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The review “Russian Economy. Trends and Outlooks” has been published by the Gaidar Institute since 1991. This is the 43th issue. This publication provides a detailed analysis of the most significant trends in the Russian economy, global trends in the social and economic development. The work contains 6 big sections that highlight different aspects of Russia’s economic development, which allow to monitor all angles of ongoing events over a prolonged period: global economic and political challenges and national responses, economic growth and economic crisis; the monetary and budget spheres; financial markets and institutions; the real sector; social sphere; institutional changes. The work is based on an extensive array of statistical data that forms the basis of original computation and numerous charts confirming the conclusions.

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4.2. Sectoral dynamics of industrial production in 2021¹

In 2021, output in the extractive sector of the Russian industry went up due to the influence of factors that appeared at the beginning of 2021: growth of demand for thermal coal and natural gas from European and Asian countries; weakening of the effect of restrictions related to the OPEC+ agreement on the back of higher quotas for daily oil production by the member countries. The manufacturing sector

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also demonstrated growth in 2021, which was achieved owing to high prices and growing external demand for the products of industries that occupy a significant share in the structure of industrial production (metallurgy, chemical industry, oil refining industry).

For a correct interpretation of the existing trends in individual industries, it is necessary to decompose their output into components: calendar, seasonal, irregular and trend;¹ the interpretation of the latter is of substantial interest. The Gaidar Institute experts cleaned the series of indexes of all the branches of industrial production for 2003—2021 from the seasonal and calendar component and singled out the trend component² on the basis of the current statistics published by Rosstat on the production indexes in the industrial sectors of the economy.

The findings of time series processing for the industrial production index as a whole are shown in *Fig. 3*. *Fig. 4* demonstrates the findings for the aggregated indexes of the extractive and manufacturing sectors, as well as the production and distribution of electricity, gas and water. For the rest of the series, the decomposition results are presented in *Table 18*.



Fig. 3. Dynamics of the industrial production index in 2014–2021 (Actual data and trend component), in % to the annual average 2016

Sources: Rosstat, authors calculations.

1 “Trend component” is a well-established term used in the literature, but it should be noted that this component is not a “trend” in the strict sense used in econometrics when analyzing time series: in this case it is the residual from the separation of calendar, seasonal and irregular components from the series.

“Trend component” is incorrect to use for time series forecasting (for most of the indexes of industrial production it is non-stationary in levels (and stationary in differences), but it can be used for interpretation of short-term dynamics and its comparison with the events that took place.

2 The trend component was extracted with the Demetra package using the X12-ARIMA procedure.

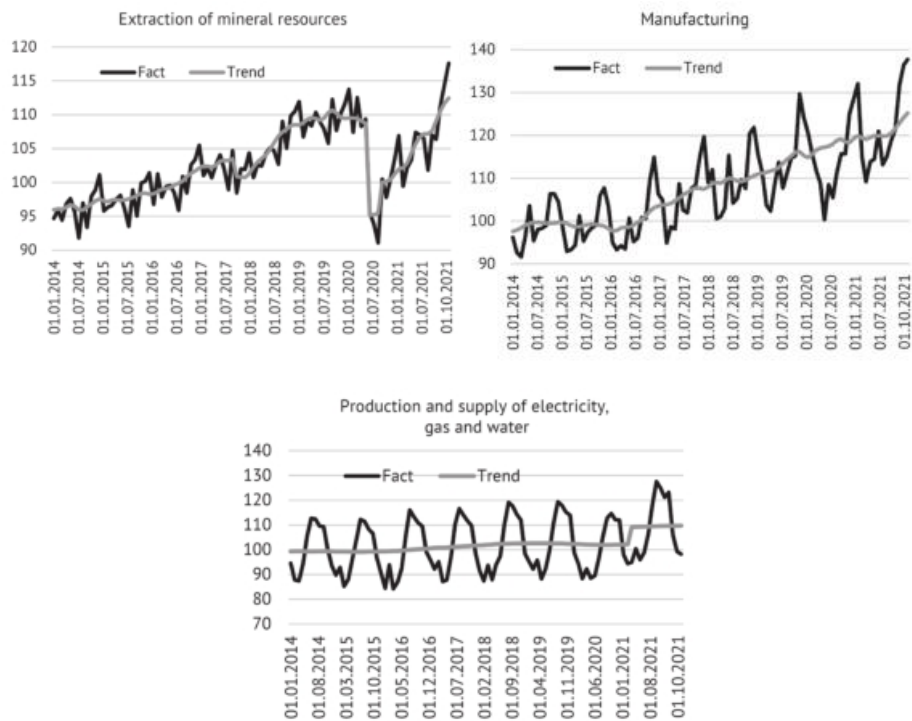


Fig. 4. The dynamics of production indexes by industry in 2014–2021 (Actual data and trend component), in % to the annual average 2016

Sources: Rosstat, own calculations.

4.2.1. Dynamics of the industrial production index in Q1

In Q1 2021, the trend component of the extractive sector demonstrated slow growth, mainly by virtue of the gas and coal sectors. The factors having a positive impact on the trend component of the extractive sector remained the same at the end of 2020. Growth of external demand for Russian coal from Europe and China: first, as a consequence of the current ban imposed by China in November 2020 on coal imports from Australia; second, owing to a sharp increase in natural gas prices and a decline in Europe’s own production. Additional influence was exerted by harsh weather conditions, which significantly raised natural gas export volumes in these areas in January-February 2021. Despite the gradual relaxation of quotas on oil production, the OPEC+ deal² continued to have a negative impact,

¹ *Kaukin A.S., Miller E.M.* Dynamic of industrial production in January-February 2021 // Russian Economic Development. 2021. No.4 (28), pp. 10-14.; *Kaukin A.S., Miller E.M.* Dynamic of industrial production in March-April 2021 // Russian Economic Development. 2021. No. 6 (28), pp. 18-22.

² At the December 3, 2020 OPEC+ meeting, it was decided to gradually ease restrictions on oil production in 2021: in particular, to increase total oil production by 0.5 million bpd, not 2 million bpd, from January 1, 2021 (from 7.7 million bpd to 7.2 million bpd, not 5.8 million bpd), which

and preventive maintenance work on infrastructure facilities of the oil and gas industry also made a negative contribution.

The analysis of the trend components in the manufacturing sector showed that a number of industries demonstrated a slight positive trend in Q1 2021 (nevertheless, manufacturing as a whole continued to stagnate):

- the light industry due to the import substitution, including the shift of consumer demand to a lower price segment on the back of lower incomes recorded in Q1;
- the chemical industry through continued growth in production of medicines and materials used for medical purposes in the face of another wave of coronavirus infection; and through increased demand for chemical and mineral fertilizers on domestic and foreign markets (mainly as a result of rising global fertilizer prices);
- machine-building through the production of passenger cars, demand for which continued to grow on the back of continued shortages (including a shortage of imported components - electronics)¹.

Given the decline in real disposable household income, there were negative dynamics in the segment of paid services to the public. The development of the trend component of freight turnover continued to show a slight decline, despite the growth of exports of fuel and energy minerals and fertilizers. Wholesale and retail trade in Q1 2021 demonstrated an uptick mainly owing to the growth in sales of drugs, chemical fertilizers, and motor vehicles.

Therefore, the OPEC+ agreement and the coronavirus pandemic were the key factors affecting the manufacturing and extractive industries in Q1 2021; some easing of conditions for Russia under the OPEC+ deal at the beginning of the year and opportunities to contain the pandemic through mass vaccination suggested the potential for growth in the short term. Nevertheless, at the end of the first three months of 2021, the manufacturing industry as a whole exhibited around zero growth rates.

4.2.2. Industrial production index in Q2₂

In Q2 2021, the trend component of the extractive sector continued its sluggish growth. The main growth drivers for the coal and gas industry remained the same. The advance in natural gas exports to European countries was ensured by the low level of occupancy of local UGS facilities prior to preparations for the heating season: the growth in demand for Russian gas from European countries, particularly Germany, Italy, Turkey, France, the Netherlands and Poland, was

allowed Russia to raise production by only 125,000 bpd. On January 5, 2021, Russia also agreed to additional relaxation of those conditions until the end of March 2021, which gave it the right to produce an additional 65,000 barrels a day. Russia's production quota for January-March 2021 was increased as an exception (the total quota remained unchanged), and from April 2021 the easing of the deal's terms continued for all the OPEC+ members.

1 Sales of new automobiles in Russia went up by 4-fold in April // *Vedomosti*. 12.05.2021. URL: <https://www.vedomosti.ru/auto/news/2021/05/12/869349-prodazhi-novih-avtomobiley-rossii-virosli>

2 *Kaukin A.S., Miller E.M.* Dynamic of industrial production in May-July 2021: factors of growth. // *Russian Economic Development*. 2021. No. 9 (28), pp. 27–32.

ensured by the fact that by Q2 2021 owing to heavy snowfalls and cold weather in Q1 2021, there was low occupancy of local UGS facilities, as PJSC Gazprom met the demand through its UGS facilities in Europe rather than by gas transportation from Russia. Increased exports of thermal coal to Asian countries (due to China's refusal to import coal from Australia) and European countries (by virtue of reduced affordability of natural on the back of increased demand for electricity and reduced supplies from Colombia). In addition, oil production increased due to the easing of restrictions under the OPEC+ deal.¹

The trend component of the manufacturing sector showed sluggish growth at the end of Q2 2021, the main positive contribution to this dynamic continued to be made by:

- chemical industry. Mainly driven by external demand surge. Export growth is a resulting from global economic recovery, particularly in China (export of chlorides, fluorides, insecticides, herbicides, amino compounds, etc.) in H1 2021 and favorable price terms in the world market. Meanwhile, the domestic market showed negative dynamics stemming from advanced purchases of raw materials at the end of 2020 and the beginning of 2021 - early 2021, resulting in large stocks of fertilizers and primary polymers, which were carried over to subsequent periods;
- metallurgical industry. Stemming from an increase in export and domestic supplies as a result of higher world prices for metallurgical products, as well as expectations of new increased customs duties on a wide range of goods produced by the industry from the end of July;
- machine-building mainly due to output growth of passenger cars, for which there has been a supply shortage since late 2020, as a result of the shutdown of many plants during the lockdown, and in early 2021 amid a shortage of imported components - electronics, mainly microchips, whose production was reduced because of the pandemic. The surge in demand for passenger cars at the end of H1 2021 is associated with the expectation of higher prices, as manufacturers have increased costs against the backdrop of rising global steel prices (the share of metal in the cost of a car is up to 40%);
- the oil refining industry driven by the ongoing recovery of economic activity in Russia.

The trend component of paid services to the public maintained a negative dynamic. The restrictions associated with the pandemic, which were in effect in different regions of Russia were the possible reason. The dynamic of the trend

¹ *Kaukin A.S., Miller E.M.* Situation of the oil market in Q2 2021 // Russian Economic Development. 2021. No. 8 (28). p. At the OPEC+ meeting in early July, OPEC ministers voted to raise oil production by 2 million bpd until the end of 2021 (or 400,000 bpd monthly in August and December) and to extend the agreement until the end of 2022. (The proposal was blocked by the UAE delegation (only a consensus decision can be made), which had insisted on raising its production benchmark from 3.168 mn b/d to 3.8 mn b/d because the current level did not match OPEC production. In order to avoid a repeat of the April 2020 situation, when the OPEC+ agreement was terminated, a compromise was reached by revising the baseline level of oil production reduction for the UAE and increasing it to 3.5 mb/d starting from May 2022. In return, the UAE supported a proposal to extend the current deal to limit oil production until the end of 2022.

component of freight turnover showed growth on the back of export supplies of fuel and energy minerals, fertilizers and metallurgical products. Wholesale and retail sales demonstrated sluggish growth by the end of Q2 2021. Wholesale trade was mostly driven by growth in sales of chemical fertilizers, wood processing products and motor vehicles, while retail sales were driven by growth in sales of food and textile products.

In Q2 2021, particular concern was caused by industrial growth in combination with a recovery of the labor market, as well as a spike in inflation in the manufacturing sector, which was caused by a strong increase in world prices for products of the metallurgical, chemical and petrochemical industries (the possible beginning of the recovery of the world economy after the pandemic). Rising prices for products of the metallurgical, chemical and petrochemical industries began bringing about price growth in the related segments of the Russian economy, and the rapid recovery of the labor market began to lead to higher wages, which could subsequently put additional pressure on inflation in the consumer segment.

4.2.3. Index in Q3¹

In Q3 2021, the trend component of the upstream sector exhibited growth. The increase in oil production was ensured by the continuing recovery of oil demand and OPEC+’s response to this surge: an increase in the total level of oil production by 400,000 barrels per day per month starting from August 2021 (Russia’s increase was about 100,000 barrels per day). Factors influencing the growth of natural gas and coal production remained the same. For gas production, it is the continued low level of UGS occupancy in Europe,² coupled with growing demand for gas on the domestic market and in China (increased gas supplies for export through the Power of Siberia “Sila Sibiri” pipeline). For coal production, it is the growth of demand in Asian and European countries, which was triggered by the growth of natural gas prices, which made coal-fired generation competitive.

The trend component of the manufacturing sector at the end of Q3 2021 showed around zero growth rates; the main positive contribution to this dynamic continued to be made by:

- Light and food industries (production of food, textile and leather products) – on the back of the shift of consumer demand to a lower price segment (as a rule, more represented by domestic rather than foreign-made products), as well as owing to the presence of a minimum share of Russian-made goods in the implementation of public procurement (for most items on the list, quotas are set at 50-90% of the finished volume of purchases)³;
- Chemical industry. Mainly due to growth in domestic and foreign demand for drugs and medical materials. And also by virtue of external demand

1 *Kaukin A.S., Miller E.M.* Industrial production index in Q3 2021 // Russian Economic Development. 2021. No. 11 (28), pp. 39–44.

2 52.2% in July 2021 against 83.3% in July 2020; 62.5% in August 2021 against 88.9% in August 2020; 74.1% in September 2021 against 93.3% in September 2020.

3 Decree of the Government of the Russian Federation of January 03, 2020 No. 2013 “On the minimum share of purchases of goods of Russian origin”.

for nitrogen fertilizers, which require large amounts of natural gas in production. A significant increase in natural gas prices made nitrogen fertilizer production in Europe unprofitable, which raised demand for export products from Russia;

- Metallurgy industry – driven by growth of export and domestic supplies driven by an increase in global prices for metallurgical products, abolition of China's VAT refund for exports and import duties on a number of ferrous metallurgy products. In addition, at the beginning of Q3 2021, export growth was influenced by the introduction of new elevated customs duties in Russia from the end of July on a wide range of goods produced by the industry;
- Machine building. The shortage of semiconductors and the increase in the cost of raw materials had no effect on the output volumes of transport vehicles, machinery and equipment in Russia, which continued to grow in Q3 2021. Possible reasons were the ongoing shortage¹ of products on the market due to the fact that the enterprises did not operate at full capacity during the lockdown in 2020, which coincided with the expectations of price growth owing to a possible increase in the scrappage fee and exchange rate fluctuations at the end of H1 2021, and the government measures stimulating demand for certain types of engineering products.

The trend component of paid services to the public retained its negative dynamics. A possible reason was the continuing pandemic-induced restrictions in different regions of Russia. The dynamics of the trend component of freight turnover showed a slow drop in Q3 2021 against the backdrop of decline in exports of fuel and energy minerals, which was caused by infrastructure constraints² associated with the transportation of coal in the Far East for export to China and an increase in domestic demand for natural gas. Wholesale and retail trade demonstrated sluggish growth: wholesale trade was driven mainly by higher sales of drugs and medical supplies, chemical fertilizers, vehicles, machinery and equipment, retail sales by higher sales of food and textile products, and by payments (designed to support consumer demand) for school-age children in August and the September payment to pensioners and military personnel.

According to the findings of the trend components analysis of the series of the industrial production indexes and other related industries, we can conclude that the main risk factors of slowdown in industrial growth in Q3 2021 remain the same: the deteriorating epidemiological situation inside the country and in the countries with which Russia is connected by large trade flows (for example, export of metallurgical and chemical industry products to China); rising prices of commodities on world exchanges; termination of state programs and measures, stimulating the consumer demand.

1 According to the Association of Russian Automobile Dealers (ROAD), demand for cars is not satisfied, and their equipment is getting worse - some models are produced with no multimedia functions, navigation, etc. due to lack of chips.

2 The throughput capacity of railroad lines in the eastern direction does not allow to raise exports of Russian coal to China.

4.2.4. Dynamics of the industrial production index in Q4¹

At Q4-end 2021, the trend component of the industrial production index was growing. All three sectors contributed: mining, processing and production and supply of electricity, gas and water.

The growth in the extractive sector was due to an increase in production of fuel and energy minerals (oil, gas, and coal), as well as an increase in production of metal ores. At the same time, the extractive sector failed to exceed the pre-pandemic level in 2021, which is fully owing to the limitations of oil production in the framework of the OPEC+ agreement concluded in 2020 (oil production occupies the most significant share of the extractive sector).

Oil production, including gas condensate, grew during all three months of Q4 2021 compared to the same period of the previous year. The factors driving the sector's growth remained the same: a recovery in global oil demand and the response of OPEC+, which began raising the agreed level of oil production under the deal in August 2021.²

Gas production volumes were on the rise throughout Q4 2021 despite lower export deliveries via the Yamal-Europe pipeline and the cessation of sales in 2022 via Gazprom Export in October-November 2021, amid record high prices and partial replacement of gas by coal (in October a historic high of \$1.900 per thousand cubic meters was reached). Production growth during this period was due to demand on the domestic market (amid increased production of nitrogen fertilizers) and increased gas supplies to China via the Power of Siberia pipeline (steady recovery of the Chinese economy after the pandemic and preparations for the Olympics forced an increase in gas reserves on the back of an acute shortage of thermal coal in the country, which caused power supply limitations in H2 2021 in a number of provinces).

Coal production was on the rise in Q4 2021. One of the main factors that continued to influence production volumes was the growth in demand in Asian and European countries, which was facilitated by a spike in natural gas prices that made coal-fired generation competitive. The growth in demand from Asian countries has not been fully realized due to the existing infrastructure limitations in the Far East, which do not allow the entire additional volume of coal to be transported to the Asia-Pacific market by rail.

Metal ore production increased during all three months of the quarter compared to the same period of the previous year. The increase in metal ore production was driven both by increased demand for ore from domestic machinery producers and by export shipments as a result of a 5% reduction in export duties on scrap and ferrous metal waste from September and the elimination of 15% export duties on aluminum alloys to support producers from the end of November 2021.

The trend component of the manufacturing sector at the end of Q4 2021 demonstrated growth, the main contribution into the dynamics being made, like in

1 *Kaukin A.S., Miller E.M.* Dynamics of industrial production in Q4 2021 // Russian Economic Development. 2022. No. 2 (29), pp. 9–13.

2 This increase is extended until the end of January 2022, see: 23st OPEC and non-OPEC Ministerial Meeting concludes // OPEC. 02.12.2021. [https://www.opec.org/opec_web/en/press_room/6736.htm].

Q3: by the light and food industries (production of food, textile and leather goods); chemical industry; machine-building (production of motor vehicles, trailers and semi-trailers; machine-tool construction, production of metallurgical, mining and agricultural equipment; production of aviation equipment, shipbuilding). Whereas in the first two branches of industry the factors that have an upward effect remained the same, in machine-building the growth was ensured by the pent-up demand, supply deficit at the market and the measures of the state support. The output growth of motor vehicles, trailers and semi-trailers was fueled by the supply shortage, which remained in H1 2021 owing to the shortage of the import components — electronics, mainly microchips, production of which was reduced because of the pandemic. In the machine tool industry, the greatest contribution

Table 18

Change of production index by sectors of the economy, %

Sectors	Share in industrial production index, %	December 2021 on December 2020	December 2021 on September 2021
Industrial production		108.25	102.67
Extraction of minerals	34.54	110.28	103.10
Manufacturing, including:	54.91	104.40	102.97
Production of food, including beverages and tobacco	16.34	113.81	103.34
Textile and apparel production	1.14	104.51	102.21
Manufacturing of leather, articles thereof and footwear	0.27	105.45	102.07
Wood processing and wood ware manufacturing	2.02	104.08	101.67
Pulp-and-paper industry	3.35	88.14	97.22
Production of charred coal and petrochemicals	17.25	106.87	101.42
Chemical industry	7.56	115.11	104.39
Manufacturing of rubber and plastic articles	2.14	102.48	105.29
Manufacturing of other nonmetallic mineral products	4.02	108.56	101.34
Metallurgy and manufacturing of ready-made fabricated metal products	17.42	124.33	107.15
Manufacturing of machinery and equipment	6.97	117.01	103.54
Manufacturing of electrical, electronic and optical equipment	6.27	104.17	103.11
Manufacturing of transport vehicles and equipment	6.75	111.02	104.30
Other industries	2.42	100.57	102.82
Electricity, gas and water supply	13.51	100.54	100.09
Wholesale trade		106.18	102.63
Retail sales		100.65	99.46
Cargo turnover		106.00	100.81
Construction		105.98	101.55
Volumes of paid services to households		109.80	102.48

Sources: Rosstat, own calculations.

was made by the production of agricultural machinery. High world prices for agricultural products in 2021 provided additional funds to their producers, who had the opportunity to invest them in the renewal of the machine park, which increased the demand for the export of the Russian agricultural equipment and, correspondingly, the volume of its production. In addition, a number of importing countries of Russian products saw a high pent-up demand for agricultural equipment. In aircraft engineering and shipbuilding, the increase in production volumes was caused by the closure of state orders, in particular, production of gas tankers for the Arctic LNG 2 project, construction of the Sibir icebreaker, etc.

The trend component of paid services to the public retained negative dynamics. A possible reason was the pandemic induced restrictions at the beginning of Q4, acting in different regions of Russia (visits only by QR-codes, PCR-tests, etc.). Dynamics of the trend component of freight turnover showed around zero growth rates: rail and road transportation made a negative contribution by the end of 2021 (mainly growth is provided by commodities — coal, the export direction to the ATC countries experienced infrastructural restrictions on its increase). Air freight went up (compared to the pre-pandemic level, it tripled): airlines ship goods together with passengers on passenger flights, but when bans on passenger traffic were put in place in spring 2020, goods still had to be shipped and this type of transportation began to grow in the overall structure, which continued in 2021.

Wholesale and retail trade demonstrated slow growth: wholesale trade was driven mainly by growth in sales of medicines and medical supplies, chemical fertilizers, vehicles, machinery and equipment, and retail trade by growth in sales of non-food items amid a sharp acceleration in consumer lending (according to the Central Bank of Russia, unsecured consumer lending surged to 20.1% in 2021 from 8.8% a year earlier).
