

Diagnosics and management of the regional potential of food import phase-out

Diagnóstico y manejo del potencial regional para eliminar importación de alimentos

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Received:11/06/2018 • Approved: 24/07/2018

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ABSTRACT:

Now the Russian agrarian sector functions in complicated conditions that are characterized, on the one hand, by high risks, expensive financing and a decrease in the real income of the population, and on the other hand, by an arising development potential due to the counter-sanction policy, which resulted in the restrictions or the complete ban on the import of agricultural products from the European countries and some other countries. In this regard, the study of the process of food import phase-out is a relevant and urgent issue not only for the theory but for the practical aspect as well. The objective of this research is the development of theoretical and methodological provisions, reflecting the peculiarities of formation and functioning of the food import phase-out mechanism in the conditions of a traditionally agrarian region on the base of improvement of the tool and methodological apparatus of development and implementation of programs and projects in the field of food production, referred to the category of products banned for import. The scientific novelty of the research is in specifying and profound studying of the theoretical and methodological provisions and elaboration of mechanisms and recommendations for formation and implementation of a regional model of food import phase-out.

Keywords: Food import phase-out, strategy, regional economy, agroindustrial complex.

RESUMEN:

Ahora el sector agrario ruso funciona en condiciones complicadas que se caracterizan, por un lado, por altos riesgos, financiamiento costoso y una disminución en el ingreso real de la población, y por otro lado, por un potencial de desarrollo emergente debido al contador. -la política de salvación, que dio lugar a las restricciones o la prohibición total de la importación de productos agrícolas de los países europeos y algunos otros países. En este sentido, el estudio del proceso de eliminación de la importación de alimentos es un tema relevante y urgente, no solo para la teoría, sino también para el aspecto práctico. El objetivo de esta investigación es el desarrollo de disposiciones teóricas y metodológicas, que reflejen las peculiaridades de la formación y el funcionamiento del mecanismo de eliminación de la importación de alimentos en las condiciones de una región tradicionalmente agraria sobre la base de la mejora de la herramienta y el aparato metodológico de desarrollo. y la implementación de programas y proyectos en el campo de la producción de alimentos, referidos a la categoría de productos prohibidos para la importación. La novedad científica de la investigación radica en la especificación y el estudio profundo de las disposiciones teóricas y metodológicas y en la elaboración de mecanismos y recomendaciones para la formación e implementación de un modelo regional de eliminación de las importaciones de alimentos.

Palabras clave: eliminación de importaciones de alimentos, estrategia, economía regional, complejo agroindustrial.

1. Introduction

The Russian economy faced the new challenges after a rather long and relatively profitable, and what was more important, predictable period. In just a year, the commercial, economic and social and politic relations between the countries were broken or lost. All this together with the economic sanctions introduced by the USA and the EU countries towards Russia and also the response Russian countersanction measures changed completely the investment climate, the accessibility of financing, the export and import policy and other factors determining the functioning of the Russian economy in the whole and its agrarian sector, in particular. As a result of these changes, the national agroindustrial complex faced the new challenges and opportunities and this led to an acute need of the development of the complex of strategic and tactic measures to provide the food security on the base of implementation of the import phase-out policy. The subject of research is the specific character and the peculiarities of the processes of implementation of programs and projects of food import phase-out in agriculture-oriented regions. The object of research is the entities of the regional agroindustrial complex and

2. Methods

2.1. General provision of methodological approach.

The methodological base is represented by the complex of fundamental methods of scientific science: analysis, synthesis, the dialectic unity of qualitative and quantitative evaluation and systematic and complex approaches, induction and deduction. During the grounding of the theoretical provisions, conclusions and recommendations, the following diversified tool and methodological apparatus was used: abstractive and logic, monographic, design and constructive, economic and statistical methods.

The theoretical and methodological base of research consists of the works of domestic and foreign specialists, experts and scientists in the field of the theory and methodology of development of the agrarian sector of economy, provision of food security (Ivanova *et al.*, 2014; Kadochnikov, 1998; Kosolapov, 2015; Shapovalova, 2016; Samarina *et al.*, 2015; Lang, & Barling, 2012), the legal acts of the Russian Federation and its regions. The information and empiric base of research is the data of the State Statistic Committee of the Federal State Statistics Service of the Russian Federation and Krasnodar Krai. Besides, we used publications in scientific and periodical press, expert evaluations of Russian institutes and scientists, leading specialists on the problems of implementation of programs of food import phase-out, materials from the Internet and also the special empiric and factual block collected and processed by the authors.

2.2. Methods of import phase-out potential determination using the index method

To study the import phase-out potential of certain territories of Krasnodar Krai, we developed a special method based upon the index analysis allowing determining selectively the capability of the districts to provide the territory with their own products. The diagram of the methodological approach is shown in Figure 1.

The approach is based upon the multicriteria estimation of the territory potential to form the sufficient level of food production within the framework of implementation of the import phase-out policy. The summing of indexes forms the complex indexes of the territory potential estimation; the result is formed by the potential index of import phase-out.

Using the proposed approach in research, we performed the evaluation of the import phase-out potential of the districts of Krasnodar Krai in the context of the main zones.

According to the statistics for 2016, the northern zone has an evident agrarian specialization; the complex index of the branch localization level is 2.93, which is much higher than in other zones of Krasnodar Krai. In the zone, Kushevsky and Pavlovsky Districts with the general index 1.11 take the leading positions of the import phase-out level. The general index of Kanevsky District is 0.89. The general index of Beloglinsky District is 0.71.

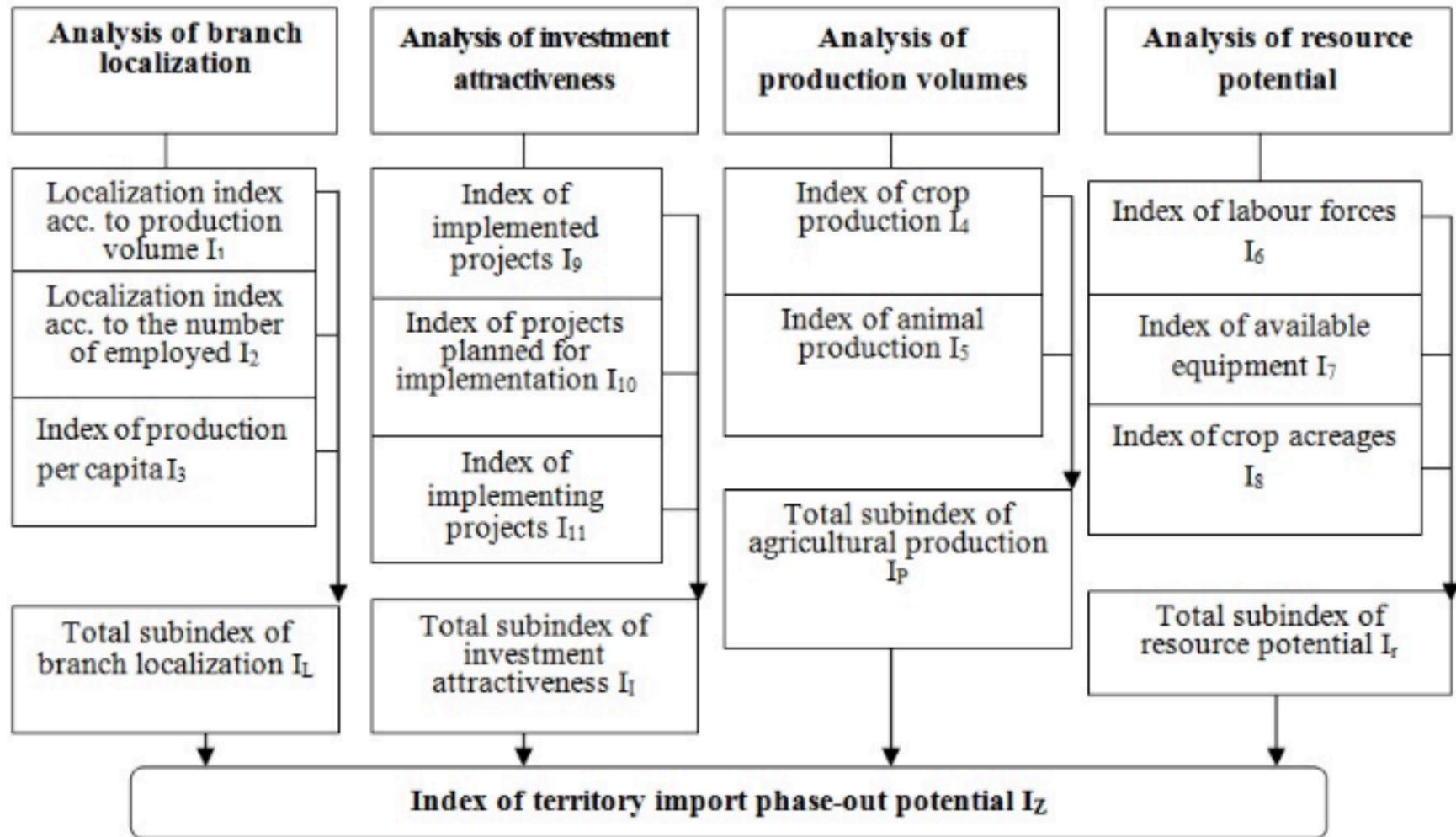
The districts with high production indexes and the medium general level of import phase-out potential are the following ones: Leningrasky District (0.086; 0.45); Tikhoretsky District (0.089; 0.34); Novopokrovsky District (0.087; 0.49); Eysky District (0.078; 0.59). Districts with a low final index are: Scherbininsky (0.36); Krylovsky (0.25).

The central agroeconomic zone includes 12 districts with a mixed structure of territory specialization. According to the estimated data, the general index of localization of the agricultural branch is 2.51. The leading positions are taken by: Vyselkovsky District with the general index 1; districts-recipients (Bryukhovetsky District (0.43), Tbilissky District (0.41), Korenovsky District (0.47), Kavkazsky District (0.31), Kurganinsky District (0.37)).

The South-Piedmont zone of Krasnodar Krai includes 9 districts. The natural and climatic and agrolandscape peculiarities of the territory do not allow cultivating a wide range of crop products everywhere. Therefore, the territory has a low level of localization of agriculture branches in comparison with the above-considered zones. The general index of localization of the agroindustrial branch in 2016 was 1.01. The leading regions of the complex estimation of the import phase-out potential are the following districts: Labinsky (1.59), Belorechensky (1.50). The districts-donors are: Abinsky District (0.72); Seversky District (0.70); Otradnensky District (0.63); Uspensky District (0.62). The districts with a low import phase-out potential are: Krymsky (0.57), Mostovskoy (0.50), Apsheronsky (0.09).

Figure 1

Diagram of indexes in the methodological approach to estimation of the import phase-out potential of the agrarian sector of the regional economy



The Anapa-Taman zone of Krasnodar Krai includes 2 municipal districts. The localization level of the manufacturing branch is 1.03. The main food volume is produced in the territory of Temryuk District (production index 0.675). Here, the resource indexes are concentrated (2.306) and also the investments projects are implemented (2.525).

The western zone of Krasnodar Krai includes 3 districts. These territories have the lowest level of localization of agricultural branches. The resource potential is limited by the soil composition that is suitable for wine growing. The territory potential is mainly in the non-standard opportunities of the natural and climatic conditions, favorable for the "deficit" products of the districts of Krasnodar Krai (fruits, berries, fish, vegetables).

2.3. Optimization task of grounding of the acreage structure taking into account the cattle breeding branch needs

The research shows that the existing structure of agricultural production has a significant shift to the crop production. The structure of the cattle-breeding branch is also non-uniform; the main part is taken by poultry breeding. In this regard, there is a goal to increase the production of cattle meat, and this presupposes an increase in the green fodder base without losses of the total margin for the agricultural producers.

The expected livestock for 2017-2018 is calculated by the method of extrapolation of the linear trend:

$$y = -21.07x + 667.8 (R^2 = 0.849) \text{ and corrected by } 43\%.$$

Taking into account the cattle meat production plan, the expected livestock in 2017 was 790 thousand animals, and in 2018 it is not less than 800 thousand animals, and this shall provide the achievement of the target values.

The system of variables was formed to solve the optimization problem:

X_1 was the crop acreage for grain crops and grain legume crops, thousand hectares;

X_2 was the crop acreage for industrial crops, thousand hectares;

X_3 was the crop acreage for forage crops, thousand hectares.

To form an economic and mathematical model, it was necessary to build a row of supporting restrictions:

1. The sum of crop acreage for crops in the region (3,564 thousand hectares):

$$X_1 + X_2 + X_3 \leq 3,564$$

2. The sum of crop acreage for industrial crops for which there was a crop norm 15-20% (712.8 thousand hectares):

$$X_2 \leq 712.8$$

3. The volume of labour costs for the production of the considered crops; it was presupposed that the use of labour should not exceed the maximally possible level in the region for 1 hectare of crops:

$$X_1 + X_2 + X_3 \leq 16,054$$

4. The planned gross production of crops at the medium level of yield:

$$8.5X_3 \geq 3,725$$

As a result, the system of four linear inequalities was formed. It is necessary to find the non-negative values of all three unknowns, when the region gets the maximal profit from the products sale. The target function looked the following way:

$$Z_{max} = 6.4X_1 + 16.2X_2 + 2.3X_3$$

The problem was solved using MS Excel. The empirical and factual block was composed using the (Database of

Indexes of the Municipal Institutions of Krasnodar Krai, 2017).

The result of the research was the determination of the economic efficiency of the regrouping of crop acreages for the producers of crop products (Table 1).

Table 1
Results of solving of the optimization problem of crop acreages

Values	Grain crops and grain legume crops	Industrial crops	Forage crops
Variant 1 – crop acreages, thousand hectares	2,539.6	794.0	230.5
Variant 2 – crop acreages, thousand hectares	2,331.6	794.0	438.2
Variant 3 – crop acreages, thousand hectares	2,413.7	712.8	438.2
Profit - Variant 1, mln roubles	296,460.35		
Profit – Variant 2, mln roubles	287,940.04		
Profit – Variant 3, mln roubles	279,900.44		

Thus, the maximal profit index for the crop producing branch was achieved in this variant of production, and the minimal index was achieved taking into account the correction of the crop acreages of industrial crops and the increase in the gross yield of forage crops. The volume of labour costs did not exceed the available resources (16,054 thousand man-days). In the calculation models, it was 12,139 thousand man-days for the 1st variant, 11,497 thousand man-days for the 2nd variant, 11,415.6 thousand man-days for the 3rd variant.

The analysis of the optimal solution of the economic problem allows concluding the following:

- the decrease in the share of crop acreages for fodder crops is related to the low profitability of production;
- the decrease in the share of acreages of industrial crops by 10% leads to a decrease in profit by 5.6%;
- the decrease in the share of grain crops and grain legume crops by 8.2% leads to a decrease in profit by 2.88%, the decrease in crop acreages by 4.9% leads to a decrease in profit by 5.6%;
- simulation of the process of redistribution of crop acreages for fodder crops causes losses for the crop-growing branch at all stages of production.

3. Results

3.1. Methodological recommendations on formation of regional programs of food import phase-out

The territory of Krasnodar Krai has some significant advantages due to its natural and climatic characteristics in comparison with other regions allowing diversifying the agricultural activity due to the growing of non-traditional products.

As an example with orientation to Krasnodar Krai, we offer a regional program of production support for the niche products (Table 2). They include: nuts, nut pastes, nut oil, milk, urbech; dried fruits; seeds; oil (safflower oil, sesame oil, peanut oil, almond oil, walnut oil, grape seeds); berries (fresh and dried); species; herbs (food, cosmetic and medical purpose). Not only venture by its nature but also start-up production projects as well as profound elaboration projects shall have support.

The complex and target program of food import phase-out at the regional level shall include the achievement of not only operative objectives but also orientation points of the tactical and strategical levels. The certain objectives and provisions shall be grounded taking into account the key provisions and priorities of the regional agricultural policy in a certain entity. As an example, we can mention:

1. Rational use of the specific elements of the natural and resource potential of the region and the capabilities of narrow specialized types of agricultural production.
2. The prompt response to the change of the commodity and market situation due to the development of the transfer mechanisms of innovations in the field of agricultural production.
3. The priority assistance to the development of small, family and non-traditional types of agricultural

production, specialized in the production of high quality natural niche products.

4. Development of tools of electronic marketing using network Internet technologies and context-cloud services.

5. Development of production zones of hand-made products, their connection to regional food networks, cafes and restaurants.

6. Development of local markets of niche products in the upper and medium price range.

7. Activation of the exhibition and trade fair activity for demonstration of the consumer features of niche group products in the region.

Table 2

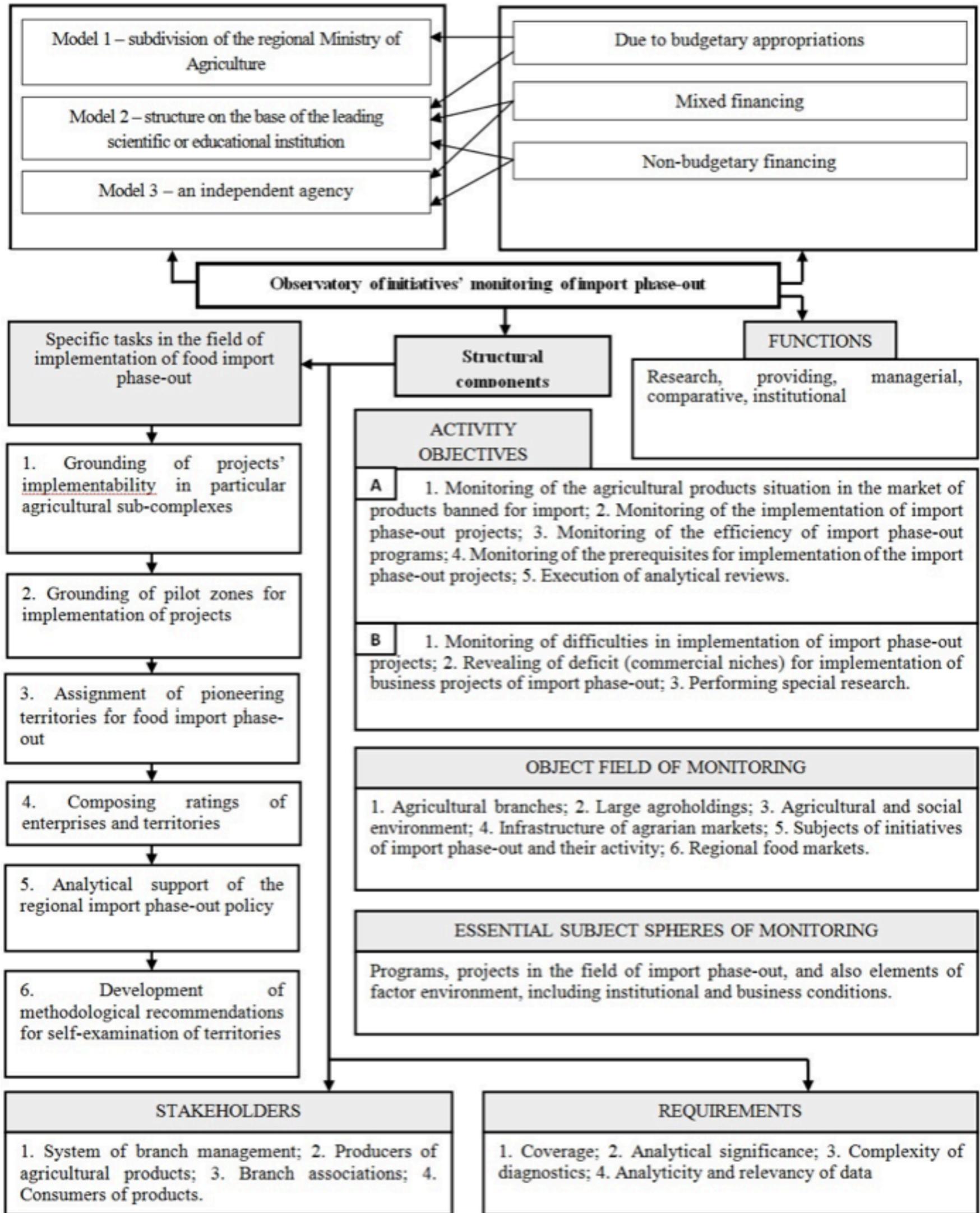
Passport of the regional program of development of the agricultural production of batch (niche) products within the framework of the implementation of the food import phase-out policy

Program section	Description
1. Detailed representation of problem that is a focus of the regional program	Insufficient volume of production of non-traditional food products. At the same time, it is of high demand among population due to the popularization of healthy lifestyle, basics of healthy nutrition. These groups of products take a certain niche in the food basket of the active prosperous population and have a high market potential.
2. Statement of objective and interdependent tasks with chronological connection of the tasks to the main stages. Determination of the indicative target indexes	Objective: Development of the agroindustrial complex of Krasnodar Krai due to the maximal diversification of the types of production activity. A decrease in the share of import commodity turnover, growth of competitiveness. Tasks: Stage 1 – intensive production development of niche food products (business planning, collection of applications from producers, informational and consultation support); Stage 2 – formation of the complex of product processing; Stage 3 – development of a competitive environment and attraction of investment funds for extension of the alternative types of activity into the agroindustrial complex of the region.
3. Formation of a list of program events of common and individual character	Direction 1. Development of a nut-growing farm Direction 2. Development of a primary processing technology of niche products Direction 3. Production of food seeds and species Direction 4. Formation of the commercial brand of the territory Direction 5. Stimulation of small business patterns in the field of production of alternative products
4. Formation of a portfolio of resource provision for implementation of the program events	Financing: 1. Funds of the federal budget. 2. Funds of the territorial budget. 3. Private investments. 4. Credit resources with the state branch guarantees.
5. Development of mechanisms of program implementation, and the subsystems of management and control	1. The institutional and organizational mechanism is provided by the territorial agricultural governing body of Krasnodar Krai (the Ministry of Agriculture, local authorities). 2. The resource mechanism of the program is provided by the authorities of Krasnodar Krai, the population of the region, associations, entities of financial and credit sphere, infrastructural objects. 3. The control mechanism of the program is implemented by the administration of the region

3.2. Branch monitoring of the food import phase-out

The implementation of the food import phase-out programs requires the availability of the efficient information tool that shall provide the possibility of collection, systematization and economic interpretation of the informational and analytical packages of processes taking place in the field of the regional agricultural production and food import phase-out. In this research, we developed a model of a regional monitoring observatory (Figure 2).

Figure 2
 Authors' model of a regional monitoring observatory
 for studying food import phase-out initiatives



3.3. Mechanism of public private partnership for implementation of food import phase-out programs

The objective of public private partnership in the structure of the food import phase-out policy is to fulfill and assist the execution of tasks of food import phase-out and creation of the favorable agricultural and social environment for functioning of the entities executing the food import phase-out tasks.

The following forms of public private partnerships can be distinguished in the national agriculture: regional and municipal target programs; clusters of production and processing of agricultural products; innovative and venture projects related to the agricultural service, agricultural tourism, locavore; garage winemaking; agreements on social partnership; provision of concessions; creation of special economic zones, technoparks, technopolices and zones of cluster development.

The distinctive feature of the mechanism of private public interaction developed by us in facilitation of the seeds

movement and regional assignment within the framework of the food import phase-out policy is to attract farmers to the process of grade-testing and consulting work of the regional consulting services of the agroindustrial complex. Beside the search of new grades and hybrids, they conclude contracts with farmers according to the zones to rent the land lots for performing of grade-testing works. It is profitable because not every zone has seed farms (especially for vegetables, some cultivated crops and niche crops). In this case, the problem of seed zoning is solved as well as the provision of experimental test land lots for improvement of crop rotation by the producer of agricultural products. Farmers get the reimbursement of their expenditures and also the tax advantages from the regional and local budgets. Besides, the extension of commercial and business relations of a peasant farm enterprise when implementing such projects will be important and this can be referred to the obtained positive effects.

One more important moment of functioning of national producers of agricultural products is the problem of sales of products. In this regard, to solve the problem of sales facilitation of batch niche products manufactured in small batches by producers of agricultural products (an individual entrepreneur, a peasant farm enterprise, a private subsidiary farm, micro enterprises, households), it is reasonable to pay attention to the sphere of E-commerce (electronic commerce, online sales). Let us describe the main stages of realization of our idea, reflecting the essence of our proposal. Objective is the creation of the electronic network trading platform for agricultural producers of niche groups of products in Krasnodar Krai. The main entities are the branch management bodies (the Ministry of Agriculture of Krasnodar Krai) acting as the Customer of the project; Contractor – developers from the IT sphere; the target group of consumers – regional producers of niche agricultural products (an individual entrepreneur, a peasant farm enterprise, individual manufacturers, households, etc.).

Main stages of the project implementation are the following ones:

1. The Ministry of Agriculture announces the competition at the expense of the budget funds for the development of an Internet platform combined with the main social networks for placement of Internet resources of regional producers of agricultural batch niche products.
2. Basing upon the number of applications provided according to the criteria of price minimization and the best conditions of development, the competition committee determines the winner and concludes the contract for the development with him.
3. Submission of the electronic layout of the Internet resource by the winner of the competition.
4. Submission of works to the Customer, information support of the site.
5. Acceptance of works and payment according to the contract.

Recommendations on using public private partnership in the regional policy of import phase-out contribute to the general development of the agrarian business sphere and its fastest adaptation to the challenges of the new economic situation.

4. Discussion

During the complex research of the problem of food import phase-out in the agrarian region of the Russian Federation, the authors have grounded the following structure of work:

1. Formation of the theoretical and methodological approaches to the study of the process and economic phenomenon of the food import phase-out.
2. Analytical approaches to the study of the food complex state of Krasnodar Krai and its contribution into the problem solution at the nationwide level.
3. The grounding and development of the tools block for formation of the regional package of state programs and projects of food import phase-out for the agrarian region.
4. The development of the public private partnership mechanism when implementing the food import phase-out policy.

The obtained research results were compared to the opinions of the expert and scientific community within the framework of conferences and scientific discussions and also to the results of other studies (Akimova, & Kochetkova, 2015; Borisovskaya, 2014; Gelbras, 2013; Kenzhebaeva *et al.*, 2015; Shchapovalova, 2016; Cafiero *et al.*, 2014; Schroeder, & Smaldone, 2015; Warr, 2014; Denisova, & Polyabskii, 2012; Häberli, & Smith, 2014; Lang, & Barling, 2012; Otero *et al.*, 2013; Upton *et al.*, 2016; David 2000).

According to the research results, the positive dynamics of food range extension were revealed in the studied region. Also, the efficiency of the adaptive approach to the process of implementation of the state programs of food security was proved. The developed tools will allow levelling the negative externalities of the external environment and balancing of the social and economic development of the territories, in particular, revealed in (Taranova *et al.*, 2015; Litvin *et al.*, 2015).

5. Conclusion

The performed research of the problems of food security provision of the region on the base of the development and activation of the processes of food import phase-out in the agricultural branches allowed making the following conclusions, generalizations and recommendations on formation and implementation of the corresponding regional model of food import phase-out in agro-developed entities.

The research showed that in the regions with the traditionally agrarian specialization of the economy, the most efficient tools of implementation of the import phase-out potential could be target programs and projects, branch monitoring of the import phase-out initiatives and public private partnership. In the research, it was concluded about the necessity of the development of the local import phase-out programs in the regions. And in this context, the organizational and methodological recommendations were offered for the formation and implementation of the regional food import phase-out programs in agro-oriented regions. It was grounded that they should provide support in such regions that were not covered with the federal target and stimulating measures (for example, in the production of niche products or so called superfoods) that formed the methodological base of the improvement of regional mechanisms of stimulation of the food import phase-out projects.

To obtain the up-to-date and relevant information of the import phase-out processes in the agrarian sector of the economy, we used the mechanism of branch monitoring of the processes implementation in the field of food import phase-out on the base of the development of the specialized monitoring observatory, the variants of its organization were grounded and the organizational and methodological order of its functioning was determined and this gave the possibility to form the feedback between the system of the branch management and the producers of agricultural products.

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Revista ESPACIOS. ISSN 0798 1015
Vol. 39 (Nº 45) Year 2018

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