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Abstract. The authors highlighted and substantiated the role and importance of import substitution of food for the Russian Federation in the context of the country's food security. The study identified and classified the types of food threats to the Russian Federation which are arising from the high import intensity of the food market. The situation of territorial differentiation in the field of food supply is revealed and substantiated. The paper presents the author's methodology, which are allowing to evaluate the contribution of each region to the import-substituting food potential of the country. The researchers used the ABC-analysis method as a result of the calculation of the import substitution's composite index by federal districts of the Russian Federation for 2010–2012, which also revealed the positioning of individual regions in the field of import substitution and food security. The findings of regional differentiation gave a comparable result, which indicates the relevance of the study. Another significant result of the presented work was the conclusion that the climatic factor of the territory's comfort does not guarantee that the federal districts fall into the leading group on import substitution. According to the authors of the studying, the leading factor which are ensuring the food security of the country as a whole and its individual regions is the level of socio-economic development.

1. Introduction

Among the most important reasons for the high import intensity of the country's food market, Academician A.I. Altukhov rightly notes the low profitability of agricultural enterprises, due to the inability to use scientific and technical achievements to improve the efficiency and competitiveness of their products, to modernise the production [1].

In recent years, the country remains highly dependent on food imports, which constitute over 40% of the total food stock, which exceeds the threshold level of food security by 15–20% [2]

If the share of imports is above 20%, the industry does not complement, but suppresses domestic production. This is most clearly manifested in the provision of agglomerations and cities, the supply of which is largely dependent on imports, that is food independence is recognised as unsecured if the annual production of vital food products is less than 80% of the annual population demand for these products according to physiological norms [3]

An important problem that forms a picture of the country's food supply is the regional divergence of these processes. S.Yu. Glazyev noted in his report "On Food Security of Russia" only 14 of the 85 constituent entities of the Russian Federation are net food producers, the remaining 69 act as net consumers. Moreover, today it is economically advantageous to purchase food products for many regions of Siberia and the Far East, for example, in China or in the republics of Central Asia, than to carry them from the European part of the Russian Federation [4].

All this taken together allows us to talk about the violation of the country's food security parameter and the emergence of food threats both for the national economy as a whole and for its individual regions. The most significant regional food threats, according to a number of studies [5–7] are presented in (Figure 1).

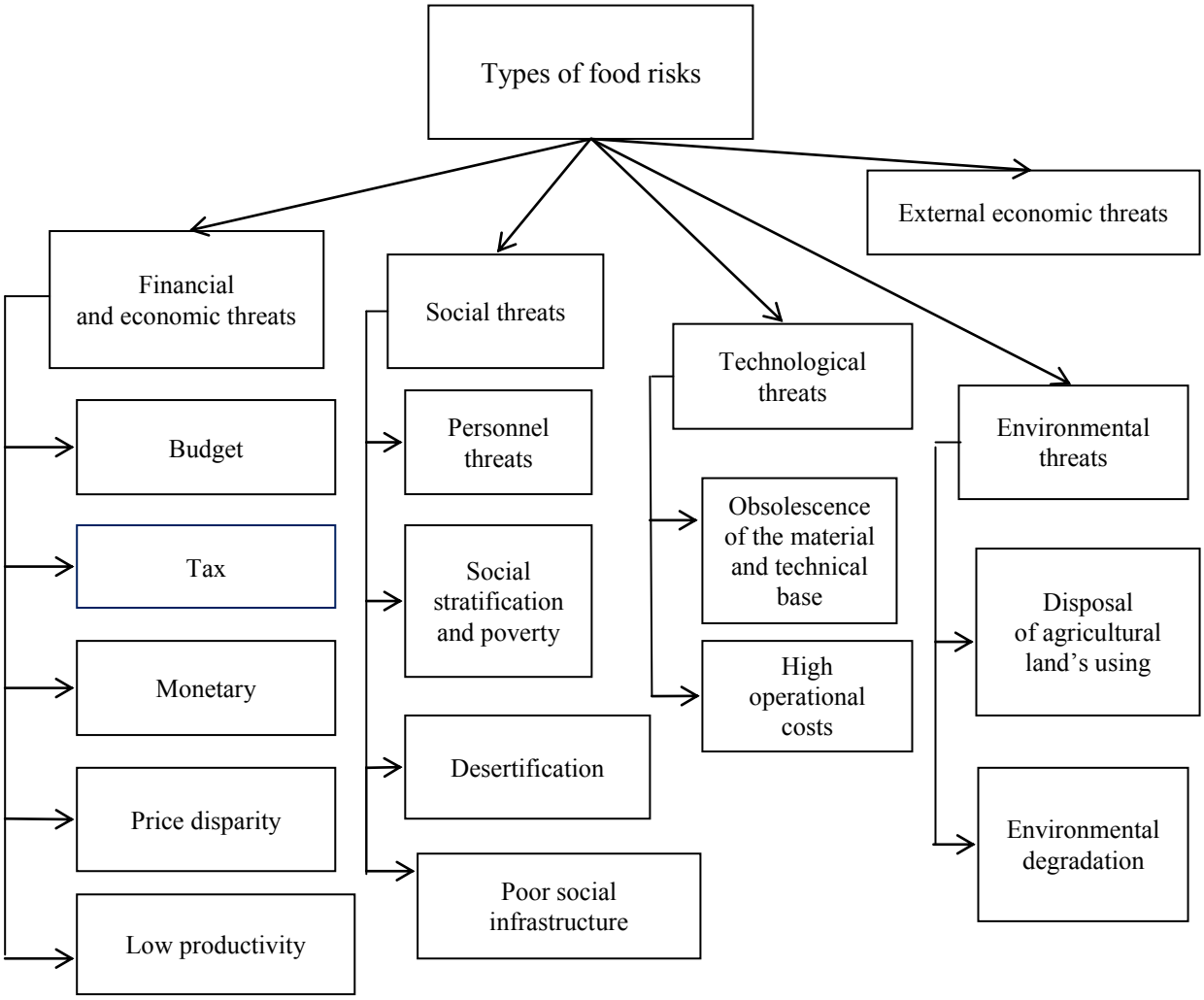

Figure 1. Classification of food threats to Russia
Source: authors' drawing

At the same time, a substantial territorial differentiation in the possibilities of self-sufficiency in food by the regions, as well as the formation of national food security and limited budget financing forces us to pay particular attention to finding reserves for the growth of food potential and import substitution for the Russian Federation.

In this regard, the data are very indicative (Table 1), in which the indicators of self-sufficiency of the Russian Federation in the most important food groups are reflected in a clear form.

Table 1. The level of self-sufficiency of the Russian Federation by leading food groups for 2008–2013

Indicator	Year						2013 to 2008. %
	2008	2009	2010	2011	2012	2013	
Sugar's self-sufficiency level, %	110.1	106.0	95.6	85.3	124.6	92.9	84.3
The level of oil's self-sustaining, %	93.7	83.6	109.7	98.3	102.0	133.9	142.9
Level of potato's self-sufficiency, %	97.6	100.0	102.0	75.9	113.0	97.5	99.9
Grain's self-sufficiency level, %	148.2	134.8	93.3	135.9	108.3	138.9	93.7
The level of self-sufficiency of vegetables and food melons, %	87.8	86.7	84.4	86.1	88.1	86.8	98.9
The level of self-sufficiency of milk and dairy products, %	80.1	79.8	75.8	76.3	74.8	71.1	88.8
The level of self-sufficiency of meat and meat products, %	56.3	60.9	64.2	67.5	69.5	73.8	131.1

Source: "On the progress and results of the implementation in 2013 of the state program for the development of agriculture and regulation of the markets for agricultural products, raw materials and food for 2013–2020" and the authors' calculations.

As it can be seen from the presented information, only the level of self-sufficiency in oil and grain demonstrates satisfactory values, allowing to diagnose food security. However, in the long term from 2008–2013 the level of grain self-sufficiency also has a decreasing trend, which in turn casts doubt on the sustainability of the growing production of meat and meat products, since these food groups are interconnected and their change is interdependent. The smallest food security is observed in such groups as: milk and dairy products, meat and meat products, vegetables and melons.

From our point of view, the study of regional food import substitution should be carried out taking into account the achieved level of development of agricultural production of a particular territorial entity, which is based on the achieved potential of its development. We singled out five indicators for the formation of a specific food base in the more responsible territories and, in general, the country's food security: agricultural output; acreage of all crops; fixed capital investment in agriculture, hunting and forestry; export of food products and agricultural raw materials; food imports and agricultural raw materials to assess the import-substituting food potential of the regions of the Russian Federation.

The most volatile parameters are import and export of food products and agricultural raw materials under current and even expanding sanctions. The increasing of the key financing rate in the Central Bank has already had a negative impact on the rate of investment in fixed assets in agriculture, hunting and forestry. At the same time, indicators of agricultural production and acreage are also subject of the changes' impact in investment activity and especially to a decrease in the volume of investments in fixed capital. Consequently, a decrease in investment in agricultural enterprises and in the infrastructure's enterprises of the industry will undoubtedly affect the country's food supply.

Let's consider the changing of the five selected indicators for the federal districts of the Russian Federation for 2010–2013 (Table 2). More visually available data which is using the rank method can be visualised in (Table 3).

Table 2. Average indicators of import-substituting food potential by federal districts of the Russian Federation for 2010–2012

Federal District	Agricultural products, million rubles	Sown area of agricultural crops, thousand hectares	Investments in agricultural enterprises, hunting and forestry, mln rubles	Export of food products and agricultural raw materials	Import of food products and agricultural raw materials
CFD	729 973.0	11 925.8	91 982.4	3 642.5	19 940.0
NWFD	153 391.7	1 075.7	21 093.7	1 561.0	11 225.0
SFD	488 173.7	10 037.8	31 523.6	3 341.3	2 893.8
NCFD	236 787.7	3 609.3	10 039.6	223.7	523.0
Volga FD	730 618.0	19 728.8	54 673.6	597.8	1 011.0
Ural FD	205 253.0	4 798.5	16 376.4	143.2	389.0
Siberian FD	421 197.3	13 172.4	28 399.2	348.6	685.8
Far Eastern FD	108 183.7	1 087.4	5 956.6	2 144.3	1 048.3

Source: Rosstat's data and authors' calculations

Table 3. The place of the federal district in the Russian Federation in terms of import-substituting food potential for 2010–2012

Federal District	Agricultural products, million rubles	Sown area of agricultural crops, thousand hectares	Investments in agricultural enterprises, hunting and forestry, mln rubles	Export of food products and agricultural raw materials	Import of food products and agricultural raw materials
CFD	2	3	1	1	1
NWFD	7	8	5	4	2
SFD	3	4	3	2	3
NCFD	5	6	7	7	7
Volga FD	1	1	2	5	5
Ural FD	6	5	6	8	8
Siberian FD	4	2	4	6	6
Far Eastern FD	8	7	8	3	4

Source: authors' calculations

The presented data demonstrates a paradoxical situation: the Volga Federal District, which is the undisputed leader in the 3-year period of time for agricultural production and acreage, is in the last three for the export of food products and agricultural raw materials. At the same time, the leader of investment attraction in the main capital of agriculture (Central Federal District) is clearly under-utilizing its potential for agricultural output. At the same time, the results, which are obtained, make it possible to reflect on the efficiency of the cultivated areas used. The indicators which are proposed by the authors can be used to study the possibilities of import substitution in federal districts and individual regions in order to highlight their share in the national value of possible import substitution.

The authors developed a technique to evaluate the contribution of each region to the import-substituting food potential of the country. This technique involves a number of stages. First, on the basis of the data (Table 2), the summary import substitution indices are calculated for the federal districts of the Russian Federation.

Index J_i estimates of indicators of food imports of the i-th region on the criteria:

k_i – the actual value of the studied region's indicator;

k_{min} and k_{max} – the largest and smallest indicators of the regions in the federal district, calculated by the formula (1):

$$J_i = \frac{k_i - k_{\min}}{k_{\max} - k_{\min}} \times 100\% \quad . \tag{1}$$

The using of this formula allows you to determine the position of the region among others for each indicator. With its help, indicators are converted into dimensionless indicators, placing the regions on a scale from 0 (low) to 100% (high). The using of the formula (1) allows you to determine the position of the region (or FD) among other meso subjects for each indicator.

Secondly, a generalised index of food import substitution of the region (PPID) is proposed for each FD (*k*-number of FD), which is calculated on the basis of (Table 4). In this case, the value of PPID is determined by the formula (2) as the arithmetic average value of 5 indices for each region:

$$\mathrm{PPID_k} = \frac{1}{5} \cdot \left(\sum_{i=1}^{5} \mathrm{J_i^k}\right), \tag{2}$$

where PPIR*k* is the index of import-substituting food potential of the *k*-th region.

Thirdly, in order to obtain more visual results of calculations, it is more expedient to use the reduced index of import-substituting food potential – (PrPIP*k*), which can be calculated using the following formula (3):

$$\mathrm{PrPIP_k} = \frac{\mathrm{PPID_k}}{\sum_{k=1}^{8} \mathrm{PPID_k}}, \tag{3}$$

Fourth, the results of the calculations allow us to form (Table 4), in which the grouping of financial statements by the degree of contribution to the import substitution of the Russian Federation for 2010–2012 is clearly seen.

Table 4. Calculation of the composite index of import substitution by federal districts of the Russian Federation for 2010–2012

Federal District	Index of agricultural products,%	Index of acreage's evaluation of agricultural crops,%	Index of Investment evaluation in agricultural and industrial complex, hunting and forestry,%	Index of food exports and agricultural raw materials,%	Index of food imports and agricultural raw materials, %
CFD	99,90	58,17	100,00	100,00	100,00
NWFD	7,26	0,00	17,60	40,52	55,42
SFD	61,05	48,05	29,72	91,39	12,81
NCFD	20,66	13,58	4,75	2,30	0,68
Volga FD	100,00	100,00	56,63	12,99	3,18
Ural FD	15,60	19,96	12,11	0,00	0,00
Siberian FD	50,29	64,85	26,09	5,87	1,52
Far Eastern FD	0,00	0,06	0,00	57,18	3,37

Source: authors' calculations

The final Federal District's assessment by the ABC analysis method allowed us to single out the undisputed leader – the Central Federal District. The second place was divided among the Southern Federal District and the North-Western Federal District. At the same time, the factor of climatic comfort was not always decisive for Federal District to fall into the leading group on import substitution.

Table 5. The grouping of federal districts according to the degree of contribution to the import substitution of the Russian Federation using the ABC analysis method for 2010–2012

Federal District	The index of indicators of food imports	The index of indicators of food imports by cumulative total	Food Import Index Group
CFD	0,33	0,33	A
NWFD	0,20	0,52	B
SFD	0,17	0,70	B
NCFD	0,11	0,81	C
Volga FD	0,09	0,89	C
Ural FD	0,04	0,94	C
Siberian FD	0,03	0,97	C
Far Eastern FD	0,03	1,00	C

Source: authors' calculations

The studying put the agrarian and social infrastructure at the first place in solving the problem of import substitution, but did not reduce the importance of such issues as tax and credit regulation of agriculture, state control of the structure and volumes of export-import operations, development and improvement of the scientific, information and personnel potential of agricultural enterprises. In other words, the main content of the strategy of import substitution is the industrialisation of the industry, which is combined with a decrease of the GDP's import intensity and the dependence of our exports of imported components [8].

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