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What is the Impact of the Global Stock Market on Various Sectors of the Russian Stock Market in the Contexts of Pandemic in 2020—2021 and Large-scale Anti-Russian Sanctions in 2022—2023?

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Abstract. The article is devoted to a comparative assessment of the impact of two major cataclysms in recent years — the COVID-19 pandemic and unprecedented comprehensive anti-Russian sanctions — on the links between the global and Russian stock markets in various sectors of the economy. The analysis was carried out with respect to the share prices of the largest oil and gas, financial and high-tech companies in Russia and their statistical dependence on the dynamics of indicators of the relevant sectors of the global stock market.

Keywords: Stock Markets, Stock Indexes and Indicators, Global Oil Sector, Global Financial Sector, Global High-tech Sector, Russian Oil and Gas Companies, Russian Banks, Russian Telecommunications Companies; Statistical Dependence, COVID-19 Pandemic, Anti-Russian Sanctions, Statistical Analysis.

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Каково влияние мирового фондового рынка на различные сектора российского фондового рынка в условиях пандемии 2020—2021 годов и масштабных антироссийских санкций 2022—2023 годов?

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Аннотация. Статья посвящена сравнительной оценке влияния двух крупных катаклизмов последних лет — пандемии COVID-19 и беспрецедентных комплексных антироссийских санкций — на связи мирового и российского фондовых рынков в различных секторах экономики. Анализ проведён в отношении курсов акций крупнейших нефтегазовых, финансовых и высокотехнологических компаний России и их статистической зависимости от динамики индикаторов соответствующих секторов мирового фондового рынка.

Ключевые слова: фондовые рынки, фондовые индексы, глобальный нефтяной сектор, глобальный финансовый сектор, глобальный высокотехнологический сектор, российские нефтегазовые компании, российские банки, российские телекоммуникационные компании, статистическая зависимость, пандемия COVID-19, антироссийские санкции, статистический анализ.

Introduction

The impact of the global stock market on national stock markets in the context of globalization, at first glance, clearly seems to be very significant and stable. However, this is far from always and not quite the case, as shown in our studies [1—3] of macroeconomic trends and investor orientations in stock markets in 2006—2019 using economic and statistical methods. The process of globalization and crises affect the preferences of investors when purchasing securities of various companies from different countries. These preferences were previously investigated in a number of works by foreign scientists [4—8], as well as in our articles [9—12].

What changed during the COVID-19 pandemic, and then in the face of unprecedented anti-Russian sanctions (there are already more than 18,000 of them!), the reason for which was the conduct of a Special military operation (SMO)? How did the disunity of economies that arose twice for various reasons affect the dynamics of stock markets and the position of large Russian companies in the oil and gas, banking and high-tech sectors, whose share in Russian stock indices totals more than half?

Methodology

The methodology base on the economic and statistical tools described in the above works [1—3, 9—12], using Microsoft Excel and EViews packages, the statistical dependencies of quotations of 9 large domestic companies in three sectors of the Russian stock market on the dynamics of indicators of the corresponding sectors of the global stock market were studied. An earlier analysis of long time series of daily quotes and values of composite indicators for the presence of stationarity using the extended Dickey—Fuller test [13] and autocorrelation by building a VAR model (testing a linear combination of series for long-term stationarity [14]) gave negative results [1], which is expected, since long-term trends in the stock market practically not observed. This allows us to evaluate the mutual influence of indicators through a series of linear correlation equations and the selection of time intervals during which each of them is relevant.

The experimental calculations¹ were performed and the main trends in the dynamics of this market in 2020—2021 (during the pandemic) and in 2022—2023 (during the period of large-scale anti-Russian sanctions) were revealed.

¹ Data sources for indices and quotes: https://www.investing.com/equities/lukoil_rts-historical-data; https://www.investing.com/equities/rosneft_rts; https://www.investing.com/equities/gazprom_rts; <https://www.investing.com/etfs/united-states-oil-fund>; https://www.investing.com/equities/sberbank_rts-historical-data; https://www.investing.com/equities/vtb_rts-historical-data; <https://www.investing.com/etfs/ishares-s-p-global-financial-historical-data>; <https://www.moex.com/ru/index/rtsi/archive>; <https://www.moex.com/ru/issue.aspx?code=rtdm>; <https://www.moex.com/ru/issue.aspx?code=mtss>; <https://www.moex.com/ru/issue.aspx?code=yndx>; <https://www.moex.com/ru/issue.aspx?code=VKCO>; <https://www.ishares.com/us/products/239750/ishares-global-tech-etf>.

Results and discussion

The statistical dependence of the stock quotations of the following major Russian companies on the dynamics of the indicators of the relevant sectors of the global stock market was studied:

- PJSC LUKOIL, NK Rosneft and PJSC Gazprom on the USO (United States Oil Fund ETF) oil futures price indicator;
- PJSC Sberbank of Russia and PJSC VTB from the global financial sector indicator IYG (iShares Global Financials ETF);
- PJSC MTS, PJSC Rostelecom, TNK Yandex and LLC VK (until November 2021 Mail.ru Group) from the IXN high-tech sector indicator (iShares Global Tech ETF).

The dependencies of the share prices of PJSC LUKOIL, NK Rosneft and PJSC Gazprom on the indicator of the global oil and gas market USO in 2020—2023

Previously, we conducted a study of the statistical dependencies of the stock quotes of PJSC LUKOIL, NK Rosneft and PJSC Gazprom on the USO oil futures price indicator before and during the coronavirus pandemic [9]. It was generally concluded that the COVID-19 pandemic contributed to a sharp increase in the positive dependence of the oil and gas sector of the Russian stock market and individual large companies on global indicators of the oil (but not gas) sector of the global stock market. The sensitivity of the RTS index and stock quotations of large oil and gas companies to changes in the composite futures price of oil has also increased. This means that the pandemic has significantly intensified the processes of globalization in the oil and gas sector of the Russian stock market.

Now let's explore what impact the unprecedented anti-Russian sanctions imposed on Russian companies in 2022—2023 had on these processes. We have identified statistical dependencies between the quotations of shares of PJSC LUKOIL (LCOH), NK Rosneft (ROSN) and PJSC Gazprom (GAZP) and the USO oil futures price indicator (Table 1).

Figure 1 shows the change in the level of stock quotations and the value of indicators in 2020—2023. There is a noticeable recovery and uneven growth of all indicators after their fall at the beginning of the coronavirus pandemic, especially significant for shares of PJSC LUKOIL. After that, there is a slowdown in this growth, followed by a slight drop in indicator levels in late 2021 — early 2022 and a sharp collapse at the end of February with the beginning of a Special military operation. During the same period, the USO level maintained an upward trend. Then there was an adaptation and growth of all stock prices of Russian oil and gas companies until July 2022. After the introduction of new sanctions, there was another drop in exchange rates and a new waging, but without reaching the previous levels, except for shares of PJSC LUKOIL.

The sabotage on the Nord Stream —1 and Nord Stream—2 gas pipelines had a negative impact on the share prices of PJSC Gazprom and domestic oil companies. However, the latter recovered fairly quickly. Only GAZP shares maintained a relatively slight downward trend; by the end of 2023, their values stabilized at a level slightly below that to which they fell in February 2022. At the same time, there is an obvious lack of synchronization in the dynamics of the share prices of Russian companies and the USO. In the autumn of 2023, the last indicator tended to decrease, while LCOH and ROSN tended to increase.

Table 1 shows that before the start of the SMO, the relationship between the dynamics of quotations of Russian companies and the USO was positive and very significant for all 3 corporations. Periods of statistically significant association are highlighted here and further in bold, bold italics — close to such.

Shortly before the start of the SMO, the regression coefficient became negative for PJSC Gazprom while maintaining tightness of communication, and for Rosneft — with a decrease in tightness of communication to an insignificant level already from April 2022. In Fig. 2 the opposite slopes of the lines of dependence of Gazprom's share prices on the USO are visible, and the tightness of the connection is displayed in the form of large or smaller sparse «clouds» of values around these lines. The largest cloud — red — refers to line 7 (insignificant feedback), the smallest

— light blue — to line 4 (close direct connection).

Table 1

The dependencies of the share prices of PJSC LUKOIL, NK Rosneft, PJSC Gazprom (y) on the USO oil futures price indicator (x)

No of dependence	Validity period	Regression equation	Coefficient of determination (R ²)
PJSC LUKOIL (LCOH)			
1	03.01.2020 — 06.03.2020	$y = 5.51x + 39.38$	0.627
2	10.03.2020 — 21.04.2020	$y = 1.37x + 53.92$	0.057
3	22.04.2020 — 08.07.2020	$y = 11.91x + 35.87$	0.889
4	09.07.2020 — 29.12.2021	$y = 9.99x + 27.89$	0.912
5	30.12.2021 — 18.02.2022	$y = 1.74x + 74.95$	0.034
6	22.02.2022 — 30.11.2023	$y = 3.54x + 33.76$	0.130
PJSC Gazprom (GAZP)			
1	03.01.2020 — 26.02.2020	$y = 0.27x + 0.68$	0.902
2	27.02.2020 — 20.04.2020	$y = 0.12x + 1.76$	0.605
3	21.04.2020 — 13.07.2020	$y = 0.30x + 1.77$	0.700
4	14.07.2020 — 29.12.2021	$y = 1.21x - 0.33$	0.904
5	30.12.2021 — 26.04.2022	$y = -0.70x + 9.55$	0.769
6	27.04.2022 — 26.08.2022	$y = 1.21x - 8.08$	0.693
7	29.08.2022 — 30.11.2023	$y = -0.14x + 3.54$	0.025
NK Rosneft (ROSN)			
1	03.01.2020 — 06.03.2020	$y = 0.26x + 2.92$	0.593
2	10.03.2020 — 20.04.2020	$y = 0.01x + 3.96$	0.001
3	21.04.2020 — 14.01.2022	$y = 0.94x + 1.97$	0.930
4	18.01.2022 — 11.04.2022	$y = -1.45x + 18.41$	0.594
5	12.04.2022 — 30.11.2023	$y = 0.41x + 1.80$	0.324

A similar picture is observed in Figure 3, which shows the dependence of Rosneft's stock quotes on the USO. The largest negative slope is line 4, corresponding to the period immediately before and immediately after the start of its. The largest and densest cloud is around line 3, which corresponds to a close connection in the period shortly after the start of the pandemic and before the start of the SMO.

Interestingly, for shares of PJSC LUKOIL, the connection was lost about 3 months before the start of the SMO and then it never resumed in 2023 (the coefficient of determination is 0.13). Figure 4 shows the densest clouds of values around lines 3 and 4, corresponding to the period of recovery from shock after the start of the coronavirus pandemic and further 2 months before the start of ITS. The most «curly» clouds are visible around lines 5 and 6, which corresponds to the periods before and after the start of the SMO. This phenomenon clearly shows a very weak connection between the indicators.

Thus, a significant part of investors foresaw a difficult situation in the securities market of Russian oil companies. The dynamics of Gazprom's quotations lost contact with the USO at the end of August 2022, six months after the start of its own, this market was relatively resistant to sanctions for some time, and they were introduced in stages. The «critical mass» was not gained immediately.

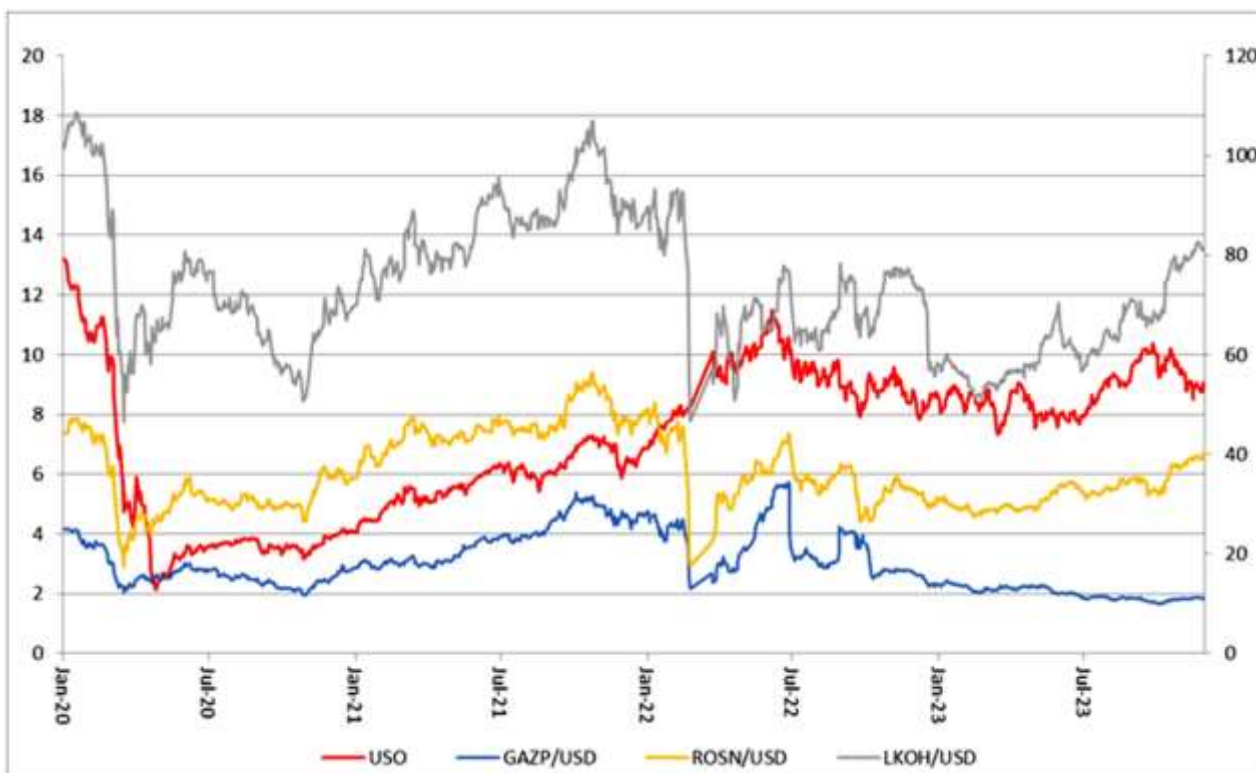


Fig. 1 / Рис. 1. The dynamics of the USO indicator, quotations of shares of PJSC LUKOIL, NK Rosneft, PJSC Gazprom in 2020—2023 / Динамика индикатора USO, котировок акций ПАО «ЛУКОЙЛ», НК «Роснефть», ПАО «Газпром» в 2020—2023 годах

The dependencies of stock quotations of PJSC Sberbank of Russia and PJSC VTB on the global financial market indicator IXG in 2020—2023

Previous studies of the impact of the financial sector of the global market on the corresponding Russian sector [9] led to the conclusion that the COVID-19 pandemic did not significantly affect the closeness of the statistical relationship between the dynamics of stock prices of large Russian banks — PJSC Sberbank and PJSC VTB— and the IXG (iShares) indicator of the financial sector of the global stock market Global Financials ETF). Sanctions and the sanctions rhetoric of the United States and the EU most likely had a more significant impact, especially on the stock prices of PJSC VTB.

In Fig. 5, attention is drawn to the rapid but unstable growth of stock quotations of PJSC Sberbank, their collapse 2 months before the start of the SMO, then incomplete recovery of values. There was a very slight drop at the very beginning of its development and then after a new less deep collapse in July 2022 — an unstable upward trend that persisted throughout 2023. The stock levels of PJSC VTB and RTS changed less sharply, and the S&P500 index tended to moderate growth until October 2021, then to decrease until August 2022 and then to very moderate growth again.

Calculations of the equations of statistical dependence between the quotations of shares of PJSC Sberbank and PJSC VTB on the global financial sector indicator IXG in 2021-2023 are shown in Table 2. It can be seen that these 2 large banks reacted differently to the avalanche of sanctions. The stock quotes of PJSC Sberbank from September 2021 to February 2022 practically did not depend on IXG (period 3), and with the beginning of its rather close dependence appeared, but it was expected to be negative in sign. In September 2022, it changed its sign to positive, remaining significant (periods 5—6), but in March 2023 it practically zeroed out (period 7).

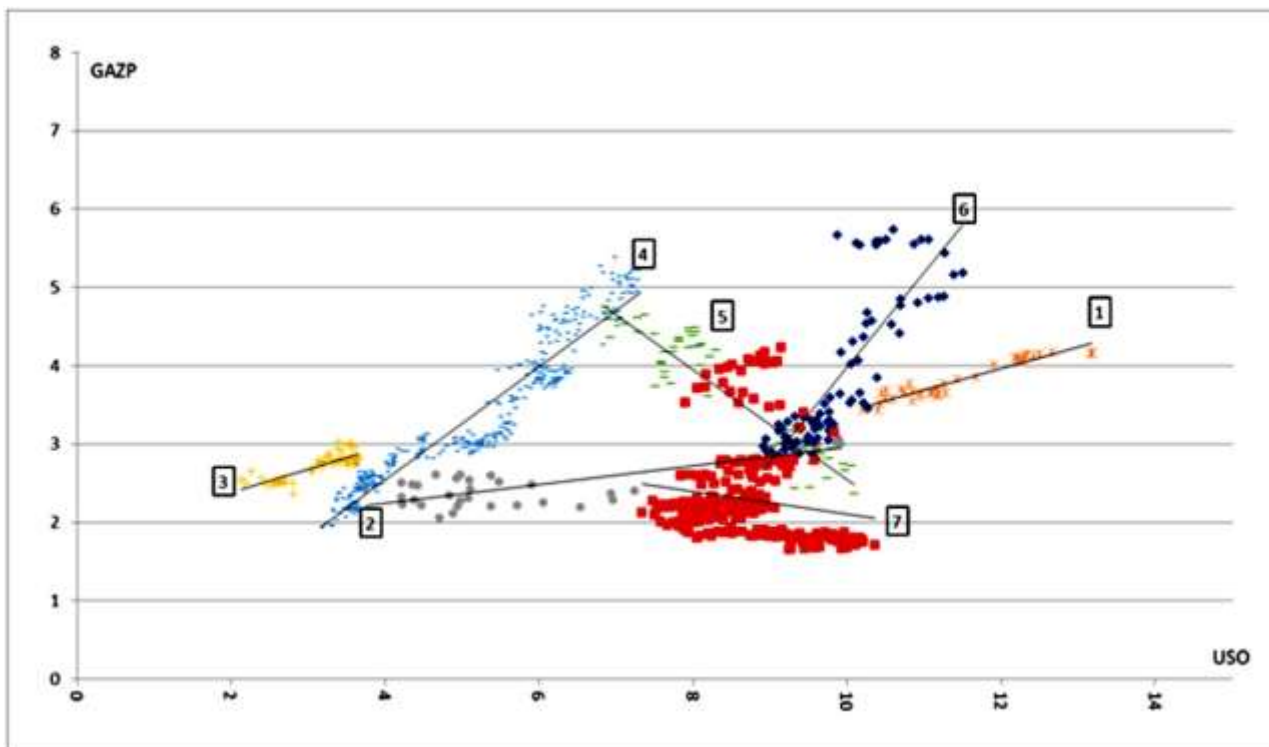


Fig. 2 / Рис. 2. Changing the equations of dependence of Gazprom shares on the USO oil price indicator in 2020—2023 / Изменение уравнений зависимости акций ПАО «Газпром» от индикатора цен на нефть USO в 2020—2023 годах

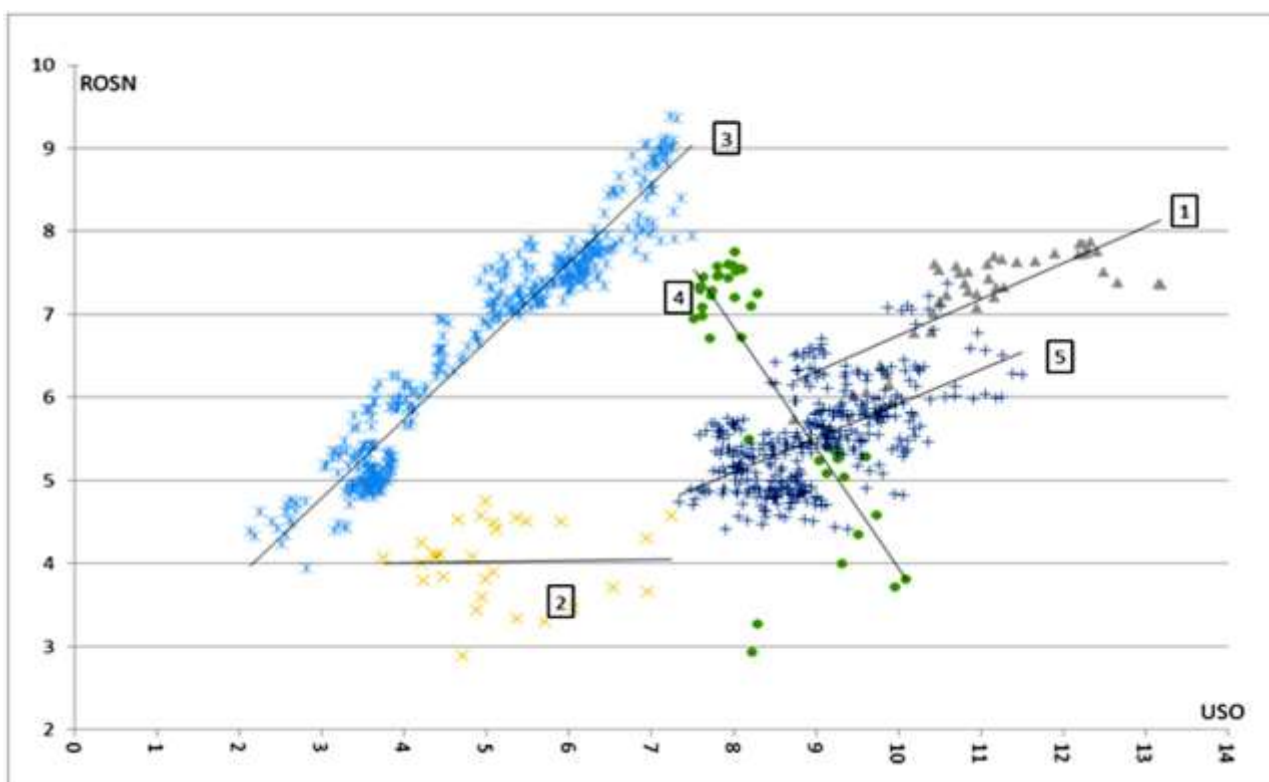


Fig. 3 / Рис. 3. Changing the equations of dependence of Rosneft shares on the USO oil price indicator in 2020—2023 / Изменение уравнений зависимости акций НК «Роснефть» от индикатора цен на нефть USO в 2020—2023 годах

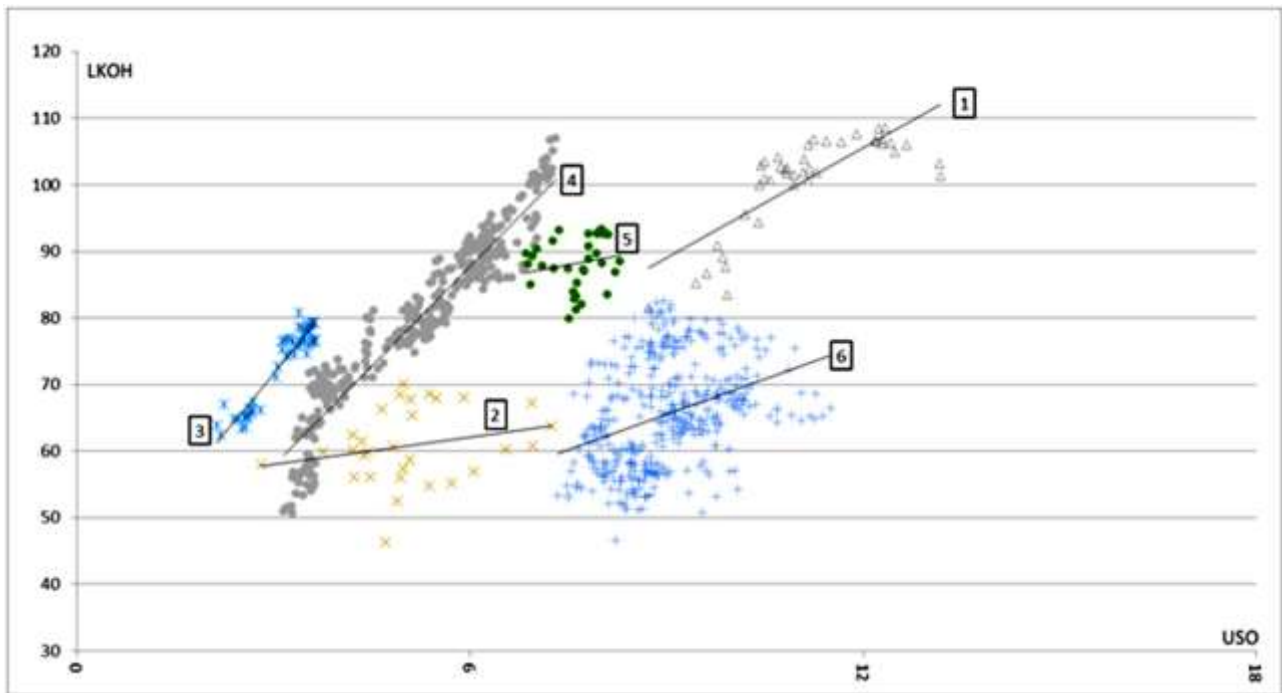


Fig. 4 / Рис. 4. Changing the equations of dependence of PJSC LUKOIL shares on the USO oil price indicator in 2020—2023 / Изменение уравнений зависимости акций ПАО «ЛУКОЙЛ» от индикатора цен на нефть USO в 2020—2023 годах

It turns out that at the beginning of its development, the dynamics of stock quotations of PJSC Sberbank (rapid recovery after the collapse in February 2022 with a decrease in the IXG exchange rate) had the opposite trend compared to the global financial sector, after recovery it roughly corresponded to the global trend for a whole year and a half, and then almost lost contact with it after the accumulation of a mass of sanctions. All this is perfectly visible in Fig. 6, where the line numbers correspond to the period numbers in Table 2. The most «spreading» clouds are around lines 3 and 7, «curling» close to their lines — 1, 2, 4 and 6, and line 4 has an opposite slope to the other lines, reflecting a negative relationship.

VTB's quotes had a significant statistical dependence on IXG only until April 2021 (periods 1-2), and then the relationship became insignificant. Consequently, the SMO had an impact only on the decline in the level of VTB stock quotations, while the statistical relationship between their dynamics and the dynamics of IXG remained weak and became negative with a very small regression coefficient. In Fig. 7, the clouds of values around lines 3—5 are very «curly», and around lines 1 and 2, the values are grouped quite closely.

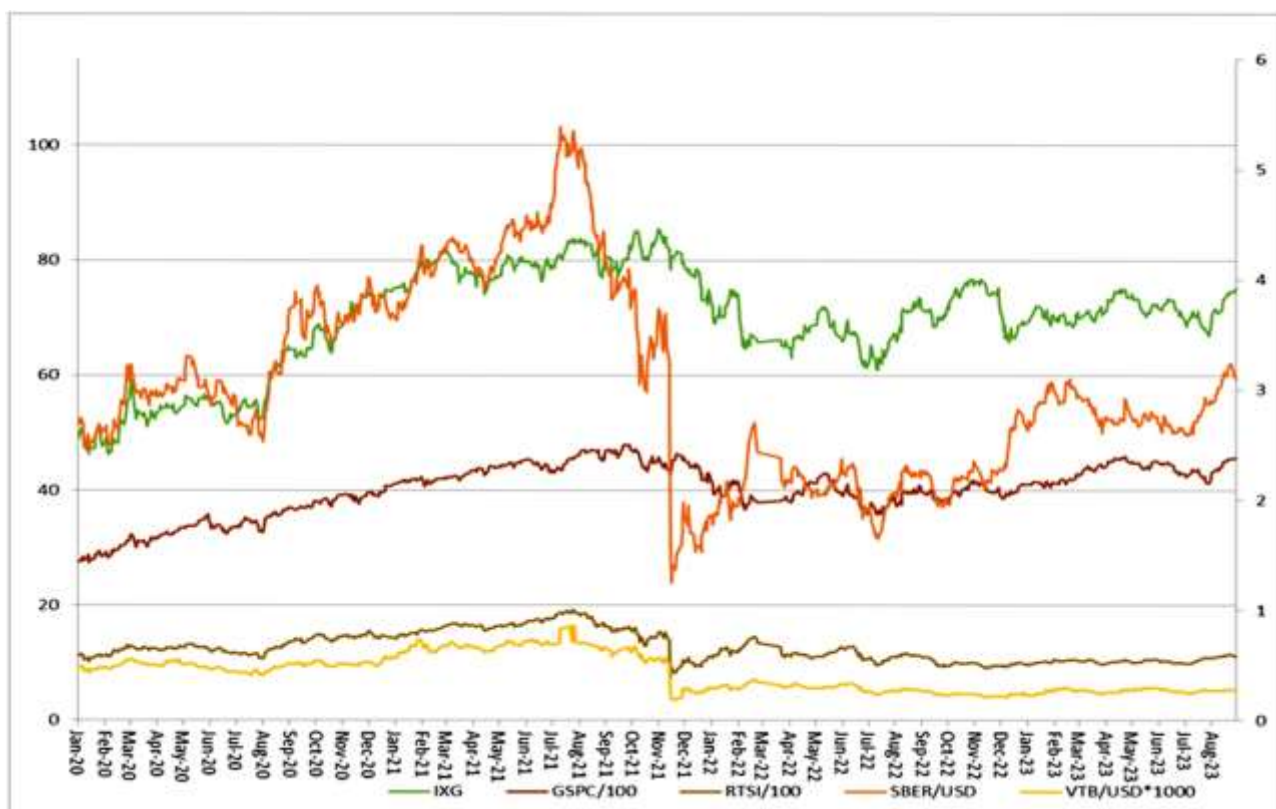


Fig. 5 / Рис. 5. The dynamics of stock quotations of PJSC Sberbank, PJSC VTB, RTS, S&P500 indices in 2020—2023 / Динамика котировок акций ПАО «Сбербанк», ПАО ВТБ, индексов RTS, S&P500 в 2020—2023 годах

Table 2

The dependencies of stock quotations of PJSC Sberbank of Russia and PJSC VTB (y) on the IXG (x) indicator in 2020—2023

No of dependence	Validity period	Regression equation	Coefficient of determination (R ²)
PJSC Sberbank of Russia (SBER)			
1	03.01.2020 — 31.03.2020	$y = 0.07x - 0.96$	0.956
2	01.04.2020 — 31.08.2021	$y = 0.05x + 0.14$	0.931
3	01.09.2021 — 22.02.2022	$y = -0.01x + 5.40$	0.002
4	24.02.2022 — 19.09.2022	$y = -0.05x + 5.48$	0.715
5	20.04.2022 — 19.12.2022	$y = 0.04x - 0.93$	0.827
6	20.12.2022 — 06.03.2023	$y = 0.04x - 1.17$	0.716
7	07.03.2023 — 30.11.2023	$y = 0.02x + 1.58$	0.036
PJSC VTB (VTB)			
1	03.01.2020 — 23.09.2020	$y = 0.01x - 0.28$	0.925
2	24.09.2020 — 12.04.2021	$y = 0.01x + 0.16$	0.777
3	13.04.2021 — 07.10.2021	$y = 0.01x - 0.11$	0.293
4	08.10.2021 — 22.02.2022	$y = 0.003x + 0.387$	0.005
5	24.02.2022 — 30.11.2023	$y = -0.003x + 0.484$	0.139

The dependencies of stock prices of Russian high-tech companies on the indicator of the global high-tech sector IXN in 2020—2023

According to a study conducted by us in 2023 [10], at first the COVID-19 pandemic did not significantly affect the closeness and direction of the statistical relationship between the dynamics of stock prices of Russian telecommunications companies and the indicator of the high-tech sector of the global stock market IXN.

This can be seen in Figure 8: in March—April 2020, all quotes and indices collapsed, and then recovered quite quickly and synchronously. Moreover, the values of the indicators, except for PJSC MTS and LLC VK, exceeded the pre-subsidy level during 2021, as demand for telecommunications services increased.

Our calculations of statistical dependencies showed (Table 3) that, on the contrary, the closeness of the relationship between the stock quotations of PJSC Rostelecom and PJSC MTS with IXN increased somewhat in the first months of the pandemic and remained close for some time, and then disappeared in relation to PJSC Rostelecom — in the summer of 2020, PJSC MTS — in the summer of 2021 (lines 2 in Figures 9 and 10). At the end of 2021, with the weakening of the pandemic, the closeness of communication with the dynamics of the global high-tech sector increased to a significant level (lines 4 in Figures 9 and 10). The relationship between the dynamics of the stock quotes of TNK Yandex and LLC VK and the dynamics of IXN remained positive and close until February 2022. A small «pandemic» drop in the quotation level at the end of March — early April 2020 was very quickly compensated, and then the stock quotes of TNK Yandex continued to grow until December 2021, after which they began to decline, and then collapsed with the beginning of their own, as well as the quotes of other Russian high-tech companies.

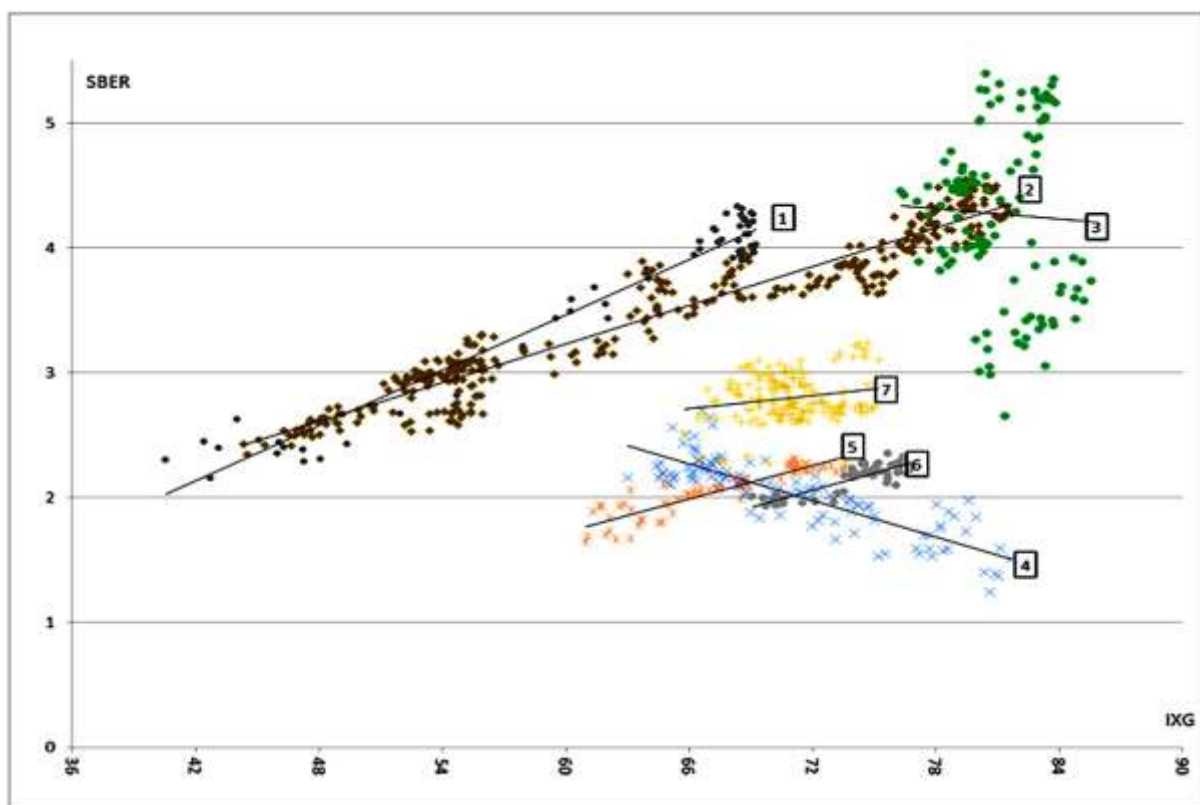


Fig. 6 / Рис. 6. Changing the equations of dependence of Sberbank stock quotes on the global financial sector indicator IXG in 2020—2023 / Изменение уравнений зависимости котировок акций ПАО «Сбербанк» от индикатора глобального финансового сектора IXG в 2020—2023 годах

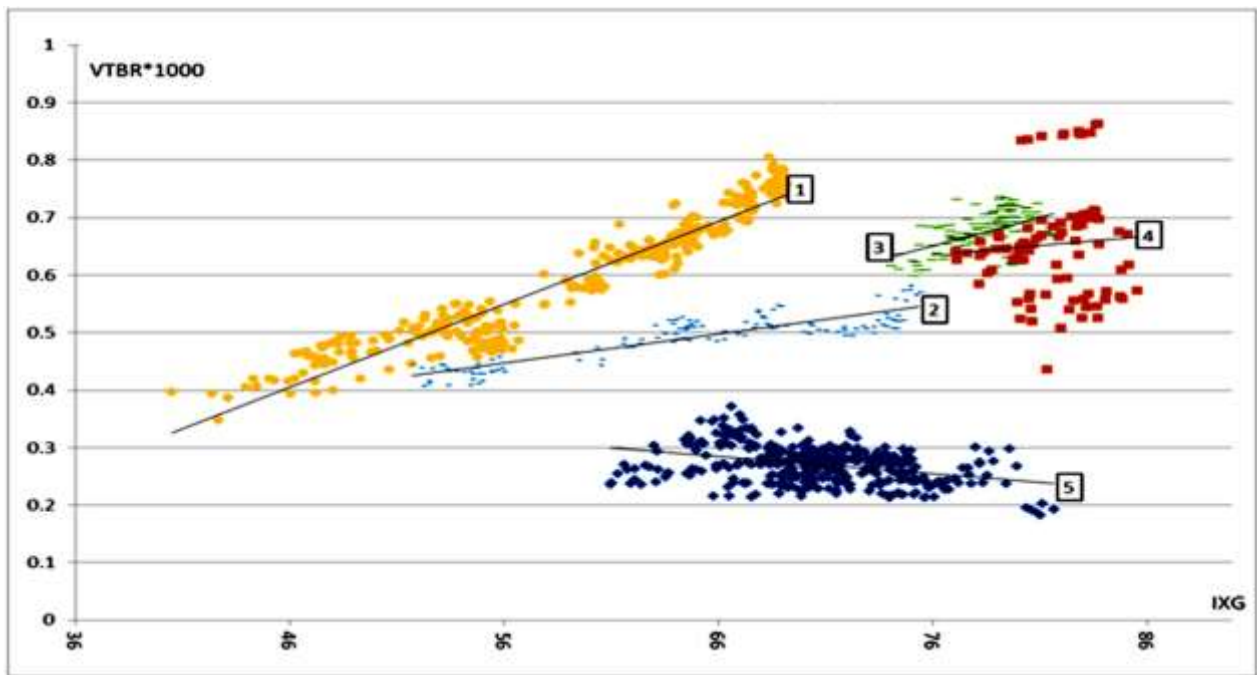


Fig. 7 / Рис. 7. Changing the equations of dependence of PJSC VTB stock quotes on the global financial sector indicator IXG in 2020—2023 / Изменение уравнений зависимости котировок акций ПАО ВТБ от индикатора глобального финансового сектора IXG в 2020—2023 годах



Fig. 8 / Рис. 8. The dynamics of the IXN indicator, shares of Russian companies PJSC MTS, PJSC Rostelecom, TNK Yandex and LLC VK in 2020—2023 / Динамика индикатора IXN, акций российских компаний ПАО «МТС», ПАО «Ростелеком», ТНК «Яндекс» и ООО «ВК» в 2020—2023 годах

Table 3

**The dependencies of stock prices of Russian high-tech companies (y)
on the global high-tech sector indicator IXN (x)**

No of dependence	Validity period	Regression equation	Coefficient of determination (R ²)
PJSC MTS (MTS)			
1	03.01.2020 — 10.03.2020	$y = 0.12x + 0.78$	0.587
2	11.03.2020 — 02.07.2020	$y = 0.12x + 0.30$	0.929
3	06.07.2020 — 19.11.2021	$y = 0.003x + 4.26$	0.012
4	22.11.2021 — 22.02.2022	$y = 0.05x + 0.62$	0.677
5	24.02.2022 — 20.07.2022	$y = -0.20x + 13.74$	0.676
6	21.07.2022 — 07.12.2022	$y = 0.07x + 0.49$	0.741
7	08.12.2022 — 27.06.2023	$y = 0.04x + 1.48$	0.477
8	28.06.2023 — 30.11.2023	$y = 0.03x + 0.87$	0.216
PJSC Rostelecom (RTKM)			
1	03.01.2020 — 03.03.2020	$y = 0.274x + 3.722$	0.659
2	04.03.2020 — 02.07.2021	$y = 0.174x + 4.912$	0.842
3	06.07.2021 — 19.11.2021	$y = 0.019x + 11.754$	0.012
4	22.11.2021 — 22.02.2022	$y = 0.325x - 9.187$	0.843
5	24.02.2022 — 10.08.2022	$y = -0.326x + 26.003$	0.687
6	11.08.2022 — 11.11.2022	$y = 0.108x + 4.519$	0.701
7	14.11.2022 — 16.10.2023	$y = -0.018x + 9.137$	0.041
8	17.10.2023 — 30.11.2023	$y = 0.138x + 0.072$	0.827
TNK Yandex (YNDX)			
1	03.01.2020 — 06.12.2021	$y = 1.34x - 2.99$	0.869
2	07.12.2021 — 22.02.2022	$y = 2.35x - 89.22$	0.844
3	24.02.2022 — 16.12.2022	$y = -0.46x + 52.76$	0.193
4	19.12.2022 — 06.02.2023	$y = 0.50x + 3.49$	0.838
5	7.02.2023 — 30.11.2023	$y = 0.24x + 13.04$	0.358
LLC VK (VKCO)			
1	06.07.2020 — 06.12.2021	$y = -0.48x + 49.07$	0.724
2	07.12.2021 — 22.02.2022	$y = 0.69x - 31.90$	0.807
3	24.02.2022 — 30.11.2023	$y = 0.03x + 5.16$	0.044

The massive anti-Russian sanctions against the SMO in March 2022 led to a collapse in stock prices of Russian high-tech companies and, after the opening of trading on the MICEX, to a change in the signs of correlation coefficients to «minus» within 5—8 months (Table 3), except for LLC VK: for this company, communication has simply become insignificant since March 2022. Then, according to the stock prices of other companies, there was a sharp weakening of this relationship to an insignificant one from the autumn of 2022 and during 2023. But there is an exception for PJSC Rostelecom: the period of significant positive feedback from the second decade of August 2022 to the first decade of November 2022 (line 6 in Fig. 11) and in the second half of October — November 2023 (line 8 in Fig. 11). During these periods, the stock prices of companies as a whole grew slightly along with IXN. However, it may have happened in such small periods by accident. The second exception is the period from the end of December 2022 to the beginning of February 2023, when there was a significant positive statistical relationship between the quotes of TNK Yandex and IXN.

This means that the periods of significant positive correlation between the dynamics of stock prices of these companies and the dynamics of the IXN indicator have become short, and the relationship itself is unstable.

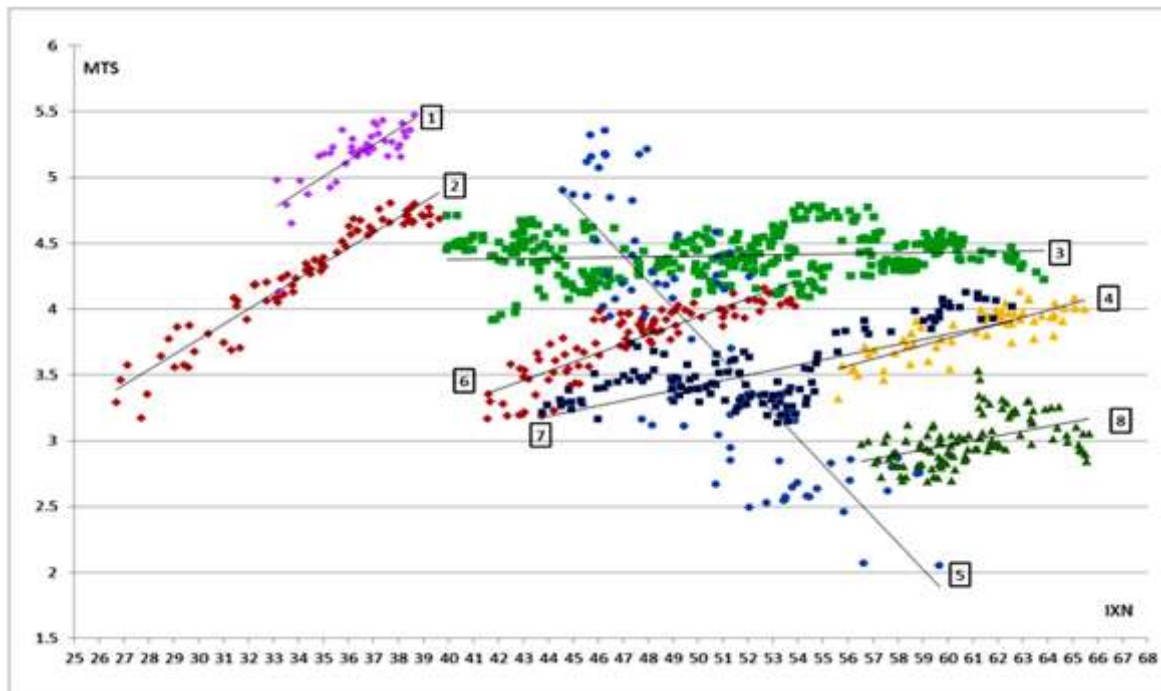


Fig. 9 / Рис. 9. Changing the equations of dependence of PJSC MTS stock quotes on the IXN global high-tech sector indicator in 2020—2023 / Изменение уравнений зависимости котировок акций ПАО «МТС» от индикатора глобального высокотехнологического сектора IXN в 2020—2023 годах

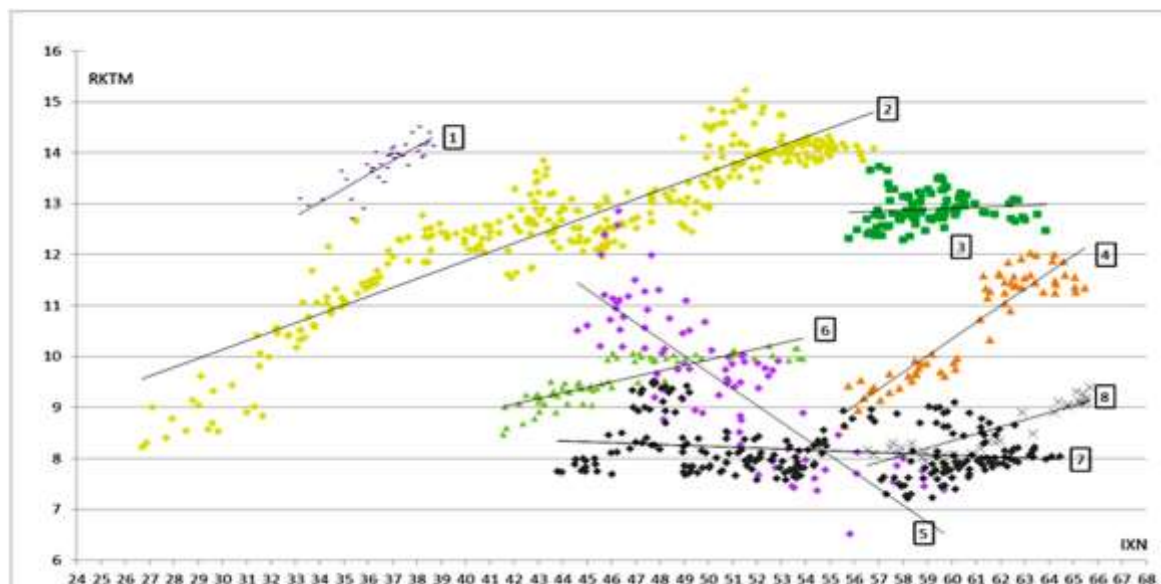


Fig. 10 / Рис. 10. Changing the equations of dependence of PJSC Rostelecom share prices on the global high-tech sector indicator IXN in 2020—2023 / Изменение уравнений зависимости котировок акций ПАО «Ростелеком» от индикатора глобального высокотехнологического сектора IXN в 2020—2023 годах

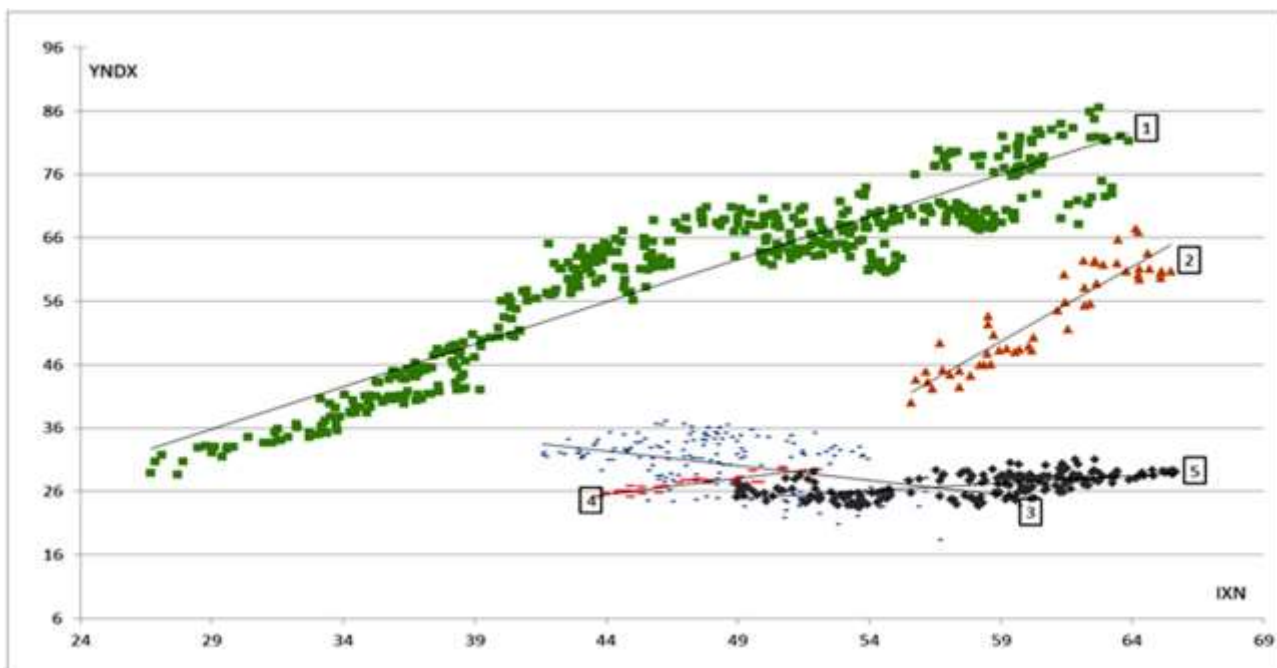


Fig. 11 / Рис. 11. Changing the equations of dependence of the stock quotes of TNK Yandex on the indicator of the global high-tech sector IXN in 2020—2023 / Изменение уравнений зависимости котировок акций ТНК «Яндекс» от индикатора глобального высокотехнологического сектора IXN в 2020—2023 годах

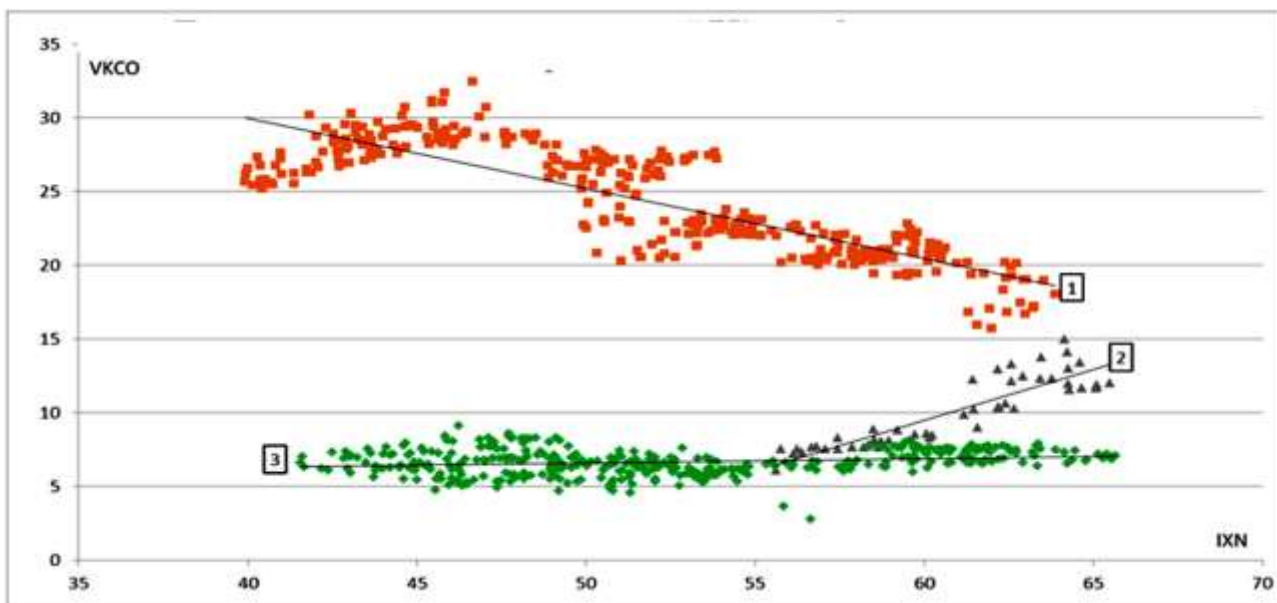


Fig. 12 / Рис. 12. Changing the equations of dependence of the stock quotes of LLC VK on the indicator of the global high-tech sector IXN in 2020—2023 / Изменение уравнений зависимости котировок акций ООО «ВК» от индикатора глобального высокотехнологического сектора IXN в 2020—2023 годах

LLC VK was a foreign issuer until the fall of 2023, but this Internet company has been focused mainly on the Russian market since the very beginning of its work. The company's shares have been listed on the stock market since July 2020 (VK CO indicator). As we showed earlier [10], until the beginning of 2022, their dynamics had a significant negative relationship with IXN (line 1 in Fig. 12), since there was a long-term downward trend in VKCO, and the level of IXN steadily increased. The stock prices of LLC VK did not stabilize until the end of the pandemic and collapsed

in the fall of 2021. Shortly before the start of the SMO, a significant positive relationship appeared for 2.5 months (line 2 in Fig. 12), which immediately disappeared after the start of the SMO (almost flat line 3 in Fig. 12) and has been absent since March 2022 and throughout 2023. The values of quotations tended to be very unstable and slightly increased with a break in September—October 2023, when the shares were not quoted due to the redomiciliation of the issuer to Russia.

Inferences

The difficult circumstances that brought the global stock market system out of relative equilibrium had a completely different impact on the sectors of the Russian stock market. The COVID-19 pandemic was a common problem for all, therefore, indicators of the global stock market sectors and stock prices of large Russian companies fell significantly and in the oil and gas sector led to the temporary destruction of the statistical relationship with the indicator of the oil and gas sector of the global stock market. But after a month of «turbulence», this connection was restored and became close again. This has not happened in the banking and high-tech sectors, and for most companies this connection has even strengthened for some time. This did not exclude subsequent short-term loosening of communication, which was most likely caused by other circumstances, for example, sanctions, which were also imposed in 2021, but not as massively as in 2022—2023. Qualitatively similar results were obtained by some Russian and foreign researchers [15—17]. In general, the pandemic has intensified the processes of globalization in stock markets.

At the beginning of its share prices of large Russian companies collapsed, which was caused by negative expectations of investors, but not yet the effect of sanctions. The statistical relationship with the dynamics of the global stock market sectors has weakened for most companies, for some of them to an insignificant level, and has also changed the sign to «minus». Then the shock passed, Russian companies began to adapt to the almost continuously imposed sanctions, so for some companies, the tightness of communication was restored for a while, and the sign became positive again. However, since the second half of 2022, the effect of the accumulation of sanctions began to manifest itself, so the statistical relationship between the studied indicators began to weaken again.

Countless sanctions have predictably led to a noticeable deglobalization of the Russian stock market, especially its oil and gas sector, where not only sanctions, but also sabotage on the two Nord Stream pipelines played a negative role. The oil and gas sector suffered the most from sanctions restrictions, but stayed afloat due to the reorientation of sales to southeastern countries. In 2022, even PJSC Gazprom made a significant profit, albeit less than in the record year for this corporation in 2021².

In the middle of 2022, the cumulative effect of sanctions also appeared in the banking sector [18]. Our research has shown that as a result of their introduction, the statistical relationship between the stock quotes of the largest Russian banks and the indicator of the financial sector of the global stock market has weakened. This contributed to the process of deglobalization of the Russian financial market, and since March 2023 the relationship has been statistically insignificant for both large banks. However, banks have also adapted to the current situation. If PJSC VTB made a significant loss in 2022, then in 2023 it will make a significant profit. And the much more stable PJSC Sberbank of Russia had a significant profit even in 2022, albeit less than in 2021, and in 2023 it received a record profit, 5.5 times higher than the profit of 2022! Although the net profit of large

² Data sources on financial statements of large Russian companies in 2022-2023:

<https://investholding.gazprom.ru/about/raskrytie-informatsii/finansovaya-otchetnost/?ysclid=lt6051a3a2945593460>;

<https://www.gazprom.ru/investors/disclosure/reports/2023/?ysclid=lt6036sis1791391578>;

<https://smart-lab.ru/q/LKOH/f/y/MSFO>; <https://vk.com/company/ru/investors/results>; https://yastatic.net/s3/ir-docs/docs/2023/Q4/71ae385276741355556163d5e0f47b4c021c7e93/yndx_Current_Folio_6K_Ex99_1_15022024_v.18_RUS_FINAL.pdf

<https://smart-lab.ru/q/MTSS/f/y/?ysclid=lt5znjpcu58100288>;

https://www.company.rt.ru/press/news_ir/news/d469741/?ysclid=lt5zmi8elp521219387;

https://www.sberbank.com/ru/investor-relations/groupresults/ifrs__2023;

https://www.sberbank.com/common/img/uploaded/files/info/2022_rsbu/year/_2022_.pdf; https://www.vtb.ru/media-files/vtb.ru/sitepages/ir/statements/annual/Annual_report_2022_RUS_.pdf

telecommunications high-tech companies decreased in 2022, they did not receive losses, and in 2023 their profits increased significantly, but have not yet reached the level of 2021.

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Conclusion

So, the share prices of large Russian oil and gas, telecommunications companies and banks relatively stabilized in 2023 at a significantly lower level than before the start of the SMO in February 2022, their dynamics became relatively independent of the dynamics of indicators of the relevant sectors of the global stock market. Is it good or bad? The answer is ambiguous. At a time when the levels of indicators of the global stock market do not have a stable tendency to significant growth, they are constantly jumping, the relative stability of Russian quotations can be assessed positively. However, shares of large Russian corporations are trading at a relatively low level and remain highly undervalued, which negatively affects the level of investment in Russian assets listed on the stock market.

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