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# Theoretical Basis of Import Substitution in the Agro-Industrial Complex

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***Abstract:***

*The authors consider the relevance of import substitution and the need for its theoretical justification. This is followed by a summary of international experience of implementing import substitution policy at the macrolevel, based on the national theories.*

*The paper examines approaches to the definition of import substitution and classifies them according to the procedural and structural principle.*

*Based on the analysis of the most accessible data sources, the authors give their own definition of the concept, considering specific industry characteristics.*

*The study provides a general mathematical formulation of diversified import substitution in the agro-industrial complex based on all its three main spheres (production of means of production, agriculture, processing industry).*

*The authors define import substitution policy in the agrarian sector of economy and highlight its special features. To form a theoretical basis for further modeling, the authors allocate different types of import substitution and highlight the need to develop a methodological basis of accounting for import substitution as a process with the elaboration of narrow-branch indicators based on the example of food balance sheets.*

***Keywords:*** *Import substitution in the agro-industrial complex, import substitution policy, risks, food, classification and types of import substitution, methodology.*

***JEL Classification:*** *Q10, Q18.*

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## 1. Introduction

The formation of food self-sufficiency is one of the public policy objectives for enabling social and economic growth. This is due both to global challenges (in addressing the problem of hunger, improving the quality of life of the world's rural population) and to the national objectives: the country's place in the world's agricultural markets, the effect of regularities of the theory of comparative advantage in the context of globalization, and the national production structure. The importance of this goal increases with the predominance of aggressive food imports in favorable conditions for development of their own agrarian sector.

The problem of import substitution in Russia in the 21st century has acquired its relevance due to the need for effective development of agriculture and food system in the post-transition economy, along with various manifestations of the sanction war (Sukhanova *et al*., 2015). The expansion of state measures of import substitution policy resulted in a renewed interest in applied issues of their implementation in the world practice (Baer, 1972; Bruton, 1998; Kwon, 2010), as well as in the basic conceptual problems. The study aims to disclose them through analysis of existing approaches to the theory of import substitution in the agrarian sector of economy, its definitions, classification of elements and identification of features to create effective models for development of the agricultural sector.

## 2. Methods

The main research methods were monographic and theoretical analysis to identify and analyze scientific information on the existing conceptual apparatus, conceptual abstraction and idealization to give author's definitions. To confirm the scientific hypothesis for construction of theoretical models, the authors used statistical data of the UN FAO and the Russian State Committee on Food Balances.

## 3. Results

### 3.1 Import substitution in economic science

The study of contradictions in approaches to the balance of imports and domestic production within the country began with the first economic theories and later evolved into a confrontation of protectionist and free trade ideas, including in the agro-food markets. Profound theoretical studies of import substitution emerged in the developing countries after the 1930s and especially after the Second World War, along with the ideas for protection of the national interests in the global economy and the world trade, overcoming the role of the raw material appendage and finding ways to ensure the economic growth. A vivid example is the implementation of import substitution policy of in 1950s-1960s in the countries of Latin America (the dependency theory and the "Singer-Prebisch Hypothesis"), Japan ("the flying geese paradigm" by Kaname Akamatsu) and China since the 1990s. The food system has a

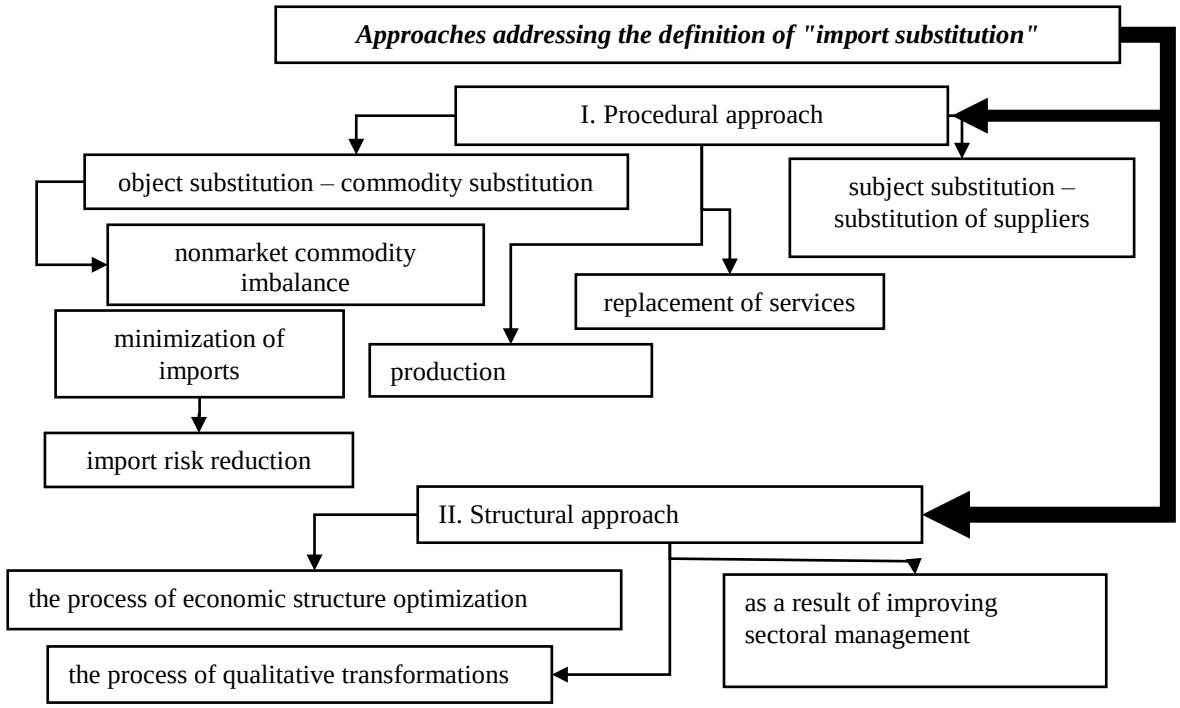
special place in the theoretical conflict of supporters and opponents of import substitution. Agricultural characteristics contribute to the formation of separate mechanisms for implementation of import substitution and may not correspond to those in other spheres.

Scott (2011) theoretically proves that subsidies and quotas as a measure of support lead to negative consequences in agriculture, in contrast to industry. Therefore, small farmers cannot effectively attract investments for development. The implementation of the import substitution policy in fact moves the resources from agriculture, providing industrial growth (Bibarsov *et al.*, 2017) To understand the positive and negative aspects of import substitution, it is necessary to outline the basic import borders in the agricultural sector, to define this concept and consider its characteristics.

### 3.2 The definition of "import substitution in the agro-industrial complex"

There are different approaches to classification of the import substitution definition. Diverse views and the ambiguity of interpretations required their clear classification; therefore, two basic approaches to the definition of import substitution were formed (procedural and structural), which incorporated multiple directions oriented towards a certain dominant distinctive sign of import substitution (according to their authors) (Figure 1).

***Figure 1:*** *Approaches addressing the definition of "import substitution"*



In theory, the procedural approach is most common, with the following features of import substitution:

- commodity replacement – reduction or suspension of imports of certain goods due to organization and launch of similar goods (import-substituting) of domestic production;
- import minimization process – reduction to nonsignificant values of imports risks in the national market;
- increasing domestic production at the national economy level, which ensures the production of goods necessary for domestic consumption by producers operating within the country;
- replacement of suppliers of goods in the domestic market – subject substitution can form an imaginary import substitution, since the domestic supplier, the brand owner do not always produce the product completely within the country. Thus, agricultural commodity producers might use imported chemical fertilizers, plant protection products, breeding and genetic material, while foods producers can use imported agricultural raw materials;
- formation of commodity market imbalance based on substitution of more efficient imports (at costs and prices) by less efficient production of domestic products. This is due to a number of negative factors: the inefficiency of the import substitution policy, its implementation errors in the framework of import substitution strategy.

Import substitution as a complex economic process has both negative consequences (reduced competition, increased corruption in the lobbying of interests, rising prices) and positive consequences (higher levels of economic security, lower unemployment and advanced technological structures). The second approach (structural) implies changes in the entire structure of the economy and is based on the principles of its optimization, qualitative transformations and improvement of industry management. The process of streamlining the structure of the national and regional economy by creating additional industries and sectors capable of replacing imports makes it possible to make the economy independent of external risks, foreign economic relations, external collusion of monopolies and groupings of countries which can affect by increasing the cost of supplies of components of goods, raw materials and foods. Qualitative changes include increasing the innovation component along with the transition to a higher technology level of agribusiness.

Import substitution is considered as a result of improving sectoral management (reloading capacities, increasing investment in advanced production of the "most imported" goods) and as a result of state protectionism, implementation of the national economic strategy and industrial policy, which aims, on the one hand, to increase the competitiveness of national producers, on the other hand – to achieve positive effect in the sphere of employment, taxes and personal incomes.

Based on the analysis of various sources, the authors give the following definition of import substitution: "*Import substitution in the agro-industrial complex is a structural process of changing the domestic agrarian markets in the direction of increasing qualitative and competitive volumes of food, as well as raw materials, equipment and technologies of national origin due to the growth of domestic production and lower imports."*

Mathematically, a diversified import substitution in the agricultural sector can be represented as the following model:

IS= $\sum_{i=1}^{n} ISA_i \cup \sum_{j=1}^{m} ISI_j \cup \sum_{y=1}^{k} IS_k$ where

$ISA_i$ is the import substitution in agriculture;
$ISI_j$ is the industrial import substitution in the means of production and raw materials for agriculture;
$IS_j$ is the import substitution in food industry and agricultural industry processing raw materials.

The units of measurement in this model are quantitative indicators of relative change in the ratio of foreign and domestic product in agro-industrial complex for a certain period of time. Sectoral import substitution is associated with priority sectors of economy, formed based on scientific and innovative, technological development of society and is determined by possibility of resource mobilization. The implementation of import substitution is associated with the implementation of political decisions.

Import substitution policy in the agro-industrial complex is the implementation of a set of measures to create conditions for reproduction of economic goods that are competitive in the domestic and external agro-food markets by subjects of the national economy based on advanced level of the knowledge economy, technical, technological and biological innovations, as well as formation of environment for inefficiency of consumption imported food and goods/services for industrial purposes in the food industry and the production of means of production for agriculture in the domestic market.

In its essence, import substitution is a process aimed at restructuring the structure of economy, with the main role played by the expansion and modernization of domestic (national) production. Therefore, the validity of import substitution policy determines its success. When implementing import substitution policy, it is important to consider:

– reduction of import risks in all phases of the reproductive cycle, including raw material supply in the production of intermediate product;

- flexible pricing policy at all stages of import substitution, including compensation to producers for modernization and creation of production;
- when implementing the policy of import substitution, it is important to form a new level of human capital and introduce advanced technologies, which requires significant investments. At the initial stage, investments are required to import the technologies for their copying and further development within the country.

The policy of import substitution cannot be homogeneous for all spheres and branches of the agro-industrial complex because of their different nature and level of industrial development, which requires the use of different models. The issues of import substitution in the agrarian sector of economy imply solutions of both acute issues of food independence and security and aspects of industrialization, agriculture-dependent industries (primarily agricultural machinery and food industries). This form certain types of import substitution (import substitution of food, import substitution in agricultural and food machinery, selection and genetics of agricultural plants and animals, biotechnology, agricultural chemical industry, food industry). Each type is associated with formation of a certain methodological mechanism for implementing features of the import substitution policy.

For instance, import substitution is most often associated with substitution of food imports as a basis for food independence combined with the country's food security. Production of a sufficient and high-quality food consumption rate is a significant indicator of the country's economic well-being, characterized by food balances. The most common indicator is the level of import substitution:

$$In = \left(1 - \left(\frac{I}{V + I - E}\right)\right) \times 100) \quad (1)$$

where V is the volume of production;
I is the volume of import;
E is the volume of export.

This indicator allows calculating the share of domestic food in the national market and its ratio with the zone of import dependence risk. The zone of import dependence is defined as the normative indicator of domestic products share at which food security is achieved. The calculation for various types of food in the Russian Federation shows a high share of dependence on imports with the assortment possibilities for fruits and fish (Figure 2a), with 80% import dependency limits; vegetables, meat, milk (Figure 2b) at the level of 90%. Grain, potatoes and egg are not subject to import dependence zone (Figure 2c). This indicator is general, but it fails to address several features of import substitution:

- import substitution by domestic production is a dynamic, but not static indicator, which requires considering the dynamics of growth in the share of domestic foodstuffs. Thus, the introduction of sanctions promoted an increase in the level

of import substitution for all types of food, including meat, through the expansion of pig and poultry production, vegetable production due to construction of the new indoors areas. Various determinants may change this dynamic;

- there are different rates of import substitution. Thus, graphically (Figure 2b), the rate of import substitution of meat is higher than that of vegetables and milk;
- positive dynamics of import substitution form the volume of import substitution relative to the borders of food security;
- accounting of qualitative characteristics of food import substitution as a condition for quality of life;
- indicators of price risks for consumers during import substitution of foodstuffs.

These features require the development of certain methodological approaches, considering the factor of dependence and the need for scenario forecasting resource, including investments in the domestic agricultural industry. From the point of methodological aspect, in the theory of import substitution in the agrarian sphere, it is important to consider the territorial features of agriculture, its regional specialization, calculation of the system of indicators for calculation of the territorial zones.

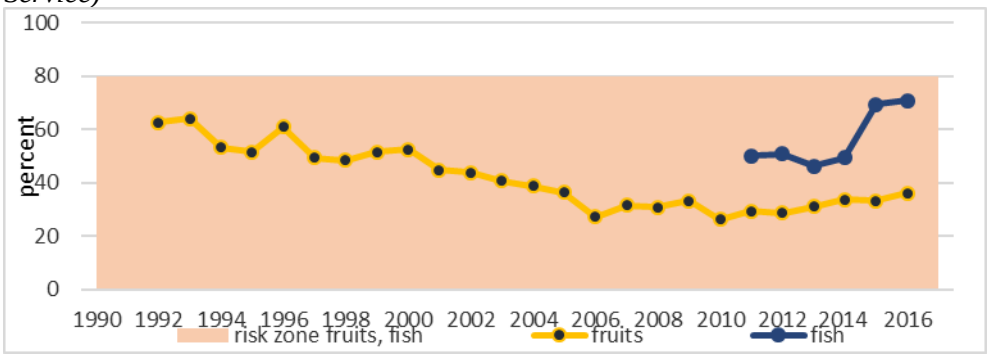
## 4. Discussion

The formation of the import substitution theory in the agro-industrial complex is connected to the application aspects of implementation of the state economic strategy, but at the same time there is no general point of view on this process. There are different views on the classification of understanding the import categories. For example, some authors allocate narrowly interpreted definitions as a local process of substituting imported goods for domestic products, and widely interpreted – as a state strategy (Animitsa *et al*., 2015), import restriction and domestic production growth (Fedoseeva, 2015; Anikina *et al*., 2016), intra-oriented, outward-oriented and mixed import substitution (Levchenko and Ivanova, 2016; Bibarsov *et al*., 2017). Several scientific studies divide the treatment of import substitution in the context of fostering a nation's positive trade balance using measures of protectionist policy, reflecting the procedural nature of import substitution, being a consequence of developed ideas about development and its implementation in politics.

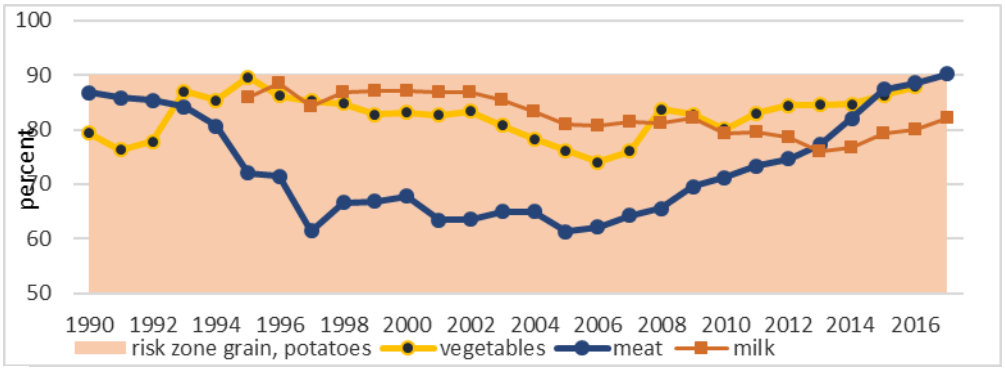
This approach also involves witching the conceptual focus to the result (Shumakova, and Nardin, 2017; Bashmakov *et al*., 2015; Veselovsky *et al*., 2017). Having analyzed the conflicting views on the concept, the authors of this article provide their own definition of import substitution in the agro-industrial complex, which includes the key features of this process in the agrarian sector of economy. Most researchers fail to address several important aspects for formation of the theory of import substitution: revealing the classification of its sectoral species and considering their specific features in the development of a system of methodological

indicators for development of the process and factor interactions with socio-economic phenomena in the rural life and economy.

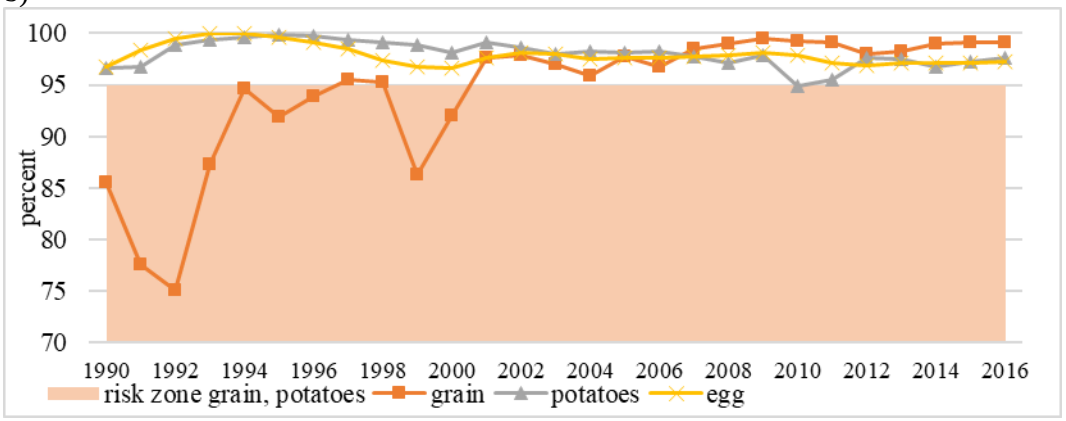
***Figure 2a-c:*** *The level of import substitution of food in Russia by types of food in 1990-2016 (calculated by the authors using data from the Federal State Statistics Service)*




a)




b)




c)

## 5. Conclusion

The authors have reviewed different approaches to the definition of import substitution in the agro-industrial complex, provided their own definition, briefly outlined its features and justified the need for its classification and development of a methodological basis.

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