PERFORMANCE INDICATOR SYSTEM INDUSTRIAL IMPORT SUBSTITUTION STRATEGIES AND TOOLS OBTAINING INTEGRAL ASSESSMENTS

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Abstract. Under modern conditions the production activities of many enterprises, referred to different branches of Russian economics, are impacted by imponderable, multidirectional and rapidly changing influences of environmental factors. It should be supplemented by different sanction restrictions, influencing the Russian economics for more than six years. In order to resist mentioned circumstances the Ministry of the Industrial Development has developed the complex of branch import substitution strategies. Its successful implementation depends largely on the efficiency of activities of enterprises of all branches of Russian economics. The article offers the system of resulting indices for the evaluation of the efficiency of activities of enterprises, referred to all branches of the Russian economics. Were substantiated instruments for the reduction of values of different indices to the commensurable point in order to obtain integral evaluations of the implementation of branch import substitution strategies. Offered system and instruments can be used by enterprises of all branches of the Russian economics for the evaluation of the efficiency of the implementation of branch import substitution strategies.
Keywords: Russian economics, branch strategies, import substitution, efficiency evaluation.

Import substitution strategies have been used in different times by many countries for the purpose of development of national economics. Brazil, South Korea and Taiwan have achieved most successes in its implementation. In these countries import substitution strategies have contributed to the rapid growth and development of the diversification of economics, to the industrialization, reduction of the dependence from the foreign made production, creation of new workplaces. The successful implementation of import substitution strategies causes the growth of export and the increase in its structure of the share of production with the high added value, what has stimulated the implementation of innovations. With that to basic instruments of the implementation of import substitution strategies were referred:

– the use of government allowances and the establishment of privilege prices for the production, manufactured within the country for the purpose of the stimulation of the national production development and of the internal demand growth;

– establishment of different kinds of restrictions for purchases of foreign technologies, items and completing parts;

– modernization of industrial enterprises of national economics due to the investment of funds, gained from the sales of production, manufactured within the country [1, p. 47].

For Russian economics issues, referred to the development and implementation of import substitution strategies, became especially important after the implementation of sanction restrictions, which have impacted the majority of its branches. It caused the considera-

ble growth of prices, weakened the ruble rate, caused serious damage to the Russian consumer market, as well as contributed to the increase of the capital outflow outside of our country. With that sanction restrictions positively influenced the development of several branches of economics, becoming a powerful drive for the implementation of import substitution strategies. The growth of prices and the reduction of purchases of imported goods in terms of the devaluation of the real course of ruble caused the increase of the growth of the demand for the Russian made production, which started to actively substitute foreign technologies, items and completing parts.

Research purpose. As the branch composition of the Russian economics is rather important and variable the basic purpose of this research was the substantiation of the system of the efficiency of the implementation of branch import substitution strategies and of instruments for the obtaining of integral evaluations.

Materials and Methods. The process of the implementation of the import substitution strategy represents the ordered collection of stages and actions, assisting to carry out: the situation analysis of the environment; development of relevant plans; implementation of the complex of certain included measures; control of the correspondence of scheduled and actual indices [2, с. 24].

In order to determine indices of the efficiency of the implementation of import substitution strategies for both economics in whole and in the context of its branches it is expedient to use the system of import substitution, which is formed on the basis of the data of "Expenses-Release" table and consolidates three groups of resulting indices. Some of these indices have been used in the method of evaluation of the import dependence of the Russian economics [3].

The first group comprises consolidated indictors, which characterize the dependence of economics and of its leading branches from the purchase of foreign items, technologies and completing parts, determined by the direct counting method. Some segments of branches of economics interact at markets: the intermediate production, the consumer market and the market of the ready, including

innovative production. In the foreign made production (items, technologies and completing parts) (IP) let's highlight the intermediate imported production (IIP_E) and the imported production for the final use (IP_{USE}). The latter comprises the final imported production (IP_{END}) and the imported production, taken into consideration in the basic accumulation of the fixed capital (IP_{FC}). In order to calculate comprehensive resulting indices of the dependence of the Russian economics and of its branches from purchases of foreign items, technologies and completing parts following formulas can be used (1) – (6):

$$IP = IIP_E + IP_{USE} \tag{1}$$

$$IP_{USE} = IP_{END} + IP_{FC} \tag{2}$$

$$ID_E = \frac{IP_E}{(V_E + IP_E)} \tag{3}$$

$$ID_B = \frac{IP_B}{(V_B + IP_B)} \tag{4}$$

$$ID_{E_i} = \frac{(IIP_E + IP_{END} + IP_{FC})_{E_i}}{V_{E_i} + (IIP_E + IP_{END} + IP_{FC})_{E_i}} \tag{5}$$

$$ID_{B_i} = \frac{(IIP_E + IP_{END} + IP_{FC})_{B_i}}{V_{B_i} + (IIP_E + IP_{END} + IP_{FC})_{B_i}} \tag{6}$$

ID_E и ID_B – comprehensive indices, characterizing the dependence of economics and its branches from purchases of foreign made items, technologies and completing parts, IP – imported production volume, V – volume of the home made manufactured production, i – production kind index, i =1,…,n, where n – number of kinds of production;

ID_{E_i} – share of the total volume of purchases of foreign made production (items, technologies and completing parts) of the i-th type in the total volume of resources and production (national and imported), used in economics. Export oriented resources are not excluded from the denominator, as its production involves foreign made items, technologies and completing parts;

ID_{B_i} – share of foreign made production (items, technologies and completing partsизделий, технологий и комплектующих) of the i-th type in the volume of the

branch (b) production, used for the intermediate consumption, for the final consumption of households and for the gross accumulation of the basic capital;

ID_{E_i} и ID_{B_i} – indices, characterizing the dependence of economics and of its branches from purchases of the foreign made production (items, technologies and completing parts) of the i-th type.

The second group comprises resulting indices, characterizing the dependence of Russian economics from purchases of foreign made items, technologies and completing parts at the level of branch industries. For the evaluation of the dependence of branch industries from purchases of foreign made items, technologies and completing parts in the volume, used for the production manufacturing (formulas (7) – (8)), and the import consumption of the branch release ((9) – (10)).

The share of purchases of the foreign made production (items, technologies and completing parts) of the i-th type, used in the intermediate consumption of b-th branch, is determined by the formula:

$$ID_{ib} = IIP_{ib} : (V_{ib} + IIP_{ib}) \qquad (7)$$

The share of purchases of the foreign made production (items, technologies and completing parts) of the i-th type, used in the intermediate consumption of b-th branch, is determined by the formula:

$$ID_{Bi} = \Sigma IIP_{Bi} : \Sigma(V_{Bi} + IIP_{Bi}) \qquad (8)$$

The import consumption (IC) of the release of the i-th type production by the b-th branch is determined by the formula:

$$IC_{bi} = IP_{bi} : V_{bi} \qquad (9)$$

The import consumption of the whole release for the b-th branch is determined by the formula:

$$IC_{Vbi} = \Sigma IP_{bi} : V_{bi}. \qquad (10)$$

In formulas (7) – (10) b =1, … , m, where m – number of branches.

The third group comprises the resulting index for the determination of complete expenses for the purchase of foreign made production (items, technologies and completing parts) in the cost of the final home made production. In order to determine full expenses for the purchase of the imported production in the total scope of the cost of the home made production and the obtaining of the total volume of the home made production in the final consumption (KP), gross accumulation (VN) and export component (EX) is used the formula (11). Its numerator represents the volume of expenses for the purchase of the intermediate imported production (consumed in branch industries):

$$IP_{TKib} = IIP_{ib} : (KP + VN + EX)_{ib} \qquad (11)$$

As the Russian economics is being functioning under sanction restrictions for more than 6 years, it seems expedient to substantiate the system of indices for the evaluation of import substitution strategies in some branches of Russian economics. Anyway, before the substantiation of the composition of such system indices let's highlight that the development and the implementation of import substitution strategies became the reactive measure for the protection of the Russian economics from non-competitive methods for the hindering its development and maintenance of the competitive ability of the Russian made production [4, c. 304]. The basic result of the implementation of import substitution strategies at the level of several branches and enterprises is the reduction of its dependence from purchases of foreign technologies, items and completing parts along with the provision for the growth of economics of the country at the expect of internal resources. Provided favorable conditions these processes can be accompanied by the increase of the share of the export of the national production at world markets.

At the first approach the system of indices for the evaluation of the efficiency of the implementation of import substitution strategies in branches of the Russian economics [5]:

– production volume by kinds (i), released only with the use of home made items and

completing parts V_{OPit} in the natural and cost measurement for a certain time period (12);

– production volume by kinds (i), released only with the use of home made and foreign made items and completing parts V_{OPit} in the natural and cost measurement for a certain time period (13);

– total production release volume by kinds V_{Vit} for a certain time period, which is determined by the formula:

$$V_{Vit} = V_{OPit} + V_{OFPit} \qquad (14)$$

– coefficient of the use of own made completing parts (k_{OPit}) in the total volume of production release by V_{OPit} kinds for a certain time period, which is determined by the formula:

$$k_{OPit} = \frac{V_{OP_{it}}}{V_{V_{it}}} \times 100\% \qquad (15)$$

– coefficient of the use of own and foreign made items and completing parts (k_{OFPit}) in the total volume of production release by $V_{OПit}$ kinds for a certain time period, for a certain time period, which is determined by the formula:

$$k_{OFPit} = \frac{V_{OFP_{it}}}{V_{V_{it}}} \times 100\% \qquad (16)$$

– coefficient of the import dependence of the total volume of the production release by kinds ($k_{V_{OPit}}$) for a certain time period, which is determined by the formula:

$$k_{V_{OPit}} = \frac{V_{OP_{it}}}{V_{OFP_{it}}} \qquad (17)$$

– index of the provision of the total volume of the production release by kinds for a certain time period by own made items and completing parts (Δk_{OPit}), which is determined by the formula:

$$\Delta k_{OPit} = k_{OPit} - k_{OFPit} \qquad (18)$$

As a first, we have formed the system of efficiency indices for the evaluation of the efficiency of the implementation of branch import substitution strategies. Anyway, it is not difficult to make sure, that the dimensionality of indices, included in its composition, is different. So, in order, to bring it to the com-

mensurate kind, it is expedient to use standardization instruments. As all personal indices are unidirectional, the standardized P_{bi} index is calculated by the following formula:

$$P_{bi} = \frac{P_{bi}}{P_{bi}^{max\rightarrow}} \qquad (19)$$

where $P_{bi}^{max\rightarrow}$ – is the maximal value of the i-th index among b-th branches of the Russian economics.

On the basis of standardized personal indices P_{bi} is calculated the Minkowski distance (measure) D_b by the formula:

$$D_b = [\sum_{i=1}^{n} |P_i - P_{bi}|^r]^r \qquad (20)$$

where $P_i = max\{P_{bi}\}^r$, and r – degree distance parameter, given at the performance of settlements.

Note that the less D_b is, the higher is the integral index of the efficiency of the implementation of import substitution strategies for the b-th branch. Consequently, the integral index of the efficiency of the implementation of import substitution strategies for the b-th R_b area is the reciprocal number D_b.

$$R_b = \frac{1}{D_b} \qquad (21)$$

A branch can obtain a high place in the ranging $D_b(R_b)$ can be obtained at the expense of the considerable superiority by one index, while other indices can be incomparably different from it. Such a situation witnesses the unbalanced efficiency of the implementation of import substitution for the b-th branch, notwithstanding good values of estimates $D_b(R_b)$. So, the option of standardized indices should be evaluated for the determination of the uniformity of the influence of the industrial policy [6].

For the influence evaluation the variability index can be used. Let's the average value of standardized indices for the b-th branch $\overline{P}_b$ be determined by the formula (22), and the standard deviation of standardized indices for the b-th branch S_b is calculated by the formula (23).

$$\overline{P}_b = \frac{1}{n} \sum_{i=1}^{n} P_{ib}^n \qquad (22)$$

$$S_b = \sqrt{\frac{(\sum_{i=1}^{n} [|(P)|]_{ib}^n - \overline{P}_b^n)^2}{n}} \qquad (23)$$

In such a case the coefficient of the option of standardized indices for the b-th branch U_b is calculated by the following formula:

$$U_b = \frac{S_b^n}{P_b^n} \times 100\% \qquad (24)$$

After the calculation of the U_b the highest place in the rating is award to the branch, where this index has got the lowest value, other branches are placed in the order of the increase of this index value.

Then $D_b(R_b)$ and U_b indices can be used not only as point methods, but also as measures for the highlighting of branches or its groups with different characteristics of branch import substitution strategies [6].

Not like existing methods of the evaluation of the efficiency of the implementation of branch import substitution strategies offered methods have got a range of privileges, namely:

– the possibility of the registration of all structural components in conformity with the evaluation of the efficiency of the use of resources at branch enterprises;

– analysis of strengths and weaknesses of branch enterprises;

– determination of the integral efficiency index for each branch enterprise;

– development of the complex of measures within frames of the implementation of import substitution strategies for the maintenance of several enterprises.

So, while using the formula (19), we can obtain the system of standardized personal indices of the efficiency of the implementation of branch import substitution strategies.

On the basis of standardized personal indices P_{bi} is calculated as Minkowski distance (measure) D_b (with r = 2) by the formula (20). Let's point it out that the less is D_b, the higher is the integral index of the efficiency of the implementation of the import substitution strategy for the b-th branch [7, p. 1413].

Hence, the integral efficiency index (efficiency rating) R_b is the reciprocal number D_b and is calculated by the formula (21). Having obtained the value of the rating of the efficiency of the implementation of branch import substitution strategies, there can be determined branches, where import substitution

strategies are being implemented in a most successful way.

Results and Discussion

For the purpose of the full evaluation of expenses for the import production purchase in the cost of different kinds of the home made production, oriented to the final consumption, accumulation and export are used more sophisticated calculation formulas in comparison with given ones (1-11). It is based on the consideration of whole import capacity for the home made final production.

The increase of values of indices 12, 14, 15, 17 and 18 with the simultaneous decrease of values of indices 12 and 16 will witness the increase of the efficiency of the implementation of import substitution strategies both by branches of Russian economics, as well as by certain industrial enterprises.

The given approach to the substantiation of the system of indices and instruments in order to bring such indices to the commensurate view in order to evaluate the efficiency of the implementation of branch import substantiation strategies. This approach applicable only for such kinds of production, for which the state statistics has got comparable data in the context of its use at the manufacturing of both home and foreign made items and completing parts.

Conclusion

On the basis of results, obtained in the course of research, following opinions can be formulated:

1. Enterprises of many branches of Russian economics not only stand against sanction restrictions, but continue its successful development. In terms of the strict competition at international markets it managed to increase volumes of the home made production and so, to partially substantiate the foreign made production, the access to which has been sanctioned. It resulted in the successful implementation of branch import substitution strategies.

2. Was offered the system of resulting indices, which can be applied for the evaluation of the efficiency of activities of most enterprises, referred to leading branches of Russian economics and for its implementation of branch import substantiation strategies. This system is not exhaustive and needs the following development in the context of production features and the certain nomenclature of

the gross production in certain branches of the Russian economics.

3. Were substantiated instruments, allowing to bring indices of the implementation of branch strategies of the different quantity of the import substantiation in order to obtain the evaluation of its efficiency.

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СИСТЕМА ПОКАЗАТЕЛЕЙ ЭФФЕКТИВНОСТИ РЕАЛИЗАЦИИ ОТРАСЛЕВЫХ СТРАТЕГИЙ ИМПОРТОЗАМЕЩЕНИЯ И ИНСТРУМЕНТАРИЙ ПОЛУЧЕНИЯ ИНТЕГРАЛЬНЫХ ОЦЕНОК

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Аннотация. В современных условиях на производственную деятельность многих предприятий различных отраслей российской экономики оказывают негативное влияние трудно предсказуемые, разнонаправленные и стремительно изменяющиеся воздействия факторов внешней среды. К ним следует добавить разного рода санкционные ограничения, действие которых отечественная экономика испытывает на себе более шести лет. Для противодействия указанным обстоятельствам Министерством промышленного развития был разработан комплекс отраслевых стратегий импортозамещения. Их успешная реализация во многом зависит от эффективности деятельности предприятий всех отраслей российской экономики. В статье предложена система результирующих показателей для оценки эффективности деятельности предприятий всех отраслей российской экономики. Обоснован инструментарий приведения значений разных показателей к сопоставимому виду для получения интегральных оценок реализации отраслевых стратегий импортозамещения. Предложенные система и инструментарий могут использоваться предприятиями всех отраслей российской экономики для оценки эффективности реализации отраслевых стратегий импортозамещения.

Ключевые слова: российская экономика, отраслевые стратегии, импортозамещение, оценка эффективности.