Technological renewal of production as the basis for increasing the competitiveness of the Russian economy[*]

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Abstract. The competitiveness of the economy is its ability to develop in the conditions of the modern struggle for the new world order. Based on the systems of indicators, the paper assesses the competitiveness of the Russian economy for 2004-2020. The study concluded that its level is decreasing. It proves that the value created in material production underlies the income of the entire society, including the state, and determines the growth rate and the number of people employed in the service sector, as well as in the infrastructure, construction, trade, transport, and communications industries. To accelerate economic growth, it is necessary first of all to increase the growth rate of material production. The obtained statistical dependences make it possible to estimate the volume of investments in fixed assets of material production necessary to ensure a given growth rate of material production and GDP. The paper shows that the Russian economy should do a full re-equipment of production based on modern technology. It has been established that the re-equipment is restrained by the system of relations of capitalist ownership of the means of production, which generates a massive outflow of resources and capital abroad. The study revealed that GDP growth is closely dependent on the growth of new value used within the country. The growth of natural rent in a number of industries has a negative effect, generates instability in the economy development. The technical re-equipment of all industries, primarily engineering, should be emphasized more than the growth of natural resource rent. It has been proved that the state of material production and the use of its results significantly affect not only the standard of living of the population, but also the most important demographic indicators: mortality, birth rate, natural increase of population, and its size. The paper proposes measures to enhance the competitiveness of the Russian economy, which involve a significant strengthening of the role of the state in the development of the economy, including on the basis of state planning.

Keywords: Competitiveness of the economy; indicators and assessment of the competitiveness of the Russian economy; reasons for the decline in the competitiveness of the Russian economy; the role of material production; the need for technological renewal of production; ways to increase the competitiveness of the economy; the role of the state in increasing the competitiveness of the economy.

JEL codes: E60, E61, E65, E66, E69

Introduction

The research has begun due to the struggle of the imperialist powers for world domination, which, in particular, creates pressure and sanctions against Russia. Russia can withstand it by being economically competitive. At the same time, the most important socio-economic indicators deteriorated recently, which means that the competitiveness declined.

The issues of competitiveness are constantly discussed in various research. The concept of competitiveness, including the competitiveness of the national economy, has different interpretations (see, e.g., Klinova, 2020). Some studies report that the concept of national competitiveness is simply unnecessary (Krugman, 2009). In our opinion, this concept is needed to reflect important objective properties of the economy.

Speaking of the concept of national competitiveness, it does not only mean the free market (Jamel et al., 2021) or other world market metrics, e.g., high-tech export share (Gnidchenko, 2021) etc., because free

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market has not existed for some time already. High-tech or high export countries are not the only successful ones — the less developed also are. The latter often develop faster (e.g., Viet Nam, India, etc.) than former (e.g., Japan, France, Italy).

Long lists of metrics in ratings created by World Economic Forum or World Management Development Institute evaluate the conditions for competitiveness in a country rather than the success of its economy not taking the competitiveness conditions into account or even against these conditions. This approach is based on the idea that the competitiveness is the only factor of a successful development and it does not consider cooperation or planning.

The national competitiveness is defined by many authors as the ability of a country to produce and reproduce the conditions necessary for population wellness; these conditions include the potential for exports, macroeconomic attractiveness and productivity (Jamel et al., 2021).

The authors understand the competitiveness of an economy as its sustainable high-rate development, which improves the quality of life for the population in the long run, while successfully overcoming external negative impact. It can be achieved by offering better conditions for competition and, if necessary, protectionist measures, state regulation, and economy planning, development of cooperation and mutual assistance between economic agents.

The theoretical basis of the study is the Marxist economic theory.

The purpose of the study is to identify the causes of the decline in the competitiveness of the Russian economy and to determine ways to overcome them, as well as factors and ways to improve it.

The main hypothesis of the study is, the competitiveness of the Russian economy is ultimately determined by the state of material production, primarily industrial production.

The study object is the economic system of Russia, the subject is the indicators of its development and their impact on the standard of living of the population. The indicators are analyzed for the period from 2004 to 2020 because of, on the one hand, the transition from the OKONKh Code to the OKVED code, and, on the other hand, the statistics. All calculations in the study were based on data from the official websites of Rosstat, the RF Ministry of Finance, the Federal Customs Service, and the Bank of Russia.

Methods

Two groups of indicators were chosen to analyze the competitiveness of the Russian economy:
1. Economic growth rates and indicators of the use of basic resources
2. Indicators of the quality of life of the population
The Group 1 includes:
– the GDP growth rate and the main sectors of material production;
– indicators of the use of labor resources;
– indicators of the use of basic business assets;
– indicators of the use of natural resources.
The Group 2 includes:
– growth rates of real disposable money incomes of the population;
– indicators of income differentiation of the population and the poverty rate;
– demographic indicators and indicators of the population's health.

Of course, the above indicators cannot be regarded as an exhaustive set of indicators for a comprehensive evaluation of the competitiveness of Russia's economy. Nevertheless, their dynamics, in our opinion, provide sufficient grounds to approximately evaluate it.

Correlation and regression analysis methods were used to analyze the dynamics of the above indicators. In some cases, the dynamics of indicators of the Russian economy were compared with the dynamics of similar indicators of other countries to make a more objective judgement.

Results

Results of the analysis of the Group 1 indicators.
Table 1 presents the indicators of physical growth rates of Russia's GDP in 2004-2020.

Table 1 – Physical growth of Russian's GDP

Period	2004-2008	2009	2009-2014	2014-2019	2004-2019	2015	2015-2019	2016	2017	2018	2019	2020
Average annual GDP growth rate	1.067	0.922	1.027	1.005	1.023	0.963	1.015	0.998	1.015	1.028	1.020	0.970

Source: calculated based on Russian Statistical Yearbook 2003-2021

As can be seen from Table 1, a fairly high GDP growth rate in 2004-2008 (1.067) was replaced by a sharp decline in 2009 by 7.8%. In the next 5 years, 2009-2014, the average annual growth rate was 1.027, much less than the pre-crisis period. In 2015, there was another 4.7% decline. Then in 2015-2019, GDP grew unevenly, averaging 1.5% per year. A 3% decline in 2020 was caused by the coronavirus pandemic.

Overall, over the pre-coronavirus period, i.e., from 2004 to 2019, the average annual GDP grew by 2.3%. Thus, we can note the unevenness of Russia's GDP growth and a downward trend. The main reasons for this situation are:

– a significant dependence of the Russian economy on the world energy market, which causes fluctuations in the sold natural rent and the new value created in general;

– significant influence on the state of economy which is rendered by the policy of owners of the capital – non-residents, whose share in the assets used in Russia is rather essential;

– influence on the Russian economy by international financial institutions, controlled by the United States and their allies, the activities of which affect Russia's foreign economic relations.

In turn, these reasons are caused by specifics of the Russian economic system, which is essentially state-monopolistic capitalism.

As follows from Table 2, since 2004 until the coronavirus pandemic, Russia's average annual GDP growth rate was lower than in many former Soviet republics, except Ukraine; lower than in Bulgaria, Romania, Poland, Argentina, Turkey, South Korea, significantly lower than in China and India, but higher than in most industrialized countries of the West and Japan. However, the decline in the growth rate of the Russian economy after 2014 led to the notion that "Russia's share in world GDP collapsed to its lowest since the beginning of the century" (World Economic Outlook, 2021), the growth rate was below the world average.

GDP growth depends on two main factors: the number of people employed in the economy and their labor productivity, calculated as the ratio of GDP to the number of people employed.

The number of employed in the Russian economy, as shown in Fig. 1, depends not only on demographic factors, but also on changes in the value of natural rents and related fluctuations in the inflow of foreign citizens in legal labor activities.

The number of working-age citizens in our country has been steadily declining since 2005, and in 2020 it decreased by more than 8.3 million people, or 9.2%, compared to 2005.

Table 2a – Average annual GDP growth in several countries in 2004-2019

Country	Russia	Azerbaijan	Armenia	Belarus	Kazakhstan	Kyrgyzstan	Moldova	Tajikistan	Uzbekistan	Ukraine	Bulgaria	Hungary	Poland	Romania
Average annual growth rates	1.023	1.078	1.050	1.037	1.052	1.042	1.039	1.070	1.071	1.005	1.029	1.020	1.040	1.036

Source: calculated based on Russian Statistical Yearbook 2003-2021

Table 2b – Average annual GDP growth in several countries in 2004-2019

Country	Brazil	India	China	South Africa	Mexico	Argentina	Turkey	South Korea	Austria	Belgium	Germany	Denmark	Italy	Netherlands
Average annual growth rates	1.022	1.073	1.088	1.020	1.022	1.030	1.048	1.034	1.015	1.014	1.015	1.013	0.999	1.015

Source: calculated based on Russian Statistical Yearbook 2003-2021

Table 2c – Average annual GDP growth in several countries in 2004-2019

Country	Great Britain	Finland	Australia	Canada	Norway	USA	Japan	France	Sweden
Average annual growth rates	1.014	1.01	1.027	1.019	1.015	1.018	1.008	1.012	1.020

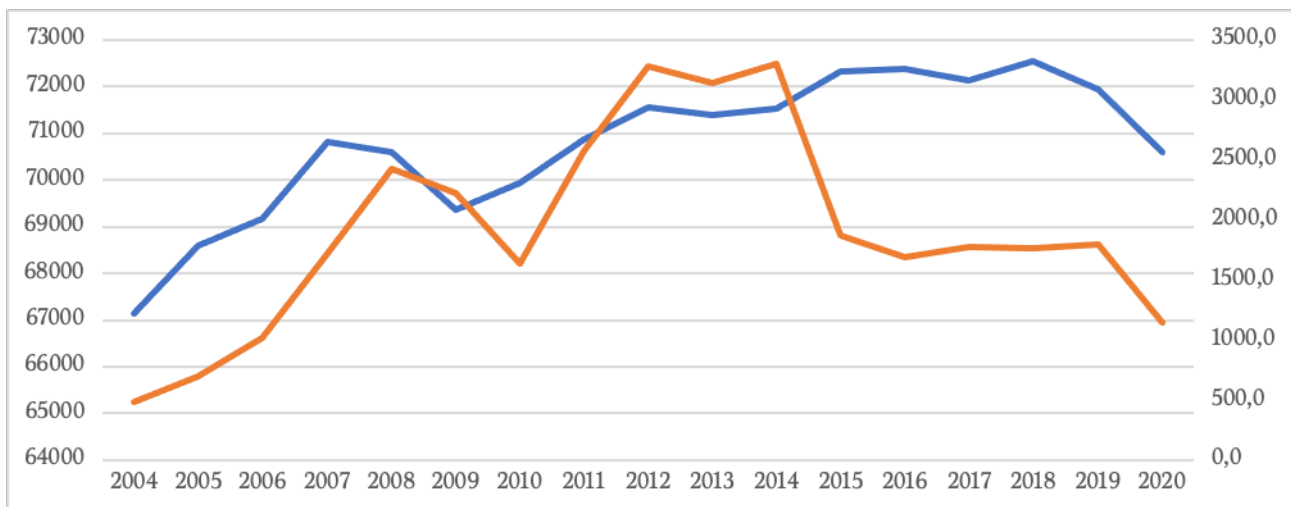*Source: calculated based on Russian Statistical Yearbook 2003-2021*

Figure 1. Average annual number of employed in the Russian economy, thousand people
(blue – Employed in the Russian economy; orange – Foreign citizens legally employed in Russia)
Source: Russian Statistical Yearbook 2003-2021

The increase in the number of employed because of the annexation of Crimea and the 2018-19 retirement reform was overshadowed by a stronger outflow of migrant workers, which led to a reduction in the total number of employed in 2020 to below its number in 2011. This shows that the number of employed people is one of the most important factors that led to the decline in GDP growth.

The most important indicator of labor use that directly affects the amount of GDP, as already mentioned, is labor productivity, calculated as the ratio of GDP to the number of people employed.

As can be seen from Table 3, the dynamics of the growth rate of labor productivity in the Russian economy is similar to the dynamics of GDP – the dependence on the dynamics of the value of natural rents and a downward trend.

Table 3 – Growth rate of labor productivity in the Russian economy

Period	2004-2008	2009	2009-2014	2014-2019	2004-2019	2015	2015-2019	2016	2017	2018	2019	2020
Average annual GDP growth rate	1.049	0.943	1.021	1.004	1.017	0.953	1.017	0.996	1.019	1.022	1.029	0.988

Source: calculated based on Russian Statistical Yearbook 2003-2021

The decline in the growth rate of labor productivity led to the fact that in 2011-2017, it grew by only 1.3%. As a result, Russia stopped catching up with several developed countries according to the indicator. See Table 4.

Table 4 – Ratio of countries by GDP (PPP) per person employed, Russia = 1

Country	2011	2014	2017	Country	2011	2014	2017
Russia	1.00	1.00	1.00	Lithuania	1.16	1.21	1.29
Azerbaijan	0.72	0.74	0.72	Netherlands	1.89	1.87	2.08
Armenia	0.37	0.45	0.57	Poland	1.18	1.16	1.32
Belarus	0.74	0.75	0.71	Romania	0.89	0.91	1.16
Kazakhstan	0.91	0.99	1.08	UK	1.66	1.63	1.79
Kyrgyzstan	0.15	0.17	0.19	Finland	1.83	1.79	1.98
Moldova	0.27	0.30	0.34	France	2.02	1.96	2.10
Tajikistan	0.17	0.19	0.24	Sweden	1.89	1.78	1.98
Ukraine	0.41	0.43	0.47	Australia	1.88	1.83	1.88
Austria	1.94	1.93	2.10	Canada	1.81	1.72	1.82
Belgium	2.16	2.11	2.36	Norway	2.70	2.47	2.46
Bulgaria	0.84	0.80	0.90	South Korea	1.32	1.26	1.50
Hungary	1.30	1.17	1.24	USA	2.45	2.26	2.41
Germany	1.90	1.81	1.99	Turkey	1.20	1.36	1.52
Denmark	1.90	1.90	2.16	Switzerland	2.03	2.14	2.40
Italy	2.01	1.87	2.07	Japan	1.53	…	1.51

Source: calculated based on Russian Statistical Yearbook 2003-2021

Increase in labor productivity can happen extensively – at the expense of lengthening the time of labor of the employed and increasing its intensity – and intensively – by introducing new technologies and increasing the technical equipment. The extensive way has its limits, and crossing them leads to violation of workers' health and ability to work. Intensive way is the main direction of increasing labor productivity.

As the data analysis showed, in Russian economy in 2004-2020, the average annual number of work hours per worker decreased. For example, in 2004-2010, it decreased by about 74 hours, or 3.4%, and in 2010-2020, by another 89 hours, or 4.2%. Therefore, the main driver of productivity growth has been improvements in the technical equipment. However, it has been slower than in those countries where productivity growth has been faster.

This led the authors to analyze another factor of production – means of labor. Machinery and equipment, among other active means of labor, has the largest impact on the level of labor productivity. As the Table 5 shows, since 2011 – especially after 2014 – the most important indicators of machinery and equipment production in the Russian economy have significantly worsened, which had been unsatisfactory even before that.

Despite the constant growth of the physical volume of fixed assets in the economy, on average by about 3.5% annually, companies that create the bulk of new value saw the accelerated depreciation of machinery and

equipment, the increased share of fully worn-out active part of the means of labor. While fully depreciated used machinery and equipment increased by 3.7 percent from 2004 to 2011, it was already 25.6 percent higher in 2017 compared to 2011. And two years later, even before the pandemic, it was up another 15.9% in 2019. As the pandemic began in 2020, these trends intensified further. The authors argue that it caused the drop in productivity growth, as discussed above.

Table 5 – Indicators of the machinery and equipment production in Russian companies over a number of years (excluding small businesses)

Period	2004	2011	2014	2017	2018	2019	2020
Wear rate, %	53.3	54.1	56.3	60.4	61.3	62.1	63.0
Share of completely worn out, %	26	22	23.1	27	27.8	28.7	30.2
Growth of physical volume, %, 2004 — baseline	100.0	122.5	138.2	153.7	160.2	167.6	173.8

Source: calculated based on Russian Statistical Yearbook 2003-2021

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The rate of renewal of the technical equipment for production obviously depends, first of all, on investments in the basic business assets. Their figures quite explain the negative processes in the production of the means of labor. See Table 6.

Table 6 – Specific weight of some kinds of investments in GDP, %

Investment type	On average in 2004-2011	On average in 2012-2019
Fixed assets investments	19.0	17.9
Non-financial assets investments	14.5	13.6
Machinery, equipment, transport investments	7.3	6.2

Source: composed by author

The higher the rate of accumulation, the higher the rate of economic development, because the increase of accumulation helps accelerate the technological renewal of the economy and improve the technical equipment. Thus, in China in 2004-2019, the accumulation rate was on average about twice as high than in Russia (Bulletin on current trends in the Russian economy, 2020). Hence, the growth rate of the Chinese economy, as well as the labor productivity of Chinese workers, was much higher than the corresponding Russian indicators.

To increase the growth rate of labor productivity and, consequently, GDP, it is necessary to increase the amount of funds going both for technological renewal of existing production and for creating new enterprises equipped with advanced technology. There are opportunities for this, as will be shown below.

The most important factor of production is natural resources: reproducible and non-reproducible.

The analysis found that when the capitalist relations were being rebuilt in the 1990s, there was an avalanche-like deterioration in the main indicators of the use of reproduced natural resources, which changed for the better after the 1998 crisis. However, even today, the reproduction of natural resources remains below the level of 1990 by many important indicators. See Table 7.

Table 7 – Some of the most important indicators of the reproduction of natural resources

Period	1990	2004	2008	2014	2015	2019	2020
Area under crops, thousand hectares	117705	77323	76923	78525	78635	79888	79948
Area under fruit and berry crops, thousand hectares	866	632	533	514	512	465	463
Mineral fertilizers applied to soil (converted to 100% of nutrients), million tons	9.9	1.4	1.9	1.9	2	2.7	3
Organic fertilizers applied to soil, million tons	389.5	53.2	51.3	61.6	64.2	70.7	70.5
Limestone meal and other limestone materials applied to soil: total, million tons	31.4	2.4	2.3	2.3	2.1	2.3	2.9
Gypsum and gypsum-containing rocks applied to soil, million tons	1361	16	3.8	10	3.2	15.3	20.6
Phosphate meal applied to soil, thousand tons	500	56	24	20	9.7	20.6	18.2
Cattle, millions	57	23.2	21	18.9	18.6	18.1	18
including cows, millions	20.6	10.2	9.1	8.3	8.1	8	7.9
Pigs, millions	38.3	13.7	16.2	19.5	21.4	25.2	25.9
Sheep and goats, millions	58.2	18.1	21.7	24.4	24.6	22.6	21.7
Milk produced, million tons	10.1	5	6.3	9	9.5	10.9	11.2
Cattle and poultry production, million tons	55.7	31.9	32.2	30	29.9	31.4	32.2
Stock of wood, billion m³	81.6	82.1	83.3	82.8	82.8	82.6	82.5
Forest regeneration, thousand hectares	1831	797	828	863	803	1,068	1,134
Fish and other aquatic biological resources caught, tons	7900	2965	3333	4235.1	4492.5	4983.3	4974.8
Juvenile fish and other bioresources released into water bodies, millions	…	6452.2	7908.4	8864.7	8974.8	8848.5	8353.2

Source: Russian Statistical Yearbook 2001

The authors believe that the data on the volume of wood burned at the root is also quite indicative. In 1990, this indicator was 23.5 million m³, in 2004-2010, it rose to 32.6 on average, and in 2011-2020, to 71.7 million m³. In recent years, i.e., in 2018-2020, it has already reached 106.6 million m3. These figures eloquently characterize the level of forest protection (Russian Statistical Yearbook 2003-2021, 2021).

Current trends in the use of natural resources were also reflected in the dynamics of agricultural production in Russia. In 1990-1998, it decreased by 44%, in 2004, it reached only 71.6% of the 1990 level and surpassed this level only in 2014 by 0.3% (Russian Statistical Yearbook – 2001, 2001).

The use of reproduced natural resources is regulated by the "Agriculture, forestry, hunting, fishing and fish farming" industry. In 2004-2019, this industry increased its output annually, with the exception of a slight decline in 2010 and 2012, while the number of employees and the growth of technical equipment of labor declined. Overall, it increased by 53.7% over 2004-2019, which enabled a reduction in imports of a number of food products and, for some items, an increase in exports.

The growth of output happened mainly due to two main factors: the labor factor capacity and the

number of employed workers who create value. The statistically significant correlation between these factors and the volume of industry output is:

$$O_1 = 0{,}611 CL_1^{1{,}425} \cdot VCW_1; \ R = 0{,}909; \tag{1}$$

where

O_1 – industry output, measured in 2004 prices, billion rubles;

VCW_1 – value-creating workers in the industry, thousand people;

CL_1 – capital-labor of value-creating workers, measured as the ratio of the volume of fixed assets used by them in billion rubles, measured in 2004 prices, to the number of value-creating workers in the industry;

R – correlation factor of the given ratio.

Note. Hereinafter, all monetary indicators will be measured in 2004 prices, in billion rubles, the number of employed – in thousand people.

$0{,}611 CL_1^{1{,}425}$ indicates the labor productivity of value-creating workers. The degree index, which is 1.425, shows that the growth of labor productivity in the industry was faster than the growth of capital equipment; therefore, not only the amount of the used means of labor increased, but the introduction of more efficient equipment also did. The growth of labor productivity in the industry is also affected by other factors: the improvement of crops, soil quality, livestock and poultry breeds, changes in the weather, etc. But their influence on labor productivity, as the analysis shows, is less significant than the use of more advanced machinery.

Table 8 – Indicators of machinery and equipment production in "Agriculture, forestry, hunting, fishing, and fish farming" companies for a number of years (excluding small businesses)

Period	2004	2011	2014	2017	2018	2019	2020
Wear rate, %	46	43.3	50.6	54.1	55	55.8	57.2
Share of completely worn out, %	24.6	8.8	11.4	15.7	16.5	18.1	19.4

Source: Russian Statistical Yearbook 2003-2021

The data in Table 8 shows that the companies in the industry, which create about half of its new value, improved the indicators of equipment reproduction in 2004-2011, but then they declined again. The share of fully depreciated machinery was less in 2019 than in 2004, but the depreciation rate was higher.

This affected the level of labor productivity in the industry, calculated as the ratio of output to the number of value-creating workers. While this rate increased by 41.6% in 2004-2011, increasing by 5.1% per year on average, it increased by 27.6% in 2011-2019, increasing by 3.1%. on average The average growth rate in industry productivity in 2004-2019 was 4.0% (Calculated based on Russian Statistical Yearbook 2003-2021).

In general, the indicators of machinery and equipment production, as well as labor productivity in these industry enterprises are better than for the production as a whole. At the same time, an increasing share of production in the industry is created by small business entities, but the statistics of their fixed asset reproduction indicators are not public knowledge. The authors believe that with these indicators, the production of fixed assets in the industry would change for the better.

Thus, subject to further improvement of the use of available reproducible natural resources, renewal and improvement of technical equipment, the industry has a significant potential for growth, even with a smaller number of employees.

The state of non-reproducible natural resources, or the material and raw material base of the Russian economy is reflected primarily in the size of their explored reserves. As Table 9 shows, deep exploratory drilling in Russia has sharply declined since 1990 and remains at about 1 million meters annually.

Nevertheless, as the report prepared by the Ministry of Natural Resources of the Russian Federation

states, "As a result of geological exploration work performed by subsoil operators, there were incremental reserves of a number of minerals (oil, natural gas, coal, iron ores, copper, molybdenum, zirconium, rare earth metals, gold, platinum group metals, and graphite), which helped maintain reproduction indicators consistently at the target and above for a ten-year period. Reserves of nickel, cobalt, zinc, potassium salts, and fluorspar remained virtually unchanged over this period. At the same time, stocks of lead, tin, and tungsten decreased" (On the State and Use of Mineral Resources of the Russian Federation in 2020, 2021).

Table 9 – Deep exploratory drilling in Russia

Period	1990	2000	2004	2009	2017	2018	2019	2020
Total, thousand meters	5299	1722	931	913	n/a	n/a	n/a	n/a
Including oil and gas, thousand meters	5286	1719	925	901	n/a	n/a	n/a	n/a
Oil, million meters	5.2	1.5	0.8	0.7	100.0	1.1	1.2	0.9

Source: Russian Statistical Yearbook 2001

Table 10 shows that production of the main types of mineral resources declined after 1990, but then began to gradually recover, and even surpassed 1990 levels for oil, natural gas, and primary energy resources as a whole. The production in 2020 declined because the global demand for energy resources also declined due to the coronavirus pandemic.

Table 10 – Extraction of main types of mineral resources in Russia

Period	1990	2004	2010	2017	2018	2019	2020
Coal, million tons	395	282	322	410	439	439	398
Oil, million tons	516	459	506	547	556	561	513
Natural gas, billion m^3	641	633	651	691	726	739	694
Primary energy resources, million tons of fuel equivalent	1857	1687	1812	2012	2089	2110	1975
Iron ore concentrate, million t.	107	97.1	95.9	95	96	97.7	100

Source: Russian Statistical Yearbook 2001

Russia has basic natural resources for many years to come and has considerable potential for successful competition in the raw materials markets. At the same time, it is important to track the mining industry, which expores and extracts these resources.

In 2004-2019, industry output increased by 25.6%, with an average annual growth rate of 1.5%. In 2020, it decreased by 8.1%. In 2004-2019, the correlation of output and factors of production in the industry is:

$$O_2 = 536,8CL_2^{0,19} \cdot VCW_2; R = 0,949 \tag{2}$$

where
O_2 – industry output;
VCW_2 – value-creating workers in the industry;
CL_2 – capital-labor of value-creating workers, measured as the ratio of the volume of fixed assets used by them to the number of value-creating workers in the industry;
R – correlation factor.

The given correlation has a sufficiently high explanatory power ($R^2 = 0.90$). It shows that the output in the industry depends mainly on two factors – the number of value-creating workers and their labor productivity ($536,8CL_2^{0,19}$), which depends on capital-labor. The degree in the formula of labor productivity (0.19) is less than 1. It indicates that, for the same increase in labor productivity for a given number of workers, a larger increase in means of labor is required. In the language of microeconomics, the marginal productivity of

fixed capital is equal to 0.19 of its average productivity. In other words, the capital intensity of production is constantly increasing.

It is usually explained by "objective processes of depletion of the mineral resource base and deterioration of mining conditions", which cause "growth of specific capital expenditures for the creation of new production facilities" (Zamaraev & Marshova, 2020). Nevertheless, the authors believe it is necessary to pay attention to the indicators of reproduction of means of labor in the industry.

Table 11 – Indicators of machinery and equipment production in mining companies for a number of years (excluding small businesses)

Period	2004	2011	2014	2017	2018	2019	2020
Wear rate, %	53	59.1	64.3	64	64.6	65	66
Share of completely worn out, %	20.8	28.2	31.5	33.7	34.1	35.7	37

Source: Russian Statistical Yearbook 2003-2021

These indicators steadily deteriorated during the studied period, as Table 11 shows, and were worse than in other manufacturing industries as a whole. The average annual growth in labor productivity, measured as the ratio of output to the number of workers creating value was only 1.1% in 2004-2019 (Calculated based on Russian Statistical Yearbook 2003-2021).

The industry retains its competitiveness mainly due to the profitability of mineral resources extraction, even in the increasingly complex objective conditions of production. However, as can be seen from the data presented, it needs a serious technological upgrade, which would improve the efficiency of the economy as a whole, free up some labor for use in other industries, and ease the labor of those employed.

The ability of the economy to develop against the negative influences of the outside world, of course, depends not only on the industries directly interacting with nature. The industries that produce finished products and bring them to consumers play an important role. According to OKVED-2016, these include the following types of economic activity (Note: OKVED-2016 is taken as the basis for classifying industries, since the period 2004-2019 is analyzed):

1. manufacturing industries;
2. production and distribution of electricity, gas, and water;
3. construction;
4. wholesale and retail trade; repair of vehicles and motorcycles
5. hotels and restaurants
6. transportation and communications.

The first two activities, along with mining and quarrying, are part of manufacturing. The vast majority of their output is in the form of goods and has value. The other four industries provide services in addition to creating value. (For example, construction, in addition to creating buildings for sale, provides repair services. In trade, along with services, there are additional costs of production. The same in the catering industry. Freight transport is part of the production process, and passenger transport is a service.)

The new value created in the above industries, as well as in the two considered at the beginning of the analysis, forms the source of all primary income in the economy. Income from payment for services, ultimately generated by their exchange for value, is secondary in nature. Therefore, new value underlies the value of GDP, but only the part that is used domestically. By this we mean the amount of new value minus the balance of the current account, deductions to sovereign funds and the reserves of the Bank of Russia.

Since the value creation is important for forming income of economic entities, the authors analyzed the indicators of the development of value-creating industries. The amount of new value contained in the output of industries was estimated by adding net taxes on products to net output. To compare the value created in different periods, it was converted to 2004 prices using GDP deflator indices. As a result, the new value was measured as exchange value, at its purchasing power. The number of those employed creating value in the industries and in the economy as a whole was also estimated. All calculations were based on data from Rosstat,

the Federal Customs Service of the Russian Federation, the RF Ministry of Finance and the Bank of Russia.

In 2004-2019, the following statistically significant correlation was relevant

$$NV=22,65CLV^{0,447}VCW+NR; R=0,948;$$ (3)

Where NV – all the new value created in the economy during the year;

VCW – average annual value-creating workers in the economy;

CLW – capital-labor of value-creating workers;

$22,65CLV^{0,447}$ – labor productivity as the ratio of created value, natural rent excluded, to the number of value-creating workers;

NR – the amount of natural rent sold in a year, billion rubles, in 2004 prices.

Natural rent represents the excess of producers' income over the normal level due to the sale of raw materials and materials made of them. According to the analysis, the size of the natural rent depends primarily on the value of oil and oil product exports. Its dependence on these factors is:

$$P=-5842+4.88E_N+2.71E_{NP}; R=0.784$$ (4)

where E_N and E_{NP} are revenues from oil and oil products exports, respectively;

R – multiple correlation factor.

Formula (4) explains fluctuations of rent by about 61.5%. Therefore, the natural rent also depends on the sale of other resources, but to a lesser extent.

In expression (3), the degree at capital-labor less than 1, which means that at the same increase of capital and the same number of workers, the increase of labor productivity without the natural rent will be less and less. To study this effect, the authors analyzed the indicators of machinery and equipment production in the industries where new value is created. The results of the analysis for two of them were given above, Table 12 shows the results for the rest, except for the "Hotels and restaurants" industry. (Since 2017, OKVED was changed, and Rosstat provides information on the new classification, which is reflected in the table).

Table 12 – Indicators of machinery and equipment production in companies in a number of industries (excluding small businesses)

	Wear rate, %			Share of completely worn out, %		
Years	2004	2011	2014	2004	2011	2014
Manufacturing industries	53.4	51.6	53.9	28.7	18.1	18.9
Production and distribution of electricity, gas, and water	57.1	42.2	43	23.6	13.8	12.5
Construction	48.9	53	59.9	19.7	16.9	20.1
Wholesale and retail trade; repair of vehicles and motorcycles	65.6	71.9	67.9	48.3	46.8	43.7
Transportation and communications	36.2	56.2	59.8	12.6	20.3	24

	Wear rate, %				Share of completely worn out, %			
Years	2017	2018	2019	2020	2017	2018	2019	2020
Manufacturing industries	58.5	60.4	60.7	62.2	23.5	24.4	25.5	27.3
Electric power, gas and steam supply; air conditioning	48.6	49.6	51.3	52.9	15.7	17.9	16.7	19.3
Water supply; sewage, waste collection and utilization, pollutant elimination	60.6	61.7	63.9	64.1	26.5	29.1	30.6	31.4

	Wear rate, %				Share of completely worn out, %			
Years	2017	2018	2019	2020	2017	2018	2019	2020
Construction	64.7	60.3	62.3	62.2	26.4	22.3	26.5	28
Wholesale and retail trade; repair of vehicles and motorcycles	72.6	73.1	73.5	74.8	47.1	48.1	46.8	48.4
Transportation and storage	62.6	63.1	63.8	65.4	25.8	26.8	27.8	30.2
Information and communications	65.3	67.8	68.5	67.5	29.8	31.7	35.8	34.5

Source: Russian Statistical Yearbook 2003-2021

These indicators show that in 2004-2011, the reproduction indicators of the most important part of the means of labor improved slightly in two out of five industries and declined in three. But then, especially after 2014, all industries saw a steady deterioration in performance. Overall, in 2019, and even more so in 2020, the machinery and equipment production in the companies that produce the bulk of the value were significantly worse than in 2004. It is clear that one should not expect an increase in the growth rate of labor productivity in such conditions. In 2011-2019, they declined substantially compared to 2004-2011. See Table 13.

Table 13 – Average annual growth in production of new value per 1 value-creating worker, in constant prices, in %

Period	2004-2011	2011-2019	2004-2019
New value, natural rent included	2.4	0.6	1.4
New value, natural rent excluded	2.7	0.3	1.4

Source: calculated based on Russian Statistical Yearbook 2003-2021; Russian Federal Customs Service; Ministry of Finance of the Russian Federation; Statistical Bulletin of the Bank of Russia

The indicators of the new value production affected the service industry and the economy as a whole.

As the analysis showed, all industries, depending on the main factors affecting their dynamics, can be divided into three groups (according to OKVED-2016):

1) Industries in which the main factors are the number of employees, fixed assets, natural rent. These are:

– agriculture, forestry, hunting, fishing, and fish farming;

– mining;

– manufacturing.

This is where new value is created.

2) Industries in which all new value created in the country serves as the main factor, since it determines the demand for the products of the industries. These include:

– production and distribution of electricity, gas, and water;

– wholesale and retail trade; repair of vehicles and motorcycles;

– education;

– communal, social, and personal services.

The first two industries create new value. But in construction, some of the activities are services. The remaining two industries are service.

3) Industries where the main determinant of output is the new value used domestically, which determines the demand for the results of their activities:

– construction;

– hotels and restaurants;

– transportation and communications;

– finances;

– real estate, renting, and services;
– public administration and military security; social insurance education;
– health care and provision of social services;
– communal, social, and personal services.

All branches of this group belong to services.

The analysis revealed the following statistically significant correlations for the first group of industries:

$$OG_1 = 32,27 CLG_1^{0,518} \cdot VCWG_1 + 0,23NR; R = 0,970; \tag{5}$$

$$NVG_1 = 9,81 CLG_1^{0,561} \cdot VCWG_1 + 0,947NR; R = 0,985; \tag{6}$$

where OG_1, CLG_1, $VCWG_1$, NVG_1 – the output, the capital-labor, the value-creating workers, and the new value in the products of industries in Group 1, respectively.

Equations (5) and (6) show that the output and new value in this group of industries is affected not only by the number of value-creating workers and their capital-labor ratio, but also by the amount of natural rent.

The new value contained in the output of Group 1 industries ranged from 45% to 59% of all new value created in the economy in 2004-2019. This was caused by fluctuations in the value of natural rents.

For the second group of industries, correlations are:

$$OG_2 = 3144.9 + 0.316NV + 0.064WG_2 - 0.296NR; R = 0.891; \tag{7}$$
$$NVG_2 = 586.14 CLG_2^{0.103} VCWG_2 + 0,178NR; R = 0.573; \tag{8}$$

where OG_2, CLG_2, $VCWG_2$, NVG_2 – the output, the capital-labor, the value-creating workers, and the new value in the products of industries in Group 2, respectively.

In addition, a significant correlation was established between the number of those employed in this group of industries and the amount of all new value created in the economy:

$$WG_2 = 18990.8 + 0.134NV + 0.257FG_2 - 0.316NR; R = 0.910; \tag{9}$$

where OG_2, WG_2, FG_2 – the output, the workers, and the fixed assets in Group 2, respectively.

Expressions (7) and (9) show a significant direct dependence not only of the output, but also of the number of workers in the Group 2 on the amount of new value created in the economy. The new value is the main factor determining the output. The correlation factor between the output in the group of industries and all new value created in the economy is 0.820. The other factors have only 7.1% of impact. This happens because the rise in new value increases the demand for the products of Group 2 industries, which boosts output and employment. An increase in the natural rent leads to an increase in the cost of specific material costs in these industries, which has a certain negative impact on output and on the number of workers. The volume of fixed assets positively impacts the number of workers in this group of industries because the expansion of fixed assets requires more workers to serve them.

The significance of dependence (8) is not very high, but it also shows the lack of obvious technical progress in the production of value in this group of industries. The direct dependence on the value of natural rents happens because the growth of rents leads to an increase in prices, which allows industries to increase their income.

Similar correlations were established for the Group 3 industries:

$$NVG_3 = 0.109 CLG_3^{1.12} \cdot VCWG_3 + 0.048NR; R = 0.889; \tag{10}$$
$$OG_3 = 1577.2 + 0.601NV_D + 0.187FG_3; R = 0.959; \tag{11}$$
$$WG_3 = 17938.1 + 0.181NV_D + 0.301FG_3 - 0.189NR; R = 0.965; \tag{12}$$

where NVG_3, CLG_3, $VCWG_3$ – the new value, the capital-labor, and the value-creating workers in the products of industries in Group 3, respectively.

Where OG_3, WG_3, FG_3 – the output, the workers, and the fixed asset in Group 3, respectively.

NVD – the new value used domestically.

Equation (10) shows a certain technical progress in this group of industries, as the capital equipment degree exceeds 1. However, the previous statement says that this is not enough for technical progress to

become tangible at the level of the whole process of value creation in the economy.

Natural rent has only a small impact on the value of new value in the equation (10). By excluding it from the correlation, the multiple correlation coefficient reduces by only 1.3%. But, like for Group 2, it happens because the growth of natural rents leads to a slight increase in prices, which increases the income of the industry group.

Equations (11) and (12) show that the main determinant of output and employment in this group is the new value used domestically. The value of the natural rent has no significant impact on the output of these industries. The impact of natural rents on the number of workers is also low. Excluding rents from the correlation formula reduces the multiple correlation coefficient by only 1%. At the same time, it works in the opposite way.

The authors also tested the hypothesis that the main factor affecting the value of GDP is the new value used domestically. The analysis produced the following correlation:

$$GDP=1.558VD_D+9894; R=0.936; \tag{10}$$

where GDP – gross domestic product;

NVD – the new value used domestically.

The correlation is quite significant, which can also be seen in the graph in Figure 2. It shows that each additional billion rubles of value used.
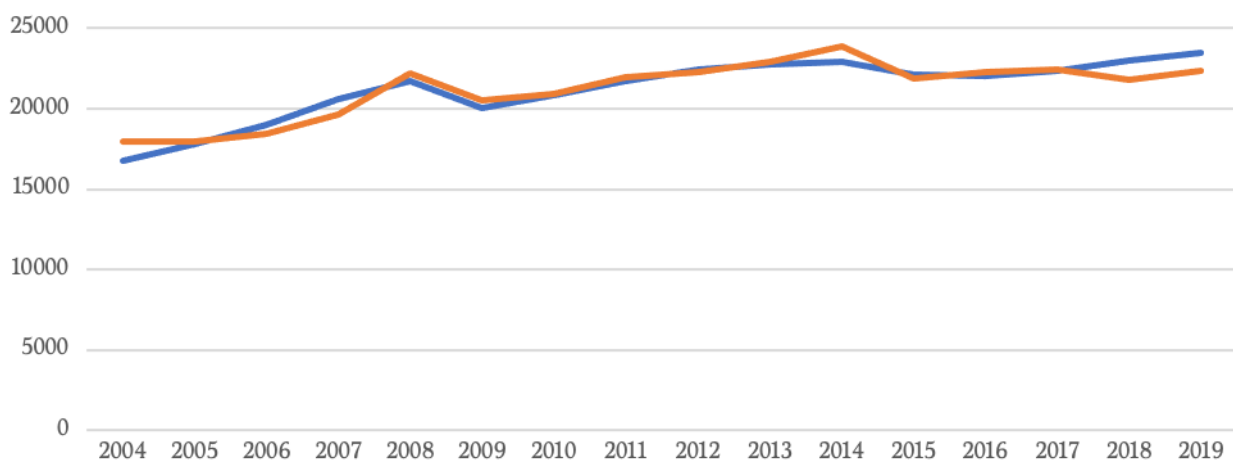
Figure 2. Actual and estimated values of GDP in 2004 prices, billion rubles
(blue – actual values; orange – estimated values)

Source: composed by author

Estimates within the country increases GDP by about 1.55 billion rubles. Conversely, for example, an increase in net exports by 1 billion rubles, all other things being equal, reduces GDP by the same 1.55 billion rubles.

Thus, production, appropriation, and use of value physically create the income of all subjects of the economy.

The generated income, in turn, determines the standard of living of economic participants. Thus, the correlation factor between the annual growth of GDP and the growth of actual final consumption of households is 0.941. The close correlation between these indicators can be seen in the graph in Figure 3. The correlation factor between the basic coefficients of GDP growth and real disposable money income of the population is 0.951. It was the dynamics of GDP that determined the indicators of growth of the population's real disposable money incomes. See Table 14.

As follows from the data in Table 14, after the rapid growth in 2004-2008, a period of slowing growth and then decline in real disposable income began. The average annual growth rate fell from 10% in 2004-2008 to 2.8% in 2009-2014, and then to -1.8% in 2014-2019. When the pandemic started in 2020, they fell another 2% (Russian Statistical Yearbook 2003-2021, 2021).

Table 14 – Average annual growth rates of real disposable money incomes of the Russian population

Period	2004-2008	2009	2009-2014	2014-2019	2004-2019	2015	2015-2019	2016	2017	2018	2019	2020
Average annual growth rates	1.100	1.021	1.028	0.982	1.030	0.968	0.986	0.942	0.988	1.004	1.010	0.980

Source: Russian Statistical Yearbook 2003-2021
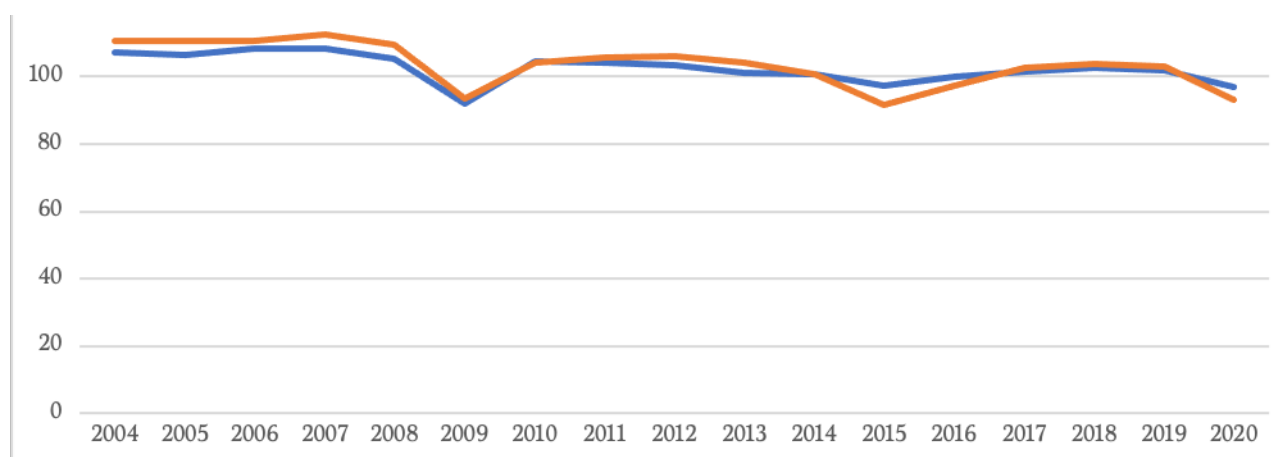
Figure 3. Annual growth rate of GDP and actual household end consumption, in %
(blue – GDP; orange – Actual household final consumption)
Source: Russian Statistical Yearbook 2003-2021

The fall in the rate of production of new value has caused a decrease in the growth rate of GDP and, as a consequence – lower growth and a decrease in real incomes of the population.

Meanwhile, the standard of living of the population does not only depend on the growth of total consumption and real income, but also their differentiation, as well as the proportion of the population below the poverty line.

As Figure 4 and 5 show, the funds ratio rose sharply from 15.2 in 2005 to 16.8 in 2006-2007 and then began to decline gradually, reaching a value of 14.8 in 2020, although there was some increase in 2012 and 2018. The proportion of people with incomes below the subsistence level fell from 17.7% in 2004 to 10.7% in 2012, but then rose to 13.4% in 2015. It then began to decline and was 12.1% in 2020 (Russian Statistical Yearbook 2003-2021, 2021).
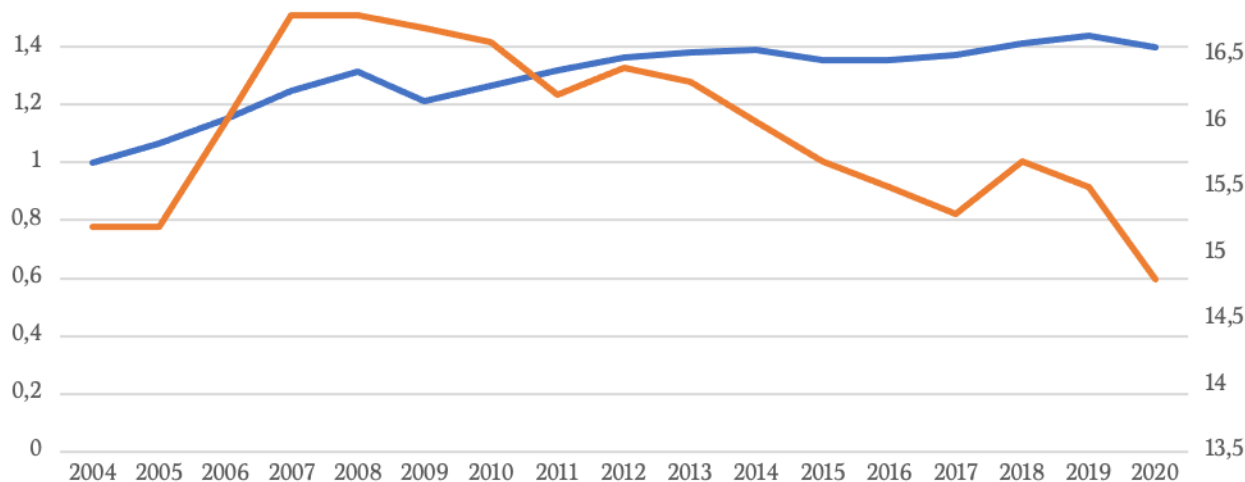

Figure 4. GDP growth and fixed assets factor dynamics in Russia
(blue – GDP growth; orange – Fixed assets factor)
Source: Russian Statistical Yearbook 2003-2021

This is the official statistics. There are no more reliable data. It follows that, on the one hand, income inequality has been decreasing in recent years (reduction of the fund ratio); but, on the other hand, inequality has increased from 2012 to 2020, as the share of the population with incomes below the subsistence level has grown.
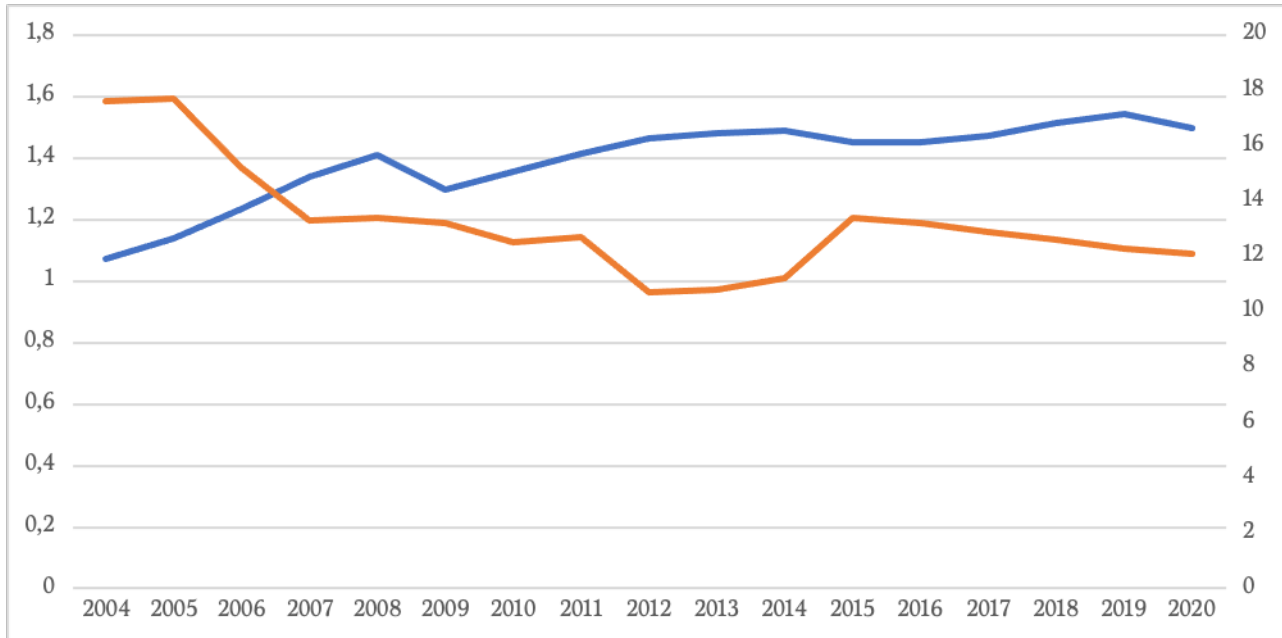

Figure 5. GDP growth and share of population below the poverty line
(blue – GDP growth; orange – % population below the poverty line)
Source: Russian Statistical Yearbook 2003-2021

An important indicator of the standard of living is the morbidity rate of the population. See Figure 6. As can be seen from the graph, the morbidity of the Russian population was increasing until 2014, reaching about 115.0 thousand people, then in 2015-2019 began to fluctuate around the level of 114.6 thousand people per year. But when the pandemic started, it suddenly dropped (?) to 111.3 thousand people in 2020 (Russian Statistical Yearbook 2003-2021, 2021) (because they detected less?), while during this period there was a sharp increase in the Covid-19 cases and population mortality (See Figure 7). These are Rosstat data.
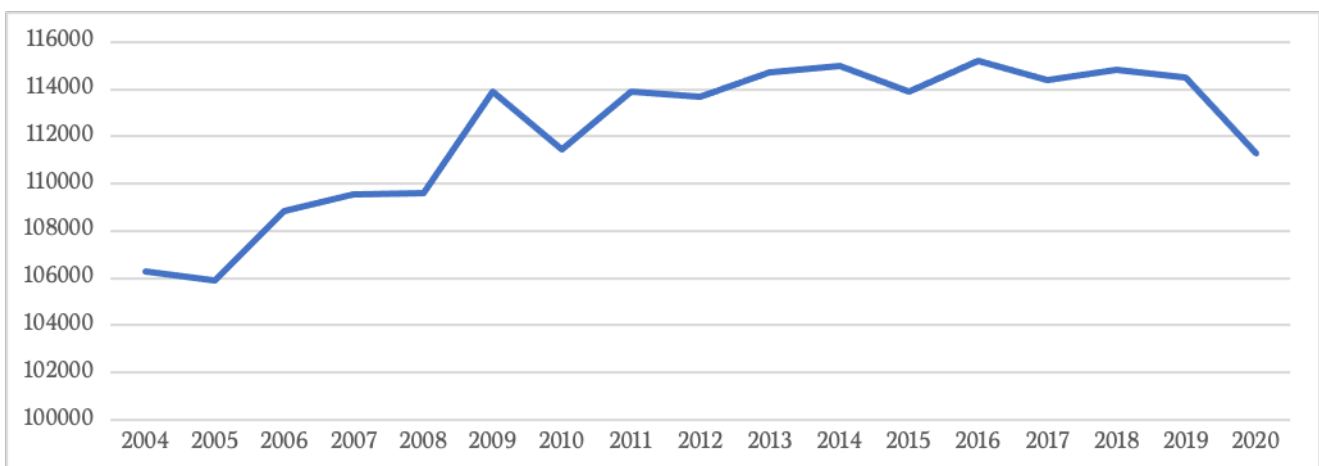

Figure 6. Total morbidity in Russia, thousand people
Source: Russian Statistical Yearbook 2003-2021

As Figure 7 shows, the natural decline in population since 2005 gradually decreased, reaching about 0 in 2012, then the natural population growth began to increase, which is 0.3 per one thousand people in 2015. Since 2016, however, natural decline began to rise again, increasing to -2.2 in 2019 and to -4.8 per one thousand people in 2020.
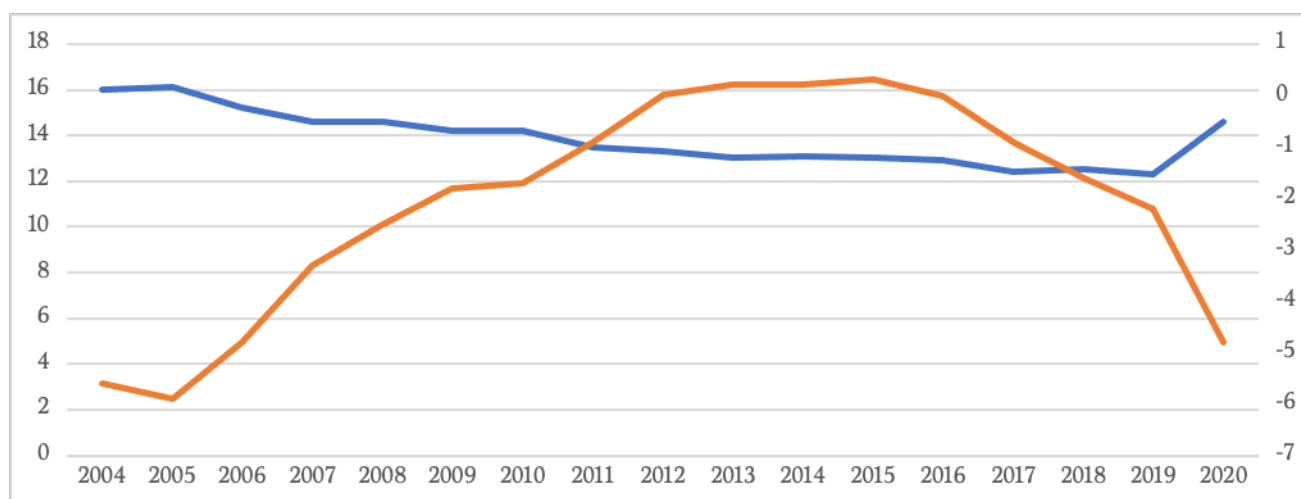
Figure 7. Indicators of mortality and natural growth of Russia's population
(blue – Dead, per thousand people; orange – Natural population growth)

Source: Russian Statistical Yearbook 2003-2021

Analysis of the data showed that the dynamics of natural population growth is closely related to the growth of real disposable income of the population. The correlation factor between these values is 0.878. And the correlation factor between the mortality rate and the growth of real disposable money income of the population was -0.832, i.e., a significant inverse relationship – the higher the income, the lower the mortality rate. This means that the dynamics of production and use of value ultimately determines the dynamics of the most important demographic indicators.

At the same time, it was discovered that the correlation factor between the growth of real disposable income of the population and total morbidity is 0.889, which indicates a significant direct correlation – with the growth of income, morbidity shows a clear upward trend. This phenomenon can probably be explained by the environment degradation, the increase in the social and psychological problems of the population, the level of medical care and other factors, which requires a special study. In any case, this fact does not indicate an improvement in the quality of life of Russian citizens.

An analysis of the dynamics of the birth rate is also interesting. See Table 15.

Table 15 – Birth rate per thousand people in Russia

Period	2004-2008	2009-2014	2015-2019	2016	2017	2018	2019	2020
Average rate for the period	10.9	13.0	11.0	12.9	11.5	10.9	10.1	9.8

Source: Russian Statistical Yearbook 2003-2021

Russia's fertility rate increased from 10.4 in 2004 to 13.3 in 2011-2014, but then began a steady decline and fell below the 2004 level in 2019. In the Covid year of 2020, the decline continued. The graph in Figure 8 clearly shows the relationship between the fertility rate and the growth rate of real disposable income of the population, although this factor is, of course, influenced by other factors, above all – the age structure of the population.

Indicators of average life expectancy, which has been growing steadily since 2004 and increased from 65.31 years to 73.34 years in 2019, i.e., by 8 years, also portray the living conditions of Russians in a good light. But in 2020, it decreased to 71.54 (Russian Statistical Yearbook 2003-2021, 2021).

One should keep in mind that this is a hypothetical indicator, not an actual one. But even this indicator shows that Russia lags behind most industrialized countries, and not only them.

Discussion

The analysis shows that since the early 2010s, the competitiveness of Russia's economy as it was defined

previously in the paper has been declining, although its position in the WEF and IMD ratings has been moving up. The dynamics of the entire set of Russia's main socio-economic indicators discussed above testify to the decline of competitiveness.
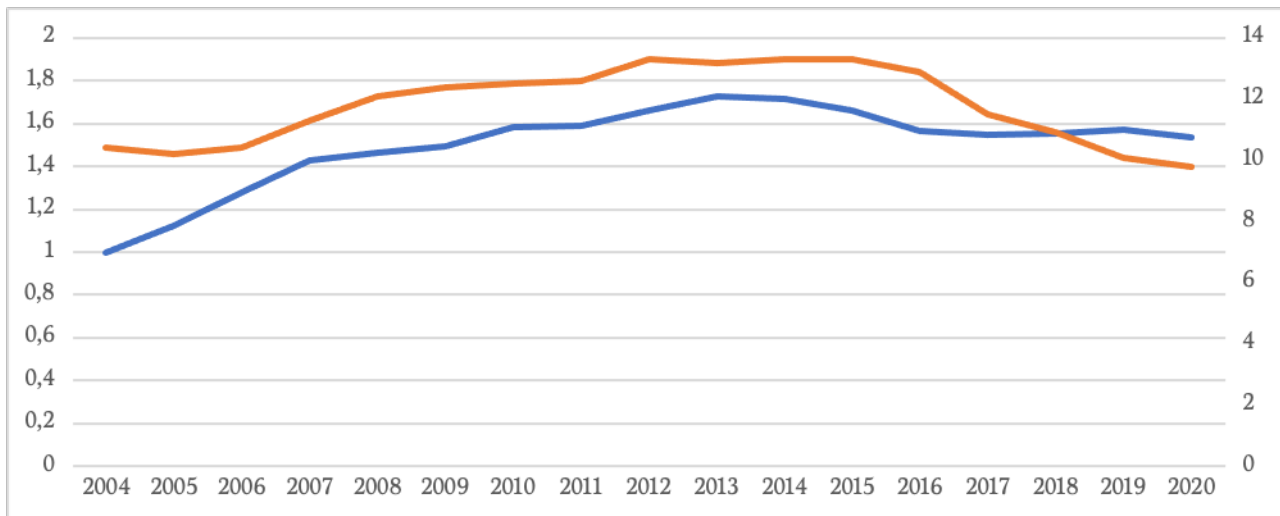

Figure 8. Dynamics of the birth rate and real disposable money incomes of the population
(blue – Real disposable income growth, 2004=1; orange – Birth rate)
Source: Russian Statistical Yearbook 2003-2021

The main reason for that, as has been shown, is the increasing wear and tear of the means of labor in use, which slows down the growth rate of labor productivity in manufacturing, which is the material basis of the whole economy. In addition, a significant part of the created value is removed from the economy. In 2004-2019, according to the estimates, the Russian economy lost value of more than 30.6 trillion rubles in 2004 prices, which is 31% more than the entire volume of GDP in 2019 in the same prices. This led to a low level of capital investment and a slowdown in renewing the materials and machinery in production and services. In 2020-2021 the outflow of value has only accelerated.

The study found that the growth of net exports is not a stimulus for economic development; on the contrary, other things being equal, it reduces domestic demand and income of economic subjects, because it reduces the new value used inside the country, creating the main channel for the value outflow. The country has to realize that exports are not needed just for the sake of exports, but precisely to buy abroad what the country needs.

Many authors point out the unacceptable deterioration of the economy. For example, experts of the National Rating Agency believe that it is necessary to increase labor productivity growth to 4-4.5% per year through a significant increase in investment in fixed capital and development of advanced technologies.

As Vodomerov (2021) shows, if all the new value created were used to develop the country, the pace of Russia's socio-economic development could be significantly accelerated and stabilized, increasing the competitiveness of the Russian economy. The existing property relations allow a narrow group of the oligarchs to own the results of the labor of millions of workers and use them in their narrow self-interest, which hinders this development.

A serious negative impact on our economy is also caused by the growing economic war being waged by the U.S. and its allies against Russia, whose actions are in no way guided by the requirements of «fair» or «free» competition.

To overcome the negative trends, it is necessary to abandon the concept of national competitiveness as providing conditions for freedom of competition, all the more so because the creation of such conditions in the current realities is nothing more than utopia. The state should increase its role in ensuring the competitiveness of the national economy, as noted by many authors. Various measures in this direction are proposed, see, for example, Klinova (2020), Zehri (2020), Naidenova & Leonteva (2020), Vlasov & Sinyakov (2020).

In particular, C. Zehri advocates an active state restriction of capital outflows, referring to the fact that

«after the 2008 financial crisis, international financial institutions have changed their views on the benefits of capital account liberalization... The International Monetary Fund (IMF) has publicly supported 'measures to control capital flows... International banking and financial institutions have agreed that capital account liberalization is a major source of financial instability, and capital controls can be an effective way to protect financial systems from its volatile flows» (Zehri, 2020).

However, the proposed measures, as a rule, are limited to various ways of indirect influence on market relations by the state. Taking into account the structure of ownership relations that has developed in Russia, where the vast majority of large corporations have foreign registration, and the share of non-residents' capital is very significant, measures of this kind will not make a sufficient impact.

The new composition of the Russian Government sets tasks and draws up programs on development of mechanical engineering, including electronic equipment production, which should prove to be good. Although it has been done before, but the declared goals, as a rule, were not achieved.

However, it seems that the role of the state should be strengthened even more. The point is that the main task to be solved is to transfer the economy to modern machinery in a historically short time by re-equipping the existing and building new enterprises. To do that, annual deliveries of new machinery to enterprises over the next few years must be 300% larger than now, both through imports and mainly at the expense of the development of Russian machine building.

Funds for this can be obtained through:

– substantially restricting capital outflows from the country (this should not stop capital exports, which are aimed at capturing foreign enterprises to acquire advanced technology or create conditions for the export of goods);

– using a large part of the sovereign funds and reserves of the Central Bank;

– internal government loans from the population (which would reduce financial speculation and scams by banks using people's deposits);

– increasing the taxation of capital taken offshore, as well as the super incomes of the richest part of the oligarchs;

– preserving resources and cancelling economically failing projects like Moscow City, etc.

These funds must be used for the technical reconstruction of the economy. It is clear that this task cannot be accomplished within the free competition. State planning is required. It must redistribute value flows in the economy by directing them to development and implementation of new technology, including an increase in imports of modern machinery in exchange for raw materials, primarily to revive the Russian machine-tool industry and the machine-building industry in general. As the competitiveness of these sectors increases, the need for and dependence on imported machinery will diminish, and the economy will be transferred to the Russian equipment.

In this case, the state should force corporations to adhere to the national interests, up to and including the nationalization of enterprises, if it is required to preserve the integrity and security of Russia in the face of the growing onslaught from the United States and its satellites. This is not the time to believe in fables about the benefits of liberal economics.

Conclusions

Main results of the study:

1) The study was based on the author's interpretation of the concept of economy competitiveness, which reflects the objective ability of the economy to develop in the context of the current intensified struggle for the new world order. It was used to assess the competitiveness of the Russian economy and to conclude that it has been declining since about 2011.

2) The provision of Marxist theory about the key role of material production in the economy was confirmed. It is the value created in material production that underlies the income of society as a whole, including the state, and determines the growth rate and the number of people employed in services, as well as infrastructure, construction, trade, transport, and communications. Therefore, in order to accelerate

economic growth, it is necessary first of all to increase the growth rate of material production.

3) The statistically significant dependencies obtained in the course of the study help estimate approximately the investments in fixed assets of material production necessary to ensure the specified growth rate of material production industries and GDP.

4) In the Russian economy as a whole, the indicators of reproduction of materials and machinery for manufacturing are declining. This means that a cardinal re-equipment of manufacturing with modern technology is overdue. However, it is restrained by the system of capitalist property relations on means of production, which generates a mass outflow of resources and capital abroad. It benefits a certain part of owners of means of production, but dooms the country to technological backwardness.

5) The study showed that the growth rate of GDP is in close direct correlation with the growth of new value used domestically (NVD). Therefore, positive net exports do not contribute to economic growth, but only pave the way for capital outflows abroad. Deductions to sovereign funds and the Central Bank reserves also reduce the value of the NVD. Restricting investment in the Russian economy under the pretext that it seems to have reached «full employment» or that it is «overheating» is not tenable. It's all about where and in what form investments are directed. If through investments, manufacturing is re-equipped with new machinery, it will let all economy sectors grow and also release the workers from manufacturing to other sectors.

6) The increase of the NVD is achieved primarily by increasing imports. But it should be done with maximum benefit for the national economy. First of all, it is necessary to increase imports of the most effective technology in exchange for exported resources, while avoiding the import of equipment that can be produced in Russia. Only what cannot be produced domestically in the near future should be imported.

7) As the analysis showed, the growth of natural rent, causing an increase in prices for industrial products, does not impact all sectors positively. The current dependence of the economy on the volume of natural rent is a factor that disturbs sustainable economic growth. The development of the economy needs to focus not on the growth of natural rents, but on the technical re-equipment of all industries, especially mechanical engineering, which produces the means of labor. Onlis this can help the country achieve true economic sovereignty in the economic war around the world and create the grounds for solving all major problems of the Russian economy: poverty, migration, demography, labor shortages, ecology, import substitution, economic diversification, etc.

8) The study showed that the growth of GDP caused by the development of material production and the use of its results significantly affects not only the standard of living, but also the most important demographic indicators: mortality, birth rate, natural increase and, therefore, the population. This once again confirms the Marxist theory that mentions the role of material production as the basis of life of the entire society. Any statements that material production seems to play a secondary role in modern society, giving way to services, are false in Russia's case. It has been shown that the development of the service sector crucially depends on the production and use of value.

9) The paper proposes measures to enhance Russian economic competitiveness which go beyond ensuring freedom of competition and suggest a greater role for government in economic development, including through government planning.

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