Methods for choosing state stimulation forms of investing the high-tech production for civilian purposes

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Abstract. The article focuses on the leading part of the innovative development which is played by high-tech sectors of the economy, including the military-industrial complex focusing the innovative potential of high-tech industries. The article emphasizes that in the context of reducing military expenditures, the most important factor in the development of enterprises of the military-industrial complex is the production of high-tech products for civilian purposes. However, the production of high-tech civilian products requires significant financial investments, even if state support is provided. In this connection, the problem of choosing the forms of this support for investments in producing the high-tech civilian products at the enterprises of the military-industrial complex becomes particularly urgent. The article describes the difficulties faced by the military-industrial complex entering the market of civilian products. The article provides a formula for calculating budget efficiency, since the basis for a positive decision to provide state support is the value of the calculated indicator of budget efficiency of production. Based on the evaluating the effectiveness of commercial and budgetary investments obtained by the proposed formula, a decision can be made to invest in the production of high-tech civilian products.

1. Introduction

One of the priority directions of economy development nowadays is still its transition to innovative production. The main features of the innovative economy include its ability to develop knowledge-intensive industries. The most important role in innovative development of the country perform the high-tech industries, including the military-industrial complex, which is the focus of innovative potential of enterprises of aviation industry, electronics, mechanical engineering and other sectors [1]. The innovation activities of these companies ensure their development, sustainable growth and competitiveness on the national and global markets [2].

Analysis of the current state and development of production of high-tech civilian products at the enterprises of the military-industrial complex shows a steady increase in the share of this industry in GDP according to Rosstat from 2014 to 2019. This is primarily due to the re-equipment of these enterprises for the purpose of high-tech production [3, 4]. For example, in the total volume of production of enterprises of the military-industrial complex engaged in innovative activities, this product amounts 16%, including a fundamentally new one is 11% [5, 6]. In his annual address to the Federal Assembly in December 2016, Russian President Vladimir Putin set a goal to increase the share...
of civilian products to 30% of the total production of the military-industrial complex by 2025, and to 50% by 2030. However, today the military-industrial complex still remains separate from the real sector of the economy. At a time when its part should be leading in the development of the national economy [7].

2. Research purpose

Difficulties faced by the military-industrial complex entering the market of civilian products:

- finding its own place in the civil products market;
- determining the interaction system of the existing participants in the market of civil products with enterprises of the military-industrial complex;
- developing the mechanisms for promoting products to the civil products market;
- choosing a strategy for managing the production of high-tech civilian products at the enterprises of the military-industrial complex;
- assessing the impact of increasing high-tech civilian products on changes in the integrated corporate structure of military-industrial enterprises;
- choosing the appropriate forms and methods of state stimulating projects for the production of high-tech civilian products.

The identified features of the high-tech sector, the requirements for stimulating investment in the production of high-tech civilian products and their corresponding principles allowed concluding further production and promotion of these products, increasing the output of competitive civilian products is possible only on the basis of state support. Thus, the task of developing a methodology for selecting forms and methods of state stimulation of projects for the production of high-tech civilian products by enterprises of the military-industrial complex is urgent.

3. Research results

The existing forms of state stimulating do not give the proper effect in practice, since they do not fully solve the formulated task of stimulating investment in the production of high-tech civilian products [8]. A well-founded system for stimulating investment in the production of high-tech civilian products should create conditions for investment that allow increasing the output of competitive civilian products, as well as for creating conditions for increasing the production of innovative products. The analysis of the stimulating forms provided by the state has shown that they all differ from each other in different characteristics [9]. However, in practice, it is possible to apply several forms of stimulating one production [10].

For example, subsidies and subventions are provided free of charge and irrevocably to enterprises of strategic importance, such as enterprises of the military-industrial complex. These funds may not be used in the current production cycle, but may be pledged to maintain them in the appropriate state. To obtain these forms of state incentives, there is a different procedure for providing them, including an application with a justification for pulling investment as support provided by the state from budgets of different levels. The main stage of determining a positive decision to provide state support is the value of the estimated indicator of budget efficiency of production.

Budget efficiency is a relative indicator of the effect on the budget of the subsequent implementation of an investment project, which can be defined as the ratio of the result obtained by the budget to the costs, expenses that caused or ensured its receipt [11, 12].

Budget efficiency can be assessed at the request of state or regional governments. In accordance with these requirements, budget efficiency can be determined for different levels of budgets or for a consolidated budget. Indicators of budget efficiency are calculated based on the data of determining the flow of budget funds [13].

The budget efficiency index $PI_B$ is used as an indicator of budget efficiency, calculated using the next formula [13]:

$$PI_B = \frac{\text{Result}}{\text{Costs}}$$
$PI_B = \sum_{t=1}^{T} \frac{BCF_t}{Inv_t^{IF}}, \tag{1}$

where $BCF_t$ is the budgetary cash flow;

$Inv_t^{IF}$ is the amount of state support at the expense of the fund (including the provision of state guarantees).

An investment project is recognized as meeting the criteria for budgetary effectiveness if the confirmed value of the budget efficiency index $PI_B$ exceeds 1. When providing state support in the form of funds directed to the authorized capital of legal entities and in the form of co-financing, the investment project must also provide the state with the required return on investment from the fund $\bar{r}$.

Budget efficiency of an investment project is the effectiveness of participation in an investment project of funds allocated from the budget of a certain level (federal, regional or local), in terms of the correlation of expenditures and revenues for the project [14].

Budget efficiency reflects the impact of an ongoing investment project on increasing revenues and reducing expenditures of the relevant budget, depending on the level of management. The budget efficiency of an investment project is evaluated by comparing the volume of investments from the budget in the investment project and the total budget revenues, as well as savings in budget expenditures arising from the implementation of the investment project [11].

Budget efficiency is assessed primarily for projects that require state support and are submitted to Federal or regional government agencies. For projects that do not require state support, the budget efficiency is assessed at the request of the relevant governmental authorities [14].

The basis for calculating budget efficiency indicators is the amount of tax revenues to the budget and payments for budgets of various levels. Based on this data, cash flows are compiled to determine the budget efficiency and aggregate indicators of the project's budget efficiency are calculated.

Nowadays, along with ensuring the country's defense capability, the main task of the defense industry is to focus on the production of innovative high-tech civilian products. The solution of this task requires significant financial resources to involve the existing innovative potential of enterprises of the military-industrial complex in the process of production of non-core products through the implementation of innovative projects. The method of selecting forms of state incentives for investment in the production of high-tech civilian products will help to solve the problem of increasing the competitiveness and efficiency of projects for the production of high-tech civilian products.

Forecasting revenues from the production of high-tech products and, as a result, the expected financial results from the implementation of an innovative project should be based on marketing research to determine the demand for high-tech products for civil purposes and methodological recommendations for a comprehensive assessment of the results of innovative projects. The net present value of cash flows associated with the implementation of an innovation project is determined [15].

At the stage of determining the volume and timing of an innovative project for the production of high-tech civilian products, a forecast is made of the overall need for investment resources necessary for the production of high-tech civilian products at the enterprises of the military-industrial complex.

Since innovation is a priority area of economic development in the Russian regions, the state is interested in developing the production of high-tech civilian products and can provide support in the form of various forms of government incentives [7]. To do this, it is necessary to determine the amount of funding necessary for the effective implementation of projects, areas of restructuring and evaluating the effectiveness of changes in the structure of enterprises in the military-industrial complex [16].

At the next stage, the budget efficiency of the project implementation is evaluated on the basis of the forms of state incentives provided to the enterprise of the military-industrial complex according to the budget efficiency index $PI_B$. To do this, the estimated amount of tax revenue to the budget of the appropriate level is determined.
If the results of the budget efficiency assessment meet the accepted criteria ($PI > 1$), then investment in a project for the production of high-tech civilian products is economically feasible. If the results of the budget efficiency assessment do not meet the accepted criteria ($PI < 1$), a decision is made to review the project. If attracting state support does not ensure the successful implementation of the project and, consequently, the growth of the tax base, then investment in this project is considered ineffective.

Then the commercial efficiency of the investment is evaluated. To assess the economic efficiency, it is proposed to use the profitability index (PI), calculated on formula 1, but this evaluation can be made on the basis of any method (NPV, IRR, etc.).

If the investment costs associated with the implementation of the project pay off ($PI > 1$), then investment in the production of high-tech civilian products at the enterprises of the military-industrial complex is economically feasible. If the investment costs associated with the implementation of the project do not pay off ($PI < 1$), then it is worth considering increasing the amount of state support.

4. Conclusion
Based on the received evaluation of the effectiveness of commercial and budgetary investments, a decision can be made to invest in the production of high-tech civilian products at the enterprises of the military-industrial complex. However, the results of the assessment may vary depending on the results of budget and commercial efficiency, that is, they may be ambiguous. After all, if the investment of any of the participants in the process (state or enterprise) will not be appropriate, the implementation of the production project becomes very unlikely. In this regard, it is further proposed to assess the impact of the innovative project of high-tech civil products on the regional infrastructure. However, it offers possible solutions to the situation in which the commercial and/or budget investments are not effective or efficient, in other words, are considered variants of management decisions on formation and implementation of the project of production of high-tech civilian products by enterprises of the military-industrial complex and investing in manufacturing based on an assessment of commercial and budget efficiency.

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