
Implementation of the Russian State Armaments Program 2011-2020: Economic and Financial Analysis

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Abstract:

The State Armaments Programme (SAP) is a set of industrial, military, political, economic and financial measures aimed at the increase in the country's defense capacity. The subject of economic analysis of this article is the SAP-2020 adopted in December 2010 and covers a period from 2011 to 2020 which is now at the final stage of its implementation.

On studying the SAP-2020 the authors revealed such key indicators as economic viability and financial efficiency of programme implementation. A comparative analysis of budget funding of the similar US programme was conducted and statistical data supporting the main findings of the study were introduced.

The authors used a wide range of methodological tools in the course of the study. The method of economic analysis, the method of structural analysis, the statistical method and the method of mathematical comparison were used.

Keywords: *State armaments program (SAP), financial policy, investment, risk, strategy, economic efficiency, military industry.*

JEL Classification Codes: *C12, C67, E39, G28, H11.*

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1. Introduction

The relevance of the research is dictated by two considerations. Firstly, the successful and timely implementation of the State Armaments Programme (hereinafter referred to as the SAP) directly determines the national security and protection of the state sovereignty of the Russian Federation (RF) in the context of growing tension in international relations. Secondly, taking into account the current economic realities, the implementation of major provisions of the SAP requires a sound economic and financial approach on the part of the state. This, in turn, implies a thorough analysis of the existing financial and economic resource base necessary to implement the SAP in a timely manner and avoid its disruption or distortion of its separate provisions. The subject of this analysis is the SAP-2020 developed from 2008 to 2010 and signed by President of the RF on December 30, 2010. This programme substituted the ineffective programme 2007-2015, its implementation, in researchers' opinion, disrupted for economic and systemic reasons (Fedorov, 2013).

First of all, let us learn what the State Armaments Programme is from an institutional point of view. This is a document of medium-term planning for the technical re-equipment of the army (in the distribution by types of forces) and the fleet. The document takes into account the analysis and assessment of possible threats to Russia's national security. The creation of the SAP is coordinated by the Ministry of Defense of the Russian Federation, which attracts other ministries and law enforcement agencies, enterprises of the defense industry complex to elaborate the document. At the same time, taking into account the specifics and scope of the planned activities, the implementation of the SAP is also conducted in close cooperation with the Ministry of Economic Development and the Ministry of Finance of the Russian Federation.

The main executor of the SAP is the domestic military-industrial complex (hereinafter referred to as MIC), which sells new and modernized military equipment in accordance with the requirements of the State Defense Order (hereinafter referred to as Gosoboronzakaz, SDO). It also accounts for the lion's share of financing from the state budget. A number of research papers are devoted to the subject of implementation of the SDO. These works were taken into account by the authors in the preparation of the material of this paper (Pankova, 2016).

The programme is being elaborated for 10 years, amendments to it are made on the basis of changes in the Military Doctrine, the National Security Concept and other fundamental documents in the field of defense. The SAP is approved by the decree of the President of the Russian Federation.

It should be separately noted that due to the special importance of the programme in the context of the national security of the country, the SAP is not published. Only the most general provisions on its objectives, the volume of costs and execution appear in open sources. Thus, the most authoritative sources in any analysis of the

SAP (technical, industrial, or as in our case, economic and financial) are the analytical materials of specialists their work closely related to the work of the Ministry of Defense or directly related to it; statistical materials provided in free access by the Ministry of Finance and the Ministry of Economic Development of the Russian Federation. The analytical assessment conducted by Stockholm International Peace Research Institute (SIPRI) also deserves attention, which also makes it possible to compare the level of defense spending in the leading countries of the world, including Russia and the USA.

The cost of the SAP for the period from 2011 to 2020 is 20 trillion rubles. The main task of the SAP-2020 is to rearm the Armed Forces of the Russian Federation by 2020 with up-to-date weapons by 70%. This is necessary to ensure Russia's security. The correct choice of priorities in this programme is one of the decisive factors that ensure Russia's military security (Orlenko, 2014).

2. The MIC of the RF in the country's economic system. Participation in the implementation of the SAP-2020. Economic analysis

Let us now consider the Russian MIC both in the country's economic system and in the context of the implementation of the SAP-2020. The Russian MIC takes a special place in the system of national economy. It implies state support, the greatest concentration of high knowledge-intensive technologies, and the availability of enterprises with world-class products.

According to various estimates, the share of the defense complex in the sphere of nation-wide scientific developments is between 65 % and 75 % (Pankova, 2016). Although the share of the MIC in the total industrial potential of Russia is only about 5-5.5 % (data for 2017), it accounts for about 30% of gross production in engineering and about 45% of machinery and equipment export. According to data in the middle of the 2000s, 60% of medical equipment was produced at defense enterprises, and the fuel and energy complex depends on them by 30%. MIC enterprises provide 100% of output by separate types of high-tech products, for example, aerospace, electronic, optical.

Until the early 1990s the intellectual potential of Russia was estimated rather high. At the end of the last century in the context of certain transformations, the demand for scientific and technical knowledge and innovations declined sharply. The financing of science decreased more than tenfold, the number of scientific workers was reduced by half (excluding hidden unemployment), new experimental facilities practically were not planned. The existing infrastructure of the national innovation system (NIS) and the mechanism for creating and materializing scientific and technical achievements were seriously distorted. The share of enterprises active in innovations in the total number of industrial enterprises in Russia fell from 60-70% in the 1980s up to 6-3 % in the 1990s (Pankova, 2016). As a result, the technological gap between Russia and the industrially developed countries of the West became

much deeper in the 1990s. It is noteworthy that it began to be visible back in the second half of the 1980s.

Recognizing the need for cardinal reform of the MIC to preserve national defense capability, the new Russian leadership has given a new impetus to the Russian MIC since the beginning of the 2000s. The military-industrial system of the country began to gradually recover at a rate exceeding the corresponding indicators for the industry as a whole. The system crisis of the MIC required taking urgent measures aimed at stabilizing the financing of the annual growth of the SDO, the beginning of building the foundations of the effective legal framework in the defense industry. To develop the MIC, it was necessary to form core integrated structures. Their area was aimed at the production of high-tech military products (Shapoval and Shelest, 2015).

As the domestic researcher Pankova notes, *“an important indicator of the overall state of the innovative sphere of Russia is its position in the world market of high technologies, the turnover of which is close to US \$ 3 trillion and exceeds the turnover of raw materials. If the share of the USA in this market is 39%, Japan accounts for 30%, Germany 16%, then the share of Russia, according to different estimates, is only 0.5-0.9%. This figure is 6% for China and Singapore. It indicates major shortcomings in the industrial and technological structure of the Russian economy, the overall strategy of the country’s economic and technological development, and low labor productivity. If the share of scientific and technological progress accounts for between 70 and 90% of GDP growth in developed countries, this figure for Russia is estimated at 8%-10%”* (Pankova, 2016).

At present, the Russian defense industry includes 1349 industrial enterprises, scientific, research and design organizations. According to the personnel records in the organizations of the MIC, about 2.5 million employees work, 1.5 million of them being directly in the defense industry³. The MIC provides about 25% of the overall machinery output in Russia and over 40% of its exports (Karlik *et al.*, 2012). Approximately 45% of goods in the structure of the marketable goods of the MIC are of military purposes and are procured under the SDO. About 22% of goods are exported in the framework of the Military-Technical Cooperation (MTC) to other countries, and the remaining 33% are civilian industry products (Fedorov, 2013). In the 1990s, Russia’s defense industry survived mostly thanks to the export supplies of the armaments and military and specialized technology abroad. However, in the mid-2000s, the main driver of the growth of the Russian defense industry was the SDO (Burenok and Lysenk, 2014).

When analyzing the trends typical for the domestic economy in the period from the late 1990s to the mid-2000s, the authors concluded that the State Defense Order

³ Compiled by the authors on the basis of Russian Military Industries List, 2018.

(SDO) had no serious visible impact on the financial and operational status of Russian defense organizations before. It is explained by the fact that all previous transformations did not set a goal to optimize the qualitative composition, the benchmark of which would be aimed at the implementation of state-sponsored programs. Today's level of state support of the MIC demonstrates that orders in the development and production of weapons and military equipment (WME) have increased. The Federal Action Programme for the Development of the MIC for 2011-2020 (FAP-2020) will allocate up to 3 trillion rubles for technical re-equipment and modernization. The FAP-2020 is the first practical action aimed at correcting the current situation and demonstrating that the financing of the SDO has come out of a critical level (Shapoval and Shelest, 2015). The main objective of the FAP-2020 is to ensure the production of high-tech products competitive in operational and combat characteristics for the military-technical field. This objective fully coincides with one of the main tasks of the MIC, covering the development and implementation of systems, projects, programs and plans in the interests of ensuring security and defense of the state.

The adopted State Armaments Programme (SAP-2020) in the sphere of the MIC (its volume of financing being about 20 trillion rubles) equips the army with means of conducting combat operations in modern conditions. It goes without saying that the SAP-2020 is also a strategic benchmark for the development of the MIC.

Modernization of the production base, reconstruction of fixed assets underlie the programme for the accelerated development of the MIC. The SAP-2020 corresponds to the increase in the volume of WME purchases, the pricing for military equipment and the location of the SDO are improving. Besides, the FAP-2020 is fully implemented at every stage, measures for the innovative development of the MIC, policy aimed at the production of civilian equipment are being implemented, the issue related to consolidation of staff and professional training is solved at the highest level.

It is necessary to separately say a few words about the financing of R&D. Estimating the share of R&D expenses for the output of finished products in a simplified way, this figure in the defense industry exceeds 10%. The ratio of R&D expenditure to output is about 1% for the economy as a whole. At the same time, the share of exports in the defense industry output is 25% on average⁴.

The authors draw attention to the fact that the scientific potential of the military-industry complex, of course, must be actively involved in the process of modernization of the domestic economy. Today the MIC is the sector of the economy, which has preserved the sectoral science, on the basis of which it would

⁴ *Compiled by the authors on the basis of Russian State Armaments Program, 2015*

be possible to try to recreate branch scientific organizations in industry and, above all, civil engineering. This could contribute to the development of the output of civilian products on the part of MIC production and the removal of the problem of the budget deficit without damaging the defense potential.

3. Financial plans for realization of the SAP-2020 for the period from 2018 to 2020.

In accordance with the plan, by the results of the fulfillment of the tasks of the SDO by 2020, the equipment of the troops with modern weapons should grow to 80 %. At the same time, by 2020, the large-scale rearmament of the army and navy should be completed, the peak of deliveries in the framework of the state arms programs is presumably to be passed (Mihnev and Erygin, 2016). This statement is confirmed by the conclusion of the Russian Presidential Academy of National Economy and Public Administration on the draft federal law “On the Federal Budget for 2017 and the Planning Period 2018 and 2019“. The draft law shows a reduction in expenditures under the “National Defense“ section to 2.8% of GDP (Table 1).

Table 1. Expenses under the section “National defense” in 2016-2019

Indicator	2016	2017	2018	2019
Expenditures under the section “National defense”, trln.rub.	3.889	2.836	2.728	2.816
Expenditures under the “National defense” as a percentage of GDP, %	4.7	3.3	3.0	2.8

During the 12th big press conference held on December 23, 2016, Russian President V. Putin said that defense spending by 2019 will have been close to 2.8% of GDP, and will not have increased over the next several years. Table 2 presents the subsections of the section “National Defense” in the medium term, for which the largest reduction in expenditures is planned.

Table 2. The planned reduction in spending in the medium-term period from 2016 to 2019 (Mihnev, Erygin, Frolova, 2017).

Subsection	2016	2019
The Armed Forces of the	2.885	2.181

Russian Federation, trillion rub.		
The Armed Forces of the Russian Federation, as a percentage of GDP, %	3.5	2.2
Applied scientific research in the field of national defense, trillion rub.	0.433	0.176
Applied scientific researches in the field of national defense, as a percentage of GDP, %	0.5	0.18
Other issues in the field of national defense, trillion rub.	0.506	0.395
Other issues in the field of national defense, as a percentage of GDP, %	0.6	0.4

It should be separately indicated that the budget expenditures for the remaining priority directions of the SAP-2020 remain practically unchanged.

4. Comparative analysis of economic efficiency of military financing of the RF and the USA by example of military budget expenditures of the two countries

On August 13, 2018, US President Donald Trump signed the defense budget for the 2019 fiscal year (beginning on October 1, 2018). The volume of future military expenditures of the country is US \$ 716 billion (Law on US MB, 2018). It is more than in the current year 2018 by 3% (US \$ 20 billion). In nominal terms, this is the largest military budget in US history.

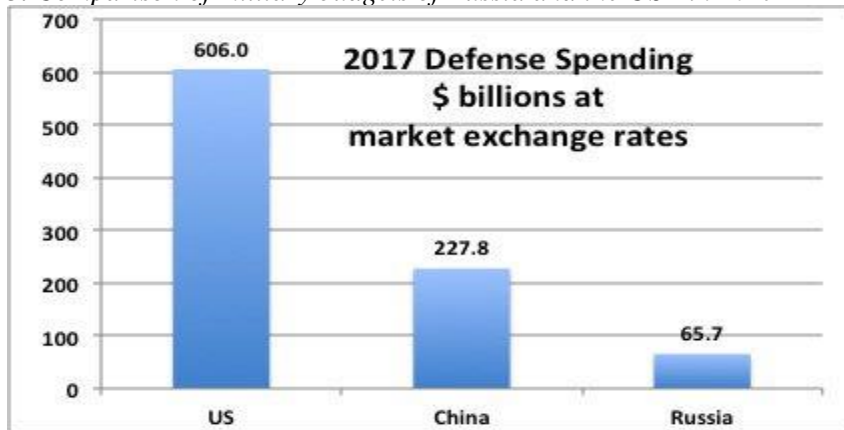
The number of military personnel in the USA will grow by about 16 thousand. In addition, their allowance will be increased by 2.6%. Pentagon will finance US \$ 40 billion to update the Air Forces. Another US \$ 65 million will be allocated for the development of new low-yield nuclear warheads, which can equip missiles launched from nuclear submarines. The budget also includes financing the production of 135 M-1 Abrams tanks and 77 F-35 fifth-generation fighter bombers. The budget also includes funds for the construction of 12 new ships, two submarines and three high-speed coast guard vessels. In addition, the budget envisages the financing of the formation of elements of the anti-ballistic missile defense system in outer space.

Speaking about the structure of the US defense budget, it is necessary to emphasize the following: US \$ 152.9 billion (22%) from the aggregate amount of US \$ 716 billion were allocated for the maintenance of military personnel, US \$ 283.5 billion

(41%) were designated for the operation of military equipment already available in the armed forces and infrastructure, and only US \$ 144.3 billion (21%) – for the purchase of new weapons and US \$ 92.4 billion (14%) – for research, development and testing of new weapons⁵.

The authors provide such a detailed information on the US military budget to avoid a methodological error in an estimated comparison of the defense budgets of Russia and the USA in absolute terms. As a rule, such an assessment is carried out by comparing the aggregate sums of defense expenditures without taking into account the specifics of the military economy, the principles of the MIC operation, and the principles of financing specific defense projects in each particular case. Otherwise, this superficial analysis does not answer the main question: how countries whose defense spending in absolute terms varies about 11 times keep parity in the main classes of weapons, and there is a military-technological gap between them in some cases, and not in favor of a nominal leader.

Table 3. Comparison of military budgets of Russia and the USA in 2017⁶



The authors single out three aspects of the economic and systemic nature that determine, in our opinion, a more rational and effective implementation of military financing in the Russian Federation in comparison with the USA.

The first aspect consists in the fact that the management of the defense industry in Russia is completely concentrated in the hands of the state. In the USA (as well as in Europe), the lion's share of developments is in the hands of private organizations (hence the problems with data leakage), and the developments often depend on their direct initiative. In turn, any private organization aims to maximize profits and minimize costs. As a result, the scheme is as follows: private companies present (at best – as a response to the tender announced by the Military Department) very

⁵ Compiled by the authors on the basis of US MB, 2018.

⁶ Compiled by the authors on the basis of SIPRI MED, 2018.

attractive projects (as is only written in documents describing the project) in the relevant department themselves, then they approve and allocate financing. However, at the output of the finished product it often turns out that the product does not correspond to the claimed project partially or critically and requires improvement at best (as in the case of the F-22 Raptor Lockheed Martin fifth-generation fighter aircrafts, and in particular F-35 Lightning II, which is currently undergoing modification, even in the conditions of combat operation). In the worst case it does not pass state certification and is not adopted at all (as was in the case with combat air-based lasers on Boeing aircrafts).

By the way, with regard to combat lasers, let us note that a separate situation develops in terms of complex (from the point of view of science and technology of production) projects. Such projects require extremely high costs and efforts, both material and bureaucratic. Commercial organizations often just do not want to do this, guided by the principle “What is the purpose of spending a lot of energy on a project that may not be successfully realized, when there are a lot of easier and absolutely profitable developments at hand?”.

In Russia, industrial organizations that deal with military developments are either state-owned or somehow completely controlled by the state as a part of the MIC. As a result, the work is carried out to the stage of receiving the order (within the framework of the SDO), until the final product with the necessary characteristics is ready. It is unnecessary to spend a large amount of money, paying less for financing the project than for the profitability of private organizations, as in the case of the United States.

The second aspect which can only be roughly attributed to the economic context is the nature of service in the Russian army. A lot of work has been done for the last ten years to transfer the Armed Forces of the country to a contractual basis. But it concerns only individual units and formations of the Armed Forces of the RF, while the vast majority of servicemen in our country are still serving on an urgent basis. There is a lot of equipment in the country which needs to be monitored, as well as objects of military infrastructure that need to be protected and maintained. It is very costly for the fully contracted US army. In Russia, such work is part of the responsibility of the staff, and therefore it is completely free. Salaries to conscripts are not assumed, so this is also a tremendous saving of budgetary funds that can be channeled for any purpose, including the development of promising types of weapons.

The third aspect is of a purely technical nature and consists in the fact that the cost of producing the same units of military products in different countries can vary greatly. For example, taking into account the entire production chain, the cost of the US Virginia fourth-generation multi-role submarine is US \$ 2.6 billion, while the production of the newest Russian submarine Yasen, which is much superior to Virginia, is about US \$ 500 million, i.e. five times cheaper (Vikulov and Hrustal'jov,

2014). The topic of the “asymmetry” of weapons can be also discussed. In other words, if the cost of production of the American destroyer *Zamvolt* with a displacement of 14.5 thousand tons and carrying 80 universal missile launchers for cruise and anti-aircraft missiles is US \$ 3.4 billion, then Russia can build about 20 FACs (Fast attack crafts) of the project 21631 “Buyan-M” for the same amount. They would be capable of launching a total of 160 Calibr missiles, excluding the rest of the armament and the possibility of using the latest hypersonic anti-ship missile “Zircon”.

According to the structure of the US military budget, its significant portion (about 65%), as noted above, is spent on the maintenance of military personnel, military pensions, and, what is most important, the maintenance of military bases around the world. While the Russian military budget aimed at purchasing the latest weapons systems and modernizing existing ones will look quite convincing even in absolute terms.

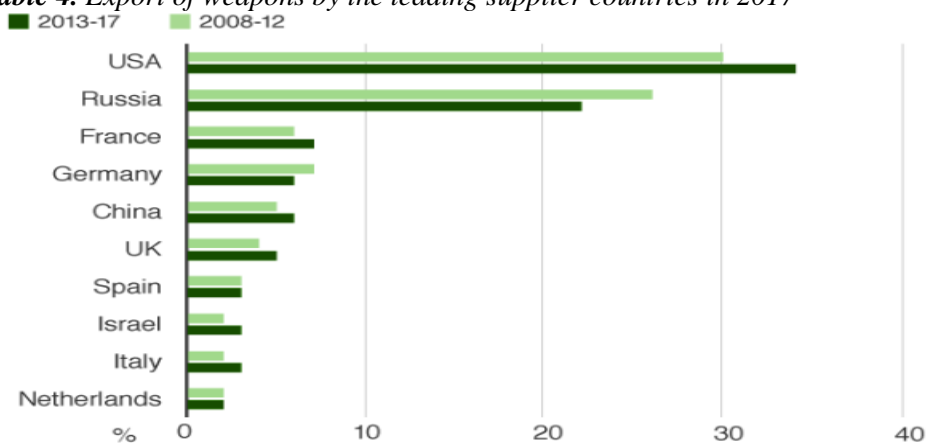
5. Conclusion

We examined the basic principles of the implementation of the SAP-2020, focusing on the key parameters of its financing in the medium term. The main regularities revealed in the framework of our study consist in three principal aspects:

1. The implementation of the SAP-2020 is directly linked with the renovation of the material and technical base of the domestic MIC, which in turn is responsible for the implementation of the SDO. Although the SDO is adopted annually and its reporting period, respectively, the Russian one also falls on the last quarter of the calendar year, the material implementation of the SAP-2020 should be methodologically considered as the sum of the SDOs in the period of the implementation of the SAP;
2. The export of arms by Russia marked an increase since 2008, and has acquired a stable dynamic since 2013. According to the authors, this indicates the achievement of the necessary production and technological indicators by the domestic defense industry that allow Russian military products to compete directly for world markets with developed countries (see Table 4). The State Armaments Program-2020 has become a serious incentive for the development of the defense industry of the Russian Federation. The war in Syria “made an excellent advertisement” for Russian-made weapons. It looks like exported MIC products can become one of the most important “growth points” of the entire domestic military industry in the foreseeable future;
3. The economic efficiency of the use of funds allocated for the implementation of the SAP-2020 seems to be optimal, since in the long run it allows maintaining military-strategic parity with the state whose defense costs exceed domestic indicators by more than 11 times.

Thus, the state's financial and economic policy in the field of defense and modernization of the domestic defense industry has all chances to become the locomotive of the country's industrial, scientific and technological development as a whole in the medium term, provided that the priorities that are correctly chosen are maintained.

Table 4. Export of weapons by the leading supplier countries in 2017⁷



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