

Actual problems and limiting factors in the development of the Russian military-industrial complex

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The collapse of the USSR in 1990s put an end to the ideological confrontation between the two social and economic systems. Arms race and mutual containment policies forced countries to spend enormous material, financial, human and other resources.

The end of Cold War raised hopes for disarmament, military spending cut, economy restructure and redirection of spending from the military to the civilian sector. Unfortunately, those hopes didn't come to fruition. The global confrontation between the two systems, two military blocs (NATO and the Warsaw Pact) has been replaced by numerous regional military conflicts around the world, requiring more and more modern weapons to support them.

The confrontation between the major world powers such as the USA, Russia, China and the EU is still on the agenda. Although the ideology took a back seat, economic aspects of the conflict between the superpowers, which, in our opinion, indirectly reflects competition for limited resource, has not made the competition less fierce or less global. That is why, every world power must develop, strengthen, and modernize its military production regardless of the impact (positive, negative or indefinite) military expenditures may have on the economic development.

Methodology, databases and analytical sources of research

- The analysis of the problems of Russia's defense industrial complex was based on a preliminary study of regulatory documents, state programs, and government orders. We assessed the status of their implementation and effectiveness, organizational changes and location of management units.
- The information provided by different national and supranational research institutes such as Russian Federal State Statistics Service (Rosstat), World Bank Open Data from The World Bank, the official website of the President of Russia, Russian News Agency TASS served as the data base for the analysis and assessment of current condition of the Russia's DIC.
- Research papers by Russian and foreign scholars, regulatory legal acts related to the discussed topic, information and analytical reports of various organizations provided analytical framework for our research.

Results

Financial stability and stable development of Russia's DIC is directly linked to Defense Procurement and Acquisition. Implementation of Armaments 2020 priority procurement program led to the rapid growth of both State Defense Order (SDO) and defense budget of the Russian Federation. Considering the current political situation, there is a prospective growth in the given sector. It should be noted, however, that despite the increased growth rate of defense industry since the implementation of Armaments 2020 priority procurement program, a number of problems, which limit the development of Russia's DIC, have appeared. Among these limitations are: scientific and technological lags, insufficient funding of R&D, outdated equipment (heavy wear and underused of equipment), recruitment problems (lack of narrowly specialized personnel), delays in conclusion of SDO contracts, pricing issues, conversion and diversification of military production, pressure of sanctions, companies' dependence on import, companies' dependence on export of military equipment.

Scientific and technological lags, insufficient funding of R&D

Russia's position in the market of high-technology products and services can be assessed on the basis of analysis of defense industry priority areas which include: aircraft industry, space industry, arms industry and shipbuilding.

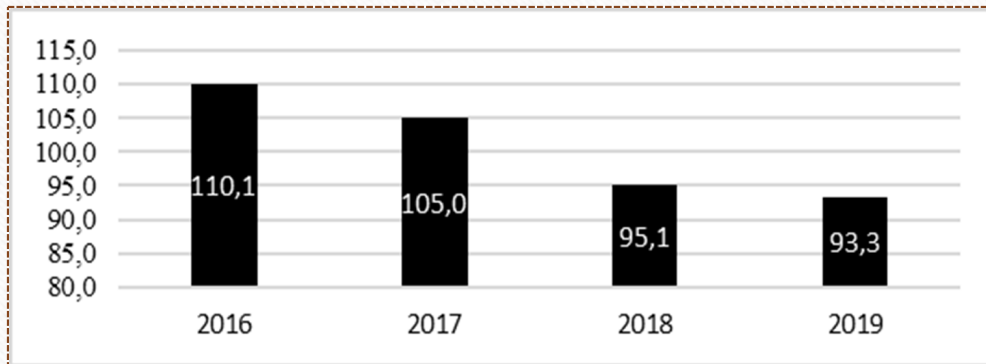


Fig. 1. Production index for high-tech economic activities, % to the corresponding period of the previous year

According to World Bank (fig.2), the share of R&D costs to GDP accounted for 1.10% in 2017. For comparison, we show data for other countries. In the USA for 2017, the share of R&D expenditures in GDP is 2.8%. In Germany - 3.03%, China - 2.12%, Japan - 3.2%, South Korea - 4.5%, Israel - 4.5%.

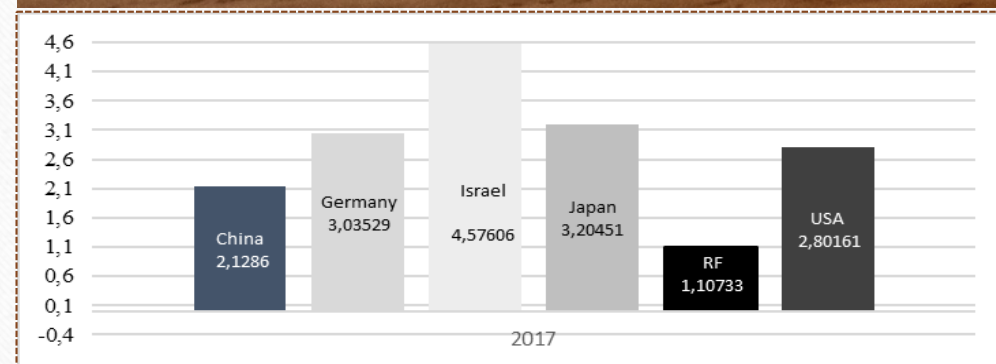


Fig. 2. Share of R&D expenditures in GDP, %

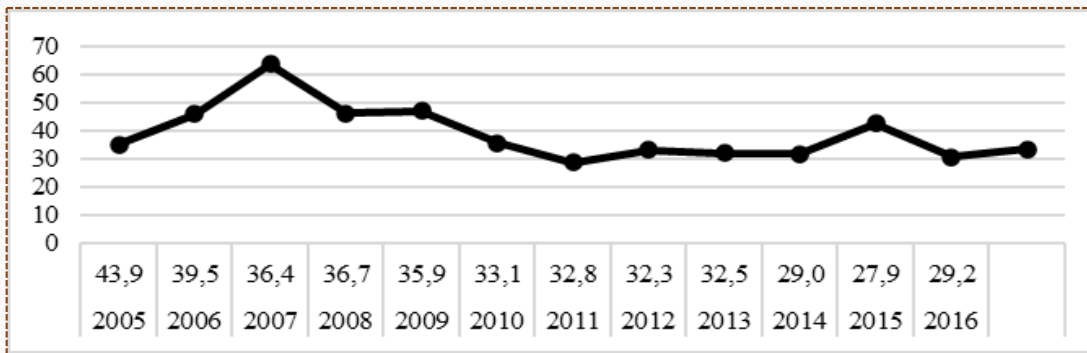


Fig. 3. The share of investments in the production of ships, aircraft and spacecraft and other vehicles in the total investment in fixed assets, %

DIC prior to 2025 will be determined by the following factors:

- the execution of Armaments priority procurement program for 2007-2015 and subsequent programs for 2020 and 2027 without violating their terms, volume and nomenclatures;
- a 15% increase of the share of Russian military aircrafts (front-line bomber, jet trainers, unmanned aerial vehicle) in the global market;
- a 20-30% increase of the share of Russian military transport aircrafts in the global market;
- sustenance of a 20% share of Russian warships and naval equipment;
- insurance of Russia's presence in land weapons market, including anti-aircraft warfare and radio-electronic systems of various applications.
- significant growth of technology and emerging technology products of non-military nature produced by Russia's DIC.

Outdated hardware

Fig. 4. The degree of wear of fixed assets in the RF end of the year,%

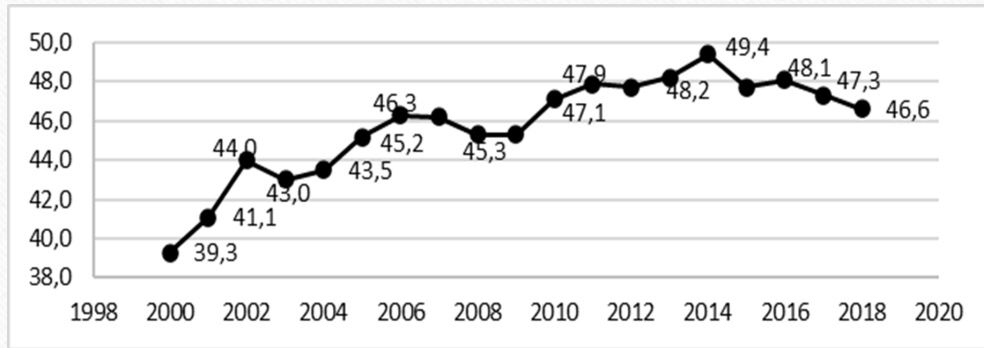
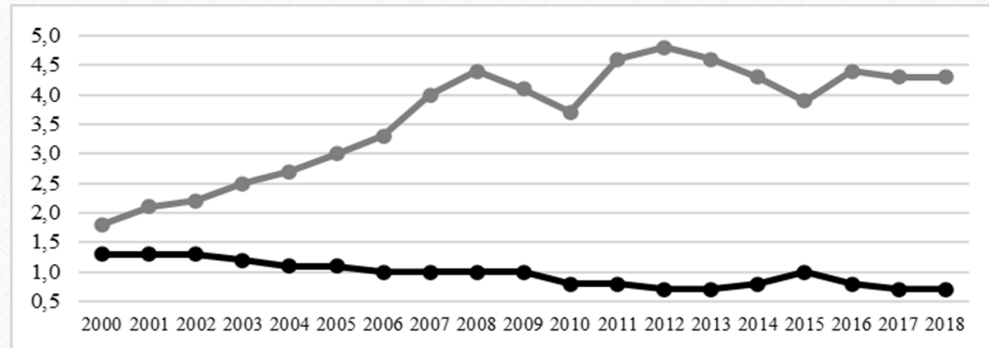


Fig. 5. Renewal rate and retirement rate of fixed assets in the Russian Federation at the end of the reporting year, %



Of all the machinery the worn-out equipment with the age of more than 20 years accounts for 80%, equipment under 10 years — less than 20%. Depreciation of industrial plant in different sectors of defense industry accounts for 60 to 82%, machinery equipment and bench test facilities are not renewed, many constructions and utility lines fail and require major repair

Recruitment problems

- Non-competitive salary and employee benefits,
- mismatch between the qualification and company's needs,
- insufficient measures to retain junior personnel,
- the skills and accumulated experience of long-service employee are lost,
- more time is needed to master new equipment, which is supplied within the frameworks of Federal Target Program.
- delays in technical and production processes.

All this may create the risk of SDO failure.

Delays in conclusion of SDO contracts

There is also another set of problems:

- duplication of control function of authorized bodies,
- lack of proper legal regulation of interaction between banks and general contractor or contractors,
- the need to introduce criminal liability for violation of the terms of the contracts,
- misapplication of funds, etc.
- pricing issues: pricing requirements do not consider steadily rising prices of energy, metal, services of infrastructure monopolies, as well as prices charged by OEM suppliers.
- the change of economic and political policies.

Pricing problems

Price formation is accompanied by a set of problems:

- specific features of product costing;
- production accounting procedure;
- calculation of labor intensity with insufficient transparency of legal and regulatory acts.

Calculation of production cost at military-industrial enterprises has its specifics. There are some financial restrictions imposed by government contracts:

- the most important problem of pricing formation is calculation of proportion of labor used in military goods production.
- the enterprises of defense industry have high mobilization costs.

Conversion and diversification problems at military-industrial complex enterprises

Currently, defense industry has two priorities:

- diversification;
- increase of civilian production.

It is necessary to analyze the limitations which prevent the diversification of arms industry, even when conducting public procurement, and then make a starting order, which will allow enterprises to enter the initial stage of production diversification.

It is estimated that local companies will be able to use accumulated experience, scientific, technical and production capacities to produce their own civilian products rather than import them from abroad . Some defense industry enterprises produce civilian goods which are in great demand among consumers and occupy a leading position in the market. For others civil market is rather unstable. This leads to a lower quality of products and production inefficiency in general. However, it is obvious that reduction of military production to a critical level is unacceptable. That is why, high-tech military products ought to be produced along with civilian products.

Sanctions

Economic sanctions primarily affected such large defense concerns as “Almaz-Antey”, “Sirius”, “Stankoinstrument”, “Kalashnikov”, “Tula Arms Factory”, NPO “Vostochnye Komplekсы”. Prohibition of debt financing affected such enterprises of defense industry as “Uralvagonzavod”, “Oboronprom”, “UAC”. Western European countries, Japan, Canada, Australia, New Zealand soon joined US sanctions. They imposed ban on export of technological items and supply of dual-use goods.

It is very difficult to ensure the sustainable economic growth without having your own scientific and technical base, and the industries which would allow the production of high-tech goods. It is necessary to identify priorities for import substitution and focus on the production of strategically important goods.

Under sanctions pressure some problems may arise in import substitution policy:

- Russia's defense industry is not yet prepared to produce goods without importing the necessary components. In order to build new production facilities of the appropriate technological level significant financial investment is required.
- Promotion of import substitution will negatively affect social services such as education and health care due to the cash outflow.

Import dependency

- In 2011-2012, dependence of Russian defense industry on foreign components was estimated at 80-85%. Sanctions imposed on import of military and dual-use goods to Russia since 2014 had a profound impact on the defense industry.
- As the large number of components were imported from Ukraine, it was difficult to find an alternative. In 2015 Minister of Defense S.Shoygu ordered to master the production of 695 (out of 1070) weapons and equipment samples which were previously produced in collaboration with Ukrainian enterprises. However, in the first half of 2015 only 57 Ukrainian components were replaced instead of the planned 102 items. It accounted for 55% of annual plan.

Dependence on the export of arms and military equipment

- Being an exporter of military equipment, Russia cooperates with 116 countries. In 2019, Rosoboronexport order book exceeded \$50 billion (the terms of contracts ranged from 3 to 7 years). According to SIPRI, for the period from 2011 to 2018 Russia's export of military equipment accounted for 24.2% of the total world export.
- Among top five consumers of Russian weaponry in 2019-2019 were: India 20.3%, Algeria 10.2%, China 18.6%, Egypt 14.0%, Iraq 6.0% .
- To alleviate the burden of crises, falling demand for military equipment among foreign partners, defense industry companies have to expand, develop and produces goods not only for export but also for other needs.

Conclusions

- Arms industry is certainly one of the most important economic sectors that no country can do without. Since Soviet times, Russia's defense industry has been a driving force of Russian economy.
- Armaments 2020 priority procurement program was designed to reform and modernize Russian defense industry. Some progress was undoubtedly made in achieving these goals.
- The majority of enterprises of defense industry demonstrated a total growth of financial indicators. Absolutely all companies have positive dynamics in increase of their assets value.
- At the same time, restructuring of defense industry revealed some problems which Russia faced during the implementation of Armaments 2020 priority procurement program.