



Russia's defense sector: An economic perspective

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Russia these days looms as an 'existential threat' to the entire Western world similar to how the Soviet Union was once treated. Its leader, Vladimir Putin, is believed to be the major challenger to the existing global order, well able to meddle into the elections in almost any country, to create a new 'Conservative International' and to kill his enemies almost in the every corner of the world. One of the causes for such concern arises from what can be treated as a massive rearmament of the Russian military in recent years, which the Kremlin increasingly makes public. The more President Putin talks about the Russian military strength, however, the more dubious it looks since the Russian defense-industrial complex is unable not only to catch up with either Western or Chinese companies technologically, but also to produce the modern weapons in quantities necessary even to replace the ageing ones. The highly emotional, and therefore alarmist, perception of today's Russia, makes it difficult to assess the real technological and productive potential of the Russian defense-industrial complex.

One of the hallmarks of Vladimir Putin's policy has been his commitment to restoring Russia's military. The decade of strong economic growth has allowed expanding military expenditures to reach 2.85 trillion rubles in official figures¹ and

\$66.3 billion according to SIPRI estimates.² While Russia is still far behind the United States on the military budget and comes fourth in the global ranking after China and Saudi Arabia,³ it continues modernizing all parts of its military, including conventional, strategic nuclear and nonstrategic nuclear forces. Moreover, it has demonstrated its impressive capabilities in Ukraine and Syria. These moves have raised serious concerns in the West and led to the designation of Russia as an 'existential threat'.⁴ However, a broader overview of the defense-industrial complex (DIC) may provide a different picture of the scale and nature of the threat. On the one hand, defense industry enterprises produce modern and technically advanced weapons and equipment like the *Iskander-M* short-range ballistic missile system (NATO reporting name SS-26 Stone), *S-400 Triumf* anti-aircraft missile system (SA-21 Growler), *Armata* tank, *Kurganets* infantry fighting vehicle and *Bulava* solid-propellant intercontinental ballistic missile designed for the newest *Yasen*-class nuclear submarines. On the other hand, a range of brand new and modernized equipment suffers from quality concerns. For example, the *Su-57* fifth generation fighter aircraft, formerly known as the *T-50*, lacks many of the genuine stealth features⁵. The *Armata* tank has failed on Red Square.⁶ The newest *Bulava* missile failed 10 tests out of 32.⁷

¹ See: Исполнение федерального бюджета и бюджетов бюджетной системы Российской Федерации за 2017 г. Москва, Министерство финансов, 2018, приложение 3, с. 128 (Execution of the Federal Budget and Budgets of the Budget System of the Russian Federation for 2017, Moscow: Ministry of Finance, 2018, appendix 3, p. 128) [in Russian].

² See: <https://www.sipri.org/sites/default/files/SIPRI-Milex-data-1949-2017.xlsx> (site retrieved Nov. 3, 2018)

³ See: <https://www.iiss.org/-/media/files/publications/military-balance-2019/mb2019-defence-budgets-branded.ashx?la=en&hash=C560EFFEC61FA0816B61B8A005215F0510F449EC> (site retrieved Feb 28, 2019)

⁴ See: National Security Strategy of the United States of America, December 2017, p. 25.

⁵ See: Mader, Georg. 'Is There a Future for the SU-57?' at: <https://www.defenceiq.com/air-forces-military-aircraft/news/is-there-a-future-for-the-su-57-1> (site retrieved Nov. 3, 2018).

⁶ See: Walker, Shaun. 'New Russian hi-tech tank grinds to halt in Victory Day parade rehearsal' at: <https://www.theguardian.com/world/2015/may/07/new-russian-hi-tech-tank-grinds-to-halt-in-victory-day-parade-rehearsal> (site retrieved Nov. 3, 2018).

⁷ See: [https://ru.wikipedia.org/wiki/Булава_\(ракета\)#Испытания](https://ru.wikipedia.org/wiki/Булава_(ракета)#Испытания) [in Russian] (site retrieved Nov. 3, 2018).



Furthermore, the plan for modernization of the *Admiral Kuznetsov*, the country's only aircraft carrier, has been postponed indefinitely since a floating dock used for its repair suddenly sank in late October, 2018.⁸ For the Russian DIC, exports traditionally play a very important role in stabilising finances. In 2017, the arms exports were worth \$19 billion, second only to the United States.⁹ However, given the growing competition in the arms market, the country's main concern is to hold onto its position. Faced with technical difficulties, Egypt thought of importing American vehicles. In November 2018, an eight-month-old *MiG-29M* crashed¹⁰ while the *Ka-52* combat helicopter could not properly operate in hot-climate conditions.¹¹ India has already preferred to import U.S.-manufactured *Apaches* and *Chinooks* to Russian *Mi-28* and *Mi-26*, *Boeing P-8* to *Tu-142* and *C-17 Globemaster* to outdated *Il-476*.¹²

⁸ See: 'Russia's Only Aircraft Carrier Is Damaged When Dock Sinks, Crane Punches Huge Hole in Ship' at: <https://www.militarytimes.com/news/your-military/2018/10/30/russias-only-aircraft-carrier-is-damaged-when-dock-sinks-crane-punches-huge-hole-in-ship/> (site retrieved Nov. 3, 2018).

⁹ See: Никольский, Алексей. 'Rosoboronekспорт продал оружие на рекордные \$19 млрд. несмотря на санкции' (Nikolsky, Alexei. 'Rosoboronekспорт Makes a Record \$19b In Arms Sales Despite of Sanctions') at: <https://www.vedomosti.ru/politics/articles/2018/11/01/785435-rosoboronekспорт-oruzhie-rekordnie-sanktsii> and: Лантратов, Константин. 'Россия продолжает гонку вооружений' (Lantratov, Konstantin. 'Russia Continues the Arms Race') at: <https://www.kommersant.ru/doc/535773> [both articles in Russian] (sites retrieved Nov. 3, 2018).

¹⁰ See: 'В Египте во время тренировочного полета разбился поставленный Россией МиГ-29М' ('Russia-Delivered MiG-29M Crashes in Egypt During a Training Mission') at: <https://www.newsru.com/world/03nov2018/migegypt.html> [in Russian] (site retrieved Nov. 3, 2018).

¹¹ See: Egypt to buy more Apaches after faced difficulties of Russian-made Ka-52 helicopters at: <https://defence-blog.com/news/egypt-to-buy-more-apaches-after-faced-difficulties-of-russian-made-ka-52-helicopters.html> (site retrieved Jan. 3, 2019).

The failed launch of the *Soyuz MS-10* spacecraft with two astronauts aboard on October 11, 2018¹³ has pointed to serious problems. Over the past 3 years, the Russian space program experienced 5 incidents in 46 launches¹⁴ while the Chinese one had 3 out of 79.¹⁵ Just to compare, Soviet launchers failed once out of approximately 90 times per year in the 1980s.¹⁶ To a certain extent, the problems highlighted are linked to insufficient funding of the State Armaments Program (SAP) for the period 2011-2020. In 2011-2018, only 54 percent of the planned sums were allocated.¹⁷ Over the next ten years Russia plans to spend 20 trillion rubles (approximately \$305 billion using current exchange rates)¹⁸ to meet SAP ambitious goals. It should be noticed that in dollar terms this sum is less than the one planned for the 2011-2020 Program, but the Kremlin consistently claims that inflation is much lower than the dollar exchange rate growth.

¹² See: 'Russia Loses Its Position in India' at: <https://defence-blog.com/army/russia-loses-position-india.html> (site retrieved Nov. 3, 2018).

¹³ See: Pérez-Peña, Richard; Chang, Kenneth and Kramer, Andrew. 'Russian Rocket Fails, and 2 Astronauts Make Safe Emergency Return' at: <https://www.nytimes.com/2018/10/11/science/soyuz-rocket.html> (site retrieved Nov. 3, 2018).

¹⁴ See: 'Orbital launch statistics by country' at: https://en.wikipedia.org/wiki/2016_in_spaceflight, https://en.wikipedia.org/wiki/2017_in_spaceflight and https://en.wikipedia.org/wiki/2018_in_spaceflight (site retrieved Nov. 3, 2018).

¹⁵ See: 'Orbital launch statistics by country' at: https://en.wikipedia.org/wiki/2016_in_spaceflight, https://en.wikipedia.org/wiki/2017_in_spaceflight and https://en.wikipedia.org/wiki/2018_in_spaceflight (site retrieved Nov. 3, 2018).

¹⁶ See: 'Space Environment: Total Payloads Launched by Country' at: <https://aerospace.csis.org/data/space-environment-total-launches-country> (site retrieved Dec. 30, 2018).

¹⁷ See: Luzin, Pavel. 'Russia's GPV-2027 State Arms Programme' at: <http://intersectionproject.eu/article/security/russias-gvp-2027-state-arms-programme> (site retrieved Nov. 3, 2018).

¹⁸ See: Connolly, Richard and Bouléque, Mathieu. *Russia's New Armament Programme: Implications for the Russian Armed Forces and Military Capabilities to 2027*, London: Chatham House, May 2018, p. 10.



Even though the plans provided are at odds with reality, a lot of Russians support the military buildup. This is due to the fact that the DIC employs two million people¹⁹ and affects up to five million people via family ties. In terms of the share of scientists and engineers working for the defense, Russia is without a doubt a world leader. As of 2016, half of the country's scientists were working in the sector.²⁰

Thus all the above mentioned provides a mixed and confusing picture of the Russian DIC and makes the assessment of trends over time difficult, to say the least. Regarding this issue, I would make three observations.

First, there is a fundamental difference between the Russian and American military industry that may help to assess its share of the former country's economy as a whole. In 2018, the US top-ten aerospace and defense producers fulfilled only 45 percent of state defense orders valued at \$320 billion while the rest (over 50 percent) was fulfilled by small and midsize enterprises on a highly competitive basis.²¹ Moreover, only 46 percent of combined sales revenues of the top-ten companies came from defense

contracts,²² meaning they benefited largely civilian production. In Russia, the defense business is organized the other way around. Russia's major defense contractors have always been state-owned monopolies specially designated for consolidation of the governmental control over the so-called 'strategic' industries.²³ In 2017, ten largest Russian military suppliers received no less than 82 percent of all defense budget allocations, and, most notably, government funding accounted for 86 percent of their total revenue.²⁴ Hence, none of these companies can channel the profits into civilian production. Even though Russia's military spending somewhat exceeds the U.S. one as a share of gross domestic product²⁵, the economic effect is strikingly different: in Russia the military expenses seem to be a burden on the national economy while in the U.S. they rather contribute to the country's development. Consequently it may be concluded that it is impossible to compare the military industry's impact on Russian and American economy solely on the basis of both countries' military spending.

Second, comparing new and modernized equipment the experts usually do not pay

¹⁹ See: 'Оборонно-промышленный комплекс: некоторые важные результаты и показатели 2016 года' ('Defense-Industrial Complex: Some Important Results and Figures for 2016') at:

<https://www.government.ru/info/27220/> [in Russian] (site retrieved Nov. 3, 2018).

²⁰ See: Цветков, Валерий. 'Оборонно-промышленный комплекс России: проблемы и перспективы развития' (Tsvetkov, Valery. 'Russia's Defense-Industrial Complex: Problems and Perspectives') at: <http://www.ipr-ras.ru/appearances/tsvetkov-opccconf-2016.pdf> [in Russian] (site retrieved Nov. 4, 2018).

²¹ Calculation based of the data from: Ausick, Paul. 'America's 15 Biggest Defense Contractors' at: <https://247wallst.com/special-report/2018/07/02/americas-15-biggest-defense-contractors/> (site retrieved Nov. 3, 2018); the ten companies are LockheedMartin, Boeing, General Dynamics, Raytheon, Northrop Grumman, Huntington Ingalls, Bechtel Group, BAE, L3 Tech and Leidos Holdings.

²² See footnote 22.

²³ See: http://www.up-pro.ru/library/production_management/productivity/100vpk.html [in Russian] (site retrieved Nov. 3, 2018); these ten companies include Rostech, four its formally independent, but fully owned, subsidiaries, and also Almaz-Antey, United Aircraft Corporation, Tactical Missiles Corporation, Russian Helicopters and Uralvagonzavod.

²⁴ See: <https://people.defensenews.com/top-100/> (site retrieved Nov. 3, 2018).

²⁵ It makes 1.88 trillion rubles, or 2.2 percent of GDP [2015] in Russia compared to \$320 billion, or 1.65 percent of GDP [2017] in the U.S., see: Cooper, Julian. *Prospects for Military Spending in Russia in 2017 and Beyond* at <https://drive.google.com/file/d/0B7CdEDgXFxVIUUNZY1dKT1BfMnc/view>, p. 2; and: Schwartz, Moshe; Sargent, John F. and Mann, Christopher. *Defense Acquisitions: How and Where DOD Spends Its Contracting Dollars* at <https://fas.org/sgp/crs/natsec/R44010.pdf>, p. 2.



attention to the volume of total production. In general, the increase in military expenses result in manufacturing larger quantities of standardized products during the calendar year. That is, however, not the case with Russia. While the Chinese average timespan for building a nuclear submarine is around 16 months²⁶ (roughly equal to the timespan that existed in the Soviet Union²⁷), Russia needs 9 years.²⁸ In terms of the total production, modern Russian industry cannot compete with the Soviet one. Not a single strategic bomber has been produced since 2009 whilst seven were supplied to the Army during the 1990s²⁹. Compared to the 1,559 T-72 tanks manufactured by the famous *Uralvagonzavod* in 1984³⁰ just 20 *Armata*-class machines were produced there in 2017.³¹ In contrast to the United States where a new aircraft carrier joins the navy every 4-5 years³² and around 100 military aircraft enter service each year,³³ the amount of fighter aircrafts and cargo planes delivered to the Russian Air Force is still significantly lagging behind the planned numbers. A similar situation may be seen in almost every sector of the DIC. The Russian Armed Forces are capable only to prevent

their arsenal from being depleted due to decommissioning, but they cannot increase it significantly. As it comes to new weapons, the situation is even worse. I would argue that the manufacturers try not so much to get a bigger market share for their production, but instead aim just to finish the tests of some new weapons or vehicles, to report to the President and to get the state order. Having received the official confirmation, no one cares about how many units will be delivered to the army.

Third, the Russian DIC suffers from growing financial mismanagement. Production costs rise faster than the overall budget allocations to the military; incomes are often misused or used for extra payments and compensations to top-managers. For example, the CEO of *Roscosmos* earned 5.96 million rubles, or \$102,000, per month in 2017. That sum was 6.6 times more than CEO salaries at *NASA*, and 160 times more than a leading engineer could earn at the company)³⁴. An accurate accounting has also revealed the cases of falsification on a large scale:³⁵ being paid twice is a widespread practice in the Russian military.

²⁶ See for greater detail: Mizokami, Kyle. 'China is Building the World's Largest Submarine Factory' at: <https://www.popularmechanics.com/military/navy-ships/a26201/china-building-the-worlds-largest-submarine-factory/> (site retrieved Nov. 3, 2018).

²⁷ See: 'Советский подводный флот в годы «холодной войны»' ('The Soviet Undersea Fleet During the Cold War Years') at: <https://topwar.ru/91479-sovetskiy-podvodnyy-flot-v-gody-holodnoy-voyny.html> [in Russian] (site retrieved Nov. 3, 2018).

²⁸ See: Иноземцев, Владислав. 'Зачем в Кремле говорят о военной экономике' в: РБК, 29 ноября, с. 9 (Inozemtsev, Vladislav. 'What For the Kremlin Talks Militarized Economy' in: *RBK*, Nov. 29, 2017, p. 9) [in Russian].

²⁹ On the supply of aircraft see: Connolly, Richard and Sendstad, Cecilie. 'Russian Rearmament: An Assessment of Defense-Industrial Performance' in: *Problems of Post-Communism*, October 2016, p. 4.

³⁰ See: '«Уралвагонзавод» рассекретил документы о выпуске танка Т-72' ('*Uralvagonzavod* De-Classifies T-72 Production Numbers') at:

https://ria.ru/defense_safety/20130927/966296510.htm [in Russian] (site retrieved Nov. 3, 2018).

³¹ See: 'Новое оружие России' ('Russia's New Armaments') at: <https://ria.ru/arms/20170207/1487355221.html> [in Russian] (site retrieved Nov. 3, 2018).

³² See: https://en.wikipedia.org/wiki/List_of_aircraft_carriers_of_the_United_States_Navy (site retrieved Nov. 3, 2018)..

³³ See: 'U.S. Air Force' at: <https://www.heritage.org/military-strength/assessment-us-military-power/us-air-force> (site retrieved Nov. 3, 2018).

³⁴ Calculated according to: https://www.roscosmos.ru/media/files/docs/2018/spravki_goskorporazii_za.2017.god.dla_saita.pdf [in Russian] and https://en.wikipedia.org/wiki/List_of_Administrators_and_Deputy_Administrators_of_NASA (sites retrieved Nov. 3, 2018).

³⁵ See: 'Счётная Палата выявила незаконное использование силовиками более 544 млрд. руб. в 2017 году' ('The Accounting Chamber Uncovers



Usually, state enterprise deposit in affiliated banks and then get them back from the state as these financial institutions go bankrupt³⁶ or get additional loans from the banks later asking assistance needed for production being continued. To be more precise, in 2016 the Ministry of Finance allocated more than 800 billion (!) rubles to cover the loan that had been made by the defense industry between 2012 and 2015³⁷, thus adding a staggering 27 percent to the overall military budget approved for that year. Another stark example of such a practice is the *Khrunichev State Research and Production Space Center*. In November 2018, it was reported that despite unfulfilled delivery contracts and overdue loans that amounted to 111 billion rubles (\$1.7 billion), the government renegotiated the deal and postponed fines for ten years.³⁸ At the same time, almost every military industrial enterprise has offshore companies associated with either its own management or federal officials responsible for securing the government contracts.³⁹ While then-President Medvedev estimated fraud and misappropriation of the funds used for the

state purchases of goods and services at around 10 percent of the total in 2010,⁴⁰ the real percent might be at least twice as high. The key reason for that was the lack of transparency. Unfortunately, the current developments paint a grim picture of openness. By 2019, more than 65 percent of the military budget is classified as either 'secret' or 'top secret'⁴¹ and, therefore, remains out of the public eye. After the wave of sanctions on Russia since the beginning of the Crimea crisis in 2014, the secrecy regime has been strengthened and the defense companies have been allowed to classify all their financial records⁴². As such, the Russia DIC is a field of continuous struggle between different groups among the Russian political and business elite. With increasing money flows diverted to the sector, this struggle is intensifying. Even the arms issues are considered with a special regard to managers and technocrats. The role of the army generals in defining the amount and the range of equipment supplied is rapidly declining. I would say that the dismissal of long-time deputy Prime Minister Dmitry

Misappropriations by the Military Up To 544b Rubles in 2017') at: <https://tass-ru/arkia-i-opk/5203606> [in Russian] (site retrieved Nov. 3, 2018).

³⁶ See: 'Фондсервисбанк отказался вернуть Роскосмосу 50 млрд. руб' ('FundServiceBank Refuses to Return 50b rubles to Roscosmos') at: <https://www.rbc.ru/finances/25/02/2015/54edffe49a7946af3d90b96e> [in Russian] (site retrieved Nov. 3, 2018).

³⁷ See: 'Минфин выплатит 800 млрд. рублей госгарантий по кредитам предприятиям ОПК' ('The Ministry of Finance Will Pay 800b Rubles in State Guarantees to Cover Loans to the Defense-Sector Companies') at: <https://ria.ru/economy/20161017/1469375558.html> [in Russian] (site retrieved Nov. 3, 2018).

³⁸ See: 'Дмитрий Рогозин рассказал о «финансовой дыре» в 111 млрд. рублей в Центре имени Хруничева' ('Dmitrii Rogozin Tells About 111 bln Rouble-Wide «Financial Bore» in the Khrunichev Center') at: <https://www.newsru.com/russia/02nov2018/rogozin.html> [in Russian] (site retrieved Nov. 3, 2018).

³⁹ See, e.g.: 'Миллиарды для дочки – семейный подряд советника Путина по ракетам' ('Billions for

the Daughter: the Family Business for Putin's Missile Technology Advisor') at: <https://www.newsru.com/russia/02nov2018/rogozin.html> [in Russian] (site retrieved Dec. 30, 2018).

⁴⁰ See: 'Медведев оценил воровство в системе госзакупок в триллион рублей в год' ('Mr. Medvedev Estimates Thievery by the State Contractors at 1 Trillion Rubles') at: <https://lenta.ru/news/2010/10/29/punish/> [in Russian] (site retrieved Nov. 3, 2018).

⁴¹ See: 'Секретные расходы российского бюджета на 2019 год превысили 3 трлн. руб., и это незаконно' ('The Classified Outlays of Russia's 2019 Budget Exceed 3trln Rubles, and It's Unlawful') at: <https://www.newsru.com/finance/18oct2018/budget.html> [in Russian] (site retrieved Nov. 3, 2018).

⁴² See: 'Минфин займётся противодействием санкциям в отношении Российской Федерации' ('The Ministry of Finance Ordered to Focus on Counteraction to Sanctions Imposed on Russia') at: <https://ru.reuters.com/article/businessNews/idRUKBN1KA233-ORUBS> [in Russian] (site retrieved Nov. 3, 2018).



Rogozin who was responsible for the defense industry, and his substitution in May 2018 with Yury Borisov, who was in charge of supervising the armament and ammunition supplies looks like the sole good news over the years.

Besides the already mentioned distinctive features of Russia's DIC (its autonomy vis-à-vis the rest of the Russian industry, its handcrafted rather than mass-scale production practices, and the transfer of leadership from the military to financial management) there are at least three challenges strongly affecting its short-term perspectives.

The first, and the most obvious, is the lack of innovation in the sector due to the obsolescence of the Soviet technologies and education. Since the 1990s, the quality of the engineering education has radically declined; most talented professionals have emigrated. Despite the fact that the average age of an engineer or technician working in the defense has declined from 52⁴³ to 45⁴⁴, the issue of ageing still remains acute.

Therefore, the 2010s upsurge in military spending has resulted not so much in developing new products and technologies

as in modernizing the existing ones and completing the projects which were postponed. The most advanced fourth-generation nuclear submarine of 885M Series (NATO reporting name: *Graney* or *Yasen*) developing since 1977 has failed. The single ship of this class, *Severodvinsk*, joined the Russian Navy in 2014, laid down in 1993 (the second one, *Kazan*, just went to sea for builder's trials after 9 years of construction)⁴⁵. The Soviet-built strategic bombers Tu-95 and Tu-160 constitute the backbone of Russia's strategic Air Force, with the first being many times refurbished and modernized⁴⁶, while the production of the last is seen to be resumed in 2020.⁴⁷ The S-400 surface-to-air missile system (SA-10 *Grumble* in NATO classification) is actually a modified version of the S-300 complex that started to be developed back in 1967 and was first deployed in 1979⁴⁸. This list might be extended. Since 2010, more than 40 decisions were made by the military to increase the terms of service for crucial weapon systems since there are no substitutes for the outdated armament. Some brand new warfare systems, like the *Burevestnik* nuclear-powered cruise missile (developing since 2001) has failed in the recent tests⁴⁹ and I doubt it will ever be deployed.

⁴³ See: 'ОПК переживает кризис среднего возраста' ('The Defense-Industrial Complex Struggles with a Middle-Age Crisis') at: <https://topwar.ru/889-put-k-triumfu.html> [in Russian] (site retrieved Nov. 4, 2018).

⁴⁴ See: 'Заседание Военно-промышленной комиссии 19 сентября 2018 года' ('The Session of the Military-Industrial Commission, Sept. 19th, 2018') at: <http://kremlin.ru/events/president/news/58596> [in Russian] (site retrieved Nov. 4, 2018); but I doubt that this statement should be taken for granted – it was almost impossible to get such results in 4-5 years; presumably the effect was achieved by including into the 'defence-industrial sector's personnel' of the entire managerial staff employed in supervising organizations were a lot of young people actually do work.

⁴⁵ See: https://ru.wikipedia.org/wiki/Подводные_лодки_проекта_885_«Ясень» [in Russian] (site retrieved Nov. 4, 2018).

⁴⁶ See: 'Модернизация «старых» стратегических бомбардировщиков' ('Modernizing the «Old» Strategic Bombers') at: <https://topwar.ru/98549-modernizaciya-staryh-strategicheskikh-bombardirovshchikov.html> [in Russian] (site retrieved Nov. 4, 2018).

⁴⁷ Preparing to this, at Kazan aircraft factory one 'new' Tu-160 was built in 2017-2018 using the parts and units left by the Soviet production kits, see: <https://tass.ru/armiya-i-opk/4733901> [in Russian] (site retrieved Nov. 4, 2018).

⁴⁸ See: 'Путь к «Триумфу»' ('The Path Towards the *Triumph*') at: <https://topwar.ru/889-put-k-triumfu.html> [in Russian] (site retrieved Nov. 4, 2018).

⁴⁹ See: 'Russia Is Preparing to Search for a Nuclear-Powered Missile That Was Lost at Sea Months Ago After a Failed Test' at:



All these problems need to be addressed as Russia faces the increasing competition not only from the traditional adversaries like the U.S. and/or European NATO member-states, but also from China, where the first domestically assembled type 001A aircraft carrier was built in just four years,⁵⁰ and the fifth-generation fighter aircraft officially entered service in 2018⁵¹. The competition with the People's Republic must be perceived as an important indicator for the Russian defense sector since Chinese use Soviet technologies quite often – not for modernizing their existing arsenals but for adopting them to their newest projects. For instance, the already mentioned fifth-generation *Chengdu G-20* fighter uses a slightly modified Russian АЛ-31Ф engine designed in the early 1990s⁵². Another example is the *Avangard* hypersonic missile (*PC-26* in Russian classification) which is assumed to be secured from being intercepted by the U.S. missile since it moves 25-27 times the speed of sound and can change its trajectory almost unpredictable (Mr. Putin even congratulated the Russian citizens with this extraordinary trick presenting it as the 2019 'New Year gift')⁵³. In fact, the ICBM that was launched in Putin's presence on December

26, 2018 was not A PC-26, but rather a slightly refurbished old Soviet-made УР-100H YTTX (NATO reporting name: *SS-19*). As is the case with every single ballistic missile it easily travels at the mentioned speed. However, nothing could prove that there was a completely new warhead on it,⁵⁴ the experts stated. I would also add that this has not been the 'first launch' of this 'unique' missile since the Russian military press wrote about similar launches from 2012.⁵⁵ Neither then nor now has the new warhead been displayed. To finish on this topic, I would argue that *the Votkinsk* machine-producing plant (running, by the way, on close to 100 percent imported equipment) has an annual capacity to build up to four new missiles, so the *Avangard* missiles will enter service in 2027 at the earliest.⁵⁶

The second challenge comes from the very fact that Russia is lagging behind many developed nations in terms of microelectronics, new materials and computer technologies. In the 1990s, when the arms producers were stripped of the major part of the government contracts, the Russian defense industries survived on export supplies. To stay competitive, they

<https://www.cnn.com/2018/08/21/russias-nuclear-powered-missile-that-putin-claimed-had-infinite-range-is-currently-lost-at-sea.html> (site retrieved Nov. 4, 2018).

⁵⁰ See, e.g.: Buckley, Chris. 'China, Sending a Signal, Launches a Home-Built Aircraft Carrier' at: <https://www.nytimes.com/2017/04/25/world/asia/china-aircraft-carrier.html> (site retrieved Nov. 4, 2018).

⁵¹ See: Lin, Jeffrey and Singer, P.W. 'China's J-20 Stealth Fighter Jet Has Officially Entered Service' at: <https://www.popsci.com/chinas-j-20-stealth-fighter-jet-officially-enters-service> (site retrieved Nov. 4, 2018).

⁵² See: Donald, David. 'More Russian engines for China's J-10 Fighter' at: <https://www.ain-online.com/aviation-news/2011-07-18/more-russian-engines-chinas-j-10-fighter#> (site retrieved Nov. 1, 2018).

⁵³ Vladimir Putin, cited at: 'Посещение Национального центра управления обороной' ('A Visit to the National Defense Command Center') at: <http://kremlin.ru/events/president/news/59519> [in Russian] (site retrieved Dec. 30, 2018).

⁵⁴ See: 'Putin Announces Early 'New Years Gift' Of Successful Supersonic Glide Vehicle Test' at: <http://www.thedrive.com/the-war-zone/25660/putin-announces-early-new-years-gift-of-successful-hypersonic-glide-vehicle-test> (site retrieved Dec. 30, 2018).

⁵⁵ See: 'Западу ничего не стоит остановить производство ракеты «Авангард»' ('It Doesn't Worth a Whistle for the West to Derail the «Avangard» Missile Production') at: <https://newizv.ru/news/tech/30-12-2018/zapadu-nichego-ne-stoit-ostanovit-proizvodstvo-rakety-avangard> [in Russian] (site retrieved Dec. 30, 2018).

⁵⁶ Estimate by the author of "Red Zion" Telegram news channel, see: <https://t.me/redzion/14163> [in Russian] (site retrieved Dec. 30, 2018).



began to use a lot of foreign-manufactured components in their products. The trend continued over into the 2010s. As a result, Russia became strongly dependent on some former Soviet republics (most notably on Ukraine) in imports of many units needed in aviation and shipbuilding. Compared to other countries, Russia's DIC might be considered the most globalized, or the most dependent on imports. This turned into a critical problem after 2014. The occupation of the Crimean peninsula, incursion into Eastern Ukraine, interference in Syria, and the usage of the chemical substances in Europe for exterminating its enemies have made Russia an outcast and resulted in embargoes for military supply and dual-use products. It is believed that the disruption of production chains with Ukraine has caused most of the damage,⁵⁷ but this statement could be debated. Back in 2015, Russian officials confirmed that from 571 to more than 800 critically important technologies and/or devices⁵⁸ used to produce around 10,000 various kinds of ammunition and machines⁵⁹ would be produced in Russia due to foreign sanctions. Initially, the Kremlin officials were quite optimistic insisting the problem might be solved in 2-3 years. However, it turned out that it was not so easy to substitute up to 80 percent of technologies originating from NATO member-states in several years.⁶⁰ The stories of production postponements due to

the lack of Ukraine-made equipment were the most documented. The *Yasrteb*-class guard ships, Admiral Gorshkov-class frigates, also known as Projects 22350, lacked Ukrainian engines as well as the Russian helicopters lacked the TB3-117 propulsion generators which had previously been supplied by *Motor-Sich* factory in Zaporizzha. The Russian ICBM producers were also critically dependent on the *Yuzhmash* plant in Dnipro.⁶¹ Taking into account the timespan of developing new armaments in Russia, it is too early to make firm conclusions about the scope of the damage, but it seems that the need for import-substitution is, and will remain, the most crucial challenge that Russian defense sector faces these days.

The third challenge is an organizational aspect of the Russian DIC. In Soviet times, the only industry where the real competition took place was the military one. It was driven by the continuing arms race that forced Soviet engineers to match the best technical solutions used by their opponents, on the one hand, and domestic rivalry between different design bureaus and production enterprises, on the other. Back in the 1960s, there were at least five competing design and construction centers in aircraft building, at least three in rocket industry, up to four in production of armored vehicles, etc.⁶² Even though such a

⁵⁷ See: 'Импортозамещение для Рогозина' ('Import-substitution for Mr. Rogozin') at: <https://www.svoboda.org/a/27477140> [in Russian] (site retrieved Nov. 4, 2018).

⁵⁸ See: 'Единый день приёмки военной продукции 16 июля 2015 года' ('The Single Day of Armaments Commissioning, July 16th, 2015') at: <http://kremlin.ru/events/president/news/50005> [in Russian] (site retrieved Nov. 4, 2018).

⁵⁹ See: 'Импортозамещение компонентов ВПК завершится на 90% в 2018 году' ('Import-substitution for the Defense Industries Will be Fulfilled by 90 Percent by 2018') at: https://www.gazeta.ru/business/news/2015/08/11/n_7453253.shtml [in Russian] (site retrieved Nov. 4, 2018).

⁶⁰ See: 'Рогозин назвал степень зависимости оборонки от поставок с Запада' ('Mr. Rogozin

Announces the Degree of Defense Sector's Dependence of Western Supplies') at: <https://lenta.ru/news/2015/06/03/bestenemy> [in Russian] (site retrieved Nov. 4, 2018).

⁶¹ See: 'Украинозамещение: как российский ВПК обходится без продукции западного соседа' ('Ukraine-substitution: How the Russian Military-Industrial Complex Survives without Supplies from Our Western Neighbour') at: <https://russian.rt.com/russia/article/403444-rossiya-ukraina-gazotur-binnye-dvigateli-vpk> [in Russian] (site retrieved Nov. 4, 2018).

⁶² See: Симонов, Николай. Военно-промышленный комплекс СССР в 1920-1960-е годы: темпы экономического роста, организация производства и управление, Москва: Издательство 'Международные отношения', 1992, сс. 314–320



system led to extra funding, it actually produced the world-class military industry the Soviet Union was proud of. Today's Russian leadership has, however, chosen another way. It has decided to concentrate the defense industry's assets under the state command, then to buy out dozens of companies that were privatized during the 1990s (like VSMPO 'Avisma', Irkutsk Aviation Enterprise, Red Sormovo ship-building factory, Perm' Engine Factory, Sapphire Production Amalgamation, and many others)⁶³ and, finally, to build huge state-controlled conglomerates comprising of many loosely connected enterprises. Thus, on the first stage of consolidation, the Kremlin created several 'united corporations' (*United Industrial Corporation Oboronprom* in 2002, *United Aircraft Corporation* in 2006, *United Shipbuilding Corporation* in 2007, *United Engine Corporation* in 2008, and several others) which actually reduced competition inside different branches of the DIC and, presumably, contributed to their 'effectiveness' through implementation of numerous cost-cutting measures. In a second stage, a holding structure called *Rostekhnologii* that later was renamed into *Rostech* and to which the state continuously handed over dozens of defense contractors, was established in 2007. Since ITS very establishment *Rostech* has been headed by Sergey Chemezov, one of President Putin's long-time friends and most loyal allies. The enterprises that belong to *Rostech* employ

around 450 thousand people in 60 out of 85 Russia's regions⁶⁴. After the recent acquisition of the *United Aircraft Corporation*,⁶⁵ it controls almost all of the largest Russian defense industry players like *Oboronprom*, VSMPO 'Avisma', Kalashnikov, Uralvagonzavod, *United Engine Corporation*, *Technodynamics*, *Russian Helicopters*, *High Precision Systems*, etc. Approximately 700 companies consolidated into 13 holdings have around 1.6 trillion rubles of annual sales⁶⁶. *Rostech* has already become a crucial actor in both Russian economy and politics: it receives around $\frac{2}{3}$ of allocations from the military budget; takes all crucial decisions concerning the directions of their development by forcing the Ministry of Defense to comply with existing production plans and schedules. At the same time Mr. Chemezov controls a group of loyalists whom he promotes to the most prominent positions inside Russia's 'power vertical' (it is assumed that he is responsible for the promotion of many influential figures. The Head of the Presidential Administration Anton Vayno, Deputy Prime Minister Yury Borisov, and Minister for Industrial Development Denis Manturov are among dozens of others).⁶⁷ In other words, *Rostech* can be cited as the best example of the complete merger between political authority and business that is so familiar to Putin's Russia. It acts as the major underminer of every kind of market competition without which the defense sector is doomed to become outdated.

(Simonov, Nikolay. *The Soviet Military-Industrial Complex from 1920s to the 1960s: Growth Rates, Production Practices, and Management*, Moscow: International Relations Publishers, 1992, pp. 314–320) [in Russian].

⁶³ See: Алексеева, Надежда. 'Щит и меч в ассортименте' (Алексеева, Nadezhda. 'Shield and Sword, in Assortment') at: <http://svpressa.ru/economy/article/85896/> [in Russian] (site retrieved Nov. 4, 2018).

⁶⁴ Numbers according to Rostech annual report for FY 2017, see: <https://rostec.ru/upload/iblock/609/60954456d3f675625e60918653ceb028.pdf> (site retrieved Nov. 4, 2018).

⁶⁵ See: 'Путин передал «Объединённую авиастроительную корпорацию» в «Ростех»' ('Mr. Putin Hands the *United Aircraft Corporation* Over to *Rostech*') at: <https://www.vedomosti.ru/business/news/2018/10/24/784580-obedinennuyu-rosteha> [in Russian] (site retrieved Nov. 4, 2018).

⁶⁶ According to Rostech's official website, see: <https://rostec.ru/en> (site retrieved Nov. 4, 2018).

⁶⁷ See: Бекбулатова, Таисия. 'Эффективный старый товарищ' (Bekbulatova, Taissia. 'An Effective Old Comrade') at: <https://meduza.io/feature/2016/12/22/effektivnyy-staryy-tovarisch> [in Russian] (site retrieved Nov. 4, 2018).



Since I'm interested in not just describing the current state, at this stage I would like to identify the current trend in the Russian military.

First of all, I would argue that the Russian defense industry is a particular segment of the national economy which is much more alien to it than it used to be during the Soviet times. It differs much from its predecessor. The Soviet military industry had been developing for decades in the country, which appeared to be an advancing industrial economy, representing both the 'essence' of this industrial drive and the quest for a global technological superiority. The modern Russian complex survives in a petrol state where personal financial success is valued over any kind of public good. Moreover, the Soviet military production was organized as a part of a centrally planned economic system and, as mentioned earlier, operated in a much more competitive environment, while the modern production is refurbished to become the largest state-owned monopoly in the country. In contrast to the Western countries where the defense contractors are deeply incorporated into the national economy, in Russia they seem aiming towards complete rejection of any ties with the part of the economy that operates in a way compatible with the global trends. According to the estimates, Russia can achieve so much needed results with ever growing funding. To be honest, however, I doubt that all the announced aims will be achieved in the nearest future. For example,

⁶⁸ See footnote 47).

⁶⁹ See: the results of 2016 - Исполнение федерального бюджета и бюджетов бюджетной системы Российской Федерации за 2016 г. Москва, Министерство финансов, 2017, приложение 3, с. 116 (*Execution of the Federal Budget and Budgets of the Budget System of the Russian Federation for 2016*, Moscow: Ministry of Finance, 2017, appendix 3, p. 116); the planned expenses for 2019 - 'По-честному или по-справедливости?' в: Аргументы и факты, 2018, 3 октября, с. 4 ('Honestly or Fairly?' in:

the Russian shipbuilders work on 5 or 6 nuclear submarines at the same time,⁶⁸ but will they be ready to enter service by 2025? At the same time, there is no doubt that the DIC will face an immediate and tremendous downturn without expanding military expenditures. In absolute terms, the 2019 budget seems to be sufficient, but given inflation rate, it is 22.9 percent lower than in 2016.⁶⁹ The financial inputs seem to be the crucial factor keeping the Russian military production afloat, with at least three caveats.

First, one should realize that the current budget allocations, which might be called unsustainable for the Russian economy, are sufficient only for holding the industry onto its current position but not for developing it. The Russian authorities talk about building more submarines, but not about constructing new shipyards or acquiring new world-class equipment (the recently sunken dry-dock was built in Sweden in the 1970s and acquired by the Soviet Navy in 1980).⁷⁰

Second, clearly separated from other industries, the Russian military will be unable to compensate any probable decline in government funding, which I believe will happen in a mid-term perspective as the oil revenues are drying out. Just to compare, *Boeing's* sales stood at \$20 billion in 1989 when the U.S. defense budget topped \$303 billion per year and rose to \$56 billion by 1998 as the military outlays dipped below \$270 billion.⁷¹

Argumenti i Fakty, Oct. 3, 2018, p. 4) [both in Russian].

⁷⁰ See for greater detail: 'Авария «Адмирала Кузнецова»' ('The Accident at «Admiral Kuznetsov»') at: <https://warspot.ru/13283-avariya-admirala-kuznetsova> [in Russian] (site retrieved Nov. 4, 2018).

⁷¹ See: for Boeing's sales: 1989 – <https://digitalcollections.lib.washington.edu/digital/collection/reports/id/44098> and 1998 – <https://www.coursehero.com/file/12958529/boeing98/>; for the U.S. military allocations see: *Economic Report*



Third, in 2017 Russian defense companies received around \$19 billion in export revenues while supplying for the national military 1.88 trillion rubles (\$28 billion) worth of goods and services. This made the share of exports in the overall revenues 7 times higher than the one in the United States.⁷² Hence, one can expect the state of the industry to deteriorate sharply if exports fall off. Over the last decade, the foreign markets provided a strong basis for optimistic forecasts. However, now the future of Russian arms exports, squeezed between the West and China is under question.

Summarizing all the above, I would draw two major conclusions concerning the current stage of development of the Russian DIC. As the Kremlin desperately wants to regain a great power status, an integral part of which is the military, it will continue to restore the defense-industrial complex. Therefore, it looks reasonable to channel more and more funds into the defense industries. The opposite side of this trend is even more important. The money that is allocated for military developments is dispersed secretly and to the state enterprises managed by Mr. Putin's close friends. The weapons and equipment regardless the price and quality are supplied to the Army headed by the Defense Minister who is Mr. Putin's most loyal ally and who has established the 'United Russia' party even before Mr. Putin associated himself with it. Therefore, the money makes the full circle from the budget to the

DIC and then to the military, at each point being used and disbursed by the members of the same ruling clan. This makes the entire system a sub-optimal one, as it works publicly for the sake of the nation, and privately for enriching Mr. Putin's inner circle. Therefore, I would argue that this kind of interaction will endure: more unrealistic production plans will be adopted, more money will be allocated, and more old missiles will be launched. Not all these will lead to any crucial breakthroughs or catching-up with the Western counterparts. The restoration of the Russian DIC is just one of the means for sustaining the 'captured state' Mr. Putin wants to manage comfortably until his death.

Furthermore, Western policymakers should objectively assess the capabilities of the Russian DIC and to elaborate a coherent policy towards Russia. In my opinion, Russia's military is clearly overestimated these days. Considering the outcomes of the Russian involvement into the Syrian civil war, one can see that the official Russian death toll was 112 servicemen and 15 airplanes and helicopters, as of September 30, 2018.⁷³ Among those who died, there were 58 soldiers and officers who passed away due to airplane accidents caused either by the poor quality of the equipment or friendly fire (1 out of 8 lost aircrafts was downed by the Islamic State fighters)⁷⁴. Shortly after the Israeli attack on the Iranian-build facilities in Syria and claims the Syrian airspace was perfectly 'sealed',⁷⁵ the Russians dispatched their acclaimed

of the President 2004, Washington (DC): Government Printing Office, 2004, table B-80, p. 379.

⁷² See footnote 27).

⁷³ See: Бондарев, Виктор. 'Сколько российских военных погибло в Сирии' (Bondarev, Viktor. 'How Many Russian Servicemen Had Died in Syria') at: <http://www.aif.ru/society/army/skolko-rossiyskih-voennykh-pogiblo-v-sirii> [in Russian] (site retrieved Dec. 30, 2018).

⁷⁴ According to: 'Потери военной авиации Российской Федерации в ходе операции в Сирии'

('The Losses Experienced by the Air Forces of the Russian Federation During the Military Operation in Syria') at:

https://ru.wikipedia.org/wiki/Потери_военной_авиации_Российской_Федерации_в_ходе_операции_в_Сирии [in Russian] (site retrieved Dec. 30, 2018).

⁷⁵ See: 'Россия поставила в Сирию усовершенствованные С-300' (Russia Deploys Modernized S-300 in Syria) at: <https://iz.ru/802161/2018-10-19/rossiia-postavila-v-siriiu-usovershenstvovannye-s-300> [in Russian] (site retrieved Dec. 30, 2018).



S-300 anti-aircraft missile systems to the area. As soon as in December 2018, however, the Israelis came back, destroyed another facilities, and safely returned to their airfields.⁷⁶ These cases, as many others, have shown that the real capabilities of the Russian weaponry are much more limited than military commanders insist on. I would also argue that there is a tiny chance for the situation to change. Therefore, the Western military strategists should not be aware of what the Russians are talking about but concentrate on what, and how, is really produced in Russia and what kinds of new weaponry are deployed. Even while Mr. Putin boldly addresses his loyalists featuring cartoons with newest missiles landing in Florida, it seems these are his dreams rather than the new Russian reality.

⁷⁶ See: 'Израиль атаковал военные объекты в Сирии с территории Ливана' (Israel Attacked Syrian Military Bases from the Lebanese Territory) at: <https://www.rbc.ru/politics/26/12/2018/>

[5c22af869a7947590764b6b0](#) [in Russian] (site retrieved Dec. 30, 2018).



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