

RUSSIA'S INVASION OF UKRAINE AND ITS IMPACT ON THE ECONOMIC PERFORMANCE OF G20 COUNTRIES

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Abstract

How to cite this paper: Shabani, L., Misini, S., Mustafa, A., Ismajli, A., & Ismajli, A. (2024). Russia's invasion of Ukraine and its impact on the economic performance of G20 countries. *Journal of Governance & Regulation*, 13(2), 154–161. <https://doi.org/10.22495/jgrv13i2art15>

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ISSN Online: 2306-6784

ISSN Print: 2220-9352

Received: 13.12.2023

Accepted: 23.04.2024

JEL Classification: E24, E29, E31, H60, P47

DOI: 10.22495/jgrv13i2art15

This paper aims to examine the impact of the Russia-Ukraine war on the performance of the Group of Twenty (G20) countries by analyzing the economic performance of these countries before and after the war, analyzing and measuring empirically from 2000 to 2022. The Russian invasion of Ukraine has prompted many researchers to study the impact of the conflict on the economic performance of the world's most prosperous countries. Furthermore, the influence of global commerce has demonstrated that the Russia-Ukraine war has impacted the global trade imbalance, harming the economic performance of the 27 European Union (EU) nations (Misini & Tosuni, 2023b). The methodology is based on a comparison of each of the G20 country's economic performance indexes (EPIs) to the countries of the EU. These countries' performance will be evaluated using the most essential macroeconomic indicators: unemployment, inflation, fiscal deficit, and yearly economic growth. In addition, this paper will examine the influence of the Russia-Ukraine war on the economic performance of these countries (G20). The analysis employed dot plot analysis, descriptive statistical analysis, and regression to conduct a more scientific investigation. The findings reveal that nations with high inflation as a result of the Russia-Ukraine war had lower economic performance, while those with low inflation had higher economic performance. Countries with lower inflation have produced greater economic results. Turkey and Argentina have experienced significant swings in economic performance. Economic growth and the budget deficit have had a favorable impact on the G20 countries' economic performance.

Keywords: Economic Performance Index, Inflation, Unemployment, Public Debt, Economic Growth

Authors' individual contribution: Conceptualization — L.S. and S.M.; Methodology — L.S., S.M., A.M., A.I., and A.I.; Formal Analysis — L.S., S.M., A.M., A.I., and A.I.; Investigation — L.S. and S.M.; Data Curation — L.S., S.M., A.M., A.I., and A.I.; Writing — Original Draft — L.S., S.M., A.M., A.I., and A.I.; Writing — Review & Editing — L.S., S.M., A.M., A.I., and A.I.; Visualization — L.S., S.M., A.M., A.I., and A.I.; Project Administration — L.S., S.M., A.M., A.I., and A.I.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

In this paper, we will look at the perspective and measurement of economic performance in the Group of Twenty (G20) countries (the United States (US), Germany, India, Turkey, Russia, France, Canada, Indonesia, China, Mexico, Saudi Arabia, Brazil, Australia, the United Kingdom (UK), Japan, Argentina, Italy, South Africa, South Korea, and the European Union (EU)) before and after COVID-19 and before and after the Russian invasion of Ukraine.

Economic growth is viewed as an unusual result in many countries, both by blind economists and by policymakers in many different countries around the world. However, certain country results reveal that economic growth has not yielded as many results in other macroeconomic variables as in some Western Balkans countries. From this perspective, it is critical to study the most important macroeconomic characteristics of the G20 in this paper, which will provide a more realistic picture of these countries' economic performance (Sedlacek, 2011; Misini & Mustafa, 2022). The economic performance index (EPI) is a more complicated macroeconomic indicator that can help to compensate for some of the inadequacies of standard gross domestic product (GDP) analysis. The following indicators will be examined in this paper: 1) unemployment, 2) inflation, 3) the budget deficit, and 4) economic growth, where such factors are recommended by (Misini & Tosuni, 2023a).

The current challenges, which include the Russia-Ukraine war, have significantly harmed the world economy in macroeconomic terms. The key factors that have influenced the change in perspective for many countries are constant inflation for basic products, public debt, especially for countries that rely on imports, an increase in extreme poverty for some poor countries, a lack of Russian gas — the worsening of Europe's energy crisis, an increase in the price of oil, and so on. All of these indicators are constantly affecting the citizens' standard of living.

The G20 countries play a critical role in the global economy, particularly in maintaining and improving global trade and investment ties. Russia's invasion of Ukraine, as well as the ensuing sanctions, have exacerbated the problems of several G20 countries. The strains and divisions among states caused by Russia's invasion of Ukraine are dimming the states' outlook. Furthermore, rising inflation and debt pressure politicians to tighten monetary and fiscal policies, further burdening economic development and affecting economic performance. Most economies are still growing, although growth has slowed and some countries have entered recession. Global growth was expected to fall to 3.2% in 2022. Economic activity in the EU is likewise declining. Similarly, the G20 countries' economic activity is deteriorating. Most advanced G20 economies (e.g., Germany, Korea, and the US) are contracting or weakening, according to recent data. According to August 2022 data, GDP is feeble, and commerce has weakened (International Monetary Fund [IMF], 2022a).

The EPI is a complex macroeconomic indicator that should alleviate some of the shortcomings that simple indices such as GDP, display. This indicator

was developed by the IMF in 2013 and it combines inputs from inflation — a monetary indicator, unemployment — a production indicator, GDP budgetary deficit — a fiscal measure, and the change of real GDP — an aggregate performance measure for the economy (Khramov & Lee, 2013).

The paper will elaborate on some main objectives by comparing the G20 countries with their economic performance, comparing the economic performance of the G20 states to the states of the EU, the impact of COVID-19 on the economic performance of the G20 state is analyzed, the impact of the Russian invasion of Ukraine on the economic performance of the G20 state is analyzed, and so on.

This paper will continue with Section 2 which will present the theoretical foundation of this research. The methods will then be given in Section 3. Section 4 will offer the empirical analysis and the study's findings. Section 5 will discuss the results. Section 6 will be the paper's conclusion.

2. LITERATURE REVIEW

The deterioration of the global outlook and large national disparities based on the economic performance of countries began in 2020 and will continue into 2021 as a result of the pandemic's uneven impact, beginning with consumption, the effects of the travel sector, sports, medicine, as well as political differences between states, and so on. Canada, South Africa, and the US have the highest current account deficits among G20 nations, while Australia, Germany, and Russia have the largest current account surpluses. Countries have comparative advantages and disadvantages, which add to the issues posed by pandemics and the war in Ukraine. Supply chains as a cause of the Ukraine war and sanctions, where Russia and Ukraine are key producers and exporters of some metals, gas, oil, wheat, corn, and so on, have had an impact on the G20's economic performance (IMF, 2022a, 2022b).

Literature, scientists, economic experts, and real outcomes demonstrate several ways to a country's economic performance. The most essential macroeconomic indicators of a country must be evaluated in order to evaluate its macroeconomic performance. Some of them, such as states or scientists, fail to recognize that economic expansion does not have a significant impact on lowering unemployment. Furthermore, this economic growth has not been quantified in relation to inflation or public debt, which are two of the most significant macroeconomic factors for measuring and evaluating a country's economic performance in a fully scientific manner (Misini & Tosuni, 2023a).

The benefits of GDP growth have a good impact on the country's economy, but this growth contributes little to the country's identity because the results thus far reveal that economic expansion has not had a developmental impact when measured just by GDP criteria; hence, this measurement did not result in an increase in citizen well-being or economic success in general. The last two COVID-19 crises, as well as Russia's invasion of Ukraine, have caused constant fear and stress among the world's most powerful powers, notwithstanding their strong economic success. Similarly, the previous two crises,

COVID-19, have resulted in unemployment; while the Russian invasion of Ukraine has resulted in continual inflation, and these two macroeconomic characteristics have also influenced the economy's performance of the states (Stiglitz, 2009; African Development Bank Group, 2022).

The G20 group's GDP increased by 0.3% in the fourth quarter of 2022, compared to 1.4% in the previous quarter. This slowdown proved to be problematic for the G20 countries. Annual GDP growth forecasts show that the G20 region's economic growth in 2022 will be 3.2%. Saudi Arabia has the greatest annual economic growth rate in the G20, at 8.7%, followed by India at 6.7%, Turkey at 5.6%, Indonesia at 5.3%, and Japan at 1.0% (Organisation for Economic Co-operation and Development [OECD], 2022). The COVID-19 dilemma has had an unpredictable influence on the economies of the EU's 27 member countries, generating problems in various economic sectors, particularly the automotive and tourism industries (De Vet et al., 2021).

COVID-19 has caused fluctuations in the GDP of the G20 countries, causing inflation as a result of government spending on health care, as well as supporting workers who have lost their jobs, and spending on medium-sized and small businesses to reduce unemployment and inflation, as well as to recover from stagnation and recession. In the G20 countries, such economic conditions have influenced inflation and boosted unemployment dynamics. Taylan et al. (2022) provided an overview of the consequences of the pandemic on GDP, as well as health, industrial production, unemployment, inflation, and several other elements (Taylan et al., 2022).

The COVID-19 dilemma and the war in Ukraine have a very tight link between all economic operations and have mostly affected in a similar way, particularly in the EU, Canada, and America. The broiler situation in several nations has deteriorated dramatically as a result of the COVID-19 epidemic. The rise in interest rates is exacerbated by the Russia-Ukraine war, exacerbating developing-country debt (Malloch-Brown, 2022). The G20 has tackled the issue of debt in two programs aimed at developing countries. The G20 first imposed a debt service moratorium in 2020, and then it formed a common debt resolution framework to resolve financial crises (Berensmann et al., 2022).

The invasion of Russia caused significant economic devastation in the region, as well as enormous human misery. The economic predicament of the economies is exacerbated by the fact that the majority of economic operations and export channels are now held or threatened by Russia. Foreign finance will continue to play a crucial role as long as the war lasts (Heinonen & Korhonen, 2023).

The Russian invasion of Ukraine caused significant disruption to the global supply chain, affecting commerce and energy supply, resulting in a spike in the price of oil and other commodities, fueling worldwide inflation in many nations. The war has weakened certain nations' trade balances and interdependence, resulting in inflation in all items (Surya et al., 2023). The clash between Russia and other states' categories, as well as significant

changes in allied regions as a result of economic stability, is visible (Tsutsunashvili et al., 2024).

The Russia-Ukraine war is not a battle between two nations, and it will not only harm these two states economically, but it will also have an impact on the world economy owing to changes in the demand and supply of commodities (Mbah & Wasum, 2022). European countries are dealing with high inflation rates and supply chain disruptions as a result of war (Lanktree, 2022). Russia is not just the world's greatest supplier of natural gas and oil, but it's also Europe's main exporter of both commodities (Bhattarai et al., 2022).

Inflation as a cause of the Ukrainian war represents macroeconomic uncertainty in the future, underlining the contrast between established and transition economies. According to the econometric model used, the rate of inflation fluctuates with a country's level of development through time. At a high degree of development, a country's monetary policy becomes a strategy directed by the current economic situation, taking all macroeconomic parameters into account. This remains a challenge in developing countries, as many of them are still operating under appropriate macroeconomic criteria. However, in the context of developing countries, inflation appears more as a picture of growth, even if the intensity of monetary policies in these countries stagnates inflation and turns it into economic weakness. Inflation is fraught with minor uncertainty (Purifice, 2021). According to Pettinger (2017), the presence of inflation causes a decline in investment owing to market uncertainty, implying that inflation may vary quickly and be influenced by external variables (Pettinger, 2017). Zeder (2020) stated that when inflation is strong, the value of the loan is reduced, making repayment easier. Nevertheless, this comes at a cost to creditors, who see the value of their claims diminish. Beggs (2019) revealed that in the commercial realm, the impact of inflation is felt directly in the trade balance, which harms a country's international competitiveness by reducing exports and increasing imports. Özyilmaz (2022) inflation has a detrimental effect on investment, which has a direct influence on economic performance. Grigoli and Sandri (2023) conclude from analyzing the relationship between governmental debt and inflation that citizens underestimate the degree of debt and raise inflationary expectations. This study was concerned with the following countries: the US, England, and Brazil.

The rise in the price of oil and gas has caused a rise in the price of all other products, raising the cost of life for global residents. The reliance of many of the world's most affluent countries on imported goods such as wheat, oil, and gas has resulted in an increase in inflation. The war also had an effect on the economic slowdown, the rise in unemployment in several nations, the rise in worldwide inflation, and so on (Misini & Tosuni, 2023b).

3. METHODOLOGY

The article will examine the economic performance of the G20 countries using secondary data from the World Bank, IMF, OECD, and other organizations. The data will be collected on an annual basis from

2000 to 2022, analyzing two crises: the first, the impact of COVID-19 on the economic performance of these countries, and the second, the Russia-Ukraine war and the impact of this war on the measurement of the economic performance of these G20 countries.

In the scope of this article, we will evaluate descriptive methods, comparative methods, critical methods, and empirical methods, providing the paper with a true scientific analysis using empirical method measurement. *Economic performance (EPI)* is the dependent variable while *inflation (Inf)*, *unemployment (Unem)*, *budget deficit (Def)*, and ΔGDP are the independent ones. The obtained *EPI* values using panel data were used to test the following model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + u_t \quad (1)$$

or

$$Y_{G20t} = \beta_0 + \beta_1 X_{it} + \beta_2 X_{ut} + \beta_3 X_{dfbt} + \beta_4 X_{grwtht} + u_t \quad (2)$$

where *Inf* (%) is the current inflation rate; *Unem* (%) is the current unemployment rate; *Def/GDP* (%) is the current budget deficit as a share of GDP; ΔGDP (%) is the real GDP growth rate; β_0 is the constant term; β_1 is the inflation rate; β_2 is the unemployment; β_3 is the budget deficit; β_4 is the real GDP; and u_t is the error term.

Table 1. Description variables

Variables	Formulate
Economic performance (dependent)	$Y_{G20t} = \beta_0 + \beta_1 X_{it} + \beta_2 X_{ut} + \beta_3 X_{dfbt} + \beta_4 X_{grwtht} + u_t$
Inflation (independent)	$Inflation\ rate = \left(\frac{B-A}{A}\right) \times 100$ (The price index of the current year (CPI) and the price index of the previous year (CPI _p). Subtract the current year (CPI) from the previous year (CPI _p))
Unemployment (independent)	$Unemployment\ rate = Unemployed\ people / Total\ labor\ force \times 100$
Budget deficit (independent)	$Budget\ deficit = Total\ expenditures\ by\ the\ government - total\ income\ of\ the\ government$
Economic growth (independent)	$Growth\ rate = (GDP_Year2 / GDP_Year1) - 1$

Source: Description authors.

4. THE STATISTICS ANALYSIS

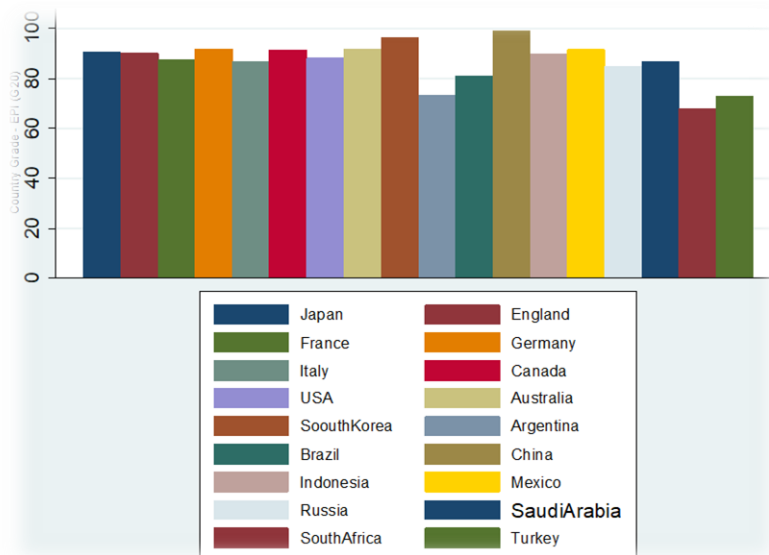
In this section, we will provide the G20 countries' EPI, examining it using figures, tables, and empirical analysis, using secondary data from 2000 to 2022 gathered from the IMF and the World Bank.

Figure 1 depicts the average of the G20 countries' EPI from 2000 to 2022. China has the highest average among these countries with

strong economic performance, followed by South Korea. South Africa has the poorest economic performance on average.

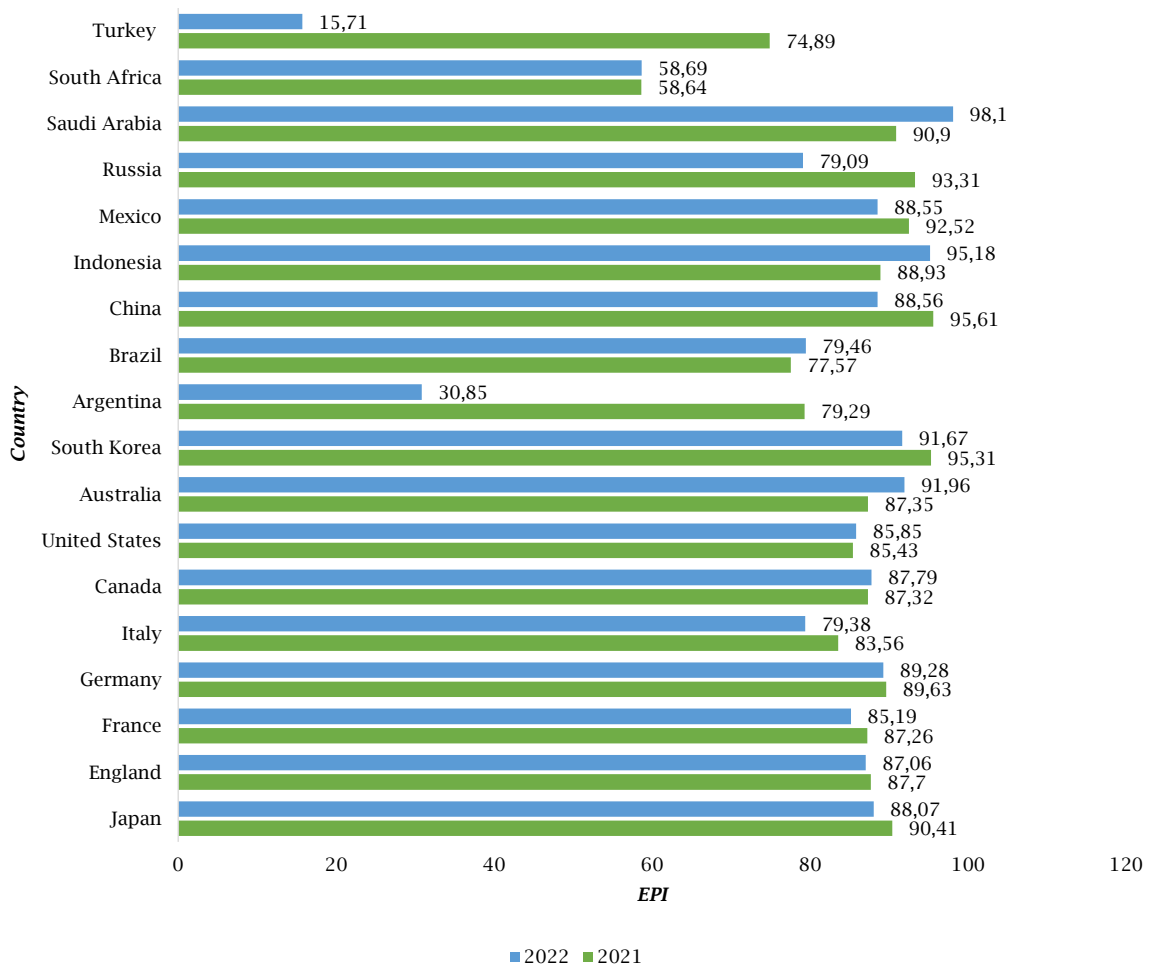
Further, we will give a figure of the G20 countries' economic performance, examining the years 2021 and 2022 for each country, making a comparison, and discussing the influence of the Russian-Ukraine war on the performance of these countries.

Figure 1. EPI for G20 countries (2000–2022)



Note: The state of India does not have unemployment data; hence we were unable to determine the state's economic performance.
Source: Authors' calculation.

Figure 2. EPI for G20 countries (2021–2022)

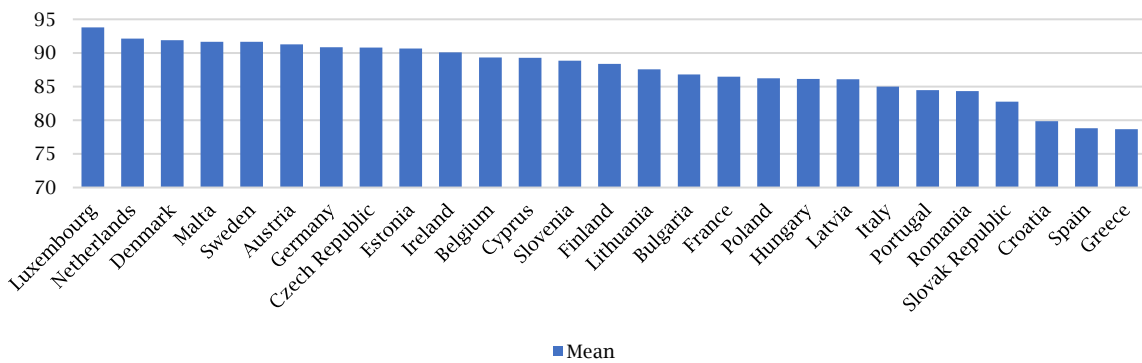


Note: EPI before the war and after the war.
Source: Authors' calculation.

This figure only depicts the G20 countries' economic performance in 2021 and 2022. The goal of this figure is to determine which countries saw the least impact on performance as a result of the Russia-Ukraine war. As shown in Figure 2, Turkey has had a severe decline in performance due to high inflation, followed by Argentina, which has

also had high inflation in this country, and it has greatly damaged economic performance. While Saudi Arabia has improved its performance from 2021 to 2022, Australia and Indonesia have also improved their performance, according to the report. Figure 3 shows the average EPI for the EU countries from 2000 to 2022.

Figure 3. EPI for countries (27 EU countries)



Source: Authors' calculation.

We examined the average economic performance of each EU member state in this figure. Based on the figure, we can deduce that Greece, Spain, and Croatia have the lowest incomes in the EU of 27 countries; while the best performers are Luxembourg, the Netherlands, Denmark, etc.

Using the IMF (2013) classification, and based on these results, this study moves on to modeling the data using more advanced statistical methodology. As indicated in Table 2, the data is presented for each country spanning 22 years from 2000 to 2022, totaling 414 observations.

Table 2. Descriptive statistics (G20 countries)

Variable	Obs.	Mean	Std. dev.	Min	Max
<i>Inflation</i>	414	5.132143	8.68001	-2.091	94.8
<i>Unemployment</i>	414	7.847104	5.291265	2.2	33.5
<i>Budget deficit</i>	414	-2.704157	4.431642	-17.203	29.802
<i>Economic growth</i>	413	2.719613	3.616138	-10.894	14.247
<i>EPI</i>	414	86.72045	11.40494	1.55	105.966

Note: The economic performance of the most inclusive EU states can be found in Misini and Tosuni (2023a).

Source: Authors' calculation.

Table 2 displays the panel data evaluated based on data received from competent institutions and calculated by the authors of the paper describing the variables, observations, average, standard deviation, minimum, and maximum, and we reached the following conclusions.

Furthermore, the analysis of the *inflation* variable shows that the average is 5.13, with a standard deviation of 8.68, with a minimum of -2.09, and a maximum of 94.8. The other

unemployment variable has an average of 7.84, with a standard deviation of 5.29, a minimum of 2.2, and a maximum of 33.5. The *budget deficit* variable averages -2.70, with a standard deviation of 4.43, minimum -17.20, maximum 29.80. The *economic growth* variable averages 2.71, with a standard deviation of 3.61, minimum -10.89, maximum 14.24.

We get at the concrete outcomes by assessing the regression based on the above-mentioned high results.

Table 3. Regression analysis

Source	Sum of squares	df	Mean square
Model	47407.1872	4	11851.7968
Residual	5525.21894	408	13.5422033
Total	52932.4062	412	128.476714

<i>EPI</i>	Coef.	Std. err.	t	P > t	95% Conf. interval	
<i>Inflation</i>	-0.9606798	0.021104	-45.52	0.000	-1.002166	-0.9191937
<i>Unemployment</i>	-0.9716355	0.035577	-27.31	0.000	-1.041573	-0.9016983
<i>Budget deficit</i>	0.1312199	0.0448369	2.93	0.004	0.0430798	0.2193601
<i>Economic growth</i>	0.5746378	0.0550398	10.44	0.000	0.4664407	0.6828348
_Cons	98.07865	0.4054895	241.88	0.000	97.28154	98.87576

Number of obs. = 413
F (4, 408) = 875.17
Prob > F = 0.0000
R-squared = 0.8956
Adj R-squared = 0.8946
Root mean square error = 3.68

Source: Authors' calculation.

All diagnostic tests suggest that the empirical model developed is appropriate for such an analysis. At the 1% level of confidence, all variables are statistically significant. *Inflation* and *unemployment* have a negative association with *EPI*, according to the regression results. This means that if *inflation* rises by 0.96%, the *EPI* will fall by 1%, assuming all other variables remain unchanged. The same is true for unemployment. *The budget deficit* and *economic growth* have a positive relationship, therefore growth in these measures will result in an increase in *EPI*.

Therefore, presenting concrete results, we can conclude that *inflation* and *unemployment* have a negative effect on the economic performance of the G20 countries, whereas the *budget deficit* has a positive effect on the rise of the economic performance within these countries that are being investigated and studied. According to the results of this study, public debt has not produced and continues to provide little outcomes in terms of improving a country's economic performance, particularly that of the G20.

5. DISCUSSION OF THE FINDINGS

This paper examines the economic performance of each G20 country using graphics. The COVID-19 crisis and the Russia-Ukraine war were also examined in the analysis. The figure analysis shows that COVID-19 has had a significant impact on countries that are more reliant on tourism, as well as their blocking of all, and more specifically the reduction of aggregate demand, such as the EU (Spain, Greece, Croatia), Turkey, South Arabia (due to landing requirements), Argentina, the United States, and Canada.

The impact of the second crisis is examined by examining the Russian invasion of Ukraine, which has affected all countries throughout the world. Nevertheless, the countries most affected by this war within the G20 are Turkey and Argentina. The countries that have been least affected by this war are Saudi Arabia because of oil production, where the price per liter has been higher than in previous years, and Australia because it is not as

reliant on imports of essential products to influence its economic performance.

According to the regression study, the two variables inflation and unemployment have harmed the economic performance of these G20 countries. The other two factors, budget deficit or fiscal balance and economic growth, also show a positive link with state economic success.

All of the variables in the regression analysis are statistically significant ($P > |t|$), but the indicators that have a negative impact on the economic performance of the G20 countries are *inflation* and *unemployment*, while the variables that have a positive impact on their economic performance are *budget deficit* and *economic growth*. After considering all of the variables described above, the variable of *economic growth* has the most positive influence, followed by the *budget deficit* as the second variable.

6. CONCLUSION

The study in this article will provide academics with a factual and empirical basis for determining the impact of the Russian-Ukrainian war on these nations' economic performance. The presentation will also describe the most significant macroeconomic measures used to assess G20 nations' economic performance. The only country that was not included in the study was India, since there is no statistical data from this country, and there is no statistical data from international reports either, thus this country was excluded from the analysis.

We conclude that the two crises have affected all G20 countries, in some countries more and in some countries less, but the first COVID-19 crisis mostly affected the countries with the highest tourism income, whereas the crisis of the Russia-

Ukraine war mostly affected the countries with the lowest financial stability and a high import of oil products, gas, wheat, corn, and so on. Turkey and Argentina have been among the G20 countries most affected by high inflation, and the inflation has influenced these countries to have the greatest turbulence in economic performance within the G20 from 2021 to 2022. Within the G20, there are many disparities in terms of EPI measurement for each country, beginning with Argentina, the EU, the US, England, Japan, and so on, and it remains a challenge for other works to analyze the economic performance of these countries in future periods as well state.

The Russian invasion of Ukraine has had a significant impact on lowering economic performance in the majority of G20 countries. Turkey had the greatest loss due to its high inflation rate. The second country is Argentina, which has huge unemployment and inflation, and the third is Russia. Other states' economic performance has declined but by a lower amount.

Most G20 states have reported that the Russian invasion of Ukraine has had a favorable impact on their economies. Saudi Arabia has increased its economic performance by 8 points, Indonesia has increased its performance by 7 points, and Australia has increased its economic performance by 4 points.

Following that, it remains for other researchers to evaluate the longest period of economic performance for the G20 countries, because, in the framework of this investigation, we discovered substantial changes in inflation for some countries, which directly affected the drop in economic performance. For such a thing, it is of interest to be studied by scholars so that in the next years more literal analyses of the impact of the Russian attack on Ukraine may be done, because the impact that we have evaluated is just for the short time of 2022.

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