

**ICEST 2022****III International Conference on Economic and Social Trends for Sustainability of Modern Society****THE HUMAN CAPITAL IS A KEY FACTOR IN IMPORT  
SUBSTITUTION UNDER SANCTIONS**

Vladimir V. Moiseev (a)\*, Vladimir V. Stroyev (b), Andrey E. Terpugov (b), Sergey M. Grigoriev (c),  
Victor F. Nitsevich (d), Sergey A. Bozhenov (a), Michael A. Ignatov (e)

\*Corresponding author

(a) Department of sociology and management, Belgorod State Technological University named after V G Shukhov, Kostyukov St, 46,  
Belgorod, 308012, Russia, din\_prof@mail.ru

(b) Present and. o. Rector of the State University of Management. Research interests include the study of the problems of developing the  
potential of regions and businesses to preserve human capital in Ryazansky Prospekt, 99, Moscow, 109542, Russia, vstroev@yandex.ru

(c) Financial University under the Government of the Russian Federation, Leningradsky Prospekt, 49, Moscow, 125993, Russia,  
smgrig@mail.ru

(d) Department of State and Municipal Administration and Law Moscow City University, Moscow, 129226, Moscow, Russia,  
nicevichvf@mgpu.ru

(e) Department of sociology and management, Belgorod State Technological University named after V G Shukhov; Full Professor, Belgorod  
State Institute of Arts and Culture, Belgorod State National Research University (NRU BelGU) Kostyukov St, 46, Belgorod, 308012, Russia,  
ignatovmikle@gmail.com

**Abstract**

With the start of the military operation on the territory of Ukraine, anti-Russian sanctions have increased significantly. As early as February 24, 2022, the United States and its NATO allies announced new, stronger sanctions against Russia, its political leadership, oligarchs, and sectors of the economy. According to some estimates, almost half of the gold and foreign exchange (international) reserves were frozen. This deprived our country of many opportunities, including buying imported technologies, components, equipment and other goods for petrodollars. According to Washington, the new restrictions will more than halve Russian imports of high-tech products. The most active work on the implementation of programs and plans for import substitution them during the crises of 1998-1999, the global financial and economic crisis of 2008-2009, as well as in 2014-2016 after the introduction of anti-Russian sanctions. The authors showed that every time, as soon as the crises passed, and the price of oil and gas exports grew, the work on import substitution slowed down. In the context of tougher sanctions, the import of high-tech goods becomes almost impossible, so ministries and departments, state corporations, small and medium-sized businesses have again turned their attention to human capital, without the knowledge and competencies of which work on import substitution is impossible. The authors show the importance of human capital in the implementation of state import substitution programs under sanctions, emphasize the need for a real transition of the Russian economy from a raw-material to an innovative development path, and the introduction of a knowledge economy.

2357-1330 © 2022 Published by European Publisher.

**Keywords:** Educational development, educational program concept, educational program development, human capital, professional education

## 1. Introduction

The exceptional importance, the growing relevance and diversity of the problems of human capital management in the interests of innovative development have led to unrelenting interest in this problem on the part of both foreign and domestic scientists, especially in the last decade. In the scientific literature, the interpretation of human capital as one of the forms of capital that contributes to acceleration of innovation processes, has deep historical roots. Thus, the prerequisites for the emergence of the theory of human capital were laid down in the works of the classics of political economy: Smith, Ricardo, Mill, Marx, Petty, Becker, Schultz and others. They considered a person as a production asset of the era of industrialism.

In scientific circulation, the term "human capital" was introduced in the 1980s. Nobel laureates Becker and Schultz. One of the first T. Schultz calculated the size of the total human capital in the United States in the early 1960s, multiplying the cost of a year of education at each level (taking into account individual earnings) by the number of person-years of education accumulated by the population at a given time (Schultz, 1960). Schultz received the 1979 Nobel Memorial Prize in Economics together with W.A. Lewis "for his pioneering research on economic development as applied to the problems of developing countries." (Schultz, 1981). In 1962, Becker published the article "Investing in Human Capital", and two years later, his fundamental work "Human Capital: A Theoretical and Empirical Analysis" was published. The formulated approaches served as a theoretical basis for all subsequent research in this area.

It should be noted that the concept of human capital in its modern form was formed under the influence of works of such famous economists as (Bowen 2018; Blaug, 1976; Kendrick, 1976; Mintzer, 1989; Weisbrod, 1983; Woodhall, 2001), etc.

Considering the role of human capital in shaping long-term sustainable economic growth, one cannot do not refer to the works of Nobel laureates Lucas, Pissarides, Solow and other authoritative researchers. So, Nobel laureate Pissarides, emphasizing the importance of education in the development human potential, pointed out that the role and activity of public policy should increase when it comes to It's about investing in education. It is this area of application of investment efforts that provides long-term positive effect of sustainable economic growth.

Prominent economists dealt with the impact of human capital on innovation processes, among them Schumpeter, La Pierre, Whitfield, Drucker, Knight, Brian Twiss and others can be noted.

A significant contribution to the study of the innovation economy and the role of human capital in it was made by domestic economists Glazyev, Dementiev, Kondratiev, Lvov, Malinetsky, Kleiner, Kuzyk, Nizhegorodtsev and others. So, Professor Kleiner (2006), in his monograph "Microeconomic Knowledge", argued that any manufactured product carries unique knowledge, so knowledge becomes one of the main factors in the competitiveness of a modern enterprise. Practice confirms this conclusion: with the introduction of science-intensive innovations into production, an enterprise receives a product with new qualities that competitors do not have. Therefore, human capital is becoming a determining factor in the development of an innovative economy, a knowledge economy.

Works by Burdenko (2019), Dyatlov (1996), Ershova (2013), Korchagin (2005), Moiseev et al. (2021), Pronina (2018), Ustinova (2015) and a number of other scientists studied the development of the

knowledge economy in Russia in comparison with the developed countries of the world. Most of them substantiate the idea that human intellectual capital plays a key role in the knowledge economy.

Thus, foreign and domestic researchers considered human capital to be an important factor that can have a significant impact on the development of the economy and social sphere of the country and its regions. Human capital is a complex multi-level phenomenon. Its quality and potential depend on the education system, including vocational education as a key component in the formation of the necessary competencies necessary for the implementation of state import substitution programs in the context of anti-Russian sanctions.

In the context of the ban on the import of Western innovative goods and technologies into Russia, the role and importance of the human capital in the economy today is immeasurably increasing.

The scientific novelty of research into the role and importance of human capital in the implementation of state import substitution programs is determined, firstly, by the lack of knowledge (despite certain aspects) of the existing methodology for the formation, improvement and use of human capital in modern conditions, and secondly, by the need to form other competencies, taking into account new challenges and needs of the economy for import substitution in Russia.

In the context of tightening anti-Russian sanctions caused by the events in Ukraine in 2022, problems arose implementation of state import substitution programs that cannot be carried out without human capital with the necessary competencies, including innovative thinking and creativity. AT the conditions of the ban on the import of Western innovative goods and technologies into Russia state programs import substitution have acquired particular relevance and practical significance. "Import substitution should become the main direction of activity," said the Chairman of the Government of the Russian Federation Mishustin (2022) on March 1, 2022 at meeting on improving the sustainability of the development of the Russian economy. President of Russia Putin at a meeting with members of the government on April 5, 2022 formulated priority tasks in the field of import substitution: "We need to set clear guidelines for import substitution and persistently pursue them in the very near future" (Putin talked about the possibility of import substitution in the food sector, 2022, p. 13).

Mikhail Mishustin, speaking at the State Duma with a report on the work of the government on April 7, 2022, stressed the importance of implementing state import substitution programs in all sectors of the economy (Mishustin delivered a report on the work of the government to the deputies of the State Duma, 2022). According to him, import substitution is a matter of economic sovereignty of the Russia. "Own strong industry, powerful scientific and technical base, highly qualified personnel - this key factors of true independence, true sovereignty," said the head of the government of the Russian Federation. In this regard, the role and importance of human capital in the Russian economy is increasing immeasurably today. A person with know-how who knows how to replace imports with domestic ones industrial goods and food of high quality, has become more in demand in our country. Therefore, in new geopolitical conditions, the state policy in relation to human capital should be shaped in response to new challenges and conducted in such a way as to contribute to the maximum extent innovation in the economy.

## **2. Problem Statement**

There are a lot of problematic issues related to the implementation of state import substitution programs under sanctions in the Russian Federation at the moment: these are the financing of programs, projects and plans (and there are several dozen of them only in federal ministries and departments); this is the acquisition of the necessary equipment, including machine tools with numerical control, chips, semiconductors, motherboards for microelectronics, which are not yet produced in our country; this is the training of engineering and technical personnel with competencies, without which import substitution is impossible, etc.

A person with know-how, who knows how to replace imports on domestic technologies, manufactured goods and high-quality food products has become more in demand in our country. Therefore, a comprehensive study of the conceptual foundations of the formation and development of human capital, scientifically based use of its potential in import substitution in modern Russia is fundamental scientific problem.

## **3. Research Questions**

In accordance with the purpose of the study, the authors tried to identify the following questions:

- i. Analyze the sanctions pressure of the collective West in connection with the events in Ukraine in February 2022, show its dynamics and the inhibitory effect on the Russian economy.
- ii. To assess the current state of human capital in our country and its readiness to implement state import substitution programs.
- iii. Determine the main directions for improving the quality of human capital with an emphasis on the successful replacement of imported goods and technologies with domestic ones.

## **4. Purpose of the Study**

The purpose of the study is to study new challenges and identify new approaches and priorities in the use of human capital in the process of import substitution under sanctions.

## **5. Research Methods**

To reveal the main issues of this article, the authors used various methods and approaches.

The first method is retrospective. This allowed the authors to show how the processes of import substitution began and were carried out in post-Soviet Russia, what main stages of these processes have already passed, what successes have been achieved. To understand the essence of the phenomenon, you need to know how it arose, what stages it went through and what it has become today.

An additional impetus to import substitution was given by the economic crisis of 2008-2009, which was accompanied by a significant depreciation of the ruble and Russia's restrictions on imports.

In 2014, when the ruble depreciated sharply again as a result of sanctions pressure on Russia after the annexation of Crimea, the president and government again stepped up import substitution processes. It

is important to emphasize that every time with additional economic sanctions from the West, the government and the president of our country turn to the problems of import substitution.

Dependence on imports in 2014 was observed in many strategic areas of the economy: machine tool building, automotive, aircraft manufacturing, chemical industry, etc. In order to reduce dependence on imported components, goods and technologies, industry plans for import substitution began to be developed en masse. Active import substitution should take place in the machine tool industry as one of the most dependent on foreign supplies domestic industries (Revival of the machine tool industry, 2014).

In the Address of the President of Russia Putin, the Federal Assembly on December 4, 2014 was tasked with stimulating import substitution and facilitating the accelerated development of non-primary companies designed to change the country's export potential product growth in a number of industries focused on the domestic market (Message of the President of the Russian Federation dated December 4, 2014). As positive examples of import substitution, the head of state cited the timber industry, light industry, pharmaceuticals, and the automotive industry. Being prime minister for a short time, V. Putin opposed total import substitution, as it happened in the Soviet Union, and considered it necessary only in strategically important sectors of the economy (Putin is against total import substitution, 2009).

Vladimir Putin, having entered the next 6-year term of governing Russia in May 2018, issued a decree on the strategic goals and objectives of the country until 2024. This decree contained very ambitious plans: to enter the TOP-5 largest economies in the world, to achieve (or exceed) the world average growth rates, reduce the country's dependence on imported technologies and goods.

Using the institutional method of research, the authors sought to analyze and show the work of federal authorities and administrations in organizing import substitution in the country, including the mobilization of financial and material resources for the implementation of government programs and projects. Ahead of summing up the results of management activities in this area, it should be noted that despite the efforts made, the overall level of dependence on imports is decreasing very slowly in our country. The head of the Ministry of Industry and Trade, Manturov, a sociologist on basic education, in one of his reports cited depressing data indicating Russia's total dependence on imports. According to him, the share of imports in the strategic sectors of the Russian economy (heavy engineering, machine tool building, radio-electronic industry and others) reached 90% on the eve of the COVID-19 pandemic (Moiseev, 2019). The reason for this dependence on imports was the wrong industrial strategy.

If at the time of the collapse of the USSR the Russian economy still had production and technical capacities, then a quarter of a century later The production potential of the Russian economy has been significantly reduced, and many high-tech technologies have been lost forever.

For many years ministries and departments have not been able to overcome the total dependence of Russian enterprises and the economy as a whole on the supply of imported technologies, components for the production of machine tools, aircraft, cars and other vital goods in our country.

By the beginning of the special military operation in Ukraine and the new sanctions, dependence on imported technologies and goods had practically not decreased, the share of imports in a number of industries still exceeded 70-90%.

In this way, progress and results of import substitution under sanctions in 2014-2022 showed that the transition from words to deeds in capitalist Russia is "a distance of enormous proportions."

That is why, at an emergency meeting in the government dedicated to overcoming the critical situation in the country's economy after February 24, 2022, cabinet members again relied on import substitution. The head of the Ministry of Industry and Trade of the Russian Federation Manturov assured that "new plans for 23 industries developed in his department contain almost a thousand items of raw materials, materials, components and finished products" over the next three years (Industry plans for import substitution of the Ministry of Industry and Trade of Russia, 2022). True, technologies are needed now, and the program and funding for development is designed for 2022-2024.

On March 1, 2022, Russian Prime Minister Mikhail Mishustin, opening a meeting on improving the sustainability of the development of the Russian economy, which was held in Moscow, called for the activation of existing import substitution tools in order to counter sanctions. He explained that due to the ever-increasing threat of sanctions in recent years, the government, on behalf of the President, has taken a number of decisions to support the development of domestic production and import substitution processes. "Under the current conditions, I consider it necessary to activate the existing tools," the head of government said (Moiseev, 2022, p. 45).

At a meeting on April 5, 2022, the head of state instructed the government to give clear guidelines for import substitution and seek their unconditional implementation "in the very near future."

In order to coordinate work on import substitution under sanctions and make operational decisions, the Ministry of Industry and Trade of Russia developed and approved sectoral plans for import substitution.

The authors express the hope that the above import substitution plans will be implemented, and will not remain on paper, as often happened before 2022.

In the implementation of plans to replace imports with domestic products and technologies, modern capitalist Russia can take an example from the Soviet Union, of which it became the legal successor.

In order to show the organic work of the Soviet government in this area, the authors used a comparative method of research, thanks to which they showed how effective the implementation of plans and programs to replace imports with their own production of goods and equipment, high technologies for the creation of nuclear missile weapons, space industry, aircraft industry, etc. The possibilities of one article do not allow showing the entire scope of the work being done, so the authors propose to dwell on the example of import substitution in the aircraft industry.

Recall that on the eve of World War II, the USSR was in a hostile capitalist environment, in fact, in political and economic isolation and was forced to create its own aviation, both civilian and military, almost from scratch, which played an important role in the victory over Nazi Germany in the years Great Patriotic War.

Developing the domestic aircraft industry in a war-torn country, the USSR, relying on human capital, its competence and enthusiasm, understanding the importance of its work for the good of the Motherland, achieved unprecedented results in the production of modern (for that time) airliners.

There was not a single foreign-made winged aircraft on the air lines of the country, but our aircraft were exported to many countries of the world, and also produced in some of them under license. The USSR could rightfully be called a great aviation power - after all, it was here that every second aircraft

was created, which was then in the airspace of the planet! The same number of aircraft came out of the assembly shops of Soviet aircraft factories as they were produced by all the other countries of the world combined. In the 50s - 80s of the XX century, dozens of types of civil aircraft were developed, not just "taking to the wings", but also successfully going into series, produced in thousands of units - such as, for example, An-2, An-14, Yak-40, Yak-42, Il-14, Il-76, Tu-134, Tu-154. This is an incomplete list of the most "circulated" Soviet winged vehicles. In addition, three dozen different types of helicopters were produced in the USSR. Many of them had both military and civilian "versions". Every year, the country exported seven to eight dozen aircraft, more than a hundred helicopters. The number of aircraft engines successfully sold abroad was in the hundreds (Moiseev, 2022).

A different picture is observed in the aircraft industry of modern Russia: in the post-Soviet period, over 20 years of work on import substitution, our own aircraft industry has practically collapsed. In 2022, a huge country that has recently "got up off its knees" is today capable of producing independently, without imported components, no more than 2 (two) long-haul wide-body airliners IL-96, and medium-haul aircraft, so necessary for flying over its own vast territory, - not one.

It is known that in the days of the USSR there were about 250 enterprises that produced over 150 aircraft of various models and about 300 helicopters per year. Today in Russia the production of domestic aircraft is carried out piece by piece (for example, IL-96). By comparison, Boeing produced and delivered 748 aircraft in 2016 alone (How many planes are manufactured by Boeing and Airbus, 2022; Moiseev, 2022).

According to the head of the United Aircraft Corporation (UAC) M. Poghosyan, until 2022 it was somehow possible to maintain all agreements with foreign partners, despite the sanctions imposed, on civil aircraft Sukhoi Superjet-100 (SSJ100) and MS-21, where the share of imported components exceeds fifty%. Initially, the Russian "SuperJet" had about 80% of imported components, but every year this share is gradually decreasing (Sarukhanov, 2012).

Here is a list of just some of the suppliers of the main systems of the Sukhoi SuperJet 100:

Avionics –THALES (France)  
Control and life support system – LIEBHERR (Germany)  
Chassis – MESSIERDOWTY (France)  
Fuel system – INTERTECHNIQUE (ZODIAC) (France)  
Hydraulics – PARKER (USA)  
Interior and Oxygen System – B/E AEROSPACE (USA)  
Fire fighting system – AUTRONICS (CURTISS WRIGHT) (USA)  
Crew Seats – IPECO (UK)  
Power supply system – HAMILTON SUNDSTRAND (USA)  
Engine vibration sensors – VIBRO-METER (Switzerland)  
Wheels, brakes – GOODRICH (USA)  
Doors – THE BOEING COMPANY (USA)  
(Sarukhanov, 2012).

And what about the Russian "SuperJet"? Russian in it is basically the brand of an aircraft that was designed, tested, certified and assembled from imported components in Russia. In addition, among the

Russian components in this aircraft, there are important details, namely: the fuselage and wings are completely Russian-made, since the metal and composites for the SuperJet are completely Russian.

According to the head of the United Aircraft Corporation (UAC) M. Poghosyan, until 2022 it was somehow possible to maintain all agreements with foreign partners, despite the sanctions imposed, on civil aircraft SukhoiSuperJet-100 and MS-21, where the share of imported components exceeds fifty%. Initially, the Russian "SuperJet" had about 80% of imported components, but every year this share is gradually decreasing.

The passenger airliner SuperJet-100 has been created since the early 2000s, in 2011 it was certified and began to enter the airlines. Until 2014, it was presented as a product of deep international integration of the domestic aviation industry with global suppliers of aircraft components.

Imposing anti-Russian sanctions, the former partners in the aviation business, after the introduction of Russian troops into Ukraine, decided to punish not only Russian manufacturers by depriving them of components, without which aircraft assembly is impossible, but also by banning air carriers from using Boeing and Airbus airliners, taken on lease. At the beginning of March 2022, the European Union announced a ban on the sale, leasing, transfer or export of aircraft and any components to the Russian Federation. The ban applies not only to new contracts, but also existing leasing contracts are terminated within 30 days. Also, the European authorities banned the supply of spare parts, repair and maintenance of European Airbuses from Russian airlines. Boeing, following US government sanctions, also refused to supply spare parts to Russia and service American aircraft.

According to the Federal Air Transport Agency, until February 2022, Russian carriers operated 980 passenger aircraft, 777 of which were leased. Of these, 78 aircraft were arrested in the very first days after the start of the special military operation (Abroad arrested 78 aircraft of Russian airlines due to sanctions, 2022).

In connection with this crisis situation in civil aviation, the authors recalled the solemn promises of the Minister of Industry and Trade Manturov and the General Director of the State Corporation Poghosyan that the Superjet-100 passenger airliner and the MS-21 aircraft will be certified with Russian units and systems already by 2022. However, these promises were not fulfilled, and now the Russians, due to disruptions in import substitution programs in this sector of the economy, will experience unprecedented difficulties in flights, both in their native country and around the world.

The state order program for domestically produced aircraft until 2030 provides for the supply of 583 modern aircraft, including those for regional transportation. Over 45.5 billion rubles have been allocated for their construction in the three-year budget (Moiseev, 2022). Whether this money will save the Russian aviation industry, time will tell.

It is known that thanks to social policy, the basic qualities of human capital are formed, therefore, in order to replace imports, it is necessary to change social policy for the better, increase, and not reduce, as in the state budget for 2022, investments in human capital. Otherwise, the "brain drain" from Russia will increase. According to former Deputy Prime Minister of the Russian government Olga Golodets, more than 1.5 million scientists, engineers, IT specialists and other qualified personnel have left Russia in search of better living conditions and are working in the economies of unfriendly states. Every fifth employee of the world-famous Microsoft company Geitz, which develops software for computers, comes



from Russia. And the flow of immigrants from Russia, in our opinion, will increase due to increased sanctions pressure and other reasons, if adequate and urgent measures are not taken. This conclusion of the authors is confirmed by the mass departure abroad after February 24, 2022 of experienced personnel, so necessary in our country for the implementation of sectoral import substitution plans approved by the government. In the last two months alone (until April 24), more than 100,000 IT specialists have left Russia in search of a better life, according to estimates by Russian economists and the media. The Federal Government had to take emergency measures to preserve the remaining contingent of IT specialists. Thus, at the initiative of the Ministry of Digital Development, Communications and Mass Media of the Russian Federation, the government exempted all employees of IT companies from paying personal income tax for the next three years, and the companies themselves from paying income tax. In addition, it was decided to give IT specialists a preferential mortgage at 5% per annum, to grant them a deferral from army service. In order to attract the necessary personnel from abroad, it was decided to introduce a simplified procedure for obtaining a work permit and a residence permit for foreigners and other measures. These effective measures are likely to reduce the outflow of the necessary personnel from Russia, but there is little chance of attracting foreign IT specialists while military operations are underway in Ukraine.

## 6. Findings

As a result of the study, the authors found that in the Russian Federation much attention (especially recently) has been paid to the problems of import substitution, the development and approval of various state programs, projects and industry plans to replace imports with domestic goods and technologies. However, in this work, according to the authors, there are a number of shortcomings that reduce the results of work in this direction. They come down to this:

- i. One of the main shortcomings is that, while approving state programs, financing projects and plans for import substitution, the Russian state does not strictly control the progress of implementation, does not recover from the perpetrators of their disruption. Over 250 billion rubles were allocated from the state budget for the construction of a medium-haul airliner until 2022, but in the end the money was spent, and there is still no domestic aircraft independent of imported components.
- ii. But even with a favorable outcome of the substitution of imported components for domestic parts, the number of aircraft produced annually cannot satisfy all the country's needs for civilian comfortable airliners.
- iii. The piece production of aircraft in capitalist Russia, which relied on the leasing of foreign airliners to the detriment of the domestic aviation industry, led to a catastrophic situation in this sector of the Russian economy. Russian airlines, including Aeroflot, refused to buy domestic aircraft, citing their supposedly low competitiveness compared to foreign ones.
- iv. Under these conditions, domestic air carriers began to replenish their fleet through imports: they imported foreign aircraft on a leasing basis, bought used aircraft, on which it was still possible to make a profit. This led not only to the bankruptcy of aircraft manufacturing

- v. Enterprises, but also to the reduction, and then the loss of experienced engineering and design and other personnel who had the necessary competencies for the successful construction of domestic aircraft.
- vi. In order to prepare human capital for the implementation of import substitution programs under sanctions, it is necessary, in our opinion, to restructure the system of professional training of engineering, design, technical and other personnel, taking into account the requirements of employers in the formation of students' competencies.
- vii. It is also important for the successful implementation of approved plans and projects in the field of import substitution restructuring the professional thinking of the executives of ministries and departments involved in the development and implementation of state import substitution programs; the selection and appointment of managers of such a high level should be based, first of all, on the level of basic education, and not on the ability to speak beautifully from high tribunes: in order to manage, you need to know the specifics of import substitution of a particular industry well. The times when it was possible to appoint a cardiologist to the post of Minister of Agriculture are irrevocably gone.
- viii. Thus, the analysis of import substitution in the Russian aircraft industry showed that the current state of this industry is deplorable. Western sanctions imposed on it in March 2022 in connection with new events in Ukraine clearly showed that the Russian leadership was more engaged in the production of military aircraft than civilian ones, and after the recall of foreign Boeings and Airbuses, it became very difficult for Russians to fly.

In the difficult economic situation in which our country found itself due to the tightening of sanctions of the collective West in response to military actions on the territory of sovereign Ukraine, the authors propose to activate the state policy of import substitution, move from words and appeals to the direct implementation of state programs, projects and plans that have long been adopted in this area. According to the authors, the way out of the current critical situation in the economy is its diversification, the transition from raw materials to an innovative way of development, including the replacement of technologies and products imported from abroad. It is also necessary to develop effective criteria for targeted support of import-substituting industries, the possibility of adapting foreign experience of import substitution and other ways in this direction (Moiseev et al., 2020). According to the deep conviction of the authors of this article, an economically competent policy of import substitution can become a catalyst for the growth of the Russian economy, the development of science, overcoming the technical backlog, reviving the investment climate. Despite numerous difficulties, the import substitution policy in modern Russia has a real potential associated with the development and implementation of a verified import substitution strategy.

However, as the practice of recent months shows, instead of active creative work to replace imported goods, components and technologies, many ministries and departments of Russia took an easier path, started organizing the so-called parallel imports. The Ministry of Industry and Trade and the government of the Russian Federation help them in this. At the end of March 2022, the government allowed parallel imports of goods from brands that have suspended operations in Russia. The list includes dozens of different products, including cars and parts for them, electronics and household appliances,

clothes and shoes, cosmetics, furniture, paper and cardboard, industrial equipment and materials. On April 25, 2022, the Ministry of Industry and Trade approved the list of such goods. The purpose of the innovation is to provide citizens and enterprises with the necessary products, equipment and components (The Ministry of Industry and Trade, 2022).

## 7. Conclusion

For the successful implementation of programs to replace imports with domestic goods and technologies in our country, a whole range of organizational, financial and other measures should be implemented, and in the shortest possible time. Among the priority measures, according to the authors of the article, the following should be implemented.

In Russia, it is necessary to develop its own production of machine tools, engines and units, components and spare parts, semiconductors and processors, computers with their own software, and other electronics. Of the 1.6 million metal-cutting machines, more than half are physically and morally obsolete. If we take into account that only about 4,000 new turning, milling, drilling and other metal-cutting machine tools are being produced, then at such a rate the re-equipment of the fixed assets of manufacturing enterprises will drag on for several centuries.

It is necessary to take urgent measures now, including training the necessary personnel, improving the quality of human capital, and developing the necessary competencies, without which it is impossible to implement state programs and import substitution plans. Recall that representatives of the elite began to talk about the need for import substitution a quarter of a century ago, in the distant 1990s of the last century, especially after the economic crisis of 1998 and the default announced in the same year.

The complex problems associated with import substitution in the Russian economy necessitate the development of new effective mechanisms to support Russian manufacturers aimed at maintaining existing high-tech enterprises, their human capital, the formation of specialized measures of state assistance to enterprises organizing the production of new types of products in accordance with industry plans for import substitution.

Lack of access to finance, high collateral requirements and significant bank interest rates are barriers to producers' participation in import substitution policies. The formation of the Industrial Development Fund, as well as the introduction of such instruments as special investment contracts, subsidizing interest on loans, financing through development institutions, and the provision of state guarantees as collateral for loans, are designed to attract private investors to import substitution.

In order to provide financial assistance to enterprises and industries that are actively engaged in the replacement of foreign technologies and goods with domestic ones, it is necessary, in our deep conviction, to start with tax cuts (tax holidays), to introduce targeted lending for domestic production at a low interest rate, as in China, to reduce prices for energy resources and raw materials within the country, etc.

In order to strengthen the financing of sectors of the economy that need to build new enterprises, purchase new equipment, technology, the obsolete budget rule should be abolished, according to which surplus petrodollars were not used for the purpose of import substitution, human capital development and innovative production, but were sent abroad, where they were frozen by unfriendly countries. As a result,

we found ourselves without import substitution, and without hundreds of billions of dollars, so necessary for the country in the difficult conditions of the sanctions pressure of the collective West.

In order for the processes of training and retraining of personnel with the required competencies to be successful, it is necessary to change part of the vocational training programs in the interests of employers organizing import substitution production.

The Cabinet of Ministers should, in our opinion, not only set specific goals for import substitution industries, but also control the implementation of state programs, introducing personal responsibility for those leaders who could not organize the implementation of the tasks set.

Thus, as the practice of import substitution in recent decades has shown, the successful implementation of state policy requires targeted organizational, financial, and legal support for domestic entrepreneurship. And it should be carried out constantly, and not from case to case, when Western sanctions are tightened or the ruble exchange rate collapses. This is precisely the guarantee of the economic and military security of the Russian Federation in modern conditions.

Passion for parallel imports, on the contrary, may lead the country to a decrease in economic and military security in the future, when the United States and its allies under anti-Russian sanctions completely block access to Western goods, components and technologies through third countries, including China, India, etc.

## Acknowledgments

The reported study was funded by RFBR, project number 19-29-07024/21.

## References

- Abroad arrested 78 aircraft of Russian airlines due to sanctions. (2022). Retrieved on 15 May, 2022 from <https://www.vedomosti.ru/business/news/2022/03/22/914609-78-samoletov>
- Blaug, M. (1976). The Empirical Status of Human Capital Theory: a slightly jaundiced survey. *Journal of Economic Literature*, 14(3). <https://www.journals.uchicago.edu/toc/jpe/1960/68/6>
- Bowen, W. G. (2018). *Higher education in the digital age. National research University "Higher School of Economics"*. Ed. house of the Higher School of Economics. <https://id.hse.ru/books/217016138.html>
- Burdenko, E. V. (2019). Methodological aspects of building ratings and indices characterizing the development of the knowledge economy in the country. *Economic relations*, 9(2), 419-442. <https://1economic.ru/journals/eo/archive/81500>
- Dyatlov, S. A. (1996). *Theory of human capital*. Publishing house of St. Petersburg University of Economics.
- Ershova, I. G. (2013). *Market of educational services: development prospects in the knowledge economy: monograph*. Kopi-R Group Publishing House.
- How many planes are manufactured by Boeing and Airbus? (2022). Retrieved on 20 May, 2022 from [https://pikabu.ru/story/skolko\\_samoletov\\_proizvodyat\\_boeing\\_i\\_ayerobus\\_4745794](https://pikabu.ru/story/skolko_samoletov_proizvodyat_boeing_i_ayerobus_4745794)
- Industry plans for import substitution of the Ministry of Industry and Trade of Russia. (2022). Retrieved on 30 April, 2022 from <https://frprf.ru/zaymy/prioritetnye-proekty/?docs=334>
- Kendrick, J. W. (1976). *The formation and stocks of total capital*. NBER.
- Kleiner, G. (2006). Microeconomics of knowledge and myths of modern theory. *Higher education in Russia*, 9, 32-34. <https://vovr.elpub.ru/jour>
- Korchagin, Y. A. (2005). *Russian Human Capital: a Factor of Development or Degradation? Monograph*. TsIRE.

- Message of the President of the Russian Federation dated December 4. (2014). Retrieved on 15 May, 2022 from <http://www.kremlin.ru/acts/bank/39443>
- Mintzer, J. (1989). Human Capital Responses to Technological Change in the Labor Market. *National Bureau of Economic Research*. Cambridge.
- Mishustin delivered a report on the work of the government to the deputies of the State Duma. (2022). <https://rg.ru/2022/04/07/mishustin-vystupil-s-otchetom-o-rabote-pravitelstva-pered-deputatami-gosdumy.html>
- Mishustin, M. (2022). Retrieved on 15 May, 2022 from *Import substitution should become the basis of the economy*. <https://ria.ru/20220301/importozameschenie-1775835779.html>
- Moiseev, V. V. (2019). Problems of Public Administration in Russia. *Education, Science, Technology, Innovation and Life*, 433-441. <https://www.clausiuspress.com/conferences/LNEMSS/ICPEM%202019/ICPEM075.pdf>
- Moiseev, V. V. (2022). *Import substitution in the Russian economy: monograph*. Direct-Media Publishing House. <https://www.directmedia.ru/book-686781-importozameschenie-v-ekonomike-rossii/>
- Moiseev, V. V., Pastukh, T. A., Nitsevich, V. F., & Stroev, V. V. (2021). Human Capital Russian Elite and Efficiency Public Administration. *Smart Innovation, Systems and Technologies*, 227, 307-312. [https://doi.org/10.1007/978-981-16-0953-4\\_22](https://doi.org/10.1007/978-981-16-0953-4_22)
- Moiseev, V. V., Sudorgin, O. A., Nitsevich, V. F., & Slatinov, V. B. (2020). Government of Import Substitution as a Factor of Russian Economy Development. *Smart Innovation, Systems and Technologies*, 138, 604-620. [https://doi.org/10.1007/978-3-030-15577-3\\_57](https://doi.org/10.1007/978-3-030-15577-3_57)
- Pronina, Z. Y. (2018). Creativity in the knowledge economy. *Creative Economy*, 12(11), 1725-1732. <https://doi.org/10.18334/ce.12.11.39646>
- Putin is against total import substitution. (2009). Retrieved on 20 May, 2022 from <https://ria.ru/20090527/172470707.html?id=>
- Putin talked about the possibility of import substitution in the food sector. (2022). Retrieved on 20 May, 2022 from <https://ria.ru/20220405/importozameschenie-1781918359.html>
- Revival of the machine tool industry. (2014). Rostec website. Retrieved on 15 May, 2022 from <https://rostec.ru/news/>
- Sarukhanov, P. (2012). *SuperJet 100 is 80% assembled from imported components*. <https://zet09.livejournal.com/226040.html>
- Schultz, T. (1960). Capital formation through education. *Journal of Political Economy*, 68, 571-583. <https://doi.org/10.1086/258393>
- Schultz, T. (1981). Investing in People: The Economics of Population Quality, Berkeley, *University of California Press Journals*, 68(6). <https://doi.org/10.1086/258393>
- The Ministry of Industry and Trade (2022). *Has published a list of goods for parallel imports to Russia*. Retrieved on 15 May, 2022 from <https://journal.tinkoff.ru/news/import-legal>
- Ustinova, K. A. (2015). *Human capital in the innovation economy: monograph*. Institute
- Weisbrod, B. A. (1983). *Human Resources, Employment and Development*, 3. <https://doi.org/10.1007/978-1-349-22741-9>
- Woodhall, M. (2001). Human capital: educational aspects. *International Encyclopedia of the Social & Behavioral Sciences*. <https://doi.org/10.1016/B0-08-043076-7/02469-4>