



# The Modern Methodology of Managing the Process of Import Substitution in the Agro-Industrial Complex for Provision of Food Security

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**Abstract.** The purpose of the article is to develop the modern methodology of managing the process of import-substitution in the agro-industrial complex for provision of Russia's food security. For assessing the effectiveness of the methodology of managing the process of import substitution for provision of food security, applied in modern Russia, the authors use the proprietary formula, which allows assessing the effectiveness of the methodology of managing the process of import substitution in the agro-industrial complex for provision of food security in statics. In order to build a full picture of its effectiveness, the authors determine the effectiveness of this methodology in dynamics with the help of regression analysis. As a result of the research, the authors prove the thesis that the methodology of managing the process of import substitution in the agro-industrial complex for provision of food security, which is used in modern Russia, is not effective. For solving the problem of provision of national food security, Russia requires a new modern managerial methodology.

**Keywords:** State management · Import substitution · Food security  
Agro-industrial complex

## 1 Introduction

The problem of provision of national food is topical for a lot of countries, which implement the course of internal and foreign production specialization, which differs from the agro-industrial complex. This is true for developed and quickly developing countries, which want to conform to the global tendencies and conduct industrialization and then post-industrialization of economy, which is accompanied by slowdown of the rate of development of the agro-industrial complex and increase of their dependence on import of foods products.

In the period of global recession, the problem of provision of national food security in these countries grew due to failures in the system of international economic relations. This became a push for starting the processes of import substitution in the agro-industrial complex for provision of food security. In modern Russia, the methodology of managing the process of import substitution in the agro-industrial

complex for provision of food security is of the integrated structure - that is it supposes usage of one managerial tool – financial support with small variations.

Our hypothesis within this article is that the methodology of managing the process of import substitution in the agro-industrial sphere for provision of food security in modern Russia is not effective. In order to solve the problem of provision of national food security of Russia, we need a new modern managerial methodology. In this article, we seek the goal of verification of this hypothesis and development of the modern methodology of managing the process of import substitution in the agro-industrial complex for provision of food security in Russia.

## 2 Materials and Method

For assessment of effectiveness of the methodology of managing the process of import substitution in the agro-industrial complex for provision of food security, applied in modern Russia, we offer to use the following proprietary formula:

$$\text{Emu} = \Delta\text{Infs}/\Delta\text{V}\text{Saic} \quad (1)$$

where Emu – effectiveness of methodology of managing the process of import substitution in the agro-industrial complex for provision of food security, applied in modern Russia;

$\Delta\text{Infs}$  – annual growth of the value of index of national food security of Russia;

$\Delta\text{V}\text{Saic}$  – annual growth of the volume of subsidies to the companies of the agro-industrial complex of Russia.

The value of Emu should be treated with a traditional method of treatment of indicators of effectiveness. If this indicator exceeds 1, effectiveness is positive, which shows the expedience of application of this methodology. If the value Emu is equal or below 1, effectiveness is negative, which shows inexpedience of application of this methodology.

The offered formula allows assessing the effectiveness of methodology of managing the process of import substitution in the agro-industrial complex for provision of food security, which is applied in modern Russia, in statics. In order to compile a fuller picture of its effectiveness, the authors determine effectiveness of this methodology in dynamics with the help of regression analysis.

This analysis is used for determining the presence and character (positive or negative) and strength (strong or weak) of the connection between the volume of subsidies to companies of the agro-industrial complex (V<sub>Saic</sub>) and the value of the index of national food security (Infs) and the place in the ranking of countries as to the index of national food security (Infs). The basic values of these indicators are shown in Table 1.

**Table 1.** Dynamics of values of the index of national food security and the volume of subsidies to the companies in Russia in 2012–2016

Indicators	Symbol	Values of indicators for the years				
		2012	2013	2014	2015	2016
Value of the index of national food security, points	Infs	68.9	60.9	62.7	63.8	63.8
Place in the ranking of countries as to the value of the index of national food security	Infs	29	40	40	43	43
Volume of subsidies to companies of the agro-industrial complex, RUB billion	VSaic	53.5	54.9	56.1	57.2	58.8

Source: compiled by the authors on the basis of: (The Economist Intelligence Unit 2017), (Ministry of Agriculture of the RF 2017).

### 3 Discussion

The issues of the methodological character, related to the issue of managing the process of import substitution in the agro-industrial complex for provision of national food security, are studied in the works (Bogoviz and Mezhov 2015), (Popkova et al. 2016), (Sadovnikova et al. 2013), (Popova et al. 2015), (Bogoviz et al. 2017), (Sandu et al. 2017), and (Przhedetskaya and Akopova 2015).

### 4 Results

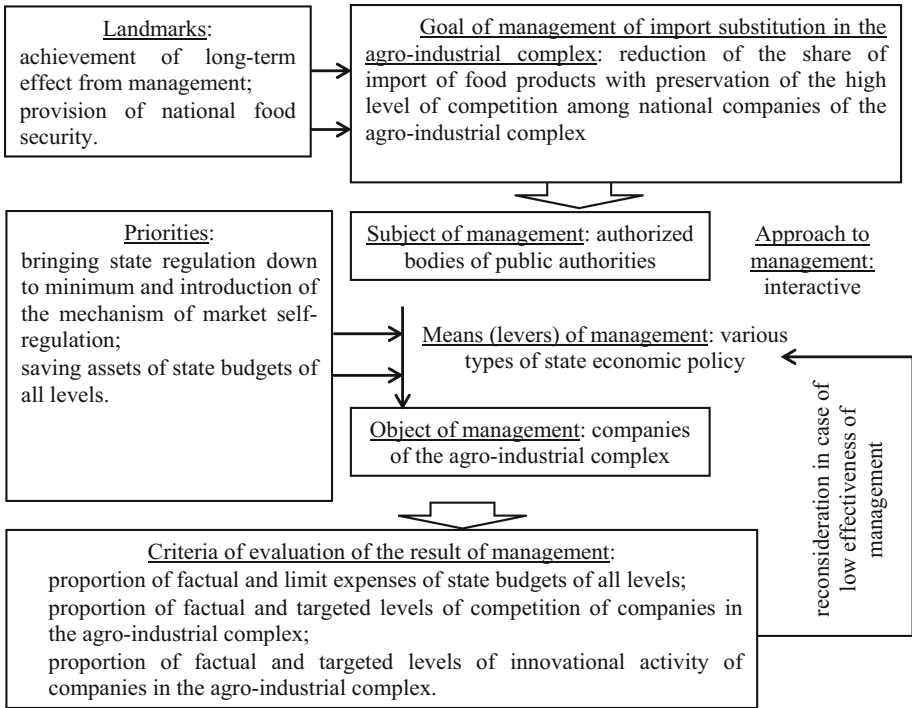
In the course of application of the developed formula for assessing the effectiveness of methodology of managing the process of import substitution in the agro-industrial complex for provision of food security, applied in modern Russia, we obtained the following results (Table 2).

**Table 2.** Results of evaluation of effectiveness of the applied methodology

Indicators	Estimate values of indicators for the years			
	2013	2014	2015	2016
Infs	0.88	1.03	1.02	1.00
VSaic	1.03	1.02	1.02	1.03
Emu	0.86	1.01	1.00	0.97

Source: compiled by the authors

As is seen from Fig. 1, effectiveness of methodology of managing the process of import substitution in the agro-industrial complex for provision of food security, applied in modern Russia, was negative in 2013 (0.86), 2015 (1.00), and 2016 (0.97), and in 2014 it barely exceeded the threshold of positive value (1.01). This shows the inexpedience of application of this methodology. The results of regression analysis are given in Table 3.



**Fig. 1.** Modern methodology of managing the process of import substitution in the agro-industrial complex for provision of food security в Russia. Source: compiled by the authors.

**Table 3.** Results of regression analysis

Characteristics of the model	Model 1: $Inf_s = f(VSaic)$	Model 2: $Inf_s = f(VSaic)$
Estimate coefficient	-0.58	2.39
Constant	96.87	-95.37
Standard error of deviation	0.76	0.87
Coefficient of determination	0.16	0.71
Coefficient of correlation	16%	71%
Fisher F criterion	0.57	7.52
Number of levels of freedom	3	3
F table	5.54	5.54

Source: compiled by the authors.

As is seen from Table 3, increase of the volume of subsidies to companies of the agro-industrial complex (VSaic) by RUB 1 billion leads to reduction of the value of the index of national food security (Infs) by 0.58 points and increase of the Russia’s place in the ranking of countries as to the index of national food security (Infs) by 2.39 points up. At that, the connection between indicators of the first model is weak

(correlation coefficient is 16%), and the model is statistically insignificant, as the estimate value of F-criterion is below the table value.

The second model is statistically significant, but the connection between indicators is rather large to state the possibility of explaining the change of one indicator with another (correlation coefficient equals 71%). The results of regression analysis coincide with the results of statistical analysis of effectiveness and confirm inexpediency of application of the methodology of managing the process of import substitution in the agro-industrial complex for provision of food security, applied in modern Russia, due to its negative effectiveness.

The better alternative is the modern methodology, developed specifically for Russia. Contrary to the applied methodology, it is polycomponent, i.e., the means (levers) of management are various types of state economic policy, including investment, innovational, monetary, anti-monopoly, etc.

The choice of policy and the character of its application (activating or restraining) depends on the current situation in the agro-industrial complex, which supposes interactive approach to management. The offered methodology of managing the process of import substitution in the agro-industrial complex for provision of food security in Russia is shown in Fig. 1.

As is seen from Fig. 1, the landmarks of managing the process of import substitution in the agro-industrial complex within the modern methodology are achievement of long-term effect from management and provision of national food security. According to these landmarks, the goal of managing import substitution in the agro-industrial complex consists in reduction of the share of import of food products with preservation of a high level of competition among the national companies in the agro-industrial complex.

The priorities of management are bringing state regulation down to minimum and realization of the mechanism of market self-regulation, as well as saving the assets of state budgets of all levels. A criterion of assessing the result of management is proportion of factual and limit expenditures of state budgets of all levels, proportion of the factual and targeted levels of competition of companies in the agro-industrial complex, and proportion of the factual and targeted levels of innovational activities of companies in the agro-industrial complex.

In case of low efficiency of management, the means (levers) of management are reconsidered. Due to high flexibility, the developed modern methodology is effective at different phases of the economic cycle. In addition to this, the developed methodology allows controlling the process of import substitution in the agro-industrial complex, which allows for self-improvement of management.

## 5 Conclusions

Thus, one of the most important causes of aggravation of the problem of provision of national food security in Russia has been application of ineffective mono-component methodology of managing the process of import substitution in the agro-industrial complex.

The modern poly-component and interactive methodology of managing this process is characterized by higher effectiveness and thus ensures full or partial solution to the problem of national food security in Russia. The developed methodology determined the general direction of optimization of the process of managing import substitution in the agro-industrial complex. Determination of specific methods and their application in various situations is a perspective direction of development of the performed scientific research.

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