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**AGRICULTURE AND ECONOMIC SECURITY OF RUSSIA:  
RETROSPECTIVE RESEARCH**

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**ABSTRACT**

The article is focused on problems of economic security of Russia from prospective of trade and production relations in the sector of food commodities that form the nation's food provision. It also provides a method of identification whether the economic conditions are safe or dangerous tested on statistical data of 2007-2011 years and analyses the derived values of agriculture and economic security by the commodity groups.

Keywords: food provision, agricultural sector, economic security, economic autarchy.

JEL Classification Q02, F52

AGRIS Subject Categories E71, E16, E72

**1. Introduction**

Food provision is one of the components of agriculture security on national as well as local level. Allocation of risks and threats, their assessment and analysis allow to create a balanced management system which is fundamental for maintaining the food sovereignty. It is clear that supply of population with food resources in sufficient quantities and satisfying quality is one of the main objectives and functions of a nation.

Creation of a mechanism of even allocation of food resources, regional allocation of agricultural companies and organization of food industry, invention of means of control and work optimization of already existing agriculture businesses allow completing the objectives of efficient

agriculture security and development policy. The structure interconnection between agriculture sector and other branches of economy has the direct influence on the economic security in terms of price affordability of the food resources (agriculture products) for the population and in terms of replace the home-produced food with the imported products.

In connection with this author of the given research sets a number of challenges and solves them. These tasks will supplement the theoretical and methodological framework of economic and agriculture security assessment based on empirical data. The scientific tasks are: development a method of allocation and assessment of the safe market position for different product groups, test of the method and analysis of the results.

## **2. The science literature review**

General theoretical and methodological approaches to the research of problems of agriculture security can be found in both Russian and foreign literature. Among those who created the most significant works in this area we should note Burobkin I. [3], Golubeva A. [6], Gumerov R. [8], Kamalian A. [9], Kulov A. [10], Kurnosov A. [11], Sentsov A. [22], Shutkov A. [25], Urbanskaia G. [27], Ushachev A. [28], Shyrovkov N. [26] and others. Unfortunately, most of the Russian researches do not touch upon the question of finding the acceptable way to open the markets without changing the economical and hence national security.

Many Russian and foreign scientists made significant researches in the field of free trade influence on economic development such as Shaposhnikov N. [23], Léonce Guilhaud de Lavergne [13], Lebedev N. [12], Afontsev N. [1], Nielson J., Taglioni D. [19], Bessonova E., Kozlov K., Yudaeva K. [2], McCulloch N., Winters L.A., Cirera X. [17], Michaely M. [18], George H. [5], MacDonald I., Morton D. [16], Fichte J.G. [4], List F. [14] and many others.

Another question is the maintaining and saving of the economic sovereignty in a free trade environment. Fixation of the national economy is directly connected with the threats of foreign competitors. Nielson J. and Taglioni D. note that “possible changes may be the growth of number of foreign companies and increase of their imports in key sectors of production ... and transformations of the security sector in connection with it” [20, P. 35]. More developed at the moment of establishment of the free trade market economy may become a threat for the less developed economy and its fixation level, absorption effect becomes possible until the economical profit of both economies is maximized. This is why it is so important from the scientific point of view to define the economic security boundaries before entering the common market and accepting the spread principles of free trade.

## **3. The method of economic security assessment in terms of trade**

The most important factor in the method of fragmentary economic security assessment is the usage of production capacity which shows how big are the available resources in case of increase of

the production activity as well as increase of potential supply of some products. As mentioned before, in the economic security assessment we consider only natural units without taking into account price indicators, because prices are nothing else than the driver of goods and services flow. The mathematical formula for the evaluation of net export potential is as follows:

(1)

$$NEP_i = \frac{Pd_i}{L_{pd}} \times 100 - [Cd_i + Ui_i + Sc_i],$$

where

$NEP_i$  – net export potential of a good (service)  $i$  in natural units;

$Pd_i$  – domestic production of good (service)  $i$  in natural units;

$L_{pd}$  – average annual production capacity usage;

$Cd_i$  – final consumption of a good (service)  $i$  including losses in natural units;

$Ui_i$  – intermediate usage for the production purposes;

$Sc_i$  – change in inventory for good (service)  $i$  in natural units.

As net export potential can be represented by both positive and negative values it is necessary to compose an equation system for assessment of the limit index. Author provides an equation system as follows:

(2)

$$\begin{cases} NEP_i \leq 0 : BL_i^{imp} = 0, \\ 0 < NEP_i < [Cd_i + Ui_i + Sc_i] : BL_i^{imp} = \frac{NEP_i}{Cd_i + Ui_i + Sc_i}, \\ NEP_i \geq [Cd_i + Ui_i + Sc_i] : BL_i^{imp} = 1. \end{cases}$$

where

$BL_i^{imp}$  – the limit index of replace of domestic production by import in relation terms (unit calculation).

If we replace the value of final consumption by value of available resources in expression (2), we will get a similar limit index but in relation to the product resources. This is a very important index from the methodological point of view, as the correlation to the total consumption of goods and services is not calculated in statistical analysis, and another index – correlation to product resources – is used instead.

#### **4. The role of free trade in economic and agriculture security**

The positive premises for the merge of markets as they are now and what they can possibly become in the future have been fundamentally defined long before establishment of the first sub regional integration structures which vests the institutional rights of new agriculture business models. Thus Lebedev N. summarizes all the historical views of XIX century scientists and defines the universal premise of a national economy which urges to enter the free trade model: “If the absolute freedom of cooperation and trade inside the country in general have the most favorable influence on the well-being of the people, then a restraint on freedom of trade has the completely opposite effect” [12, P. 110]. From the point of view of Shaposhnikov N. the profit, and hence the efficiency of the foreign trade depends: “not on the growth in number of products, but on the growth of the utility of these products” [23, P. 22]. In modern interpretation Shaposhnikov’s conclusion which is defined by him as a condition and a criteria of assessment of trade liberalization quality makes us review the definition of the trade balance which is idealized in the free trade consequences problems.

A number of scientists thinks that analysis of correlation of foreign market and domestic market prices of the main product types can help to define the finance-economic conditions of agriculture sector functioning and competitive potential of the economy in general<sup>1</sup>.

##### **4.1. Empirical results of economic competitiveness assessment**

The empirical research examines the modern period of trade relations development from 1991 to 2011, where 2011 is considered as the base year for the assessment of real consequences of Russia’s entrance to the World Trade Organization. Because of the lack of the actual information especially statistical data of resources structure and usage of some food products, the research limits the presentation of data to the last 5 years, 2007-2011.

By analysis mostly of the food products as they represent the basis of agriculture security of the state, we can conclude that in most cases the import price is equal or sometimes even lower than the total domestic production cost (table 1). Hence the threats connected with loss of market position of domestic producers and possible decrease of production is in this case very high.

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<sup>1</sup> Look eg., Davidkov O., Iemeljanov S., Suvorov N. The problems of Russian entrance to WTO:: price ratio of world and domestic markets// Forecasting problems. No. 3, (2003): 143-155. – P. 147

Table1 – Comparative Data of prices and costs  
for some product types in Russia in 2011

Product Tyoes	Import price, Russian rubles <sup>1)</sup>	Domestic production		
		Manufacture cost, Russian rubles	Retail price,Russian rubles	Markup, Russian rubles
Fresh and frozen meat (no poultry), kg	108,7	159,5	232,6	39,1
Fresh poultry, kg	44,7	72,2	110,1	17,7
Fresh and frozen fish, kg	78,7	78,0	170,2	32,3
Dairy butter and oil, kg	130,3	213,3	277,4	36,3
Sunflower oil, kg	39,5	33,0	73,3	12,1
Canned meat and meat products, kg	138,0	no data	201,0	no data
White sugar, kg	24,5	17,6	32,5	4,5

Note:

composed and calculated by author according to Russian Federal State Statistics Service data;  
estimated according to average US Dollar exchange rate in 2011 (import to Russian economic territory prices).

The author's conclusion about the agriculture threats for Russia are mirrored in researches of Russian (Shumilova I. [24]) as well as foreign scientists (Post D.L. [21] – agriculture security areas, Gruszczyński L. [7] – risk areas in agriculture resources quality, and others). Evident confirmation of this is the conclusion of Shumiliva I. who states that “negative consequences of entrance to WTO will bring a big damage to agriculture sector companies” [24, P. 181], with what we cannot be disputed.

It is reasonable also to examine the scale of autarchy principle of economic security by examining the ability of economy to supply its needs with its own production. We can make this assessment by using the provision index, defined as correlation of domestic production of particular products and the value of total consumption including final and intermediate consumption and also losses and changes in inventory (table 2).

Table 2 – Domestic Production Ability of Consumption Provision  
by Product Types in Russia in 2007-2011 <sup>1</sup>

Product Types	2007	2008	2009	2010	2011
Domestic Production Provision, in correlation to 1					
<i>Food products</i>					
Meat and poultry (including byproducts)	0,56	0,56	0,63	0,68	0,69
Bovine meat (without byproducts)	0,44	0,38	0,38	0,39	0,35
Pork (without byproducts)	0,47	0,44	0,59	0,62	0,56
Poultry (including poultry byproducts)	0,62	0,67	0,75	0,83	0,88
Sausages	1,00	1,00	1,00	1,00	–
Canned meat	0,88	0,87	0,88	0,86	0,80
Animal oil	0,68	0,74	0,73	0,70	0,69
Cheese	0,59	0,60	0,59	0,54	0,55

<sup>1</sup> Note: composed and calculated by the author according to Federal Customs Service of Russia.

Product Types	2007	2008	2009	2010	2011
Wheat and rye flour	1,03	1,04	1,05	1,02	1,05
Cereals	1,03	1,05	1,03	1,01	1,00
Macaroni foods	1,06	1,06	1,06	1,05	–
Vegetable oil	0,92	0,84	1,09	0,94	1,02
Margarine	1,01	1,01	1,09	1,03	–
Milk and cream	0,78	0,72	0,63	0,41	0,61
Salt	0,75	0,71	0,60	0,58	0,55
Sugar	1,00	0,98	0,98	0,95	0,98

Note: the values of domestic production provision are presented in correlation to 1; all values are calculated according to natural values of used parameters; the evaluation is made according to Russian Federal State Statistics Service data.

The results of provision assessment by product types allow defining the areas, where fragmentary economical security exists. It is also worth to notice that this conclusion does not mean the opposite, as the import replace of the domestic production limit can be higher than the actual provision in evaluation of the current replace level.

#### 4.2. Empirical results by provision and security assessment

Russian company's activity analysis by the advance order index (table 3) shows that significant threat exists in the activity areas, where the number of product delivery orders in the next periods is lower than the threshold point for ensuring of the continuous work.

Table 3 – The share of advance orders in the total value of produced in Russia in 2007-2011<sup>1</sup>

Economic activity types	2007	2008	2009	2010	2011
The total rate of orders for products delivery in the next periods of production, %					
Agriculture, will to provide services in this area , including	6,5	5,3	4,5	4,3	3,9
Animal husbandry	6,3	7,5	6,0	5,2	5,2
Plant husbandry	6,1	1,3	1,6	2,3	1,6
Food production, including beverages, including	40,8	36,9	32,7	29,8	25,7
Production of meat and meat products	40,5	35,4	36,4	33,1	31,6
Production of animal and vegetable fat and butter	17,7	31,1	28,4	26,1	7,3
Milk and dairy products	32,2	26,4	28,4	19,3	21,1
Production of flour, grain and starch products	53,8	52,0	58,7	57,8	33,1
Other food production	65,5	54,5	44,0	43,1	37,9

Note: all values are calculated according to natural value costs of used parameters.

Considering the assessment of the fragmentary economic security by product types it is necessary to evaluate the current and maximum level of import replace of domestic production. The results of this evaluation are presented in table 4 (q.v. appendix). According to this method fragmentary economic security in free trade environment is the consequence of merge of two

<sup>1</sup> Note: composed and calculated by the author according to Interfax-AKI: Professional Market and Company Analysis System (SPARK).

economies to the point, when domestic production can cover the needs of the domestic market fully using the existing reserves and production capability.

From the results of the empirical evaluation presented in table 4 we can see, that year 2009 – the economic crisis peak is characterized by significant increase of the maximum level of import replace of domestic production. As a result some of the product types switched to the area of products with fragmentary economic security, for example meat and poultry (including byproducts), vegetable oil. But in the same time the production of dried milk and cream experienced losses due to import from foreign states, where currency depreciation rate was higher than in Russia, particularly from Republic of Belarus.

## **5. Conclusion**

The author's research shows, that free trade as a happening of modern economic development is very complex and has many aspect. The change of autarchy approach to the open market and open economy approach emphasizes the importance of researches in field of economic and especially agriculture security. The trends allow us to tell, that consequences of Russia's entrance to WTO will cause the indeterminacy of product orientation of agriculture companies, characterized by active searching of the outlet areas. However, as presented, this problem will have place only for those economic activity types with marginal position – on one hand they are not foreign market oriented and on the other hand they do not use any import resources.



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Table 4 – Current and maximum levels of replacement of domestic production by import products by product types in Russia in 2005-2011 <sup>1</sup>

Product types	Current level of replacement of domestic production by import products					Maximum level of replacement of domestic production by import products					Fragmentary economic security, use
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011	
<i>Agriculture products</i>											
Meat and poultry (including byproducts)	0,44	0,44	0,38	0,32	0,31	0,00	0,00	0,02	0,47	0,37	+
Bovine meat (without byproducts)	0,56	0,62	0,62	0,61	0,65	0,00	0,00	0,00	0,00	0,00	–
Pork (without byproducts)	0,53	0,56	0,41	0,38	0,44	0,00	0,00	0,00	0,35	0,10	–
Poultry (including poultry byproducts)	0,38	0,33	0,26	0,18	0,13	0,00	0,00	0,00	0,03	0,08	–
Sausages	0,01	0,01	0,01	0,01	–	0,53	0,50	0,55	0,56	–	+(2010)
Canned meat	0,19	0,20	0,17	0,18	0,23	0,70	0,77	0,88	0,82	0,59	+
Animal oil	0,33	0,27	0,28	0,31	0,32	1,00	1,00	1,00	1,00	1,00	+
Cheese	0,44	0,42	0,42	0,47	0,47	0,00	0,00	0,00	0,00	0,00	–
Wheat and rye flour	0,00	0,00	0,00	0,00	0,01	1,00	1,00	1,00	1,00	1,00	+
Cereals	0,03	0,05	0,02	0,02	0,02	1,00	1,00	1,00	1,00	1,00	+
Macaroni foods	0,07	0,07	0,05	0,06	–	0,78	0,65	0,67	0,55	–	+(2010)
Vegetable oil	0,32	0,38	0,25	0,28	0,28	0,39	0,33	0,50	0,26	0,74	+
Margarine	0,11	0,10	0,16	0,23	–	0,57	0,68	0,82	0,74	–	+(2010)
Milk and cream	0,23	0,29	0,39	0,59	0,40	0,93	0,64	1,00	0,33	0,29	–
Salt	0,26	0,30	0,41	0,43	0,45	1,00	1,00	1,00	1,00	1,00	+
Sugar	0,05	0,03	0,05	0,06	0,03	0,18	0,14	0,13	0,04	0,10	+

Note: the evaluation of maximum level of replace of domestic production by import products was made according to restricted values from 0 to 1; the level of replace was evaluated according to natural values of the used parameters.

– threshold point of replacement exceed.

<sup>1</sup> Note: composed and calculated by author according to Russian Federal State Statistics Service data by the method of allocation and assessment of the safe market position for different product groups described in this research.