rice	x	0	x	0	x	0	x	0	**0.005**	100
Bran of Wheat	x	0	x	0	-0.012	0	-1.309	0	**1.879**	100
Broad beans	x	0	x	0	x	0	**0.437**	72.6	x	0
Cake of Linseed	x	0	x	0	x	0	**0.013**	100	x	0
Cake of Oilseeds. Nes	x	0	x	0	x	0	**0.012**	96.0	x	0
Cake of Rapeseed	x	0	x	0	**0.010**	2.1	**3.044**	81.4	**0.422**	16.5
Cereal Preparations. Nes	x	0	**6.755**	7.6	**0.260**	76.9	-0.560	12.3	-1.345	1.9
Chick peas	x	0	x	0	-0.047	2.4	**0.265**	15.4	**0.964**	82.2
Cigarettes	**20.526**	0.1	-0.505	0	**7.108**	70.2	-16.09	0.7	-26.22	20.2
Coffee Subst. Cont.Coffee	x	0	**0.038**	100	x	0	x	0	x	0
Cow milk. whole. fresh	x	0	x	0	**0.201**	59.5	-0.551	0	**0.738**	40.3
Cranberries	x	0	-0.006	0	x	0	**0.036**	100	x	0
Dregs From Brewing;Dist.	x	0	x	0	0.000	0.5	**0.360**	60.6	x	0.0
Dried Mushrooms	x	0	**0.636**	3.7	-0.009	0	**0.525**	79.4	-0.310	2.5
Flax Tow Waste	-0.257	0	x	0	**0.002**	6.9	**0.147**	91.3	-0.005	1.4
Flour of Wheat	x	0	**2.664**	0.5	-0.743	23.4	-1.606	0	**11.778**	76.1
Food Wastes	x	0	x	0	0.000	100	x	0	x	0
forage Products	x	0	x	0	-0.007	0	**0.257**	99.0	**0.001**	0.8
Germ of Wheat	x	0	x	0	0.000	100	x	0	x	0
Hair Coarse Nes	x	0	x	0	-0.046	0	x	0	**0.104**	99.7
Hemp Tow Waste	x	0	x	0	x	0	x	0	x	0
Hides Nes	x	0	x	0	x	0	**0.100**	100	x	0
Hides Wet Salted Cattle	x	0	x	0	-0.090	23.0	**0.363**	67.3	**0.036**	9.6
Honey. natural	x	0	x	0	x	0	x	0	x	0
Ice Cream and Edible Ice	x	0	**2.687**	1.0	**0.938**	82.8	-1.883	2.4	**0.857**	13.2
Juice of Pineapples	x	0	**0.089**	0.4	**0.025**	89.7	-0.078	0.1	**0.019**	9.5
Linseed oil	x	0	**0.013**	1.2	-0.008	67.9	-0.002	23.5	0.000	3.7
Molasses	x	0	x	0	**0.217**	33.5	**1.079**	21.0	**1.596**	45.5
Nuts. Nes	-2.107	0	-0.066	0.0	**0.006**	1.2	**0.084**	1.1	**4.730**	97.6
Oats	x	0	x	0	-0.016	5.4	-0.011	0	0.091	53.6
Oilseeds. Nes	x	0	x	0	-0.452	0	**1.402**	97.1	-0.496	2.9
Other Fructose and Syrup	x	0	**0.064**	0.9	**0.002**	5.3	-0.172	0	0.000	0.2
Peas. Dry	**0.164**	0.0	-3.666	0.1	**0.002**	7.8	**5.123**	78.0	**0.604**	14.1
Peas. Green	-0.211	0	-0.004	0	x	0	0.620	100	X	0
Preparations of Beef Meat	**0.821**	0.1	-0.048	0	**0.277**	60.0	-0.323	0	**0.607**	39.4
Prepared Meat Nes	**0.164**	0.2	-0.004	0	**0.025**	79.5	-0.054	0	**0.030**	20.2
Rapeseed	x	0	x	0	**0.002**	0.2	**7.447**	95.9	**0.009**	0.1
Rapeseed oil	x	0	x	0	-0.022	1.0	**16.596**	99.0	-0.004	0

Source: FAOSTAT. author's calculations (2013)

Table 82 - Values of LFI index of individual products in the group C in relation to specific regions in 2006

	Africa		Americas		CIS		EU		Asia	
	LFI	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**
Res.Fatty Subs	x	0	x	0	-0.003	100	x	0	-0.036	0
Rice Flour	x	0	**0.320**	15	**0.009**	78.9	-0.028	0.6	-0.038	5.6
Roots and Tubers. nes	x	0	x	0	x	0	**0.001**	100	0.000	100.0
Safflower oil	x	0	x	0	x	0	-0.001	0	x	0
Sausages of Pig Meat	x	0	-8.149	0	**2.252**	89.8	-6.166	0	**1.210**	10.0
Skins Wet Salted Calves	x	0	x	0	0.000	0.3	**0.790**	99.7	x	0
Skinsdry Slt Goat	x	0	x	0	**0.001**	100	x	0	x	0
Straw Husks	x	0	x	0	**0.001**	36.0	**0.008**	64.0	x	0
Sugar Refined	-19.265	0	-0.775	0.1	-6.698	84.0	-10.67	1.2	**3.383**	14.7
Veg Prod for Feed	x	0	-0.196	0	x	0	**0.198**	68.4	-0.026	0
Veg.in Tem. Preservatives	x	0	-0.151	0	0.000	0.1	**1.352**	46.4	-1.505	48.5
Wool Degreased	x	0	x	0	-2.999	36.4	**1.429**	41.9	**0.358**	21.7
Wool. greasy	x	0	x	0	-0.729	6.3	**0.633**	54.9	**0.282**	38.8
Wool;Hair Waste	x	0	x	0	**0.007**	30.4	**0.118**	69.6	x	0
Yogh Conc.Or Not	x	0	**0.051**	0.0	**1.124**	98.3	-3.217	0	**0.105**	1.7

Source: FAOSTAT. author's calculations (2013)

In 2006, the product structure of the group C has undergone certain changes. Some items moved to this group from the group D, but in general, the essence of the group C remained the same. The largest number of the products still have a comparative advantage in relation to EU (26 items out of 56), Asian countries (22 items) and CIS countries (20 items).

The following products showed the highest values of the index: cigarettes in relation to Africa (LFI=20.5) and CIS countries (LFI=7.1); flour of wheat in relation to Asia (LFI=11.8), rapeseed and rapeseed oil in relation to EU (LFI=7.5 and LFI=16.6 respectively).

Table 83 - Values of LFI index of individual products in the group C in relation to specific regions in 2010

	Africa		Americas		CIS		EU		Asia	
	LFI	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**	**LFI**	**% of export**
Apple juice. single strength	x	0	-0.016	0.4	-0.911	89.9	-0.836	0.2	**0.076**	3.1
Bran of Cereals	**0.010**	5.6	x	0	x	0	-0.045	0	**1.831**	94.4
Bran of Maize	x	0	x	0	x	0	-0.007	0	**0.056**	100
Buckwheat	x	0	x	0	**0.001**	9.7	**0.063**	81.1	**0.028**	9.2
Cake of Linseed	x	0	x	0	x	0	**0.021**	89	x	0
Cake of Oilseeds. Nes	x	0	x	0	-0.007	0	**0.024**	100	x	0
Cake of Rapeseed	x	0	x	0	x	0	**2.397**	64.7	**5.177**	35.3
Cashew nuts. with shell	x	0	x	0	x	0	x	0	**0.006**	100
Cereals. nes	x	0	x	0	**0.009**	100	-0.001	0	x	0
Chick peas	**0.010**	3.5	**0.335**	1.2	-0.176	7.2	**0.007**	1.4	**2.605**	86.8
Cigarettes	**0.005**	0.0	**0.109**	0.0	**1.201**	88.7	-8.989	1.4	-37.29	2.7
Coffee Subst. Cont.Coffee	x	0	**0.010**	13.3	0.000	80	x	0	x	0
Cotton Linter	x	0	x	0	x	0	x	0	**0.217**	100
Dregs From Brewing;Dist.	x	0	x	0	**0.003**	19.4	**0.087**	59.3	**0.123**	21.3
Eggs Liquid	x	0	x	0	0.000	100	x	0	x	0
Flax Tow Waste	x	0	x	0	0.000	6.8	-0.025	91.7	-0.046	0.8
Flour of Roots and Tubers	x	0	x	0	x	0	0.000	100	x	0
Flour of Rye	x	0	x	0	**0.006**	65.1	-0.018	0	**0.119**	32.1
Flour of Wheat	x	0	**0.835**	0.5	**0.085**	30.3	-0.786	0.1	**10.194**	55.7
Food Wastes	x	0	x	0	x	0	**0.004**	100	x	0
Germ of Maize	x	0	x	0	0.000	100	x	0	x	0
Hair Carded/ Combed	x	0	x	0	-0.024	91.1	**0.002**	8.9	x	0
Hair Fine	x	0	x	0	**0.003**	100	x	0	-0.109	0
Hides Nes	x	0	-0.028	0	x	0	**0.002**	89.5	**0.001**	10.526
Meat Dried Nes	x	0	x	0	x	0	**1.166**	100	x	0
Meat nes	x	0	x	0	x	0	**0.277**	100	-0.082	0
Milk Whole Evp	x	0	x	0	**0.109**	99.9	-0.036	0	**0.003**	0.1
Millet	x	0	x	0	-0.094	4.4	**0.073**	78.6	**0.054**	14.6
Molasses	x	0	-0.003	0	**0.050**	29.4	**0.250**	14.6	**3.775**	56.0
Mustard seed	x	0	x	0	0.000	0.2	**0.180**	37.4	**1.179**	62.4
Nuts. nes	-0.448	0	-2.998	0	0.000	0.6	**0.178**	29.6	**1.582**	69.7
Oats	x	0	x	0	-0.003	5.8	-0.007	0.2	**0.280**	94.0
Other Fructose and Syrup	x	0	-0.149	6.4	**0.002**	90.0	-0.001	0	-0.022	3.6
Peas. Dry	x	0	-14.40	0.0	-0.000	13.8	**1.737**	65.8	**3.382**	20.4
Peas. green	-0.270	0	-0.026	0	0.000	0.2	**0.501**	99.8	-0.001	0
Pig meat	x	0	x	0	0.000	15.9	**0.012**	55.3	x	0
Plums and sloes	x	0	x	0	0.000	11.5	0.000	15.4	x	0
Preparations of Beef Meat	x	0	-6.692	0	-0.002	84.1	-0.472	0.0	**0.427**	10.3
Rapeseed	x	0	-1.654	0	-0.000	0.8	**1.300**	85.6	**1.691**	13.7
Rapeseed oil	x	0	-0.074	0	-0.010	0.1	**10.136**	94.3	**1.896**	4.4
Res.Fatty Subs	x	0	x	0	**0.015**	72.4	**0.011**	5.1	**0.181**	22.4
Roots and Tubers. nes	x	0	-0.020	0	**0.001**	89.6	-0.002	5.2	0.000	6.3
Rye	x	0	x	0	**0.007**	73.7	-0.074	0	**0.095**	26.3
Sausages of Pig Meat	x	0	-12.37	0	**0.356**	81.8	-6.098	0.0	**0.024**	1.0
Skin Furs	x	0	**28.707**	12.1	x	0	-0.672	71	**3.966**	15.5
Soybean oil	**1.033**	16.5	-0.064	0	-0.901	0.3	**9.594**	82.5	-1.265	0.7
Straw Husks	x	0	-0.036	0	-0.001	7.1	**0.003**	52.4	**0.008**	40.5
Tobacco Products Nes	-0.340	3.8	**8.417**	2.3	**0.280**	78.1	-10.45	6.7	-2.941	4.2
Veg Prod for Feed	x	0	x	0	x	0	**0.318**	100	x	0
Whey Condensed	x	0	x	0	x	0	x	0	x	0
Wool. greasy	x	0	**0.121**	0.3	0.000	0.1	**0.154**	17.7	**2.801**	81.9
Wool;Hair Waste	x	0	x	0	**0.002**	36.3	**0.030**	63.7	-0.021	0

Source: FAOSTAT. author's calculations (2013)

In 2010, 4 out of 52 items included in the group C have a comparative advantage in relation to African countries, 28 in relation to Asian countries, 16 products in relation to CIS, 22 items in relation to EU countries and 7 products in relation to Americas.

The results support the earlier suggestion that in bilateral trade with individual regions products of the Group C have comparative advantages despite of comparative disadvantages in relation to the whole world.

In most cases the products have comparative advantages in relations to CIS, EU or Asia countries while trade in these products with the countries of Africa and Americas in most cases does not exist.

11. Russia's intra-industry trade in agricultural products: the extent and major trends

The analysis of intra-industry trade is important because it reflects the level and the nature of economic integration between countries.

Having conducted the review of previous researches on the intra-industry trade in Russia, we found following results.

On the basis of trade indicator analysis (revealed comparative advantages and Grubel-Lloyd index of intra-industry trade), Garanina (2009), argues that Russia is globally disadvantaged in manufactures trade vis-a-vis the EU and China, and advantaged in trade within the CIS. Russia is managing to expand its manufactured exports to other CIS countries. However, it is gradually losing its role of main supplier of capital goods in the post-Soviet space.

Using the Aquino and Grubel- Lloyd indices, Algieri (2004) examined the developments in the trade specialization patterns at the national level in post-Soviet Russia. The results of his researches showed that Russia exhibits mainly specialized intra-industry trade, a tendency that appears to have increased over time. Russia's exports highlights that exports are biased toward natural resources and at the same time the traded goods show a slight labour intensity and R&D intensity.

Gusev (2007) has found that the highest intensity level of intra-industry trade is characteristic of Russia's foreign trade exchange with the CIS countries and China.

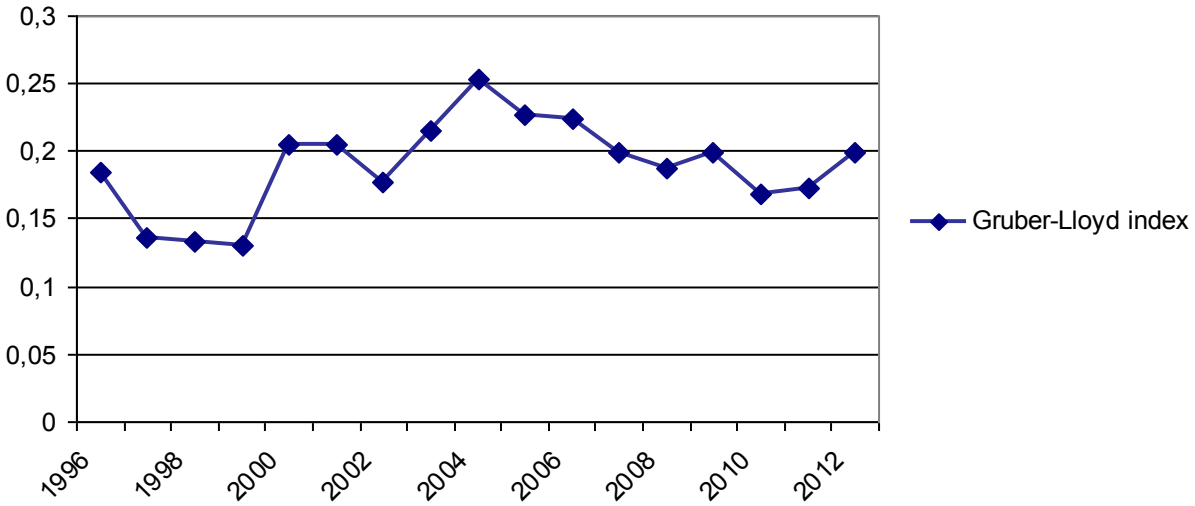
Nevertheless, despite the fact that the intensity of Russia's intra-industry trade with the CIS countries and China is the highest, compared to other countries, this factor under the period in question remains low.[113]

We started our analysis with the traditional Grubel-Lloyd indicator (1975) in computing the degree of intra-industry trade in relation to the whole world.

The calculation of the Lloyd–Grubel Index for the industries of Russia's economy (Figure 22) has shown the intra-industry specialization movements for the period of 1996–2012 in the Russia's trade in agricultural products and foodstuffs with the world's rest.

[113] Gusev (2007) Studies on Russian Economic Development, Pleiades Publishing, Ltd., Vol. 18, No. 2, pp. 196–205, ISSN 1075-7007

Figure 22 - Gruber-Lloyd index for Russian foreign trade in agricultural products and foodstuffs



Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

During the analyzed period, there are noticeable fluctuations of the index value. International trade in agricultural products is sensitive to factors such as government policies, fluctuations of tariffs and quota rates, import restrictions for sanitary reasons and other factors.

There is no any clear trend in the index value. Before 2004 the index increased, reaching its maximum and then started to decline steadily. The maximum value of G-L index was 0.25 in 2004; the minimum was 0.13 in 1999.

Further, using the methodology proposed by Greenaway et al. (1995), we divided trade flows into three trade types: one-way trade, inter-industry, intra-industry trade.

Table 84 – The shares of inter-industry and intra-industry trade in Russian foreign trade in agricultural products and foodstuffs (as a percentage of total trade)

	1996	1998	2000	2002	2004	2006	2008	2010	2012
Inter-industry	74.54	79.35	69	72.23	64.38	59.49	68.61	72.85	63.55
One-way trade	0.01	0.04	1.22	1.61	0.90	0.80	0.64	1.24	0.37
Intra-industry	25.46	20.65	31.00	27.77	35.62	40.50	31.39	27.14	36.45
Horizontal IIT	7.34	6.57	14.12	7.67	12.90	19.44	16.33	16.12	17.16
Vertical IIT	18.12	14.08	16.89	20.10	22.72	21.06	15.06	11.03	19.29

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

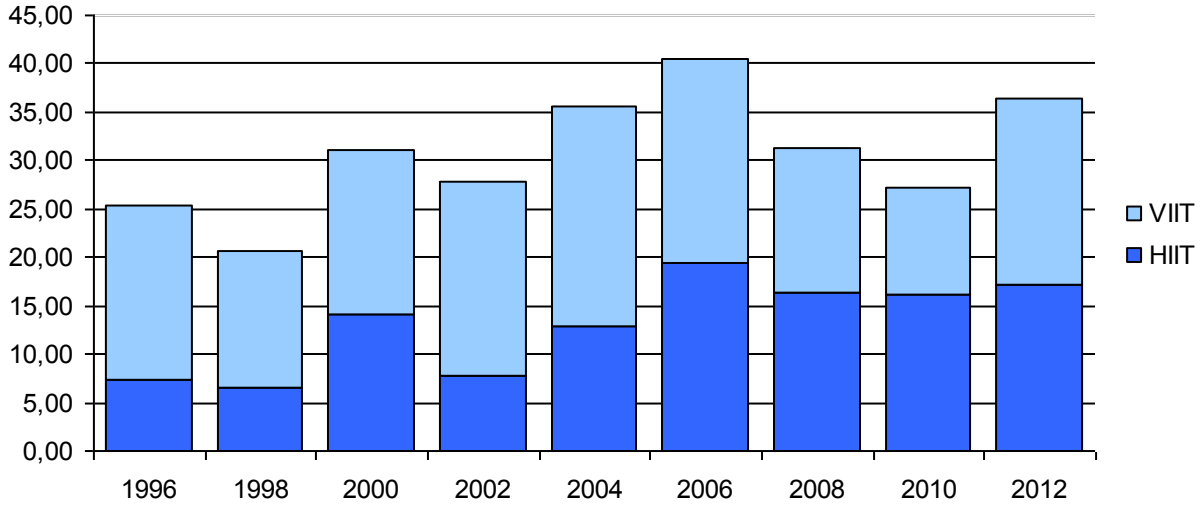
As can be seen in the Table 84, inter-industry trade dominates in Russian foreign trade in agricultural and food products. Intra-industry trade accounts for about a third of all trade flows.

The results for Russia show that intra-industry trade increased from 25.46% in 1996 to 40.5% in 2006 and decreased during the following years. We can observe a growth of the share of

HIIT relative to VIIT. Fluctuations in the level of intra-industry trade are primarily related to changes in the structure of exports as well as changes in unit values of individual products.

For better visibility, it will better to depict the results on the Figure 23.

Figure 23 – The intra-industry trade in Russian foreign trade in agricultural products and foodstuffs with the world rest (as a percentage of total trade)



Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Table 84 and Figure 23 display the evolution of the share of IIT in total Russian trade flows in agricultural products and foodstuffs. In Russian foreign trade in agricultural and food inter-industry trade dominates.

Vertical IIT is greater than horizontal IIT in Russia over the analyzed period. Mainly fluctuations in the level of intra-industry trade due to variations of horizontal intra-industry trade while vertical type of intra-industry trade is quite stable.

Table 85 - Fontagne and Freudenberg index of intra-industry trade in relations to individual regions

	1996	1998	2000	2002	2004	2006	2008	2010	2012
CIS	0.528	0.375	0.476	0.436	0.497	0.636	0.564	0.542	0.684
EU	0.478	0.152	0.606	0.365	0.197	0.437	0.724	0.550	0.161
Asia	0.366	0.239	0.296	0.282	0.345	0.344	0.224	0.183	0.210
North America	0.019	0.055	0.044	0.043	0.110	0.061	0.058	0.077	0.074
South America	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Africa	0.015	0.001	0.000	0.002	0.000	0.001	0.002	0.002	0.012

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Fontagne and Freudenberg index (FF) showed a significant and growing share of intra-industry trade with the CIS countries. The largest fluctuations were observed in relation to the EU countries. For the countries of South America and Africa, the index is close to zero.

From 1996 to 2012, there was an increase of the share of IIT in Russian international trade, from 52.8 to 68.4 per cent according to the FF in relation to CIS countries.

Individual regions

Next, we consider the issue of intra-industry trade by individual regions in more detail. It can be assumed that the level of intra-industry trade can vary significantly in relation to different countries.

CIS countries

CIS countries are important trading partners of Russia in terms of both exports and imports. Economic relations between Russia and these countries evolved over time of USSR. These facts, as well as their geographical location determine their significant share in Russian foreign trade. CIS country had become the largest partner of Russia in terms of exports. For example, in 2010 export to CIS countries accounted 36.6% of Russia's agricultural exports and 11.3% of agricultural imports.

Table 86 - The shares of inter-industry and intra-industry trade in Russian foreign trade in agricultural products and foodstuffs in relation to CIS countries (% of total trade)

	1996	1998	2000	2002	2004	2006	2008	2010	2012
Inter-industry	47.22	62.52	52.36	56.37	50.28	36.44	43.55	45.81	31.64
One-way trade	0.35	1.85	0.29	2.19	3.80	0.56	0.53	2.88	0.24
Intra-industry	52.78	37.48	47.64	43.64	49.71	63.56	56.45	54.18	68.36
Horizontal IIT	46.71	27.18	30.97	21.63	21.44	34.78	24.27	29.69	34.48
Vertical IIT	6.08	10.30	16.67	22.01	28.28	28.78	32.18	24.49	33.89

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

As we can see in the Table 86, intra-industry trade prevails in relation to this region. The share of one-way trade in the structure of Russian trade with CIS countries is extremely low.

In order to illustrate the situation, let us give several examples of the most important items included in trade flows of the horizontally and vertically differentiated commodities.

In 2012, the following items were classified as horizontal IIT:

HS-0207 Meat and edible offal of the poultry, fresh, chilled or frozen

HS-1806 Chocolate and other food preparations containing cocoa.

HS-1905 Bread, pastry, cakes, biscuits and other bakers' wares, whether or not containing cocoa

Vertical IIT:

HS-0402 Milk and cream, concentrated or containing added sugar or other sweetening matter.

HS-0406 Cheese and curd.

HS-2208 Undenatured ethyl alcohol of an alcoholic strength by volume of less than 80 % vol., etc.

The share of inter-industry trade is declining; the share of intra-industry trade is increasing. Thus, at the beginning of the period, horizontal type of intra-industry trade was dominated, but by the end of the period the levels of horizontal and vertical trade equalized.

Besides the geographical location, Russia and the CIS countries share similar processes of economic transformation and liberalization, the transition from a planned to a market economy, are still ongoing since the collapse of the Soviet Union.

This determines the similar level of agricultural production development, similar standards of living, diet patterns (which determine the demand for food products) etc.

Asian countries

Asian countries are also important trade partners for Russian Federation in term of trade in agricultural products and foodstuffs. About 20-30% of Russian agricultural exports and 15-20% of imports are associated with the Asian countries. Turkey, Vietnam, Thailand, Pakistan and China are the main Russia's trade partners in this region.

Table 87 - The shares of inter-industry and intra-industry trade in Russian foreign trade in agricultural products and foodstuffs in relation to Asian countries (% of total trade)

	1996	1998	2000	2002	2004	2006	2008	2010	2012
Inter-industry	63.4	76.07	70.44	71.79	65.47	65.61	77.6	81.69	78.97
One-way trade	0.77	1.22	9.43	2.75	1.19	0.66	1.79	11.29	0.65
Intra-industry	36.59	23.92	29.56	28.21	34.53	34.39	22.40	18.30	21.04
Horizontal IIT	23.86	4.67	16.73	16.04	9.96	19.97	11.49	9.56	8.80
Vertical IIT	12.73	19.25	12.83	12.16	24.57	14.42	10.90	8.75	12.24

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

Intra-industry trade, measured with the Fontagne-Freudenberg method, accounts for around 36.59 per cent of total trade in 1996 and 21.04 per cent in 2012. Thus, we observe a reduction in the level of intra-industry trade. The increase mostly resulted from the growth of trade in vertically differentiated goods (i.e. homogenous products with the same quality but with different characteristics).

The most important items realized under the vertical type of intra-industry trade are:

HS-0304 Fish fillets and other fish meat

HS-0306 Crustaceans

HS-1905 Bread, pastry, cakes, biscuits and other bakers' wares

Vertical intra-industry trade flow includes such items as:

HS-0307 Molluscs

HS-2008 Fruit, nuts and other edible parts of plants

HS-2009 Fruit juices (including grape must) and vegetable juices

African countries

In recent years, trade in agricultural products between Russia and the countries of Africa is gaining momentum. The share of export to Africa in the total export value has increased extremely from 2.2% in 1998 to 20.3% in 2010. This was due to the growth of exports of wheat and barley, mainly to Egypt and some other African countries.

Among the major trading partners on the African continent, trade is concentrated among just a few countries. In terms of exports Egypt (48%), Morocco (16%); and Tunisia (12%) account for about 76% of the total Russian exports to this region.

Table 88 - The shares of inter-industry and intra-industry trade in Russian foreign trade in agricultural products and foodstuffs in relation to African countries (% of total trade)

	1996	1998	2000	2002	2004	2006	2008	2010	2012
Inter-industry	98.53	99.89	100	99.84	99.99	99.93	99.81	99.83	98.78
One-way trade	95.37	94.16	97.34	98.21	96.09	92.96	99.08	99.60	97.38
Intra-industry	1.47	0.11	0.00	0.16	0.01	0.07	0.19	0.17	1.22
Horizontal IIT	0.00	0.00	0.00	0.13	0.00	0.05	0.03	0.00	0.00
Vertical IIT	1.47	0.11	0.00	0.03	0.00	0.02	0.16	0.17	1.22

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

It can be seen from the data in Table 88 that almost whole trade flows with African countries is the inter-industry trade, particularly one-way trade (either exports or imports). It can be logically explained by the differences in climatic conditions for agricultural production as well as differences in factor endowments. Russia exports cereals to Africa (mainly feed wheat and barley). In recent years, sunflower oil export also increases. In turn, Africa imports in Russia predominantly fruits and vegetables.

Intra-industry trade flow includes a few specific items. For example, in 2012, we can characterize following commodity groups as Vertical IIT type:

HS-0303 Fish, frozen, excluding fish

HS-2101 Extracts, essences and concentrates, of coffee, tea or mate etc.

European Union

In the late 90's exports to the EU amounted to more than a third of the total agricultural exports of the country. Over time, its share has declined from 44.2% of the total agricultural exports in 1998 to 11.9% in 2009. As regards the import from EU, it is still more than a third (30-35%) of total import of agricultural products.

Table 89 - The shares of inter-industry and intra-industry trade in Russian foreign trade in agricultural products and foodstuffs in relation to European Union (% of total trade)

	1996	1998	2000	2002	2004	2006	2008	2010	2012
Inter-industry	84.35	93.37	86.71	86.18	93.18	92.66	93.5	92.9	94.96
One-way trade	32.74	43.47	21.93	37.84	34.57	16.83	8.98	12.89	31.31
Intra-industry	15.65	6.63	13.29	13.83	6.82	7.35	6.50	7.10	5.04
Horizontal IIT	0.47	2.68	0.46	0.31	0.14	0.22	1.65	3.19	1.86
Vertical IIT	15.19	3.94	12.83	13.51	6.68	7.13	4.84	3.90	3.18

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

In the Table 89 we can see a tendency to decrease the share of intra-industry trade in the structure of Russia's foreign trade with EU countries. During the analyzed period it declined from 15.65% to 5.04% of the total trade flows.

Intra-industry trade reduction corresponds to vertically differentiated products, while the share of HIIT has remained remarkably stable over this period

The following commodity groups were classified as horizontal IIT:

HS-0210 Salted, dried or smoked meat

HS-1704 Sugar confectionery,

HS-2008 Fruit, nuts and other edible parts of plants,

HS-2304 Oil-cake and other solid residues

Vertical type of intra-industry trade was observed in following groups:

HS-0208 Meat and edible meat offal

HS-0303 Fish, frozen, whole

HS-0306 Crustaceans

HS-0802 Nuts except coconut, brazil & cashew, fresh or dried, etc.

Countries of the North America

In the North American continent, the predominant partner of Russia in terms of international trade in agricultural products (especially imports) is the United States.

Table 90 - The shares of inter-industry and intra-industry trade in Russian foreign trade in agricultural products and foodstuffs in relation to the countries of North America (% of total trade)

	1996	1998	2000	2002	2004	2006	2008	2010	2012
Inter-industry	98.07	94.49	95.56	95.73	89.02	93.92	94.2	92.27	92.63
One-way trade	86.78	86.54	84.81	83.25	64.61	76.73	44.88	47.08	78.02
Intra-industry	1.93	5.51	4.44	4.27	10.98	6.08	5.80	7.73	7.38
Horizontal IIT	0.15	1.73	0.18	0.31	3.09	0.61	0.45	2.18	0.77
Vertical IIT	1.78	3.77	4.26	3.96	7.89	5.47	5.34	5.55	6.61

Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

In the trade flows between Russia and the countries of North America inter-industry trade dominates throughout the whole analyzed period. The share of intra-industry trade is relatively small, ranging from 1.93% in 1996 to 10.98% in 2004. These fluctuations in the index are associated with a change in the pattern of trade between Russia and the countries of North America. For example, the growth of intra-industry trade in 2004 and subsequent years was due to the increase in exports of milk products and preparations of vegetables, fruits, nuts.

As examples of horizontal IIT trade, we can denote the following groups:

HS-1704 Sugar confectionery, not containing cocoa

HS-1104 Cereal grains otherwise worked

HS-1904 Prepared foods

HS-1905 Bread, pastry, cakes, biscuits and other bakers' wares

HS-2101 Extracts, essences and concentrates, of coffee, tea or mat

Commodity groups that were classified as vertical IIT are:

HS-0304 Fish fillets and other fish meat

HS-0401 Milk and cream, not concentrated or sweetened

HS-2008 Fruit, nuts and other edible parts of plants

HS-2009 Fruit juices (& grape must) & veg juice, no spirit

HS-2208 Alcohol of a strength by volume of less than 80 % vol

The value of vertical intra-industry trade prevails over the horizontal.

Countries of the South America

At the moment South America plays a significant role in Russia's international agricultural trade only in terms of imports. Export of Russian agricultural products in this region is negligible.

The main supplier of food to Russia from the South America is Brazil. According to the FAO, in 2010 it accounted for over 85% of Russia's imports of raw sugar, almost 45% of Russia's imports of beef and almost 40% of all Russian imports of pork. Uruguay, Paraguay and Argentina are also large suppliers of meat of bovine animals. (ICTSD, 2012)

Table 91 - The shares of inter-industry and intra-industry trade in Russian foreign trade in agricultural products and foodstuffs in relation to the countries of South America (% of total trade)

	1996	1998	2000	2002	2004	2006	2008	2010	2012
Inter-industry	99.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9
One-way trade	94.4	100.0	99.9	92.8	93.6	95.4	61.5	94.7	93.7
Intra-industry	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Horizontal IIT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vertical IIT	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Sources: UN Commodity Trade Statistics Database, author’s calculations (2013)

In relation to South America inter-industry trade dominates throughout the whole analyzed period, just as it is observed in the cases with other geographically distant areas. The share of intra-industry trade is negligible, close to zero.

We can mark the geographical remoteness as the main factor that reduces the level of intra-industry trade.

Individual countries

The next step of our analysis is to investigate the characteristics of intra-industry trade in the Russian bilateral level with the most important countries (both from the export and import sides).

Table 92 - Fontagne and Freudenberg index of intra-industry trade in relations to individual countries

	1996	**1998**	**2000**	2002	**2004**	**2006**	**2008**	**2010**	**2012**	**Average**
Ukraine	0.04	0.17	0.24	0.35	0.35	0.57	0.33	0.47	0.52	0.34
Germany	0.11	0.09	0.12	0.09	0.10	0.16	0.08	0.09	0.12	0.11
USA	0.02	0.04	0.04	0.04	0.10	0.07	0.06	0.04	0.10	0.06
China	0.01	0.00	0.01	0.04	0.06	0.05	0.04	0.02	0.05	0.03
Egypt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brazil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

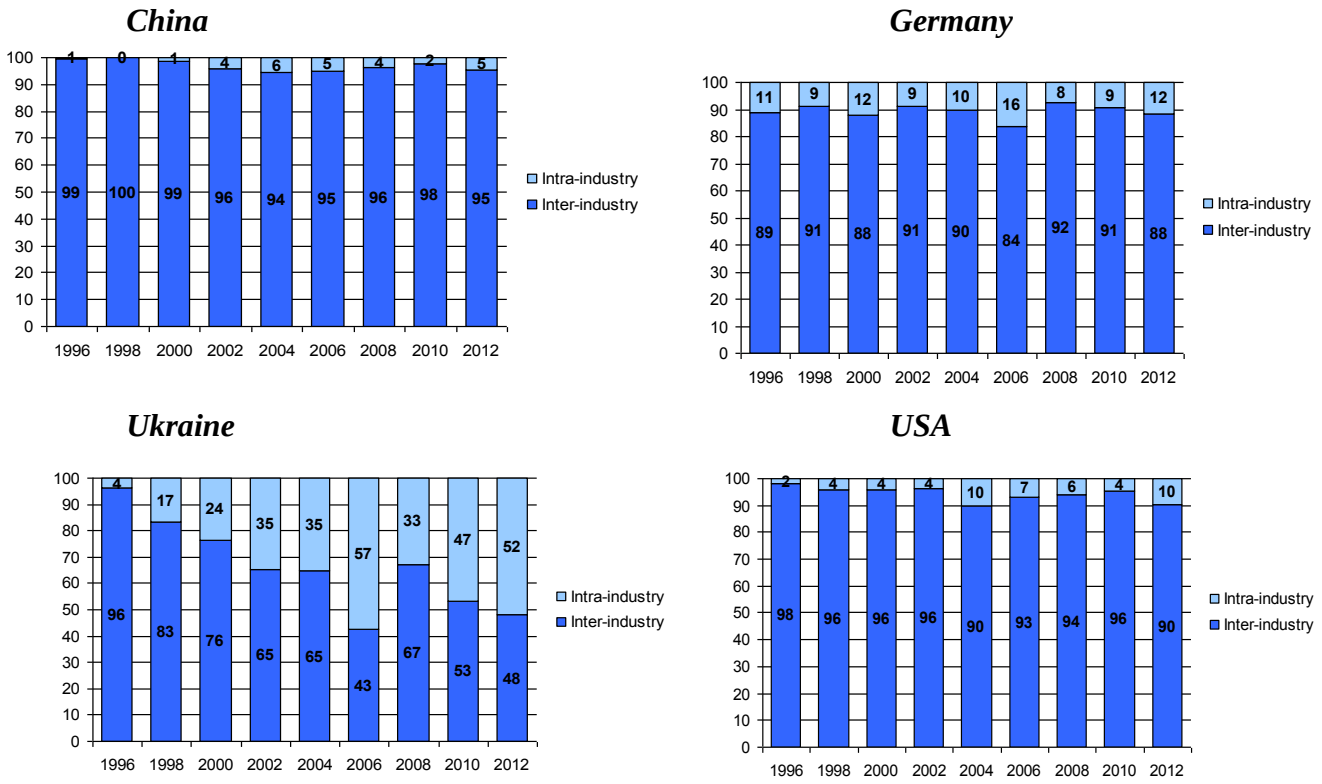
Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

The difference in the IIT levels between Russia and its main trading partners are summarized in the Table 92. Among the considered trading partners, the Ukraine enjoys the highest level of IIT. The average value of FF index during the 17 years studied was 0.34. Growth trends in index values are observed in relation to Ukraine and USA.

In relation to Brazil and Egypt results showed that inter-industry trade amounts 100% of the total Russian foreign trade in agricultural products and foodstuffs.

We can display the results for China, Germany, Ukraine and USA on the charts.

Figure 24 – Inter- and intra-industry trade in agricultural products and foodstuffs between Russian Federation and individual countries (as a percentage of total trade)



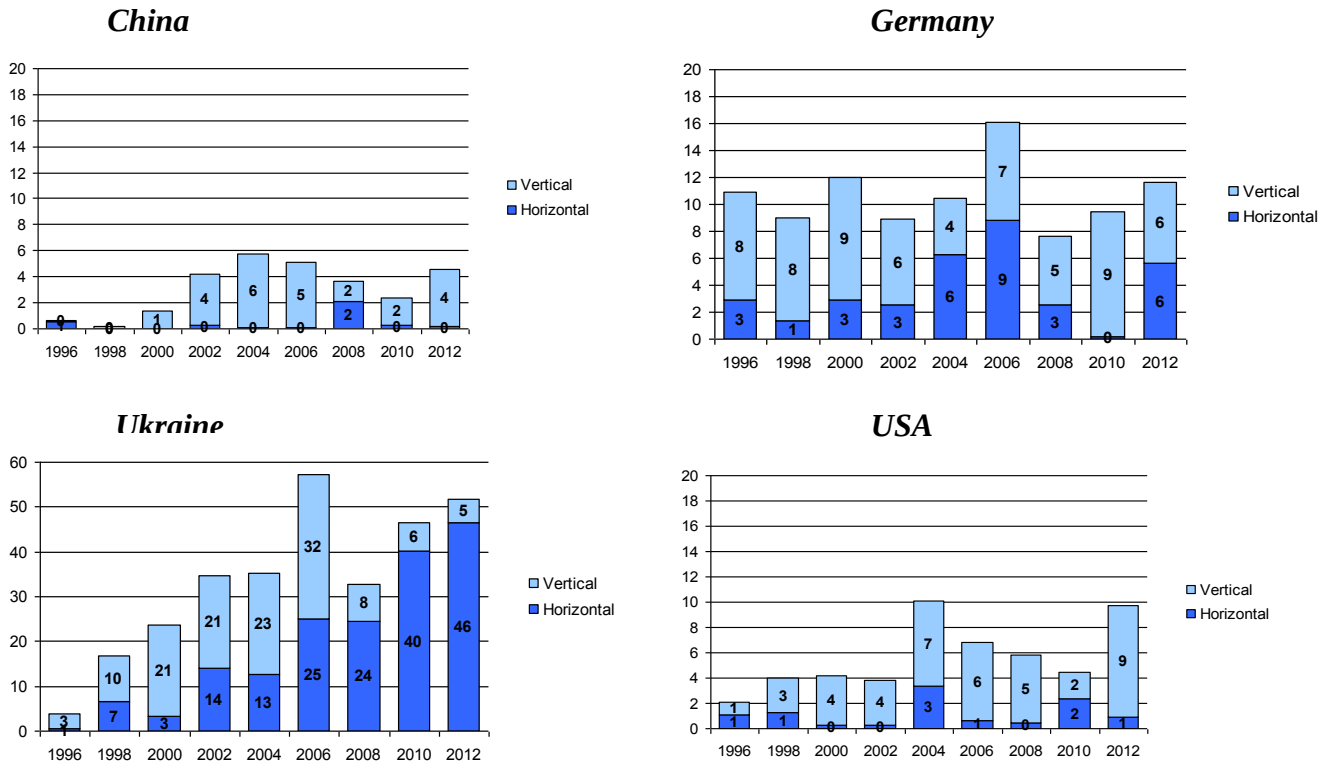
Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

How can be seen in the Figure 24, inter-industry trade is the dominant type in the Russian trade in agricultural products and foodstuffs in relation to all considered countries.

However, the intensity of Russia's intra-industry trade in agricultural products with the CIS countries is the highest and has a distinct upward trend.

Further, using the same methods as before, we divided intra-industry trade in horizontal and vertical types.

Figure 25 – Horizontal and vertical intra-industry trade between Russian Federation and main trade partners (as a percentage of total trade)



Sources: UN Commodity Trade Statistics Database, author's calculations (2013)

In relation to Ukraine, within the intra-industry trade, the horizontal type of IIT dominates. In other cases the vertical intra-industry trade is higher than horizontal intra-industry trade. In the case of Ukraine, there is also a steady growth in the intensity of horizontal intra-industry trade. In the cases of other countries such growth was not observed.

This is evident from comparing the intensity level of the intra-industry trade in the case of Russia's foreign trade in agricultural products that increase in intra-industry trade simultaneously with the process of trade liberalization occurred only in relation to the CIS countries. It confirms the fact that the higher the degree of integration among countries and the low in trade barriers, the higher its associated IIT index

12. Discussion of research findings

In this paper has been used a number of methods and analytical tools for the analysis of the Russia's current position in the international market of agricultural products and foodstuffs. This has helped us to consider the studied subject from different angles. Overview of the Russian economy and the agricultural sector of the country allowed us to substantiate the reasons for changes in the country's foreign trade, the preconditions for increasing or, on the contrary, reduction of the competitiveness of Russian agricultural products. For example, the transformation processes in the Russian economy, which began in the early 90's, have caused the decline in all sectors, but especially noticeable in the livestock industry.

This fact largely determined the current state of Russia in the international market as one of the largest importers of meat and meat products, and at the same time as a feed wheat exporter. The country just does not have enough livestock to feed by this wheat. Therefore, the country has taken the path of increasing export crop products and import of meat and meat products.

Changes in the territorial structure of Russia's foreign trade showed a reorientation of Russia's agricultural exports from the European markets to the markets of Asia, Africa and CIS countries.

The analysis in this paper examines Russia's foreign trade in agricultural products from three perspectives. First, here were investigated factors that may affect the volume of foreign trade. It was followed by a detailed analysis of the comparative advantages of the Russian agricultural exports. And the final part is devoted to the analysis of the structure of trade relations with individual regions and countries in terms of intra-industry and inter-industry trade.

To perform the analysis of the factors affecting the Russian agricultural foreign trade several hypotheses about the relationship between value of Russian foreign trade in agricultural products and foodstuffs (as a dependent variable) and studied independent variables were formulated.

Then several separate simple regression equation for each variable were constructed in order to test these hypotheses.

Construction of the model of foreign trade in the case of the Russian Federation is inappropriate. Russia on foreign trade greatly influenced by the political aspects, government regulation of markets and many other factors that make it very hard to build an adequate econometric model. Moreover it does not meet the objectives of this study.

Most of the hypotheses formulated in the work have been accepted. Hypotheses testing showed that there exists a strong relationship among the variables of the gross agricultural

production value and agricultural exports. An increase in the agricultural production value has a significant and positive impact on export trade flows. This dependence seems the most logical, so far as the more agricultural products country produces, the more can be exported.

There are also high correlation and statistical significance in relations between government support for agriculture and agricultural exports. This dependence can be considered as more interesting and less expected. The government support for agriculture in Russia is not as significant as, for example, in the European Union countries. In addition, this support is not aimed at export-oriented industries, but distributed among the agricultural enterprises of different sectors. However, the analysis showed a fairly high (although less than in the previous hypothesis) level of correlations between the amount of government spending on agriculture and agricultural exports.

The results of the analysis support the hypothesis about the relationship between world food prices and agricultural exports. As the world price level rises, foreign made goods become relatively more expensive so country's exports grow. Thus, the results of calculations correspond to initial assumptions, provided by the economic theory.

There is an evidence the significant relationship between world food prices and Russia’s agricultural export prices. So it can be said with some certainty, that Russian export prices substantially follow the worldwide prices. Russia's share of global agricultural exports is very low, amounting to less than 1%. Thus the country is unable to influence world prices of agricultural products. So, despite the high level of government intervention in foreign trade, customs and tariff regulation, long-term contracts and trade agreements between the countries, the Russian export prices are highly dependent on world prices.

In addition, in the regression analysis two hypotheses were rejected. These are hypotheses about relationships between ruble exchange rate and country’s agricultural exports and imports. In both cases, the regressions were deemed insignificant. When formulating hypothesis it has been suggested that the relationship between these parameters exists. It is known that increasing in the real exchange rate will lead to depreciation of domestic currency; thus, it was found to encourage exports. However, both of the hypotheses were not confirmed.

As already mentioned before, from the import side it can be explained by fairly low price elasticity of demand for agricultural products compared to other products. As mentioned earlier, Russia is not self-sufficient in agricultural products. Since foods are goods of first priority, the demand for them is less exposed to fluctuations in the exchange rate.

From the export side it is possible to explain by product and territorial structure of Russian exports. It is dominated by unprocessed foods In addition, a large share of Russian foreign trade is trade with the CIS countries, where transactions with which can be made in local currency.

After analyzing the factors that affect the volume of Russian agricultural exports I embarked on a detailed analysis of its competitiveness. This analysis was constructed using the methodology of revealed comparative advantage by several indices, as well as their combinations. Analysis of comparative advantage was conducted as more particularly for the individual products, as well as by aggregations and product groups.

The use of the several indices for the same set of data reduces the likelihood of random error.

Results of calculations by Balassa's and Volrath's indices were practically the same. Both indices were applied to the same data set, but Balassa's index takes into account only the export trade flows, while the Volrath's index both export and import flows.

The number of products having comparative advantage in the analysis by Volrath's index is more than in the analysis by Balassa's index.

According to Volrath's index, during the analyzed period, the number of products that have revealed competitive advantage has grown steadily and increased from 13 to 46 items (among the approximately 600 items studied). This trend can be seen as increasing total competitiveness of the Russian agricultural exports as well as it would indicate the increasing diversification of Russia's exports. However, the Balassa's index did not show a significant increase in the number of competitive products.

In the calculation of the index by groups of products, there are some additional groups that revealed comparative advantages. Those are root crops and eggs. Trying to identify what products in this group have comparative advantages, the Volrath's index has been calculated in detail for each individual product, but the comparative advantages of any one of them could be found. Moreover, Balassa's index did not show comparative advantages of these products. So, we cannot consider these groups as having a comparative advantage.

Thus, despite the fact that both analyses have showed us almost the same results, contradictions in some issues still arise. Thus, the results clearly showed the need for additional analysis tools.

The Lafay's index has been chosen as the most suitable. This index is not only appropriate for the analysis of bilateral relations between Russia and individual regions and countries, but also allows us to estimate the dynamics of changes in comparative advantage over time. While these two indices can only show us the presence or absence of comparative advantage, the Lafay index helps us to understand how the comparative advantages over time and to compare strength of comparative advantage of individual products and product groups, for individual regions and countries.

The detailed analysis of revealed comparative advantage identified differences depending on the geographical areas of foreign trade.

The index confirmed the results of the previous two indices, and identified the comparative advantages "Cereals and their preparations" in relation to all regions as well as a noticeable increase over time. It is very important group in Russian agricultural exports. This group makes up a large share of the total export value of the country and shows high growth rates in recent years. During the monitoring period, their share in the total volume of Russian exports increased from 20% to 46%.

Cereals and their preparations significantly strengthened its position in relation to the countries of Africa.

LFI index identified the reduction of comparative advantage of Milk and milk products (in relation to all regions), Hides, skins and wool (most notably in relation to EU), Vegetable oils and oil crops" (in relation to all regions).

For further analysis Russian exports and imports, have been regrouped into three groups depending on the degree of processing.

For further analysis Russian exports and imports, have been regrouped into three groups depending on the degree of processing. Certainly, each group will contain both products with comparative advantage and comparative disadvantage. But at this stage, our objective is to identify common patterns and shifts in comparative advantage towards one group or another.

If we consider this issue in relation to the world as a whole, we observe the following results.

From 1998 to 2001, the comparative advantages were observed in group of by-products (for example, bran of wheat, sunflower cake), then, from 2002 to 2010, the positive value of the index was indicated in the group of primary products.

The results of calculations indicated that Russia has a comparative disadvantage in processed products compared with primary products. But this is generally in relation to the whole world. What trends are taking place in relation to individual regions and countries?

Using the same Lafay index, comparative advantage of primary, processed and by-products were calculated for individual regions.

LFI index allowed us to form a clearer picture of the specialization and comparative advantages of Russian agricultural exports in bilateral relations with individual regions.

According to results, it can be argued that primary products have the significant comparative advantage in EU countries, countries of the Commonwealth of Independent States and in Asian countries.

The index showed that the processed products have a comparative advantage in the American market. But even there, this advantage is weak (values of LFI are close to zero).

Further, for more detailed analysis was conducted in relation to the most important selected countries.

The most important countries in this study were not chosen by the greatest share in the structure of exports, and by their importance in the structure of foreign trade in agricultural products in general. Therefore, some of these countries are more important to Russia in terms of exports, the other countries - in terms of imports. Thus here were selected Germany, China, Ukraine, Brazil, the United States and Egypt. Here, on a bilateral level, only LFI index was used for the analysis.

The analysis showed that in relation to some countries Russia is narrowly specialized, while in respect to others Russian agricultural export is more diversified.

In the case of Brazil, none of the investigated products have had a comparative advantage. This indicated that Russian agricultural products are completely uncompetitive in the Brazilian market.

This is quite understandable, since Brazil is a large country with a developed agricultural sector and also has a much more favorable conditions for the agricultural production than Russia.

In respect of Egypt, comparative advantages are pronounced in two major product groups, namely in cereals and vegetable oils and oil crops. However, the strength of comparative advantage (defined by the value of LFI index) is very high. One might even say that with respect to Egypt the level of comparative advantage the highest of all that has been received for a full investigation.

In the case of China, only one group has significant comparative advantages. This is a group “Fish, molluscs, aquatic invertebrates”. Within this group export of codfish is the most competitive. The rest of the products are not competitive in relation to China for the whole period.

Thus, after considering the comparative advantages of Russia's foreign trade in agricultural products in relation to individual countries, we see that in most cases it is quite narrowly specialized.

However, the index value, reflecting strength of comparative advantage, in the case of Ukraine and Germany less than, for example, in China and Egypt. Thus it turns out that in relation to the CIS, Russia has less strong comparative advantages but in regard to more products. At the same time, in relation to Africa and Asia, comparative advantages are more narrowly specialized, but more intense.

In addition to the most important countries in this analysis the comparative advantages of the Russian agricultural production has been considered in relation to all countries with which the

country has trade relations in the global market of agricultural products and foodstuffs. This part of the analysis was conducted for 2012 and it showed that Russian agricultural products are more competitive in relation to Egypt, Turkey, Kazakhstan, Rep. of Korea, Saudi Arabia, etc.

The next step in this work was the "product mapping" of Russian agricultural export. This analytical tool helps us to disaggregate total trade flows into several groups and identify the most competitive items as well as products which do not have competitive advantage at all.

Analysis has shown that the most of the products is have no revealed comparative advantage and keep negative trade balance.

From the standpoint of economic development and trade balance it seems to be bad. However, it is clear that due to a number of natural and climatic factors in Russia cannot be effective and fully self-sufficient in all agricultural products, particularly in its forms as tropical fruits, tea, coffee etc. And such products represent a substantial part of this group.

Besides the aforementioned products, this group includes commodities that Russia is able to produce on its own, but for some reason does not produce.

During the analyzed period, there was a decrease of number of products in group D, and the increase in the group C.

Group C contains the part of the products, not having comparative advantage according to the RCSA index, but having a positive trade balance. The comparative disadvantage in this case, may occur in relation to the whole world, while in bilateral trade with individual regions or countries comparative advantages quite possibly exist.

Group B consists of products, which have comparative advantage but the country is a net-importer of these products. The existence of this group can be explained as follows. The total volume of global trade in these commodities is rather insignificant. Meanwhile, in this small-scale market Russia plays a significant role both as the exporter and the importer. This determines the comparative advantages of the country in these items. However, imports of these products exceed exports. There are very few such small-scale markets. These cases can be considered as specific, unusual for the system as a whole. Otherwise, this group is a transitional group for goods which is obtaining or losing their comparative advantages over time.

Generally, the higher the comparative advantage of a specific product, the higher the possibility of a country to be a net-exporter.

To rationally judge about any changes in the structure of Russian exports, in the context of this grouping, we must investigate not only the number of products included in each group, but primarily their values and their share in the total value of foreign trade in agricultural products.

Since the analysis was conducted in current prices, there were not considered the values of each group, but their shares in the total value of exports and imports.

Considering the value of products in each group instead of the number of products, we have got completely different results. According to the results of calculations, a half of the export value is concentrated in Group A that is leading exports. Thus, we can see that 5% of the exported goods, belonging to group A, account for about 50% total agricultural export value. In turn, the group D includes about 80% of items, but it accounts for only about 30% of total export value, but 95-99% of the total import value of agricultural products and foodstuffs.

At the same time, there is a reduction in the value of groups D and C. These trends can be considered as a strengthening of the comparative advantages of the total Russian exports.

During the analyzed time period, the value of each group fluctuated considerably. These changes have occurred not only due to fluctuations in the quantity and value of trade flows, but also largely due to changes in the structure of each group, transition of individual items from one group to another.

As examples of such changes here can be mentioned a transition of Hides Cattle from the group A th the group D caused by the continued decline in the livestock sector and by licensing for export of hides and skins of cattle, sheep and other animals.

These export restrictions were aimed at protecting domestic leather industry. Thus, restricting the export of this commodity group, the government reduced its competitiveness on the world market.

Another example is the decline in comparative advantage of sunflower seed caused by increase in production capacity for oilseed processing. Consequently, the country began to export more sunflower oils instead of raw materials (sunflower seeds).

In this way, the structure of Russian agricultural exports has changed throughout the analyzed period.

It should be noticed that Group C products are also important, хотя казалось бы противоречива. They do not have comparative advantages, but have a positive trade balance. The comparative disadvantage in this case, may occur in relation to the whole world, while in bilateral trade with individual regions or countries comparative advantages quite possibly exist.

Such a phenomenon has been observed in the analysis by LFI index in the previous part of the paper. To test this hypothesis, LFI index was used again to analyze bilateral trade flows between Russia and individual regions.

A detailed analysis of this group using the LFI index shows that each product of the analyzed group (with rare exceptions) has a comparative advantage in relation to at least one region.

For example, comparative advantage of cigarettes was found in relation to Africa and CIS countries; flour of wheat in relation to Asia, rapeseed and rapeseed oil in relation to EU. The

export of rapeseed in Europe is important and promising area for Russia, since European countries use it for bio-fuel production. Exports of rapeseed in the EU amount to 68.2% of the total Russian exports of this commodity. The results confirmed the hypothesis.

In most cases the products have comparative advantages in relations to CIS, EU or Asia countries while trade in these products with the countries of Africa and Americas in most cases does not exist.

Thus, the results of "product mapping" do not conflict with previous analyzes, but also substantially expanded these observations, allowing to draw conclusions about the structure and the most important trends in the development of the Russian agricultural exports and its competitiveness.

And the last element in this thesis was to analyze the extent of intra-industry trade in the Russia's foreign trade in agricultural products and foodstuffs. This analysis helps us understand the nature of trade flows, as well as the level of integration between countries.

As it was found, inter-industry type of trade dominates in Russian foreign trade in agricultural and food products. Intra-industry trade accounts for about a third of all trade flows.

In conducting this analysis, it was difficult to identify any clear trends.

During the analyzed period, there are noticeable fluctuations of the index value. International trade in agricultural products is sensitive to factors such as government policies, fluctuations of tariffs and quota rates, import restrictions for sanitary reasons and other factors.

Hoping to identify the more notable trends, the analysis was also carried out by region and selected countries.

Analysis by regions showed that the highest level of intra-industry trade is in relation to CIS countries. Besides the geographical location, Russia and the CIS countries share similar processes of economic transformation and liberalization, the transition from a planned to a market economy, are still ongoing since the collapse of the Soviet Union.

This determines the similar level of agricultural production development, similar standards of living, diet patterns (which determine the demand for food products) etc.

In relation to Asian countries, the share of intra-industry trade in lower but it exists. However, a reduction in the level of intra-industry trade was observed.

Almost whole trade with African countries is the inter-industry trade, particularly one-way trade (either exports or imports). It can be logically explained by the differences in climatic conditions for agricultural production as well as differences in factor endowments. Russia exports cereals to Africa (mainly feed wheat and barley). In recent years, sunflower oil export also increases. In turn, Africa imports in Russia predominantly fruits and vegetables.

In the trade flows between Russia and the countries of North and South America inter-industry trade dominates throughout the whole analyzed period. The share of intra-industry trade is negligible, close to zero.

The analysis of intra-industry trade patterns in relation to individual countries didn't revealed significant differences to the analysis by regions.

Among the considered trading partners, the Ukraine enjoys the highest level of IIT. In relation to Brazil and Egypt results showed that inter-industry trade amounts 100% of the total Russian foreign trade in agricultural products and foodstuffs. This is exactly the same as the results of the analysis by region.

This is evident from comparing the intensity level of the intra-industry trade in the case of Russia's foreign trade in agricultural products that increase in intra-industry trade simultaneously with the process of trade liberalization was not observed.

The increase in the share of intra-industry trade occurred only in relation to the CIS countries.

Comparing the results of the research with the previous studies, the following can be said.

There are a number of studies that examined the issue of comparative advantage in the case of Russian Federation. However, research, concentrating directly on the issue of international trade in agricultural products and foodstuffs in Russia, are very few. Trade in agricultural and industrial products differs greatly and we cannot compare these studies.

Such scholars as Tabata (2006), Ahrend (2004), Savin and Winker (2009), Cooper (2006) argued that the Russian agricultural production in general has comparative disadvantage. And if we compare agriculture with such powerful sectors of the Russian economy as oil, natural gas, precious woods, etc., then agriculture do not look very impressive. However, this does not mean that it is doomed to be uncompetitive and backward sectors of the Russian economy.

In this paper, I tried to consider the Russian agricultural trade not as a part of the total Russian trade, but as a separate segment which is a part of the global market of agricultural products and foodstuffs.

Among the studies with a similar approach to the issue of comparative advantage, it is worth noting the work of Liefert (2002). In his study, he uses a completely different methodology, based on the calculation of the domestic resource cost (DRC) and social cost-benefit ratio. Nevertheless, he considers the comparative advantages of Russian agricultural products separately from other sectors, which means that its results can be compared with the results of this dissertation research.

According to Liefert, Russia has a disadvantage in meat compared with its bulk crops (grain and sunflower seed, the country's main oilseed), which provide animal feed. These results

completely consistent with the results of this work. The use of radically different methodologies makes them even more reliable and trustworthy. We unfortunately do not have the available research in respect to Russian intra-industry trade in agricultural products.

The analysis of intra-industry trade enables us to assume that geographic distance is the main factor determining the intensity of intra-industry trade in agricultural products between the two countries. We also observed that the intra-industry trade intensity growth in countries with a similar level of economic development

These results are consistent with existing literature at the point that the higher the degree of integration among countries and the low in trade barriers, the higher its associated IIT index (Fontagne, 1997; Brulhart and Hine, 1999; Lovely and Nelson, 2002; Brulhart and Elliott, 2002; Diaz-Mora, 2002). It also confirms the fact that the higher the degree of integration among countries and the low in trade barriers, the higher its associated IIT index.

13. Conclusion

In conclusion, let us compare the results with the objectives of the study.

The current position of the Russian Federation in the global market of agricultural products and foodstuffs was specified in this paper in terms of its competitiveness and the nature of trade relationship with individual regions and countries.

Stated sub-objectives were performed as follows.

1) In the course of the literature review there were identified basic concepts related to the topic of the study. There were described concepts of foreign trade, theories of comparative advantage, new trade theory, inter-industry and intra-industry trade. In such a way, we determined the theoretical background for the research.

Then we considered the concept of protectionism, the major trends in world agricultural markets was described. We considered globalization and trade liberalization in agriculture, global trends affecting world agricultural demand (world population growth, increase in the demand for bio-energy, sustained per capita income growth and changes in dietary patterns), supply (natural resource constraints, weather conditions and technology constraints) and prices (devaluation of the U.S. dollar, rising energy prices, increases in agricultural costs of production, growth in foreign exchange holdings by major food-importing countries, and protective policies adopted by some exporting and importing countries, etc.).

In addition, there were considered relationship of Russia with other countries and groups of countries, participation in international organizations and trading blocs and their impact on country's foreign trade in agricultural products. For example, agricultural trade flows between Russia and the countries of the Eurasian Economic Community increased much more rapidly than with other countries (exports have grown by almost 10 times, imports - by 3.5 times, during the 12 years). Not all the international organizations where Russia is involved have a direct impact on trade in agricultural products. Many of them are elements of political cooperation between the countries and they affect trade relations only indirectly.

2) The second sub-objective of this paper was to examine Russia's economic performance, role of agriculture in the economy, structure of agricultural production. Therefore, in the next chapter, I examined Russia's economic performance and agricultural production.

After a significant decline in the early 90s and a long process of transformation of the economy, the economy of Russia is beginning to recover and stabilize. To a large extent, it is caused by a favorable situation and high prices in the world hydrocarbon market. Agriculture is also slowly but surely recovering.

Russia is characterized by large areas of agricultural land, a third of its population lives in rural areas. The share of agriculture in GDP is relatively low and amounts about 3% of GDP.

Russian Federation produces a lot of agricultural products and foodstuffs. However, country is not self-sufficient in many products. The highest level of import dependence is observed for meat, vegetables and fruits.

3) Next I investigated the product and territorial structure of Russian foreign trade in agricultural products and foodstuffs

Food and agricultural products amount about only 2% of Russian agricultural export. The share of agricultural products in Russian import is more significant and amounts to 14%. However in 2000s, there is the significant growth of foreign trade turnover due to the expansion of both imports and exports.

There were significant changes in the product structure of Russian agricultural exports. The share of cereals greatly increased, the shares of oilseeds, hides and skins and sugar decreased. In the early 2000s Russia became one of the major suppliers of wheat in the world market.

The product structure of import was relatively stable. There shares of cereals and sugar slightly decreased, the share of fruit, vegetables and dairy products were growing.

The territorial structure of agricultural exports has undergone significant changes. If at the end of the 90's most of the country's agri-food exports went to EU countries, in the last years the most important are Asian and CIS countries. The structure of agricultural imports didn't change significantly. All segments have grown proportionally. The most important trade partners of Russia are Ukraine, Germany, China, Brazil, Egypt and USA

The share of Russian Federation in the world agricultural and food exports is less than 1%, in the world imports - 3%.

4) From the regression analysis of the factors affecting country's agricultural trade the following conclusions can be drawn. Empirical results have shown that there exists a strong relationship among the variables of the gross agricultural production value and agricultural exports. An increase in the agricultural production value has a significant and positive impact on export trade flows. There are also high correlation and statistical significance in relations between government support for agriculture and agricultural exports. The results of the analysis support the hypothesis about the relationship between world food prices and agricultural exports. There is an evidence the significant relationship between world food prices and Russia's agricultural export prices. So it can be said with some certainty, that Russian export prices substantially follow the worldwide prices.

Hypotheses about relationships between ruble exchange rate and country's agricultural exports and imports were deemed insignificant.

5) To identify the most important segments where Russian agricultural products are more competitive, the analyses of specialization and comparative advantage of Russian agricultural export was conducted. The total trade flows were disaggregated into individual segments in order to identity the most important and competitive.. These analyses used several indices of revealed comparative advantage.

How it comes up from the analysis by Balassa's index, in a modern Russia's agricultural export, the comparative advantage belongs mostly to crops (Wheat, Barley), their by-products (Bran of Wheat) and products of their processing, such as Barley Pearled, Pot Barley, Barley Flour and Grits, Cereal Preparations, etc. Russia has a great potential for the production of grain, primarily due to the large land area. Development of production capacities, favorable weather conditions of recent years, the improvement of transport infrastructure led to the situation when cereals, especially wheat, became a strategically important element of Russian agricultural exports.

Over the period, comparative advantages in oil crops and oils, mainly sunflower seeds and cake, and sunflower oil were also observed. Russia has traditionally produced large amounts of sunflower seeds. But in 2000s there was expansion of processing facilities and increase in domestic output of vegetable oils. As a result, in 2005 Russia became a net exporter of sunflower oil while preserving its status of net exporter of sunflower seeds.

Analyzing the same set of products using Vollrath's index, we observe that the number of products that have revealed competitive advantage grew steadily. This trend can be seen as increasing total competitiveness of the Russian agricultural exports.

At the beginning of the study period from 1998 to 2001, the comparative advantages were observed in group of by-products (e.g. bran of wheat, sunflower cake etc.).

From 2002 to 2007, the positive value of the index was indicated to a greater extent in primary products (wheat, barley, whole cow milk, sunflower seed etc.).

Primary products have the significant comparative advantage in relation to EU countries, countries of the Commonwealth of Independent States and to Asian countries. In trade with the countries of North, Central and South America on the contrary the processed products have greater comparative advantages.

Another analytical tool, that is used in in the analysis of comparative advantage is "products mapping". This tool enables to assess leading exported products from two different points of view, i.e. domestic trade-balance and international competitiveness.

During the analysis four specific groups of products were distinguished from the total agricultural export flows.

According to the results of “products mapping”, the largest number of the agricultural products exported by Russian Federation is part of the group D. They have no revealed comparative advantage and keep negative trade balance. Production of these commodities is ineffective due to economic, historical, natural or geographical factors within the Russian Federation, so country has to import them. Such goods are, for example, tropical fruits (bananas, apricots, coconut, etc.), meat, and most of the meat products, tea, coffee etc.

But considering the value of products in each group instead of the number of products, we got completely different results. According to the results of calculations, much of the export value is concentrated in Group A.

Wheat has the greatest weight in the group A and accounted 42.02% of total exports in 2002, 31.3% in 2006 and 35.5% in 2010, while the whole group A represented 59.3%, 51% and 50.6% of total exports respectively.

During the analyzed period there were significant changes in the volumes and structures of these groups.

In 1998, the Group A comprised 43.8% of the total value of agricultural exports, in 2002-2003 increased to almost 60% of the total value and in 2007 reached its maximum of 65.7% of the total value of Russian agricultural exports. In 2010 its share was 50.6%. Despite some fluctuations, the overall trend can be assessed as a steady growth of the share of the group A in the total value of Russian agricultural exports.

At the same time, there is a reduction in the share of groups D and C in the total exports value. These trends can be considered as a strengthening of the comparative advantages of Russian exports on the whole.

Thus, there is a situation when 5% of the exported goods, belonging to group A, account for about 50% total agricultural exports. In turn, 80% of items included in the Group D, account for only about 30% of total exports, but 95-99% of the total imports. On this basis, we can consider the contents of the group A as the foundation of the Russian agri-food export.

It should be noticed that Group C products are also important. They do not have comparative advantages, but have a positive trade balance. The comparative disadvantage in this case, may occur in relation to the whole world, while in bilateral trade with individual regions or countries comparative advantages quite possibly exist.

6) The next sub-objective was to identify the most important countries in relation to which Russian agricultural products are more competitive.

All analyses conducted have shown that the comparative advantage of production varies depending on the region, participating in the international trade. Russia has more significant comparative advantages in relation to CIS countries and Asian countries. This mainly occurs due

to the geographical location of these regions, and hence lower transport costs, as well as due to the well-established trade relations.

In studying the structure of Russia's foreign trade in agricultural products, the following conclusions were made.

To test this assumption we calculated LFI index (by Lafay (1992)) for each product/aggregation in this group in relations to 5 regions: European Union (EU), Commonwealth of Independent States (CIS), Africa, Asia and Americas as well as in relation to selected important countries.

The results support the suggestion that in bilateral trade with individual regions products of this group have comparative advantages in relation to specific region or country despite of comparative disadvantages in relation to the whole world. For example, rapeseeds have comparative disadvantage in relation to African and American countries as well as to the whole world, but rapeseeds have a strong comparative advantage in relation to the EU since European countries use rapeseeds for bio-fuel production.

Then, Russian foreign trade in agricultural products and foodstuffs was be analyzed in terms of inter-industry and intra-industry trade.

Results show that the extent of intra-industry trade in agricultural products in Russia varies significantly depending on the geographical region. The lowest level of intra-industry trade is observed in relation to Africa and South America, the highest - in relation to CIS countries.

We also found out that in the case of Russia’s foreign trade in agricultural products increase in intra-industry trade simultaneously with the process of trade liberalization occurred only in relation to the CIS countries.

Results for selected countries showed that in relation to Brazil and Egypt inter-industry trade amounts 100% of the total Russian foreign trade in agricultural products and foodstuffs. Moreover, the inter-industry trade is the dominant type in the Russian trade in agricultural products and foodstuffs in relation to all considered countries. The highest level of intra-industry trade was observed in relation to Ukraine, which is consistent with the results of the analysis by regions. Therefore, on the basis of this analysis, we can assume that geographic distance is the main factor determining the intensity of intra-industry trade in agricultural products between the two countries. We can also suppose that upon foreign trade liberalization the intra-industry trade intensity growth in countries with a similar level of economic development

7) The most significant changes over the analyzed period over the analyzed period are:

- Strengthening of the comparative advantages of Russian agricultural export.

- Changes in the structure of Russian exports, strengthening the competitiveness of some products (wheat, sunflower oil), and the weakening of others (sunflower seeds, hides and furs).

- Shift of comparative advantage from by-products to primary products.

- Increasing of intra-industry trade with liberalization processes was not observed.

Based on the analyses performed, we can make the following assumptions about the future development of Russia's foreign trade in agricultural products.

In the coming years, Russia’s accession to WTO will increase the level of country’s integration into the world economy. Rules and regulations related to this accession constrain the government's ability to support individual sectors of agriculture and to intervene in the foreign trade.

In such circumstances, only the most competitive segments of agriculture will expand. This will lead to a narrowing of Russia’s specialization in the international market of agricultural products, prerequisites of which we can observe now.

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Appendix 1 - FAOSTAT Commodity List

Item Name				
Agave Fibres Nes	Butter Cow Milk	Citrus juice, concentrated	Citrus fruit, nes	Grape Juice
Alfalfa for forage and silage	Butter of Karite Nuts	Citrus juice, single strength	Fat Prep Nes	Grapefruit (inc. pomelos)
Alfalfa Meal and Pellets	Butter,Ghee of Sheep Milk	Clover for forage and silage	Fatty Acids	Grapefruit juice, concentrated
Almonds Shelled	Butterm.,Curdl,Acid.Milk	Cloves	Feed Additives	Grapes
Almonds, with shell	Cabbages and other brassicas	Cmpd Feed,Oth Or Nes	Feed Minerals	Grasses Nes for forage;Sil
Anise, badian, fennel, corian.	Cake of Copra	Cmpd Feed,Pigs	Feed Supplements	Grease incl. Lanolin Wool
Apple juice, concentrated	Cake of Cottonseed	Cmpd Feed,Poultry	Fibre Crops Nes	Groundnut oil
Apple juice, single strength	Cake of Groundnuts	Coarse Goat Hair	Figs	Groundnuts Shelled
Apples	Cake of Hempseed	Cocoa beans	Figs Dried	Groundnuts, with shell
Apricots	Cake of Kapok	Cocoa Butter	Fine Goat Hair	Gums Natural
Arecanuts	Cake of Linseed	Cocoa Paste	Flax fibre and tow	Hair Carded/ Combed
Artichokes	Cake of Maize	Cocoahusks;Shell	Flax Fibre Raw	Hair Coarse Nes
Asparagus	Cake of Mustard	Cocoapowder&Cake	Flax Tow Waste	Hair Fine
Avocados	Cake of Oilseeds, Nes	Coconut (copra) oil	Flour of Buckwheat	Hair of Horses
Bacon and Ham	Cake of Palm Kernel	Coconuts	Flour of Cassava	Hay (Clover, Lucerne,Etc)
Bagasse	Cake of Rapeseed	Coconuts Desiccated	Flour of Cereals	Hay (Unspecified)
Bambara beans	Cake of Sesame Seed	Cocoon Unr.&Waste	Flour of Fonio	Hay Non Legum
Bananas	Cake of Soybeans	Coffee Extracts	Flour of Fruits	Hazelnuts Shelled
Barley	Cake Rice Bran	Coffee Husks and Skins	Flour of Maize	Hazelnuts, with shell
Barley Flour and Grits	Cake Safflower	Coffee Roasted	Flour of Millet	Hemp Tow Waste
Barley Pearled	Camel meat	Coffee Subst. Cont.Coffee	Flour of Mixed Grain	Hempseed
Beans, dry	Canary seed	Coffee, green	Flour of Mustard	Hen eggs, in shell
Beans, green	Cane Tops	Coir	Flour of Oilseeds	Hides Dry Slt Horses
Beer of Barley	Canned Mushrooms	Compound Feed, Cattle	Flour of Pulses	Hides Dry Slt Nes
Beer of Sorghum	Carobs	Copra	Flour of Roots and Tubers	Hides Drysalt Buf
Beeswax	Carrots and turnips	Cotton Carded,Combed	Flour of Rye	Hides Nes
Beet Pulp	Cashew Nuts Shelled	Cotton lint	Flour of Sorghum	Hides Nes Cattle
Beets for Fodder	Cashew nuts, with shell	Cotton Linter	Flour of Wheat	Hides Unsp Camels
Berries Nes	Cashewapple	Cotton Waste	Fonio	Hides Unsp Horse
Bever. Dist.Alc	Cassava	Cottonseed	Food Prep Nes	Hides Wet Salted Buffaloes
Beverage Non-Alc	Cassava Dried	Cottonseed oil	Food Prep,Flour,Malt Extract	Hides Wet Salted Camels
Bird meat, nes	Cassava Starch	Cow milk, whole, fresh	Food Waste,Prep. for Feed	Hides Wet Salted Cattle
Blueberries	Castor oil seed	Cow peas, dry	Food Wastes	Hides Wet Salted Horses
Bran Buckwheat	Cattle Butch.Fat	Cranberries	forage Products	Hides Wet Salted Nes
Bran of Barley	Cattle Hides	Cream Fresh	Frozen Potatoes	Hidesdry S.Cattle
Bran of Cereals	Cattle meat	Crude Materials	Fruit Dried Nes	Homogen. Cooked Fruit Prp
Bran of Fonio	Cauliflowers and broccoli	Cucumbers and gherkins	Fruit Fresh Nes	Homogen.Meat Prp.
Bran of Maize	Cereal Preparations, Nes	Currants	Fruit Juice Nes	Homogen.Veget.Prep
Bran of Millet	Cereals, nes	Dates	Fruit Prp Nes	Hops
Bran of Mixed Grains	Cheese of Goat Mlk	Degras	Fruit Tropical Dried Nes	Horse meat
Bran of Oats	Cheese of Sheep Milk	Dregs From Brewing;Dist.	Fruit, tropical fresh nes	Ice Cream and Edible Ice
Bran of Pulses	Cheese of Skimmed Cow Milk	Dried Mushrooms	Fruit,Nut,Peel, Sugar Prs	Infant Food
Bran of Rice	Cheese of Whole Cow Milk	Dry Apricots	Game meat	Isoglucose
Bran of Rye	Cherries	Duck meat	Garlic	Juice of Grapefruit
Bran of Sorghum	Chestnuts	Eggplants (aubergines)	Germ of Maize	Juice of Pineapples
Bran of Wheat	Chick peas	Eggs Dried	Germ of Wheat	Juice of Tomatoes
Brazil Nuts Shelled	Chicken meat	Eggs Liquid	Ghee Oil of Buf	Juice of Vegetables Nes
Brazil nuts, with shell	Chicory roots	Extracts Tea, Mate, Prep	Ghee,Butteroil of Cow Milk	Jute
Bread	Chillies and peppers, dry	Fat Liver Prep (Foie Gras)	Ginger	Kapok Fibre
Breakfast Cereals	Chillies and peppers, green	Fat of Camels	Glucose and Dextrose	Kapokseed in Shell
Broad beans, horse beans, dry	Chocolate Prsnes	Fat of Cattle	Gluten Feed&Meal	Kapokseed Shelled
Buckwheat	Cider Etc	Fat of Pigs	Goat meat	Karakul Skins
Buffalo Hide	Cigarettes	Fat of Poultry	Goatskins	Karite Nuts (Sheanuts)
Buffalo meat	Cigars Cheroots	Fat of Ptry Rend	Goose and guinea fowl meat	Kiwi fruit
Bulgur	Cinnamon (canella)	Fat of Sheep	Gooseberries	Kolanuts

Appendix 1 - FAOSTAT Commodity List

Item Name				
Lactose	Must of Grapes	Peas, dry	Plantains	Plum juice, single strength
Lard	Mustard oil	Peas, green	Plum juice, concentrated	Plums and sloes
Lard Stearine Oil	Mustard seed	Pepper (Piper spp.)	Plum juice, single strength	Plums Dried (Prunes)
Leather Use&Waste	Natural honey	Peppermint	Plums and sloes	Popcorn
Leeks, other alliaceous veg	Natural rubber	Persimmons	Plums Dried (Prunes)	Poppy Oil
Leguminous for Silage	Nutmeg, mace and cardamoms	Pet Food	Popcorn	Poppy seed
Leguminous vegetables, nes	Nuts, nes	Pig Butcher Fat	Poppy Oil	Pork
Lemon juice, concentrated	Oats	Pig meat	Poppy seed	Pot Barley
Lemon juice, single strength	Oats Rolled	Pigeon peas	Pork	Potato Offals
Lemons and limes	Offals Liver Chicken	Pineapple Juice Conc	Pot Barley	Potatoes
Lentils	Offals Liver Duck	Pineapples	Potato Offals	Potatoes Flour
Lettuce and chicory	Offals Liver Geese	Pineapples Cand	Potatoes	Prep of Pig Meat
Linseed	Offals Nes	Pistachios	Potatoes Flour	Preparations of Beef Meat
Linseed oil	Offals of Cattle, Edible	Plantains	Prep of Pig Meat	Prepared Groundnuts
Liquid Margarine	Offals of Goats, Edible	Plum juice, concentrated	Preparations of Beef Meat	Prepared Meat Nes
Liver Prep.	Offals of Horses	Plum juice, single strength	Prepared Groundnuts	Prepared Nuts (Exc.Groundnuts)
Lupins	Offals of Pigs, Edible	Plums and sloes	Prepared Meat Nes	Processed Cheese
Macaroni	Offals of Sheep,Edible	Plums Dried (Prunes)	Prepared Nuts	Prod.of Nat.Milk Constit
Maize	Offals Other Camelids	Popcorn	Processed Cheese	Pulp of Fruit for Feed
Maize for forage and silage	Oil Boiled Etc	Poppy Oil	Prod.of Nat.Milk Constit	Pulses, nes
Maize oil	Oil Citronella	Poppy seed	Pulp of Fruit for Feed	Pumpkins, squash and gourds
Maize, green	Oil Essential Nes	Pork	Pulses, nes	Pyrethrum Extr
Malt	Oil Hydrogenated	Pot Barley	Pumpkins, squash and gourds	Pyrethrum,Dried
Malt Extract	Oil of Castor Beans	Potato Offals	Pyrethrum Extr	Quinces
Mango Juice	Oil of Jojoba	Potatoes	Pyrethrum,Dried	Quinoa
Mango Pulp	Oil of Kapok	Potatoes Flour	Quinces	Rabbit meat
Mangoes, mangosteens, guavas	Oil of Olive Residues	Prep of Pig Meat	Quinoa	Raisins
Manila Fibre (Abaca)	Oil of Tung Nuts	Preparations of Beef Meat	Rabbit meat	Ramie
Maple Sugar and Syrups	Oil of vegetable origin, nes	Prepared Groundnuts	Raisins	Rapeseed
Marc of Grapes	Oils,Fats of Animal Nes	Prepared Meat Nes	Ramie	Rapeseed oil
Margrine Short	Oilseeds, Nes	Prepared Nuts (Exc.Groundnuts)	Rapeseed	Raspberries
Maté	Okra	Processed Cheese	Rapeseed oil	Reconsti.Ted Milk
Meal Meat	Olive oil, virgin	Prod.of Nat.Milk Constit	Raspberries	Res.Fatty Subs
Meat Dried Nes	Olive Residues	Pulp of Fruit for Feed	Reconsti.Ted Milk	Rice bran oil
Meat Extracts	Olives	Pulses, nes	Res.Fatty Subs	Rice Broken
Meat nes	Olives Preserved	Pumpkins, squash and gourds	Rice bran oil	Rice Fermented Beverages
Meat of Asses	Onions (inc. shallots), green	Pyrethrum Extr	Rice Broken	Rice Flour
Meat of Beef,Drd, Sltd,Smkd	Onions, dry	Pyrethrum,Dried	Rice Fermented Beverages	Rice Husked
Meat of Chicken Canned	Orange juice, concentrated	Quinces	Rice Flour	Rice Milled
Meat-CattleBoneless	Orange juice, single strength	Quinoa	Rice Husked	Rice, paddy
Melonseed	Oranges	Rabbit meat	Rice Milled	Roots and Tubers Dried
Milk Skimmed Cond	Other Bastfibres	Raisins	Rice, paddy	Roots and Tubers, nes
Milk Skimmed Dry	Other bird eggs,in shell	Peas, dry	Roots and Tubers Dried	Rubber Nat Dry
Milk Skimmed Evp	Other Conc, Nes	Peas, green	Roots and Tubers, nes	Rye
Milk Skm of Cows	Other Fructose and Syrup	Pepper (Piper spp.)	Rubber Nat Dry	Safflower oil
Milk Whole Cond	Other melons (inc.cantaloupes)	Peppermint	Rye	Safflower seed
Milk Whole Dried	Palm kernel oil	Persimmons	Safflower oil	Sausage Beef&Veal
Milk Whole Evp	Palm kernels	Pet Food	Safflower seed	Sausages of Pig Meat
Milkdry Buttrmilk	Palm oil	Pig Butcher Fat	Sausage Beef&Veal	Sesame oil
Milled/Husked Rice	Papayas	Pig meat	Sausages of Pig Meat	Sesame seed
Millet	Paste of Tomatoes	Pigeon peas	Sesame oil	Sheep meat
Mixed grain	Pastry	Pineapple Juice Conc	Sesame seed	Sheep milk, whole, fresh
Mixes and Doughs	Peaches and nectarines	Pineapples	Sheep meat	Sheepskins
Molasses	Peanut Butter	Pineapples Cand	Plantains	Silk Raw
Mushrooms and truffles	Pears	Pistachios	Plum juice, concentrated	Silk-worm cocoons, reelable

Appendix 1 - FAOSTAT Commodity List

Item Name		
Sisal	Tomato Peeled	Live Animals Non Food
Skin Furs	Tomatoes	Mules
Skins Nes Calves	Tomatojuice Concentrated	Other Camelids
Skins Nes Goats	Triticale	Other Rodents
Skins Nes Pigs	Tung Nuts	Pigeons, Other Birds
Skins Nes Sheep	Turkey meat	Pigs
Skins of Rabbits	Turnips for Fodder	Rabbits and hares
Skins Wet Salted Calves	Vanilla	Sheep
Skins Wet Salted Goats	Veg Prod for Feed	Turkeys
Skins With Wool Sheep	Veg.in Tem. Preservatives	
Skinsdry S.Calves	Veg.Prep. Or Pres.Frozen	
Skinsdry Slt Goat	Veg.Prod.Fresh Or Dried	
Skinsdry Sltdpigs	Vegetable Frozen	
Skinsdry Sltsheep	Vegetable Tallow	
Skinswet Salted	Vegetables Dehydrated	
Skinswet Sltdpigs	Vegetables fresh nes	
Sorghum	Vegetables in Vinegar	
Sour cherries	Vegetables Preserved Nes	
Soya Curd	Vegetables Roots Fodder	
Soya Paste	Vegetables, canned nes	
Soya Sauce	Vegetables, dried nes	
Soybean oil	Vermouths&Similar	
Soybeans	Vetches	
Spermaceti	Vitamins	
Spices, nes	Wafers	
Spinach	Walnuts Shelled	
Stone fruit, nes	Walnuts, with shell	
Straw Husks	Watermelons	
Strawberries	Waters,Ice Etc	
String beans	Waxes Vegetable	
Sugar beet	Wheat	
Sugar cane	Whey Cheese	
Sugar Confectionery	Whey Condensed	
Sugar crops, nes	Whey Dry	
Sugar flavoured	Whey Fresh	
Sugar Non- Centrifugal	Wine	
Sugar Raw Centrifugal	Wool Degreased	
Sugar Refined	Wool Shoddy	
Sugar, nes	Wool, greasy	
Sunflower Cake	Wool;Hair Waste	
Sunflower oil	Yams	
Sunflower seed	Yautia (cocoyam)	
Swedes for Fodder	Yogh Conc.Or Not	
Sweet Corn Frozen	Yoghurt	
Sweet Corn Prep or Preserved	Animals Live Nes	
Sweet potatoes	Asses	
Tallow	Beehives	
Tangerine Juice	Buffaloes	
Tangerines, mandarins, clem.	Camels	
Tapioca of Cassava	Cattle	
Tapioca of Potatoes	Chickens	
Taro (cocoyam)	Ducks	
Tea	Geese and guinea fowls	
Tobacco Products Nes	Goats	
Tobacco, unmanufactured	Horses	

Appendix 2 - Russia's TRQ (volumes and tariff rates) for beef, pork and poultry in 2003-2011

	Unit	2003*	2004	2005	2006	2007	2008	2009	2010	2011
Beef, fresh and chilled										
Volume of TRQ	ths. tonnes	11.5	27.5	27.5	27.8	28.3	28.9	29.5	30	30
In-quota rates	%	15, but not less than 0.2 euro per kg.								
Out of quota rates	%	60%, n.l. 0.8 EUR/kg	60%, n.l. 0.8 EUR/kg	60%, n.l. 0.8 EUR/kg	40%, n.l. 0.4 EUR/kg	50%, n.l. 0.65 EUR/kg.	45, n.l. 0.6 EUR/kg	40 n.l. 0.53 EUR/kg	50, n.l. 1 EUR/kg	50, n.l. 1 EUR/kg
Beef, frozen										
Volume of TRQ	ths. tonnes	315	420	430	435	440	445	450	530	530
In-quota rates	%	15, but not less than 0.15 euro per kg							15, but not less than 0.2 euro per kg	
Out of quota rates	%	60%, n.l. 0.6 EUR/kg	60%, n.l. 0.6 EUR/kg	60%, n.l. 0.6 EUR/kg	40%, n.l. 0.4 EUR/kg	52.5%, n.l. 0.53 EUR/kg	50, n.l. 0.5 EUR/kg	40, n.l. 0.4 EUR/kg	50, n.l. 1 EUR/kg	50, n.l. 1 EUR/kg
Pork fresh, chilled and frozen										
Volume of TRQ	ths. tonnes	337.5	450	467.4	476.1	484.8	493.5	531.9	472.1	472.1
In-quota rates	%	15**,** but not less than 0.25 euro per kg.								
Out of quota rates	%	80%, n.l. 1.06 EUR/kg	80%, n.l. 1.06 EUR/kg	80%, n.l. 1.06 EUR/kg	60%, n.l. 1.0 EUR/kg	55%, n.l. 0.9 EUR/kg	60, n.l. 1.0 EUR/kg.	75, n.l. 1.5 EUR/kg	75 n.l. 1.5 EUR/kg	75, n.l. 1.5 EUR/kg
Meat and edible offal of poultry, fresh, chilled and frozen										
Volume of TRQ	ths. tonnes	744	1050	1050	1130.8	1171.2	1211.6	1252.0	780	350
In-quota rates	%	25, but not less than 0.2 euro per kg.								
Out of quota rates	%	No over-quota imports	No over-quota imports	No over-quota imports	60%, n.l. 0.48 EUR/kg	50%, n.l. 0.4 EUR/kg	60, n.l. 0.48 EUR/kg	95, n.l. 0.8 EUR/kg	80, n.l. 0.7 EUR/kg	80, n.l. 0.7 EUR/kg

n.l.: “but not less than”;

* - for beef, fresh and chilled - from 01.08.2003; for beef frozen- from 01.04.2003; for pork fresh, chilled and frozen - from 01.04.2003; for poultry - from 30.04.2003

Sources: OECD, Russian laws on customs tariffs and quotas (2013)

Appendix 3 - Russia's foreign trade in agricultural products with all countries in 2012 (USD)

Country	Export	Import	Balance	Country	Export	Import	Balance
Afghanistan	17843304	11066939	6776365	Rep.Korea	7812465	24216	7788249
Albania	55330910	989547	54341363	Rep.Congo		143693	-143693
Algeria	30779964	3469111	27310853	Denmark	60819017	787731758	-726912741
Angola	754163		754163	Djibouti	20191564		20191564
Anguilla		6174	-6174	Dominica		1550	-1550
Antigua and Barbuda		7143	-7143	Dominican Rep.		4227643	-4227643
Areas, nes	18029432	23072	18006360	Ecuador	7385000	1187558763	-1180173763
Argentina		952375623	-952375623	Egypt	1804699720	263129904	1541569816
Armenia	174340405	222150656	-47810251	El Salvador	18244	270058	-251814
Australia	2435364	323454203	-321018839	Estonia	21270078	105381249	-84111171
Austria	22508336	187244377	-164736041	Ethiopia	1326180	20077013	-18750833
Azerbaijan	587924483	352560428	235364055	Faeroe Isds		77455166	-77455166
Bahamas		2905652	-2905652	Falkland Isds		15270	-15270
Bahrain	409367	63760	345607	Finland	50864581	520764368	-469899787
Bangladesh	1158622	23696149	-22537527	France	122497805	1530194826	-1407697021
Barbados	41798	657344	-615546	Gambia	16726	6956	9770
Belarus	603564781	1802275714	-1198710933	Georgia	307246522	51649715	255596807
Belgium	137087183	571739292	-434652109	Germany	191335198	2172884409	-1981549211
Belize		7800	-7800	Ghana	811636	105646659	-104835023
Benin	48552	28098	20454	Greece	98671984	325983482	-227311498
Bermuda		363801	-363801	Greenland		241961	-241961
Bolivia		3838421	-3838421	Guatemala	54898	16742136	-16687238
Bosnia Herzegovina	53093	2273376	-2220283	Guinea	744994	69440	675554
Br. Virgin Isds	71500	16537	54963	Guinea-Bissau		78575	-78575
Brazil	12448955	2814340502	-2801891547	Guyana		666450	-666450
Bulgaria	6557994	82740406	-76182412	Haiti	28930	7760	21170
Burkina Faso	159257	32361	126896	Honduras		10269672	-10269672
Burundi	6538	1260256	-1253718	Hungary	520378	308801608	-308281230
Cambodia	229521	8638190	-8408669	Iceland	610088	162957400	-162347312
Cameroon	32299	4293400	-4261101	India	140998802	565984493	-424985691
Canada	8715918	831003837	-822287919	Indonesia	961326	734683563	-733722237
Chile	1058626	461322087	-460263461	Iran	535893581	305019181	230874400
China	1026519348	1599553716	-573034368	Iraq	201345169	61908	201283261
China, Hong Kong SAR	16751371	44400	16706971	Ireland	10773920	267986056	-257212136
China, Macao SAR	9735		9735	Israel	279545479	418572357	-139026878
Colombia	126603	156973331	-156846728	Italy	355047880	1284415463	-929367583
Comoros		550746	-550746	Jamaica		870919	-870919
Congo		26257	-26257	Japan	266385041	24814800	241570241
Cook Isds		95	-95	Jordan	164342722	16560582	147782140
Costa Rica		113684438	-113684438	Kazakhstan	1350824653	192242917	1158581736
Croatia	559791	28714329	-28154538	Kenya	60941773	133107123	-72165350
Cuba	49438	48911471	-48862033	Kuwait	1318501		1318501
Cyprus	34856708	20118461	14738247	Kyrgyzstan	181092029	22766962	158325067
Czech Rep.	5304449	125039268	-119734819	Lao	38030	28128	9902
CГrte d'Ivoire	761462	154671970	-153910508	Latvia	314999233	130251179	184748054

Appendix 4 - Results of the regression analysis

Hypothesis I Gross Production Value and export value

N=16	b*	Std.Err. (of b*)	b	Std.Err. (of b)	t(14)	p-value
Intercept			-2209189	480880,9	-4,59405	0,000417
Var1	0,964083	0,070985	0	0,0	13,58157	0,000000

Regression Summary for Dependent Variable: Var2 (Spreadsheet1)
R= ,96408322 R2= ,92945646 Adjusted R2= ,92441763
F(1,14)=184,46 p<,00000 Std.Error of estimate: 8126E2

Hypothesis II Government expenditure for agriculture and export value

N=16	b*	Std.Err. (of b*)	b	Std.Err. (of b)	t(14)	p-value
Intercept			-348242	733442,0	0,000000	0,64224771
Var1	0,866142433354317	0,133576432	0,876342846	0,135149539	6,000000	1,000000

Regression Summary for Dependent Variable: Var2 (Spreadsheet1)
R= ,86614243 R2= ,75020271 Adjusted R2= ,73236005
F(1,14)=42,045 p<,00001 Std.Error of estimate: 1529E3

Hypothesis IIIa. Official exchange rate (LCU per US$, period average) and export value

N=16	b*	Std.Err. (of b*)	b	Std.Err. (of b)	t(14)	p-value
Intercept			797819,0	2118820	0,376539	0,712161242961884
Var1	0,363448028533299	0,24898444	119258,0	81699	1,000000	0,166440010070801

Regression Summary for Dependent Variable: Var2 (Spreadsheet1)
R= ,36344803 R2= ,13209447 Adjusted R2= ,07010122
F(1,14)=2,1308 p<,16644 Std.Error of estimate: 2850E3

Hypothesis IIIb. Official exchange rate (LCU per US$, period average) and import value

N=16	b*	Std.Err. (of b*)	b	Std.Err. (of b)	t(14)	p-value
Intercept			9597186	7258617	1,000000	0,207304552197456
Var1	0,288588838439725	0,255890110668066	315649	279884	1,000000	0,278368711471558

Regression Summary for Dependent Variable: Var2 (Spreadsheet1)
R= ,28858884 R2= ,08328352 Adjusted R2= ,01780377
F(1,14)=1,2719 p<,27837 Std.Error of estimate: 9764E3

Hypothesis IV. World Food Price Index and export value

N=16	b*	Std.Err. (of b*)	B	Std.Err. (of b)	t(14)	p-value
Intercept			-4625980	1051652	-4,39877	0,000606
Var1	0,911765	0,109768	63420	7635	8,30631	0,000001

Regression Summary for Dependent Variable: Var2 (Spreadsheet1)
R= ,91176461 R2= ,83131471 Adjusted R2= ,81926576
F(1,14)=68,995 p<,00000 Std.Error of estimate: 1257E3

Hypothesis V. World Food Price Index and Russia's export price index

N=16	b*	Std.Err. (of b*)	B	Std.Err. (of b)	t(14)	p-value
Intercept			26,00000	15,00000	1,000000	0,10350731
Var1	0,800075785976947	0,1603297	0,557578578	0,1117349475	4,000000	1,000000

Regression Summary for Dependent Variable: Var2 (Spreadsheet1)
R= ,80007579 R2= ,64012126 Adjusted R2= ,61441564
F(1,14)=24,902 p<,00020 Std.Error of estimate: 18,388

Appendix 5 - LFI index in relation to individual countries

	Total	Cocoa and cocoa preparations	Cereals	Beverages, spirits and vinegar	Oil seeds and vegetable oils
Afghanistan	0,03	0,01	x	0,00	0,32
Albania	0,14	x	0,03	0,00	-0,01
Algeria	0,07	x	0,00	0,00	0,49
Argentina	-0,97	x	-1,68	-0,20	-2,03
Armenia	0,20	1,40	0,04	-0,37	0,03
Australia	-0,32	-0,00	-0,00	0,02	-0,01
Austria	-0,14	-0,07	-0,02	-0,13	0,03
Azerbaijan	1,09	3,12	0,07	0,82	0,48
Bangladesh	-0,02	x	x	x	0,02
Belarus	-0,35	3,16	0,01	3,40	-0,36
Belgium	-0,24	-0,82	0,00	-0,09	1,09
Brazil	-2,84	0,03	-0,05	-0,02	-2,32
Bulgaria	-0,07	-0,02	0,00	-0,18	-0,05
Cambodia	-0,01	x	-0,13	0,00	x
Canada	-0,83	x	-0,03	0,04	-0,11
Chile	-0,47	0,06	-0,02	-0,36	-0,21
China	0,91	-0,13	-0,04	0,06	-0,36
China, Hong Kong	0,04	x	x	0,00	-0,00
Colombia	-0,16	-0,03	x	0,00	-0,00
Costa Rica	-0,12	-0,00	x	x	-0,00
Croatia	-0,03	0,00	-0,01	-0,01	-0,06
Cuba	-0,05	0,00	x	-0,05	x
Cyprus	0,07	x	0,01	0,00	-0,00
Czech Rep.	-0,11	0,01	-0,00	-0,31	-0,25
CГrte d'Ivoire	-0,16	-4,39	x	0,00	-0,00
Dem. Rep. of Korea	0,02	0,00	0,00	0,01	0,01
Denmark	-0,65	-0,02	-0,49	-0,04	-0,56
Djibouti	0,05	x	0,01	0,00	x
Ecuador	-1,19	-0,01	0,00	x	x
Egypt	4,19	0,05	0,89	-0,00	4,87
Estonia	-0,05	x	0,00	0,14	0,02
Finland	-0,41	-0,24	-0,03	0,59	-0,05
France	-1,26	-0,86	-0,53	-4,70	0,24
Georgia	0,71	1,56	0,07	0,86	0,31
Germany	-1,74	-3,86	-0,02	0,14	-1,25
Ghana	-0,11	-3,04	x	x	-0,00
Greece	-0,09	0,00	0,05	-0,03	0,03
Hungary	-0,31	-0,02	-0,39	-0,07	-0,22
Iceland	-0,16	x	x	-0,01	x
India	-0,23	x	-0,42	0,01	-0,73
Indonesia	-0,75	-0,83	0,00	x	-11,96
Iran	1,01	-0,00	0,29	-0,00	0,64
Iraq	0,50	x	0,12	0,01	x
Ireland	-0,25	-0,00	-0,06	-0,76	-0,01
Israel	0,26	0,09	0,14	0,21	-0,04
Italy	-0,43	-1,88	0,00	-3,44	0,96
Japan	0,63	0,33	0,00	-0,09	0,02
Jordan	0,39	0,00	0,09	0,02	-0,00
Kazakhstan	3,14	12,97	-1,30	4,59	2,92
Kyrgyzstan	0,42	2,58	0,00	0,99	0,74
Latvia	0,65	0,19	0,04	1,13	1,91

Appendix 5 - LFI index in relation to individual countries

	Total	Cocoa and cocoa preparations	Cereals	Beverages, spirits and vinegar	Oil seeds and vegetable oils
Lebanon	0,17	x	0,04	0,04	0,00
Libya	0,58	x	0,14	0,00	x
Lithuania	-0,08	0,16	-0,00	0,26	0,88
Malaysia	-0,29	-1,93	x	-0,00	-4,07
Mexico	-0,17	-0,00	0,02	-0,48	-0,03
Mongolia	0,36	1,86	-0,00	0,63	0,42
Morocco	-0,19	x	0,03	0,00	0,10
Myanmar	-0,03	x	-0,36	x	x
Netherlands	-1,18	-1,77	0,01	-0,16	-2,56
New Zealand	-0,17	0,00	x	0,01	-0,02
Nicaragua	0,04	x	0,01	x	-0,12
Nigeria	0,04	-0,68	0,01	0,00	-0,03
Norway	-0,95	-0,00	0,01	-0,01	1,01
Oman	0,04	-0,00	0,01	0,00	0,14
Other Asia, nes	0,03	0,09	x	-0,01	-0,00
Pakistan	-0,10	-0,00	-0,21		-0,00
Paraguay	-0,86	x	-0,00	x	-5,68
Peru	-0,01	-0,00	0,02	-0,00	-0,03
Philippines	-0,06	-0,00		-0,00	-0,01
Poland	-1,26	-2,79	0,00	-0,02	-0,09
Portugal	0,08	-0,00	0,00	-0,06	0,26
Rep. of Korea	2,49	0,01	0,00	-0,25	-0,02
Rep. of Moldova	0,05	0,39	-0,00	-0,31	0,14
Romania	0,01	-0,02	-0,46	0,01	-0,03
Saudi Arabia	1,38	x	0,32	-0,00	0,52
Senegal	0,03	x	0,01	x	0,03
Serbia	-0,08	-0,00	-0,07	-0,04	-0,02
Singapore	-0,01	-0,06	x	0,01	-0,02
Slovakia	-0,03	-0,04	-0,02	-0,00	-0,02
Slovenia	-0,02	-0,01	-0,00	-0,03	-0,01
South Africa	-0,19	0,01	0,02	-0,27	-0,02
Spain	-0,80	-0,33	0,09	-1,00	-0,84
Sudan	0,21	x	0,04	0,01	0,42
Sweden	-0,09	-0,06	-0,08	-0,09	-0,45
Switzerland	-0,12	-0,56	0,01	-0,07	-0,00
Syria	0,12	x	0,02	0,00	0,16
Tajikistan	0,32	0,87	0,01	0,31	0,58
TFYR of Macedonia	-0,03	x	x	-0,02	-0,00
Thailand	-0,19	-0,00	-0,10	-0,01	-0,06
Tunisia	0,17	x	0,04	0,01	0,07
Turkey	3,24	-0,14	0,54	0,22	12,18
Turkmenistan	0,33	1,07	0,02	0,57	0,40
Uganda	0,06	-0,00	0,02	x	x
Ukraine	-0,34	-5,89	-0,14	0,27	-1,00
United Arab Emirates	0,15	-0,01	0,02	0,15	0,32
United Kingdom	-0,44	-0,18	-0,13	-2,56	0,45
United Rep. of Tanzania	0,05	x	0,02	0,03	-0,01
Uruguay	-0,43	-0,01	-0,13	-0,08	-0,46
USA	-2,02	0,10	-0,22	-0,11	-2,11
Uzbekistan	0,38	0,41	0,00	0,19	2,90
Viet Nam	-0,28	0,01	-0,12	0,22	0,01
Yemen	0,53	x	0,13	x	x