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High-Tech and Knowledge-Intensive Industries: Transformation of the Asset Management System and New Business Strategies (on the Example of State Corporation Rostech)

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ABSTRACT

In the Russian Federation, restoring the financial solvency of defence industry companies (DIC) only through systematic debt coverage without a pool of the state institutional efforts and business entities is unlikely. It is indicated by the continuing instability of the global economic system and uncertainty about the prospects for its development, combined with a reduction in the resources available to the state, low profitability of defence industries, and a high level of debt load. In these conditions, the reform of the asset management system in state-owned corporations (SC) of the defence industry, the search for new development models in their clusters and holdings become uncontested. The article shows the directions of transformation of the management system using the example of the state corporation "Rostech": gradual further consolidation of disparate assets by industry within several years and changes in their management structure (formation of unified control centres and design bureaus, specialization centres, competence centres, the introduction of a divisional structure for managing production assets, etc.). The study contains an analysis of the key components of the business strategy of The State Corporation "Rostech" formation of "national champions"; the transition from «point» import substitution to export-oriented; the development of effective cooperation and the creation of national production chains; the servitization of high-tech and knowledge-intensive industries.

Keywords: high-tech and knowledge-intensive industries; military-industrial complex (MIC); defence industry; integrated structures; transformation; asset management system; business strategy; "national champions"; servitization; "Rostech" state corporation

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INTRODUCTION

Russian military-industrial companies make a huge contribution to the development of the high-tech sector of the economy. MIC products are a source of innovation in energy, automotive, vehicle manufacturing, medical equipment, etc.

About 1.281 organizations with an average of over 2 million people on the list were included in the consolidated register of MIC organizations in 2020. More than 70% of Russian MICs are integrated into 40 integrated structures.¹

Massive financial support for the Russian MIC in the last decade was provided within the framework of the State programmers of the Russian Federation “Development of the military-industrial complex”: for the period 2010–2020 in the amount of 21.2 trillion rub.; current 2018–2027–21.7 trillion rub.² They included both system-wide and sector-specific financial support, including through the provision of various types of incentive subsidies, State guarantees to MIC organizations. The new state program of the Russian Federation “Development of the military-industrial complex” until 2035 is expected to be supported at the level of not less than 21–22 trillion rub., despite the difficulties and peculiarities of the economic situation in the country.

The Covid crisis has had a major impact the distribution of budget flows: in order to stabilize the financial economy, the budget of the federal budget was reallocated to the reserve fund of the Government of the Russian Federation in 2020. According to information on the implementation of the federal budget of the Ministry of Finance of the Russian Federation, as a result of

recombination of cash flows, funding for State programmer activities was reduced by 14% “Development of the military-industrial complex” to perform a state defense order (SDO).³

At the same time, the tasks of state defense order aimed at the implementation of the current State weapons programmer were kept in full. Funding for implementation of DSO intend to implement a bank credit account by authorities. Over a three-year period, it is planned to attract 360 billion rub.

The development of Russian MIC companies is constrained by a number of financial problems that the authorities have been systematically trying to resolve for many years. [1] Some of these problems include: inconsistency of financial interests of SDO clients and implementers; exorbitant credit burdens on MIC companies; lack of flexibility in the conduct of financial activities due to new amendments in Federal Act No.275 “On a state defense order” in 2018; loss of adequate pricing mechanism, very low prices of MIC products. In 2020, loans owed by MIC enterprises amounted to about 2 trillion rub., defense companies spent about 200 billion rub. annually on interest payments. [1] According to experts, “the main thing of the loan will never be repaid”. In fact, this means that MIC companies are not even able to pay interest on loans from commercial banks.

However, overcoming the chronic financial problems in the MIC became impossible without transforming the governance system and business models of its public corporations. Restoring the financial solvency of MIC companies only by systematically covering the debts of companies without a pool of institutional

¹ Official website of the Ministry of Industry and Trade of the Russian Federation. Basic State Policy for the Development of the MIC. URL: <https://minpromtorg.gov.ru/activities/industry/siszhadachi/oboronprom/>.

² State programme of the Russian Federation “Development of the military-industrial complex”, approved by the Government of the Russian Federation Resolution of 13.03.2020 No. 268–12. URL: <http://docs.cntd.ru/document/420356175>.

³ At least 21 trillion roubles will be allocated for the new State weapons programme. URL: <https://rg.ru/2021/04/13/na-novuii-gosprogramm-u-vooruzhenij-vydeliat-ne-menee-21-trilliona-rublej.html>.

measures on the part of the State and economic agents is unlikely. [2, 3]

DYNAMIC CHARACTERISTICS “ROSTEC” STATE CORPORATION IN STRUCTURE MIC

The Russian MIC is represented by a relatively small number of large corporations that are wholly state-controlled. [4] The top three-government companies account for 59% of the market, their shares in total MIC revenue in 2018 are given on the *table 1*, and their financial situation cannot be called perfect.

For the past 15 years, MIC has traditionally faced a systematic lack of funding in the creation and launching of products. It was formed by the low margin of SDO contracts in MIC companies; its shortage of own funds to move from prototype to production; limited debt financing due to regulatory requirements and potential sanctions risks from financial institutions. [5] Only “Rostec” State Corporation, continuing the strategy of consolidation of assets of companies, showed positive financial results of operational activities in 2016–2020 (*table 2*).

According to the annual report “Rostec”⁴ State Corporation in 2020, despite the limitations associated with the pandemic, consolidated revenues have been significantly increased (on 6% higher than in 2019). According to S. Chemezov’s estimates, the consolidated revenue of the state corporation in 2021 will exceed 2 trillion rub.⁵

The increase in revenues from the sale of civilian products in 2020 (it was 636 bln. rubles) made it possible to increase the financial sustainability of “Rostec”

State Corporation and to reduce direct dependence on SDOs. The share of civil production in gross output in 2020 reached 33.9%. The increase in import substitution in medical products and pharmaceuticals has contributed to this situation.

During the years of its existence “Rostec” State Corporation has become a giant, aggressively collecting all kinds of assets and managing practically all the science-intensive industry of the Russian Federation.

Today the assets of SC “Rostec” are combined by a complex management structure: they are divided into clusters, clusters into holdings (9 defense and 6 civilian), holdings — into sub-holdings and individual companies. In the offices, the management of SC “Rostec” includes 806 organizations, including 10 infrastructure subsidiaries, 70 direct subsidiaries in 2020.

The development strategy of SC “Rostec” assumes that by 2035 the corporation will reach the level of revenues of the largest industrial corporations in the world (to the level Samsung, General Electric, Siemens and Boeing), EBITDA margin will increase to the top 25 of the world’s analog companies. [6–8] However, the Russian corporation is significantly lower in terms of operational efficiency (profit margins on net profit, revenue per employee). Although in 2016–2020 the revenue growth was almost 26%, net profit increased the trend in the number of employees continued (by 30%). Analysts estimate that reaching 100 billion dollars by 2035 is a challenge with a growth rate of 10% and established performance (*table 3*). Despite the COVID-19 pandemic, foreign companies are likely to continue to grow at a slower rate after a while, but the large gap will remain. [9, 10]

The general approach to the realization of the leadership plans of SC “Rostec” assumes as a driver of the development of the products of the 4th Industrial Revolution: “smart” civil production — production of robotics, LEDs and composites,

⁴ Official name: State Corporation for the promotion of the development, production and export of high-technology industrial products. “Rostec”.

⁵ Meeting of Mikhail Mishustin with the General Director of the SC “Rostec” Sergei Chemezov. URL: <http://government.ru/news/41284/>.

Table 1

Consolidation of defence sector enterprises

Government corporation MIC	Share of revenue in 2018, %	Number of the employed in 2019, thous. person	Number of part structure, units
Rostec	42	590	about 800
USC	9	95	40
Roskosmos	8	191*	70
Total	59	876	@

Source: Butrin D. How much do they reforge swords. URL: <https://www.kommersant.ru/doc/4127841?query=ОПК>; Annual report of "Rostech" State Corporation for 2019. URL: <https://rostec.ru/investors>; Annual Report United Shipbuilding Corporation (USC) for 2019. URL: https://www.aosk.ru/upload/iblock/3ce/Godovoy_otchet_USC_2019; Annual report of the State Corporation for Space Activities "Roscosmos" for 2019. URL: <https://www.roscosmos.ru/22444>.

Table 2

Dynamics of financial indicators of SC "Rostech" in 2016–2020

Indicator	2016	2017	2018	2019	2020
Consolidated revenue, bln. rub.	1266	1589	1643	1771.6	1878
EBITDA margin, %	-	-	17.9	20.2	15.1
EBITDA	268	305	294	359	283
Net profit, billion rub.	88	179	128	179	111.2
Average annual staff, person	453	512	529	590.6	589.2

Source: Annual report of the state corporation "Rostech" for 2017. URL: <http://report2017.rostec.ru>; Annual report of the State Corporation "Rostech" for 2018. URL: <https://rostec.ru/upload/iblock/587/587257de247709537226335c9b40b76a.pdf>; Annual report of the state corporation "Rostech" for 2020. URL: <https://rostec.ru/upload/iblock/f16/p9uys0xhnyvgqhyfvmvqb9430t4lifk8.pdf>.

telecommunication equipment. [11] This approach has become an alternative against the backdrop of the emergence of a new track — the desire of traditional buyer-States for national autonomy in military production (China, India).

Accelerated, catching-up growth is certainly possible, but this variant of development from SC "Rostech" will require optimization of its structure (in various projections), privatization of certain assets and large-scale investments. According

to preliminary estimates carried out at SC "Rostech", the amount of necessary investment is 4.3 trillion rubles, which in the context of falling federal revenues from hydrocarbons, clearly requires the attraction of private capital.

TRANSFORMATION OF ASSET MANAGEMENT SYSTEM AND BUSINESS STRATEGY CONTOURS OF SC "ROSTEC"

Continuing sanctions and the development of a new technological system required the

Table 3

Comparative characteristics of SC “Rostech” and foreign defence companies

Company	Revenue, billions of dollars	Profit, billions of dollars	Number of employees, thous. persons
Rostec	18.9	1.3	453
Samsung (South Korea)	180.9	20.4	399
Siemens (German)	88	6.2	351
Boeng (USA)	94.6	4.9	148
General Electric (USA)	111.5	17.5	295
Nothrop Grumman (USA)	24.5	3.2	67
Leonardo (Italy)	13.2	0.6	46

Source: Khazbiev A. Rostec – UAC: winged megalomania. URL: <https://expert.ru/2018/08/7/rosteh-oak-kryilataya-megalomaniya>.

SC “Rostech” to transform the management of the holding and complex, finding new business models for them to develop, restructure established high-technology clusters, and otherwise streamline production chains. [12]

In the Covid period the need to solve the financial sustainability issues of SC “Rostech”, increasing the competitiveness of Russian military industries, meet the growing demand of Russia’s national producers and population for high-tech products, a systemic reform of its asset management system has been updated.

Among the main factors in the search for a new management system SC “Rostech” we will mention three, in our opinion, dominant.

Low labor productivity compared to the world’s largest defense companies, which affects the price of products and their

competitiveness.⁶ World trend — reduced number of firms, which designing and series producing high-tech products in one market niche. The high resource intensity of parallel designs forces the world’s largest corporations to combine disparate assets, and the concentration of resources makes it possible to adapt the latest products to the technologies of the 4th Industrial Revolution more quickly.

Ongoing sanctions risks, this includes — deficiency of foreign components. Total denial or unreliability of supplies may affect the entire production chain and may violate the contractual discipline for the delivery of the final product of Russian producers.

The digital economy and the emergence of technology platforms and

⁶ Labour productivity in Russia’s MIC: “the main eyes do not see”. URL: https://vpk.name/news/203738_proizvoditelnost_truda_v_opk_rossii_glavnogo_glazami_ne_uvidish.html.

“ecosystems” in MIC. In 2019 as part of a federal project “Digital technologies” was defined the development of cross-cutting digital technologies and responsible for each of them. As a result of SC “Rostec” became responsible for quantum sensors, blockchain, internet of things, wireless communication technologies 5G (with “Rostelecom”). SC “Rostec” has set up a Competence Center for this purpose, responsible for the development of technology initiative. [13, 14] Thus, SC “Rostec” became the coordinator of activities of all other actors ready to participate in its development (development institutes, companies, universities, research institutes, individual citizens).⁷

The beginning of the transformation of the management system into SC “Rostec” assumes a step-by-step over several years the further consolidation of disparate assets by branch and the change in their management structure. Examples of such integration include the establishment of the United Corporate Aircraft Centre; United National Helicopter Operations Centre (NHC); new holding “Ruselectronics”, which merged the enterprises of the radio-electronic cluster SC “Rostec” under the management of JSC “United Instrument-Making Corporation”, past technology audits, etc.

B In the new consolidated units SC “Rostec” eliminate duplicate production, are formed United Design Bureau Centre, centers of specialization, centers of competence, divisional structure of management of productive assets, etc. This will certainly improve their functioning in the short term. Thus, according to SC “Rostec”, the combined effect of the integration of the aviation design bureau will save about 130 billion rubles. Aggregation of design offices and program

directorates at the site of “United Aircraft Corporation” means the transition from a three-tier control system to a two-tiered system, which is practiced in most of the holdings belonging to SC “Rostec”.⁸

Currently, the key elements of SC “Rostec” business strategy are:

Formation of “national champions” based on further consolidation, integration of own assets as well as use of PPP mechanisms (public-private partnerships) (table 4).

Transition from “point” import substitution to export-oriented. It is especially relief is beginning to be sold in electronics and machine-tool industry.

Under the sanctions regime, State holdings of radio-electronic cluster (REC) SC “Rostec” and large private companies continued to increase their electronics innovation output. Small and medium-sized enterprises were formed in the subjects of the Russian Federation with a developed machine-building complex, which production innovative high-tech electronics things that are demand on the world market. [15] Accumulated «critical mass» of innovative-active manufacturers allowed SC “Rostec” to form a plan of modernization of electronic production “New generations of microelectronics and creation of electronic component database”. Its implementation in practice, however, implies investment of 798 billion rubles to 2024, the rejection of foreign suppliers and an increase in the volume of new generation Russian microelectronics exports. [16]

Using partnership with Russian leading companies with state support through consolidated order, pioneering directions in electronics development can be quickly realized. In 2021, public and private

⁷ Vasily Brovko about new technological development schemes in the national project “Digital Economy”. “Information Technologies”. URL: <https://www.kommersant.ru/doc/4187705>.

⁸ Creation of a single aviation engineering cluster UAC will save up to 130 billion rubles. “Rostec”. URL: <https://www.finanz.ru/novosti/aktsii/sozdanie-edinogo-aviacionno-inzhenernogo-klastera-oak-sekonomit-do-130-mlrd-rub-rostekh-1030222539>.

Table 4

Examples of the formation of “national champions” in the SC “Rostec” business model

Industry	Goal	Company
Aviation industry, updated aviation cluster SC “Rostec”. Creating a United Corporate Aviation Center, consolidating the management of aircraft programs and other assets “UAC” (2021)	- Integration of the assets of the aviation cluster SC “Rostec” and the assets “UAC”, their reformatting on the basis of the new industrial model and creation of synergistic effect. - SC “Rostec” will be able to manage not only the manufacturers of components for the aviation industry, but also the factories producing the aircraft. - Production volumes of “UAC” will allow SC “Rostec” to enter into the five largest machine building holdings in the world along with Boeing and General Electric	SC “Rostec” unites the company “Suhoi”, “MiG” and “UAC”, which includes “Ilyushin”, “Tupolev” and “Irkut”. The holding company is involved in production cooperation “Helicopters of Russia”, “United Engine Building Corporation”, “TechnoDynamics”, Concern “Radio-Electronic Technologies” (CRET) etc. producing about 70% of components for “UAC”
Machine tool, creation of a new holding company (2021)	- Merge machine tool assets of GC. - Replace imports of foreign machines. - Occupy 50% of the Russian heavy manufacturing equipment market. - Become an international exporter	Most of the holding will consist of subsidiaries and machine tool assets of the state corporation: BelZAN and “Stankoprom”, “Niti Progress” (multi-processor machines, heavy machines, metal working tools and machine components)
Telecommunications, the company “Spectr” will be a “national vendor” equipment for communication networks 4G, 5G and 6G (2021)	- Wide import substitution: Russian communication operators have been obliged to buy Russian equipment for 4G since 2023, but their networks now operate on ZTE, Nokia, Huawei and Ericsson solutions. - Formation of technical and production cooperation of manufacturers of communication networks equipment	Russian companies – producing communication network equipment
Radio-electronics, National Multi-vendor, operating under the brand “Ruselectronics” (2021)	- Building corporate analog-model Siemens and Nokia. - Construction of modern communication networks 5G, security systems (including cyber threats). - Support for integrated infrastructure projects	The head structure of the superholding “United Instrument Building Corporation” integrated 124 enterprises of SC “Rostec”
Microelectronics, group of companies “Element” – leader of microelectronics in Russia. The group’s total revenue for 2020 exceeded 23 billion rubles (2020)	- Integration of private and public micro-electronic assets with PPPs under unified management. - Building cooperation with hull manufacturers and with the developers of the electronic-component base (ECB)	The companies, belonging to SC “Rostec” and to Joint Stock Financial Corporation “Sistema”, Research Institute of Precision Machine Manufacturing (RIPMM, development of means of production for microelectronics)

Source: compiled by the author based on the materials of the official website of “Rostec” State Corporation. URL: <https://rostec.ru>.



consortia emerged in the electronics market. So, “Rostelecom”, “Rostec” и JFC “Sistema” created a radio-electronic consortium ANO “Telecommunication Technologies”. Consortium “Computer Engineering” (with the support of the Ministry of Industrial Development of Russia) formed leading Russian companies — developers and producer computer engineering: LLC “PC Aquarius”, JSC “Kraftway Corporation PLC”, LLC “Electronics Depot”, LLC “Delovoy Office” (iRU), LLC “NT”, LLC “KNC Group” (YADRO), companies LLC “Element” and LLC “Bulat”. [14]

Established new machine tool holding, SC “Rostec” plans to occupy about half of the national market for metal cutting machines, including high-precision equipment segments. In order to develop new engineering products, it will be necessary to invest in 10 billion rubles, with investment in R&D amounting to 4.4 billion rubles. The volume of the Russian market of machine tools was estimated at 70 billion rubles and the share of domestic equipment on it was less than 10% in 2021. In the medium term, about 30 types of machines will be launched into Russian production, which will replace 25 analogues of foreign companies, and Russian equipment will start supplying foreign markets. The priority directions in import substitution will be the production of multi-processor machines, heavy machinery, metal working tool and machine components.⁹

DEVELOPMENT OF EFFECTIVE COOPERATION AND ESTABLISH OF NATIONAL PRODUCTION CHAINS¹⁰ [17]

In the post-covid period effective production chains began to form between:

⁹ “Rostec” will create a new holding with a market in 140 billion rubles. URL: https://www.rbc.ru/business/10/09/2021/6139d8b29a7947db151314b5?utm_source=telegram&utm_medium=messenger2020/12/09.

¹⁰ Success without cooperation is impossible. URL: <https://rostec.ru/news/4517919>.

- Established organizational units SC “Rostec”. Thus, the holding “Schwabe” and the concern “Uralwagonsavod” signed an agreement on cooperation in the sphere of transformation of crane farm and energy-efficient environmental monitoring and safety technologies. Main objective of the partnership — Development and implementation of innovative high-tech products, technologies and digital services to modernize the company’s crane farm and realization of the national development goals of the Russian Federation within the framework of the projects “Ecology” and “Safe City”. Production cooperation involves equipping industrial enterprises with modern and efficient equipment, including to meet the challenges of improving energy efficiency and working conditions.¹¹ Another example: launch of a new aircraft upgrade programmer «Superjet» (SSJ New), focused on import-substituting components for Russian has led to the existence of new cooperative links between the UAC and the aviation cluster holding companies (replacement of SaM146 engine with new Russian PD-8, domestic avionics systems etc.).

- SC “Rostec” and other GC MIC, for example with GC “Rosatom”, when creating new materials and composites for the aviation construction cluster under conditions of sanctions and import substitution.

- SC “Rostec” and private companies in the real economy. New national production chains formed in framework of established in 2021 SC “Rostec” equipment consortium for fifth generation communication networks (5G). It forms the technological cooperation of Russian production companies: 10 leading Russian private producer-companies (after technology audit) have confirmed their readiness to participate in cooperation. Cooperative collaboration will involve the

¹¹ “Schwabe” and “Uralwagonsavod” agreed on cooperation. URL: <https://www.kp.ru/daily/28322/4464944/>.

use of private specifications to develop individual elements of an integrated solution for the deployment of 5G networks, integrating the component providers of these private companies into a single chain. In the business model of the new machine tool holding SC “Rostec” it is planned to establish new cooperative links with other Russian enterprises of the branch and to create a large project office.¹²

SERVICING OF HIGH-TECHNOLOGY AND KNOWLEDGE-INTENSIVE INDUSTRIES, WHICH MILITARY AND CIVILIAN PRODUCTION

Servicing has now become a key business strategy, especially in knowledge-intensive industries in developed countries.[18] Sales of manufactures alone increasingly fail to achieve the desired level of profitability of industrial corporations in developed countries. As a result, there is a way to move up value chains, towards higher value, integrating the cost of goods and services. Statistical sources show the increasing role of machine-engineering services in transnational value chains: in recent years, their share of world exports, both as direct exports of services and as part of exports of manufacture products, — is constantly growing.[18]

The transition in the units of SC “Rostec” to business-strategies with the optimal model range of products according to the needs of both state customers and private operators has become complemented by the developed system of after-sales service, an engineering and repair system.

For example, consumers of civil products “UAC”, thanks to manufacturers’ investments in the after-sales service system, almost stopped suffering from shortage of spare parts. In addition, as a result of the servicing, the level of

serviceability of the “Superjet” increased by 10% and the average flight rate of the aircraft increased to a level comparable to foreign competitors.¹³ It seems that without a developed after-sales service system SC “Rostec” can only meet the needs of customers in “truncated” format. At the same time, it is necessary in its companies to carry out scientific and technical work, allowing to carry out timely modernization of existing machines and equipment, to extend their service life and to improve their functionality.

In recent years SC “Rostec” actively uses for servicing production of own Center of additive technologies. At the same time, 3D-technologies are being improved, and in the near future they may be replaced by more developed Russian economical 5D-printers, allowing to significantly reduce the price of printed products. Russia is currently printing large-scale parts for a new liner MC-21, K-226 and others. Using a 3D printer saves a lot of money on raw materials to make parts, they get easier, and they get cleaner. One of the advantages of this method is certainly the rapid speed of production. The launch of own 3D printers in Russia allowed to create two directions in the Center of additive technologies: printing unique parts for new products and repairing worn parts.¹⁴

Centers of integrated logistics support (ILS) on repair of helicopter engines JSC “UEC-Klimov” already work in Peru, in Vietnam. They can be opened in China, Ethiopia and the United Arab Emirates. Their purpose is to carry out an average repair of BK-2500/TB3–117 engines installed on MИ-8/17 and KA-32. The emergence of logistic support centers abroad is envisaged

¹² SC “Rostec” creates a consortium of 5G equipment manufacturers. URL: <https://ria.ru/20210201/rosteekh-1595506433.html>.

¹³ Financial support for the programmer was provided in the form of State guarantees for the production of 59 SSJ-100 aircraft in 2020–2021.

¹⁴ 3D-printers in the Russian Federation produce the concern “Kalashnikov” (SC “Rostec”) and LLC “NC Centrotech”, city Novouralsk, (SC “Rosatom”).



in the goals of the national project “International Cooperation and Export”.¹⁵

CONCLUSION

As we overcome the coronavirus crisis, in the domestic economy is overcome, the performance of new business models and flexible approaches in asset management in high-technology and knowledge-intensive industries will be influenced by a set of institutional initiatives on the part of the State, safety banks of MIC, business associations and development institutions.

Forthcoming MIC product pricing reform and withdrawal of civil proceedings military-industrial enterprises from excessive control. In 2021, the profitability of contracts the state defense order did not exceed 3–4%, which also hampered civil diversification projects. The Russian Business Association (RBA) proposes to lay down rules for the indexation of prices of MIC products in the transfer of the state defense order and to lift the limit on the boundary of the index for the head performers of the contract (now it cannot exceed 5%, while prices of suppliers' products can be 1.5–2 times higher). The new pricing order can certainly improve the financial conditions of military industries.¹⁶

Increased protectionist measures in support of MIC enterprises as part of import substitution and diversification policies. In 2019–2020, the Government of the Russian Federation introduced a number of protectionist measures in public

procurement (Russian suppliers were given an unconditional advantage). In addition to these measures, in 2021 federal authorities obliged the largest state companies to use the products of the Russian radio-electronics industry (REI) in their activities. This include the government companies, for which the introduction of Russian radio-electronic products becomes mandatory, — “Rosseti”, “Rosselhozbank”, VTB, “Aeroflot”, “Rosneft”, “Rusgidro” etc. These measures will stimulate REI companies and allow them to lock up a large part of a large domestic market (according to the Ministry of Economic Development of the Russian Federation, its volume in 2019 was 2.879 trillion rubles). Seems, these measures are particularly timely in the context of the reformatting of global value chains in microelectronics, arise institutional constraints in national markets of traditional suppliers, persistent shortages of selected microelectronics products (e.g., chips).¹⁷

To date, there are no macroeconomic barriers to the positive development of new business models of high-tech and knowledge-intensive MIC industries. Accelerated development of military industries with massive institutional and investment support from the State will create tens and hundreds of thousands of new high-tech and high-paying jobs. Their products will not only fill the domestic market, but will also occupy worthy niches on the world market, which will allow the Russian economy to get rid of raw materials.

¹⁵ Russian helicopter repair centers in China and Ethiopia. URL: https://news.rambler.ru/other/42732028/?utm_content=news_media&utm_medium=read_more&utm_source=copylink.

¹⁶ Review of public administration 29–30 July 2021. URL: <https://vs.tpprf.ru/ru>.

¹⁷ The authorities will require a State company to purchase Russian radio electronics. URL: https://vpk.name/news/537393_vlasti_obyazhut_goskompanii_zakupat_rossiiskuyu_radioelektroniku.html.

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