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Comparative Analysis of Macroeconomic Variables and Financial Performance Indicators Before and During the Russia-Ukraine Conflict: Evidence from Russia

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ABSTRACT

This study examines the economic and geopolitical ramifications of the ongoing Russia-Ukraine conflict on Russia and the global economy. It conducts a comparative analysis of selected macroeconomic and financial indicators across the pre-conflict (2005–2013) and during-conflict (2014–2022) periods. **The objective** is to determine whether significant differences exist in the mean values of key variables across the two phases. The study employs ratio analysis, descriptive statistics, the Shapiro-Wilk test, Wilcoxon matched-pairs signed-rank test, and t-tests. **Methodologically**, the two-period framework enables comparison of means, medians, and ratios, representing a key analytical contribution. **The results** indicate significant differences in oil rents and foreign direct investment (FDI) between the two periods, with higher average levels in the pre-conflict phase. In contrast, unemployment rates are lower during the conflict period compared to the pre-conflict period. These findings suggest structural shifts in Russia's macroeconomic performance amid geopolitical tensions, sanctions, the 2014 conflict escalation, the COVID-19 pandemic, and the 2022 special military operation. The study concludes that while oil rents and FDI declined during the conflict period, the Russian economy exhibited relative labor market resilience despite Western sanctions. It recommends **future research** applying regression analysis to further examine the impact of oil rents, FDI, and unemployment on economic growth under conditions of conflict and instability. **Keywords:** Russia; oil rents; foreign direct investment; Russia-Ukraine conflict; economic growth; financial performance

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ОРИГИНАЛЬНАЯ СТАТЬЯ

Сравнительный анализ макроэкономических переменных и показателей финансовой деятельности до и во время российско-украинского конфликта: данные по России

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АННОТАЦИЯ

Предмет исследования — экономические и геополитические последствия продолжающегося российско-украинского конфликта, как для России, так и для мировой экономики. **Цель исследования** — сравнить выбранные макроэкономические переменные и показатели финансовой деятельности за периоды до и во время конфликта. **Задача исследования** — определить, есть ли существенные различия в средних значениях этих переменных на разных этапах. В анализе используется сочетание различных **методов**, в том числе, анализ соотношений, описательная статистика, критерий Шапиро–Уилка, парный знаковый ранговый критерий Вилкоксона и t-критерий. С методологической точки зрения исследование делит временной ряд на два отдельных периода: доконфликтный (2005–2013 гг.) и конфликтный (2014–2022 гг.). Такой подход позволяет провести комплексный анализ соотношений, медиан и средних значений, что является **новаторским вкладом** в исследование. **Результаты** показывают значительные различия в средних показателях нефтяной ренты и прямых иностранных инвестиций в доконфликтный период и в период конфликта. Кроме того, в период конфликта средний уровень безработицы стал ниже, чем в доконфликтный период. Исследо-

вание показывает, что в доконфликтный период средние показатели нефтяной ренты и прямых иностранных инвестиций были выше, чем в период конфликта. В исследовании делается вывод, что до начала конфликта средний уровень нефтяной ренты и прямых иностранных инвестиций был выше, чем в других странах, из-за таких факторов, как российско-украинский конфликт 2014 г., пандемия COVID-19 и специальная военная операция 2022 г. Кроме того, низкий уровень безработицы в период конфликта свидетельствует об устойчивости российской экономики, несмотря на жесткие санкции, введенные США и их западными союзниками. Для дальнейшего изучения в **будущих исследованиях** влияния нефтяной ренты, прямых иностранных инвестиций и уровня безработицы на экономический рост России авторы рекомендуют использовать регрессионный анализ. Такой подход позволит глубже понять динамику, определяющую экономические показатели в периоды конфликтов и нестабильности.

Ключевые слова: Россия; нефтяная рента; прямые иностранные инвестиции; российско-украинский конфликт; экономический рост; финансовые показатели

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INTRODUCTION

The Russia-Ukraine conflict, which began in February 2014, has persisted for over a decade. Its escalation in February 2022 has significantly affected global economic growth and disrupted supply chains, contributing to slower growth, rising inflation, and increased volatility in energy, food, and commodity prices [1, 2]. In response, the United States, the European Union, and their allies imposed extensive sanctions, including restrictions on Russia's access to foreign reserves, limitations on dollar-based transactions for major Russian banks, and bans on selected imports and exports.¹ These measures have created substantial challenges for Russian financial authorities, particularly the Bank of Russia, which has implemented policy interventions such as capital controls, market support measures, and actions to maintain financial stability and banking sector resilience. Consequently, the Bank of Russia implemented measures to support the stock market, including the introduction of cross-border capital controls and efforts to strengthen financial stability amid restricted access to part of its international reserves. These interventions aim to uphold the resilience of banks and other financial entities, ensuring their uninterrupted operation, and providing support for the functioning of enterprises.²

Given these developments, it is important to assess the broader effects of the conflict and sanctions on Russia's macroeconomic and financial performance. However, there remains limited literature examining these impacts in detail. This study addresses this gap by comparing macroeconomic and financial indicators before and during the conflict to evaluate

their overall effects. Specifically, the study analyzes how the Russia-Ukraine conflict has influenced key economic and banking performance indicators by comparing average values across the pre-conflict (2005–2013) and conflict (2014–2022) periods. The paper is organized as follows: Section 2 presents the oil and natural gas sector, Section 3 reviews the literature, Section 4 outlines the data and methodology, Section 5 presents empirical results, and Section 6 concludes the study.

RUSSIA: OIL AND NATURAL GAS SECTOR

Russia is richly endowed with natural resources, including oil, natural gas, coal, gold, timber, diamonds, and rare earth metals [3]. Oil and gas form the backbone of its economy and are key drivers of global energy supply [4]. Russia is among the world's top oil producers and exporters, accounting for about 14% of global crude oil production in 2021.³ It is also the seventh-largest holder of proven oil reserves and has made major investments in production facilities, refining capacity, and pipeline infrastructure serving Europe and Asia. In natural gas, Russia is the second-largest producer globally and holds the world's largest reserves.⁴ It is the leading exporter, with major pipelines such as Nord Stream, Blue Stream, and TurkStream supplying a significant share of Europe's gas demand prior to 2022.⁵

Hydrocarbons dominate the Russian economy, accounting for around two-thirds of exports and

¹ CRS. Russia's War on Ukraine: U.S. Policy and the Role of Congress, February, 2024. URL: <https://crsreports.congress.gov/product/pdf/if/if12277> (accessed on 19.04.2024).

² Bank of Russia. The Bank of Russia's Work in 2022: Results in Brief, 2023. URL: https://www.cbr.ru/collection/collection/file/43917/rb_2022.pdf (accessed on 19.04.2024).

³ IEA. Energy Fact Sheet: Why does Russian oil and gas matter? March 2022. URL: <https://www.iea.org/articles/energy-fact-sheet-why-does-russian-oil-and-gas-matter> (accessed on 22.12.2023).

⁴ OPEC. OPEC Annual Statistical Bulletin 58th edition. Organization of the Petroleum Exporting Countries. 2023. URL: https://asb.opec.org/ASB_PDFDownload.php (accessed on 19.04.2024).

⁵ IEA. Energy Fact Sheet: Why does Russian oil and gas matter? March 2022. URL: <https://www.iea.org/articles/energy-fact-sheet-why-does-russian-oil-and-gas-matter> (accessed on 22.12.2023).

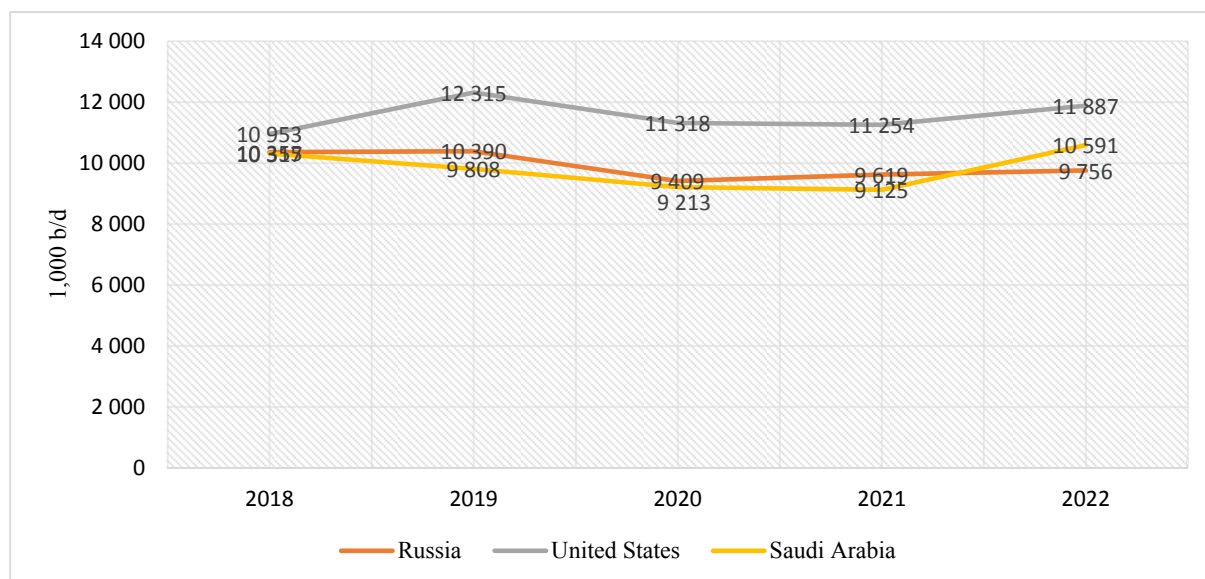


Fig. 1. The World's Largest Oil Producers

Source: Authors' calculation based on data from 2023 OPEC Annual Statistical Bulletin 58th edition. URL: https://asb.opec.org/ASB_PDFDownload.php (accessed on 10.12.2023).

about 45% of federal budget revenues in 2021 [5], highlighting strong energy dependence [6]. *Figure 1* illustrates global oil production, where the United States leads output but consumes most domestically, while Russia remains a major exporter. The figure also indicates a slight increase in Russia's oil output in 2022, raising questions about the effectiveness of sanctions [7, 8].

Russia is the world's second-largest natural gas producer and the leading gas exporter globally. *Figure 2* presents Russian gas export trends from 2018 to 2022, mainly directed toward Europe and Asia. The data shows a sharp 31.67% decline in gas exports in 2022 compared to the previous year, largely due to sanctions imposed by the United States and the European Union.

Against this background, the study examines the long-term effects of the Russia-Ukraine conflict on oil and gas revenues, FDI inflows, financial performance indicators, inflation, unemployment, and trade patterns, comparing the pre-conflict (2005–2013) and conflict (2014–2022) periods to assess statistically significant changes.

LITERATURE REVIEW

This section reviews prior studies that applied ratio analysis, descriptive statistics, and t-test methods. Most of the existing literature focuses on the performance comparison between Islamic and conventional banks. These studies are used as a reference due to limited research applying similar techniques to macroeconomic indicators. Samad [9] examined Islamic and conventional banks in

Bahrain (1991–2001), focusing on profitability, liquidity, and credit risk. Using financial ratios and t-tests across 21 banks, the study found no significant difference in profitability and liquidity, although Islamic banks performed better in credit risk. Similarly, Majeed and Zainab [10] analyzed Pakistani banks (2008–2019) and found that Islamic banks outperformed in capitalization, risk management, and liquidity, but underperformed in profitability, showing Islamic banks performing relatively weaker than conventional banks. Masruki et al. [11] used descriptive statistics, ratio analysis, and t-tests across profitability, liquidity, risk, and efficiency indicators, concluding that Islamic banks were less profitable but more liquid at the 5% significance level. Siraj and Pillai [12], studying GCC banks (2005–2010), found that Islamic banks performed better in several indicators, including operating income, assets, and deposits, partially supporting earlier findings on capitalization but contradicting results on profitability.

Building on these studies, this research applies ratio analysis, descriptive statistics, and t-tests to compare macroeconomic and financial indicators between the pre-conflict and during-conflict periods. The aim is to determine whether there are statistically significant differences in the average values of the selected variables across the two periods.

DATA AND RESEARCH METHODOLOGY

Data and sample selection

This study conducts a comparative analysis of macroeconomic and financial performance

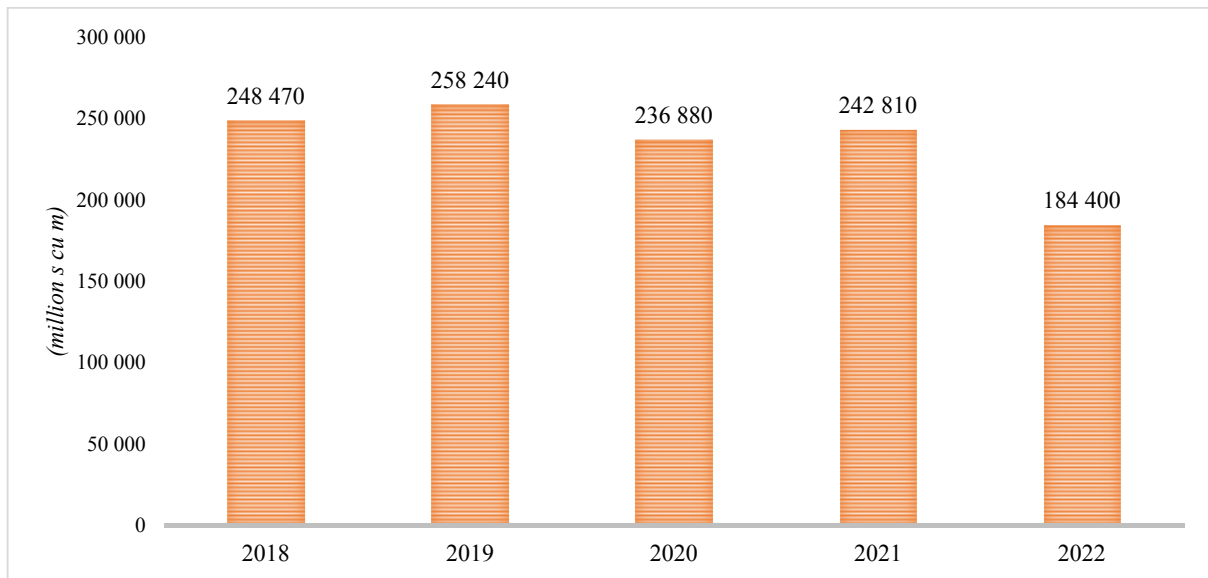


Fig. 2. The Historical Data for Russian Gas Exports

Source: Authors' calculation based on data from 2023 OPEC Annual Statistical Bulletin 58th edition. URL: https://asb.opec.org/ASB_PDFDownload.php (accessed on 10.12.2023).

indicators before and during the Russia-Ukraine conflict over the period 2005–2022. The sample is divided into two phases: the pre-conflict period (2005–2013) and the during-conflict period (2014–2022), enabling a clear comparison between the two eras. The study uses annual secondary data for Russia. The variables include GDP, inflation, gross domestic savings, unemployment, FDI, oil and gas rents, exports, bank nonperforming loans, deposit and lending interest rates, and total reserves. Most variables are expressed in ratio form, while total reserves are measured in real values. The analysis focuses on assessing the impact of the conflict on macroeconomic performance and financial stability across the two periods.

Research Methodology

This study employs average ratio analysis to compare macroeconomic and financial performance indicators before and during the Russia-Ukraine conflict (2005–2022). It evaluates key variables including GDP, inflation, gross domestic savings, unemployment, FDI, oil and gas rents, exports, and banking indicators such as NPLs, deposit and lending rates, and total reserves.

The analysis applies descriptive statistics alongside the Shapiro-Wilk test to assess data normality. Where data are normally distributed, t-tests are used to examine differences in mean values between the pre-conflict (2005–2013) and conflict (2014–2022) periods. For non-normally distributed data, the Wilcoxon matched-pairs signed-rank test is applied to compare medians.

This combined approach helps determine whether statistically significant differences exist between the two periods.

Gross Domestic Product (GDP)

GDP measures the total value of final goods and services produced within a country over a given period and is widely used to assess economic performance [13]. Real GDP growth reflects economic health, with increases indicating expansion and declines signaling downturns.⁶ This study compares average GDP between the pre-conflict and during-conflict periods to test for significant differences. The following hypothesis was developed.

There is a difference between the average two means of GDP.

Inflation Rate

Inflation refers to the rate at which general price levels increase over time, reducing purchasing power [14, 15]. It is commonly measured using the Consumer Price Index (CPI).⁷ This study compares average inflation rates across the two periods to assess differences. The hypothesis is that there is a significant difference between the two period means of the inflation rate.

⁶ IMF. Gross Domestic Product: An Economy's All. URL: <https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/gross-domestic-product-GDP>

⁷ World Bank. Inflation, consumer prices for the United States [FPCPITOTLZGUSA], December 2023. URL: <https://fred.stlouisfed.org/series/FPCPITOTLZGUSA> (accessed on 06.02.2024).

Gross Domestic Savings

GDS represents national income remaining after total consumption and reflects resources available for investment.⁸ This study examines whether average GDS differs significantly between the pre-conflict and conflict periods. The following hypothesis was formulated:

There is a significant difference between the average two means of GDS.

Unemployment Rate

The unemployment rate measures the share of the labor force actively seeking but unable to find work and is a key indicator of labor market performance.⁹ This study compares average unemployment before and during the conflict to assess its impact. The following hypothesis was formulated.

There is a significant difference between the average two means of unemployment rate.

Foreign Direct Investment Inflows

FDI refers to cross-border investment involving ownership in foreign enterprises [16, 17]. It reflects long-term economic integration.¹⁰ This study examines whether average FDI inflows differ significantly between the two periods. The following hypothesis was developed.

There is a significant difference between the average two means of FDI.

Oil and Gas Rents

Oil and gas rents represent the difference between resource value and production cost.¹¹ This study examines whether the average oil and gas rents in Russia differ significantly between the pre-conflict and during-conflict periods.

The study is guided by the following hypothesis that there is a significant difference in the average means of oil rents and natural gas rents between the pre-conflict and conflict periods.

Export of Goods and Services

Exports measure the value of goods and services provided to non-residents and are key indicators

of economic performance.¹² This study compares average exports across the two periods. The following hypothesis was developed.

There is a significant difference between the average two means of exports of goods and services.

Bank Nonperforming Loans Ratio

The NPL ratio measures the share of loans that are in default or near default and reflects banking sector health.¹³ This study examines whether average NPL ratios differ across the two periods. The hypothesis is that there is a significant difference between the two period means of bank non-performing loans.

Deposit Interest Rate

The deposit interest rate is the rate paid by banks on demand, time, or savings deposits [18], which are often used by investors for capital preservation, modest returns, and insurance protection.¹⁴ This study compares average deposit rates between the two periods. The hypothesis is that there is a significant difference between the two period means of the deposit interest rate.

Lending Interest Rate

The lending rate is the cost of borrowing for private sector loans and reflects credit conditions in the economy.¹⁵ This study examines whether the mean lending rate differs significantly between the pre-conflict and conflict periods in Russia's banking sector.¹⁶ The hypothesis is that there is a significant difference between the two period means of the lending interest rate.

Total Reserves

Total reserves include monetary gold, SDRs, IMF positions, and foreign exchange assets held by

⁸ The World Bank. Gross domestic savings. URL: <https://databank.worldbank.org/metadataglossary/world-development-indicators/series/NY.GDS.TOTL.ZS> (accessed on 20.04.2024).

⁹ OECD. Unemployment rate (indicator). URL: <https://doi.org/10.1787/cbe71f42-en> (accessed on 07.02.2024).

¹⁰ OECD. FDI flows, 2024. URL: <https://data.oecd.org/fdi/fdi-flows.htm> (accessed on 21.04.2024).

¹¹ World Bank. Oil rents (% of GDP). URL: <https://databank.worldbank.org/metadataglossary/adjusted-net-savings/series/NY.GDP.PETR.RT.ZS> (accessed on 06.02.2024).

¹² The World Bank. Exports of goods and services (% of GDP). URL: <https://databank.worldbank.org/metadataglossary/jobs/series/NE.EXP.GNFS.ZS> (accessed on 05.02.2024).

¹³ The World Bank. Bank nonperforming loans to total gross loans (%). URL: <https://databank.worldbank.org/metadataglossary/world-development-indicators/series/FB.AST.NPER.ZS> (accessed on 20.04.2024).

¹⁴ The World Bank. Deposit interest rate (%). URL: <https://databank.worldbank.org/metadataglossary/world-development-indicators/series/FR.INR.DPST> (accessed on 05.02.2024).

¹⁵ The World Bank. Lending interest rate (%). URL: <https://databank.worldbank.org/metadataglossary/world-development-indicators/series/FR.INR.LEND> (accessed on 21.04.2024).

¹⁶ The World Bank. Lending interest rate (%). URL: <https://databank.worldbank.org/metadataglossary/world-development-indicators/series/FR.INR.LEND> (accessed on 05.02.2024).

Table 1

Shapiro-Wilk for Testing Normality Results

Variable	Obs	W	z	Prob > z	Obs	W	z	Prob > z
2005–2013 period					2014–2022 period			
GDP	9	0.81064	1.927	0.02699	9	0.90888	0.501	0.30813
Inf	9	0.97421	–1.462	0.92812	9	0.91699	0.337	0.3679
GDS	9	0.8739	1.102	0.13534	9	0.8616	1.283	0.09979
UnEmp	9	0.95301	–0.592	0.72315	9	0.90692	0.539	0.29489
FDI	9	0.92886	0.074	0.47061	9	0.88949	0.852	0.19714
OIL	9	0.9196	0.282	0.38894	8	0.86336	1.128	0.12967
GAS	9	0.98425	–2.109	0.98254	8	0.81125	1.778	0.03773
Exp	9	0.94708	–0.407	0.65803	9	0.9446	–0.335	0.63107
BNLTGL	6	0.96428	–1.045	0.85203	9	0.90734	0.531	0.29771
DIR	9	0.85845	1.327	0.09224	9	0.94942	–0.478	0.68366
LIR	9	0.8703	1.156	0.12386	9	0.95402	–0.625	0.73417
TR	9	0.82532	1.756	0.03956	9	0.88895	0.861	0.19461

Source: Authors' calculation.

monetary authorities.¹⁷ his study examines whether the mean of total reserves differs between the pre-conflict and conflict periods and tests whether the difference is statistically significant. The hypothesis is that there is a significant difference between the two period means of total reserves.

RESULTS AND DISCUSSIONS

Shapiro-Wilk for Testing Normality

The Shapiro-Wilk test is used to assess the normality of the macroeconomic variables and financial performance indicators. *Table 1* summarizes the results of the Shapiro-Wilk test for 12 variables. The data for three variables, namely GDP, GAS, and TR, failed to demonstrate normality, while the data for the remaining nine variables showed normality.

The Shapiro-Wilk test of normality was conducted to determine whether GDP, inflation rate, gross domestic savings, unemployment rate, foreign direct investment inflows, oil and natural gas rents, export of goods and services, bank nonperforming loans, deposit interest rate, lending interest rate, and total reserves are normally distributed. The results indicate that we must reject the null hypothesis for GDP with a p-value of 0.02699, GAS with a p-value of 0.03773, and total reserves (TR) with a p-value of 0.03956, concluding that these data are not normally distributed. Conversely, for the remaining nine variables, their p-values are greater than 0.05, indicating that we fail to reject the null hypothesis and conclude that their data are normally distributed.

Descriptive Statistics and T-test Values

This section presents descriptive statistics and t-test results for key economic indicators across the pre-conflict (2005–2013) and during-conflict (2014–2022) periods.

¹⁷ World Bank. Total reserves in months of imports. URL: <https://databank.worldbank.org/metadataglossary/international-debt-statistics/series/FI.RES.TOTL.MO> (accessed on 06.02.2024).

Table 2

Descriptive Statistics

Results	Mean	Std. Dev.	Mean	Std. Dev.	T-tests (mean-comparison tests)-two sample using variables		
Variables / Periods	Pre-Conflict Period: 2005–2013		During-The-Conflict Period: 2014–2022		t-values	p-values	Inference
Inf	13.45605	7.053582	7.987603	6.051826	1.7652	0.0966	REJ H0
GDS	31.03508	3.131834	30.35545	2.249261	0.5288	0.6042	REJ H0
UnEmp	6.611111	0.9437087	5.003333	0.5792236	4.356	0.0005	AcceptH1
FDI	3.161632	0.8598356	1.044808	1.30636	4.0606	0.0009	AcceptH1
OIL	10.66609	1.833608	7.34787	2.096576	3.4828	0.0033	AcceptH1
Exp	29.81876	3.120674	27.84361	1.839456	1.6358	0.1214	REJ H0
BNLTTGL	6.733952	2.004778	8.193731	1.348569	0.000	1.000	REJ H0
DIR	5.458333	1.386549	5.999444	1.745224	0.7283	0.477	REJ H0
LIR	10.72407	2.037072	10.33919	2.813416	0.000	1.000	REJ H0

Source: Authors' calculation based on data from World Bank. URL: <https://data.worldbank.org/country/russian-federation?view=chart> (accessed on 10.12.2023).

Note: All the data are expressed as percentages.

Table 2 indicates that inflation declines from an average of 13.46 (pre-conflict) to 7.99 (during-conflict), but the difference is not statistically significant ($p = 0.0966$). Gross domestic savings remain relatively stable at 31.04 and 30.36, with no significant difference ($p = 0.6042$). In contrast, unemployment decreases significantly from 6.61 to 5.00 ($p = 0.0005$), indicating a meaningful improvement during the conflict period. FDI falls sharply from 3.16 to 1.04, with a statistically significant difference ($p = 0.0009$), while oil revenues also decline from 10.67 to 7.35 ($p = 0.0033$), confirming a significant reduction during the conflict period. Export values slightly decrease (29.82 to 27.84), but the difference is not significant ($p = 0.1214$). Bank nonperforming loans rise from 6.73 to 8.19, though the change is not statistically significant ($p = 1.000$). Similarly, deposit and lending

interest rates show small variations between periods, with no significant differences ($p = 0.477$ and $p = 1.000$, respectively). Overall, the results indicate significant differences only in unemployment, FDI, and oil revenues, while other indicators remain statistically unchanged between the two periods.

Wilcoxon Matched-Pairs Signed-Rank Test and Descriptive Statistics

Table 3 reports the Wilcoxon test results for variables that are not normally distributed (GDP, gas, and total reserves), as identified by the Shapiro-Wilk test.

GDP shows a median decline from 4.45 (pre-conflict) to 0.01 (during-conflict), but the difference is not statistically significant ($p = 0.1097$). Similarly, gas (GAS) decreases from 3.19 to 2.25, with no significant difference between periods ($p = 0.2076$).

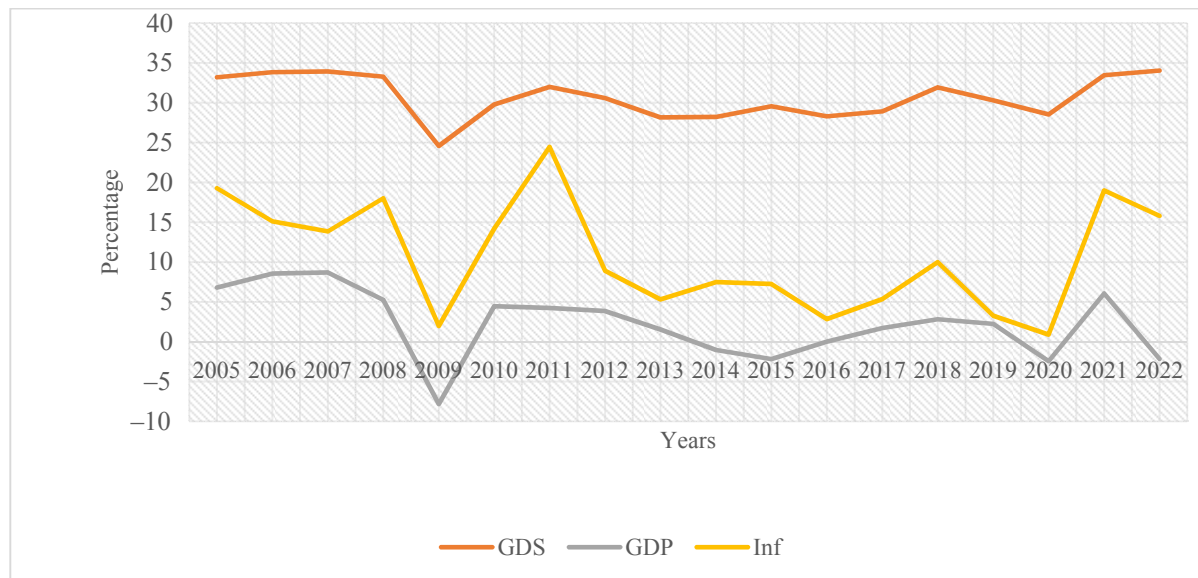
Table 3

Wilcoxon Matched-Pairs Signed-Rank Test and Descriptive Statistics

Results	Median	Std. Dev.	Median	Std. Dev.	Wilcoxon matched-pairs signed-rank test	
Variables / Periods	Pre-Conflict Period: 2005–2013		During-The-Conflict Period: 2005–2013		P. Value	Inference
GDP	4.453096	4.979172	0.010248	2.877068	0.1097	REJ H0
GAS	3.186084	0.59412	2.253895	1.451025	0.2076	REJ H0
TR	4.79E+08	1.14E+08	4.69E+08	1.04E+08	0.0858	REJ H0

Source: Authors' calculation based on data from world bank. <https://data.worldbank.org/country/russian-federation?view=chart> (accessed on 10.12.2023).

Note: All the data are expressed as percentages, except for total reserves (TR), which is represented in its real amount.

**Fig. 3. Gross Domestic Savings, GDP, and Inflation**

Source: Compiled by authors based on data from World Bank. URL: <https://data.worldbank.org/country/russian-federation?view=chart> (accessed on 10.12.2023).

Total reserves also show a decline across periods, but the change remains statistically insignificant ($p = 0.0858$).

Overall, the results indicate that there are no statistically significant differences in GDP, gas, or total reserves between the pre-conflict and during-conflict periods, thereby failing to support the stated hypothesis.

RATIO ANALYSIS**Macroeconomic Ratio Analysis**

This section examines eight macroeconomic indicators across three figures: (1) gross domestic

savings, GDP, and inflation; (2) unemployment and FDI inflows; and (3) oil and gas rents and exports of goods and services.

Gross Domestic Savings, GDP, and Inflation Analysis

Figure 3 illustrates the historical trends of gross domestic savings, GDP, and inflation rate during four major events: the 2008 financial crisis, the 2014 Russia-Ukraine conflict, the COVID-19 pandemic [19], and the renewed conflict in 2022. The three indicators display similar trends over the study period. Following the 2008 financial crisis, all

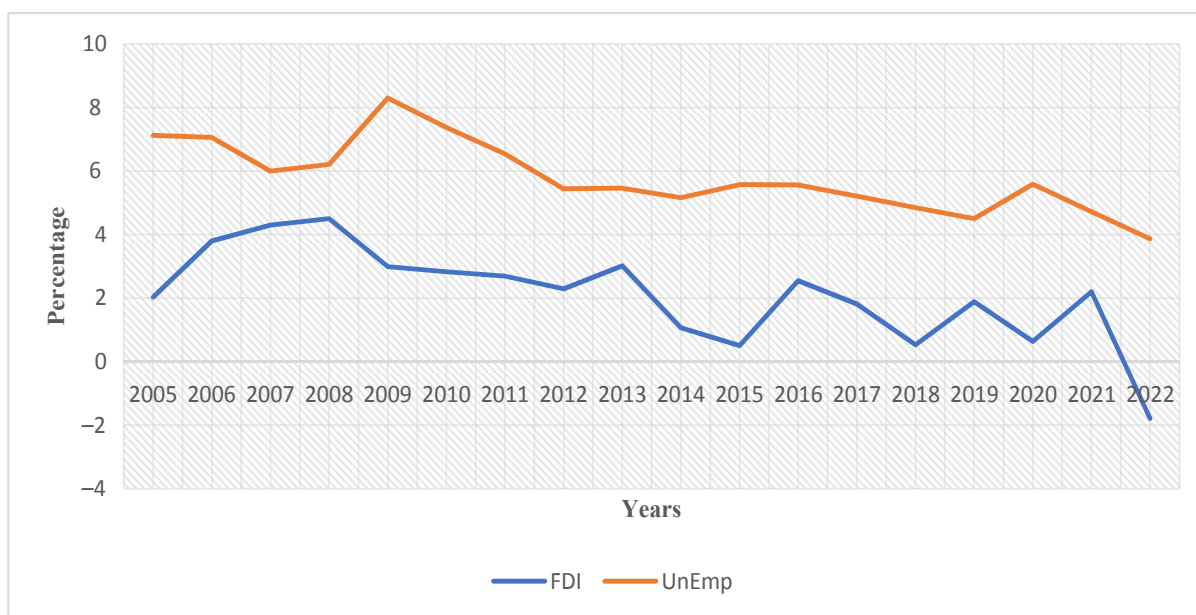


Fig. 4. Foreign Direct Investment Inflows and the Unemployment Rate

Source: Compiled by authors based on data from World Bank. URL: <https://data.worldbank.org/country/russian-federation?view=chart> (accessed on 10.12.2023).

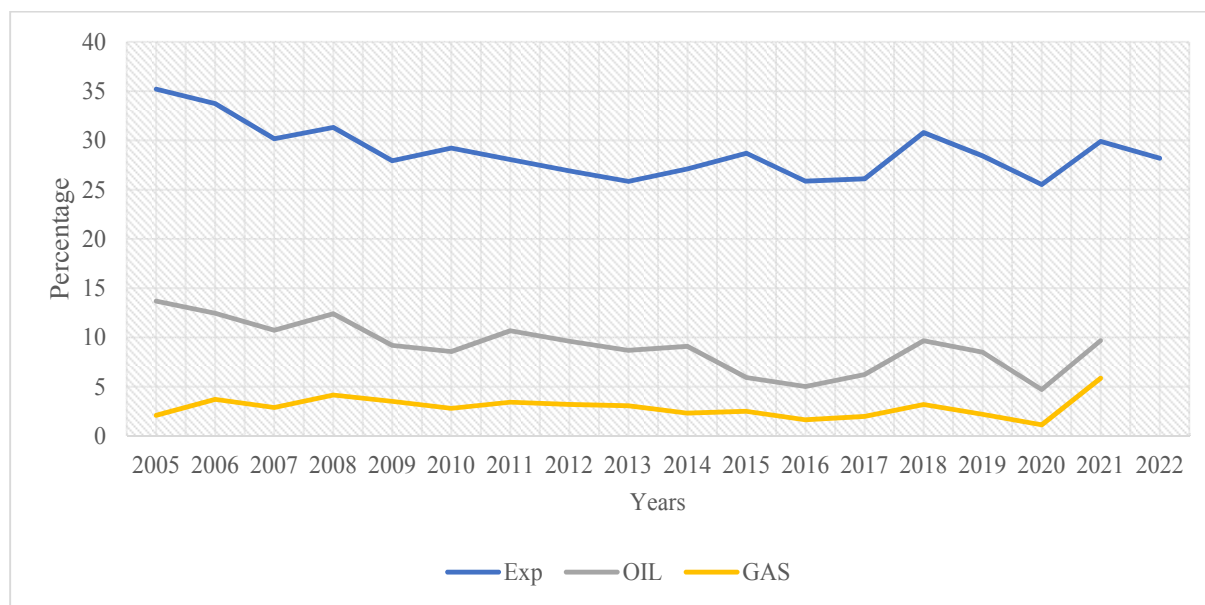


Fig. 5. Oil and Gas and Export of Goods and Services Analysis

Source: Compiled by authors based on data from World Bank. URL: <https://data.worldbank.org/country/russian-federation?view=chart> (accessed on 10.12.2023).

indicators declined sharply to 24.60%, –7.82%, and 1.97%, respectively [20]. A gradual recovery followed, though growth slowed after the 2014 conflict, with values reaching 28.20%, –1.04%, and 7.49%. A similar pattern appeared during the COVID-19 pandemic in 2020, when the indicators fell to 28.53%, –2.45%, and 0.89%, respectively. Although slight improvements were observed in 2021, all three variables declined again in 2022 following the renewed Russia-Ukraine conflict.

Foreign Direct Investment Inflows and the Unemployment Rate Analysis

This section examines the historical trends of foreign direct investment (FDI) and unemployment rate from 2005 to 2022. *Figure 4* shows an inverse relationship between the two variables, where declines in FDI generally coincide with rising unemployment. FDI remained highly volatile throughout the period. Following the 2008 financial crisis, FDI fell sharply from 4.50 to 2.99 and

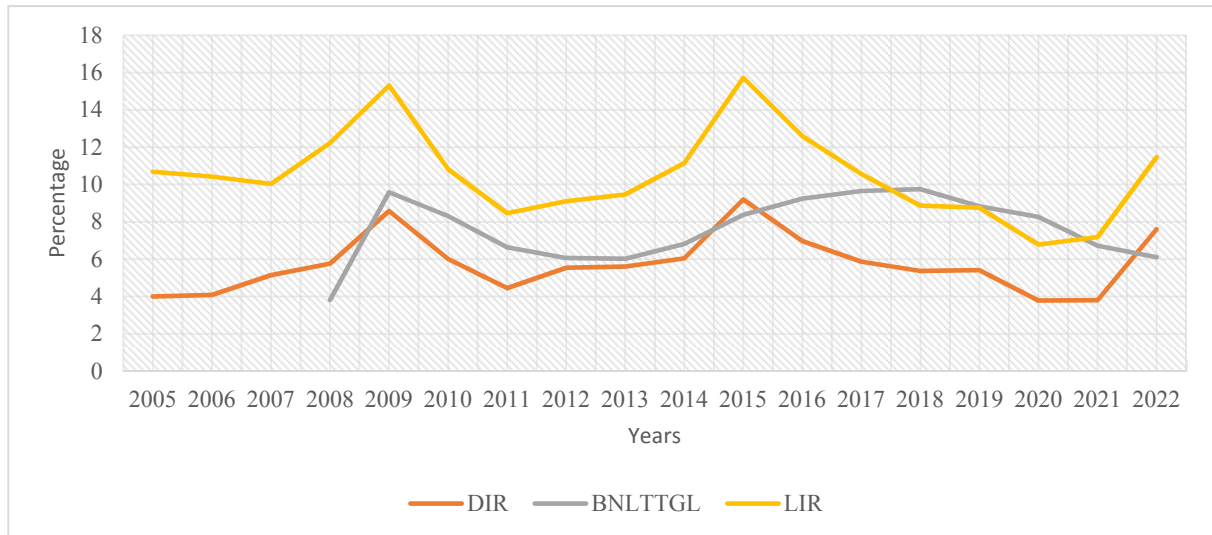


Fig. 6. Bank Nonperforming Loans Ratio, Deposit Interest Rate and Lending Interest Rate

Source: Compiled by authors based on data from World Bank. URL: <https://data.worldbank.org/country/russian-federation?view=chart> (accessed on 10.12.2023).

recovered gradually until 2013. However, the 2014 Russia-Ukraine conflict and subsequent US sanctions triggered another decline, while the COVID-19 pandemic further reduced FDI in 2020. Although conditions improved in 2021, the renewed conflict and intensified Western sanctions in 2022 caused another sharp drop. In contrast, unemployment rose significantly after the 2008 financial crisis, then gradually declined, reaching 4.5 in 2019. A slight increase occurred during the COVID-19 slowdown in 2020, followed by recovery in 2021, when the unemployment rate reached its lowest level of 3.87%.

Oil and Gas and Export of Goods and Services Analysis

This final section presents the historical trends of key macroeconomic variables — oil and gas rents and exports of goods and services — from 2005 to 2022. *Figure 5* shows that all three indicators generally move in similar patterns. A sharp decline began after 2007, linked to the global financial crisis, followed by a downturn in 2014 during the Russia-Ukraine conflict that lasted until 2017. Growth resumed in 2018–2019 before falling in 2020 due to the COVID-19 pandemic, recovering in 2021, and declining again in 2022 amid renewed conflict. Data for oil and gas rents in 2022 is unavailable, but based on export trends, a similar decline is expected given their closely aligned movements.

Financial Performance Analysis

This section examines four key variables: bank nonperforming loans (NPLs), deposit interest rate, lending interest rate, and total reserves. The

analysis is divided into two parts: the first covers NPLs, deposit, and lending rates, while the second focuses on total reserves.

Bank Nonperforming Loans Ratio, Deposit Interest Rate and Lending Interest Rate Analysis

Figure 6 indicates that the deposit and lending interest rates show similar movements over the study period. After the 2008 financial crisis, both increased, peaking at 8.6% and 15.3% respectively, before gradually stabilizing. In 2015, both rates rose again to 9.2% and 15.7%, reflecting the effects of the 2014 Russia-Ukraine conflict and related sanctions. A sharp decline occurred in 2020 due to the COVID-19 pandemic, with rates falling to 3.76% and 6.77%, followed by recovery in 2021 and beyond.

NPLs increased significantly in 2009, reaching 9.6% during the financial crisis, then improved until 2013. However, they rose again after 2014, peaking at 9.75% in 2018, before declining in the following years as conditions improved.

Total Reserves Analysis

This section focuses on total reserves, including gold and US currency, which are important for monetary stability and supporting cross-border trade. *Figure 7* shows the trend from 2005 to 2022, which closely follows the patterns observed in *Fig. 6*.

Total reserves slightly declined during the 2008 financial crisis, followed by a recovery up to 2013. A sharp drop occurred in 2014 due to the Russia-Ukraine conflict, after which reserves gradually recovered and peaked in 2021. However, a downward trend emerged in 2020 due to COVID-19 and

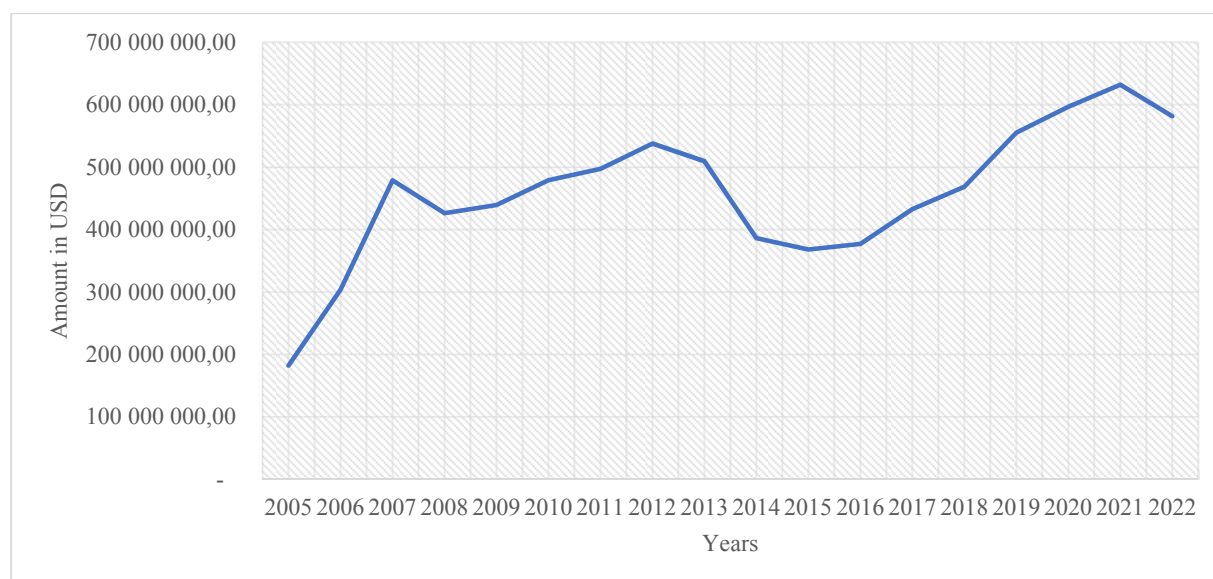


Fig. 7. Total Reserves Analysis

Source: Compiled by authors based on data from World Bank. URL: <https://data.worldbank.org/country/russian-federation?view=chart> (accessed on 10.12.2023).

continued into 2022, driven by the renewed Russia-Ukraine conflict and its broader economic effects.

CONCLUSION

This study conducts a comparative analysis of key macroeconomic and financial indicators—GDP, oil and gas rents, FDI, domestic savings, trade patterns, inflation, unemployment, and banking performance—across the pre-conflict period (2005–2013) and the conflict period (2014–2022) to test for differences in their means and medians. The analysis uses ratio analysis, descriptive statistics, the Shapiro-Wilk test, Wilcoxon signed-rank test, and t-tests.

The results show statistically significant differences in oil rents, FDI inflows, and unemployment rates. Pre-conflict averages for oil rents and FDI were higher, reflecting the impact

of major shocks such as the 2014 Russia-Ukraine conflict, COVID-19, and the 2022 conflict. In contrast, unemployment was lower during the conflict period, suggesting some labor market resilience despite sanctions. No significant differences were found in GDP, inflation, gross domestic savings, gas rents, exports, bank NPLs, interest rates, and total reserves, indicating relative stability in the broader economy and banking sector despite multiple external shocks.

Overall, the findings suggest that the economy demonstrated considerable resilience in absorbing major geopolitical and economic disturbances without severe systemic disruption. The study recommends future research using regression analysis to further examine the effects of oil rents, FDI, and unemployment on economic growth to strengthen these findings.

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