

# The economic consequences of the war in the 21<sup>st</sup> century at the regional and global levels

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**Abstract.** The article examines the theoretical and practical effects of wars in the 21st century on the economy. The concept of "military economy" is highlighted. The dynamics of military expenditures are analyzed. The reasons behind and types of wars that have occurred in the past and are currently occurring are made clear. Emphasis is placed on studying the economic consequences of Russia's war in Ukraine. The assessment of the potential of countries before the war testified and confirmed the aggressive goals of a large country that attacked a much smaller one. The war against Ukraine put the issue of preserving the independence of small countries on the agenda. The main focus of the essay is on examining the economic effects of the conflict, not just on the economies of the participating nations but also on the world economy. The instability of individual commodity markets, inflation, and migration became the main mechanisms of the war's influence. As a result, the indicators of economic growth of many countries of the world are deteriorating. The raised questions actualize the task before the world community of finding new methods of solving the problems of wars.

**Keywords:** war, economic consequences, military expenditures, global economy

## 1 Introduction

Russia's military aggression against Ukraine in the 21st century put on the agenda not only the security and existence of a multi-million European country but also actualized the task of researching the multifaceted effects of war on the development of individual countries and the global economy as a whole.

War is planned violence between governments that takes place over concerns of symbolic importance such as land, resources, and power [1].

The authors of the work [2] highlight that war continues to consist of the organized use of violence to achieve political goals. And in the 21st century, the war continues to be a real political event. The reasons of the wars are somewhat different: in Africa, they are local conflicts over access to resources like water and land; in the Middle East and between Russia and Ukraine - they are for geopolitical interests.

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Scientists [3] consider two approaches to understanding the causes of war: liberal and conservative, which have strategic consequences. Within the framework of the liberal approach, by promoting democratization, conditions are created for deterring aggression and resolving conflict. According to conservatives, democratization will fail and is not worth the expense. In addition, the authors consider active and passive wars. The authors conclude that with the advent of nuclear weapons in the 20th century, passive wars became more widespread.

The author of the work [4] studies hybrid wars. He concludes that in the future, in a hybrid war, opponents will use modern technologies, tools of the global economy, unpredictable tactics, asymmetric modes of operation, etc.

The authors of the paper [5] note that in the 1990s, there was hope that military power would be replaced by "soft" power. The author of paper [6] also concluded that the wars of the 21st century, in the vast majority of cases, will not be fought with the use of huge firepower and military capabilities. According to the study [7], the introduction of nuclear weapons fundamentally altered the global order, shifting the balance of power (often known as the "balance of terror") and restricting international conflicts to periphery regions.

However, this did not take place. And in the 21st century, wars are accompanied by ethnic cleansing and mass violence caused by great political differences.

According to the World Population Review, as of September 2022, military operations of one kind or another are taking place on the territory of 23 countries [8].

The most significant military conflict was Russia's war against Ukraine, the goal of which was defined not only as the destruction of the state but also the destruction of Ukrainians, taking the globe back to the parameters of World War II.

Population migration, the destruction of industrial and social infrastructure on the territory of Ukraine, the seizure of nuclear power plants, the displacement of commodity products on world markets - all these negative processes require research in the context of ensuring the sustainable development of both the country, the region as well as the global economy as a whole. With all its political and economic institutions, the civilized world does not always have the leverage to prevent or stop military aggression.

Understanding the consequences of all responsible persons should be based on complex analytical information. All of this calls for research on war models, its aftereffects, and steps to rebuild Ukraine.

Military conflicts in certain regions of the world have had global economic and social consequences. However, the most recent military battle is the biggest to occur in Europe since World War II and, for the first time, it aspires to entirely occupy a different nation.

The importance of such studies from an economic point of view is based on the need to form a complex of information about the negative effects for those politicians who are responsible for the start of the war.

The purpose of the article is to study the impact of the war of the 21st century from an economic point of view on the countries at war and the global economy in the context of developing economic tools for deterring aggression in the world. To achieve this goal, the following main tasks will be solved: generalization of the theoretical basis of the study of the impact of wars on economic and social processes; developing methods for analyzing the impact of war on national and global economies; determination of the main economic and social consequences of Russia's war against Ukraine; describing the key steps required to stop war or the effects of it.

## **1.1 Literature review**

War as a research subject is in the field of interest of political scientists, sociologists, economists, and others.

The scientists who study wars more often focus on exploring the causes of aggression, which should allow influencing it to prevent it. However, no less important is the study of the economic consequences of the war, whose understanding will make it possible to formulate arguments in favor of preventing the war from the standpoint of preserving resources for development and not directing them to eliminate the consequences in the post-war period.

Scientific works devoted to the study of the consequences of the war should be grouped according to several main directions:

*The first direction* is the study of the nature and consequences of war in terms of their composition and types.

According to [9], a "war economy" is any form of economic activity, whether legal or not, that takes place during a conflict. However, the author, also establishes the existence during the war of three components:

the war economy, which includes the mobilization and use of resources to support a country's ability to wage war;

the shadow economy, which characterizes illegal activities and the use of war to obtain profits from them;

the coping economy - unites population groups that overcome wartime problems and survive.

Accordingly, the economy plays an important role in the ability of countries to wage war. However, it is more important to understand the consequences of war. Thus, the scientist [10] pointed out two systemic consequences of the war. Wars have had a significant impact on how the world functions today. Additionally, the likelihood of future battles is influenced by recent ones. Under such conditions, it is precisely the objective assessment of the consequences and the determination of sources of financing for the liquidation of losses that allows us to understand the scale of economic losses.

A slightly different approach to the classification of consequences is considered in [11]. Thus, it is noted that economic, criminal, and security (political) consequences arise as a result of the war. Another important conclusion made by the author: the end of the war is not the basis for the disappearance of problems.

According to [12] concludes that the long-term growth of civil activity is explained by the resilience of individuals and the scaling of these effects. These effects of the war can be attributed to population mobilization resources and a particular group's capacity for consolidation and activation.

The conclusions in the paper [13] provide some interesting points for discussion. The scientist concludes that the economic consequences of the war can only be either positive or negative.

The scientists [14] also indicate a mixed effect of war on GDP per capita, as the production of weapons and ammunition is counted as having a positive impact.

Among the most significant systemic consequences are a change in the economic environment and the cessation of the functioning of the economy for a long time. A change in the economic environment leads to a rapid recovery of economic growth after the war. However, the termination of business processes has a more negative effect than destroying physical capital. The scientists [14] note that the cost of war consists of three parts: the cost of resources used for war; destruction of physical and human capital; the decrease in GDP per capita measured during and after the war. The authors of the work [15] draw attention to the fact that war-ravaged societies are prone to humanitarian crises. Another significant drawback and potential catalyst for crime is the surplus of weapons left over from the war.

*The second direction* – territorial – involves revealing the specifics of the war in one or more countries. Undoubtedly, every war has certain features, that are important for determining the content of the measures necessary to minimize negative manifestations.

Thus, scientists studied the consequences of the war in Kosovo [11], Afghanistan [9], Vietnam [12], and others.

One of the last wars was the one in Syria. The paper [16] studied the economic consequences of the war in Syria, in particular, the economic and social consequences. Migration, poverty, and a lack of education for entire generations are just a few of the major effects that will negatively affect the future.

A territorial approach to the study of wars is important because each war has had regional consequences and significantly affects countries bordering the regions of hostilities.

*The third direction* is the global level of the causes and consequences of war. The scientists [17] take into consideration how wars are directly impacted by globalization. Scientists note that the interaction between globalization and war is complex.

The impact of the war on the world economy directly from the point of view of the impact on financial markets is studied in [18]. Scientists claim that international markets evaluate conflict scenarios and determine their severity. On this basis, the effects can be ambiguous: from positive expectations of the growth of individual sectors to a rapid adverse reaction. That is, the seriousness of conflicts and the level of their predictability determine the responses of the world financial market.

In the reverse direction, the question is raised in [19]. Scholars consider the "trade makes peace" thesis, which seems to be very logical since societies achieve economic benefits from trade, and wars disrupt trade.

The very process of globalization manifests itself not only in economic processes but also in technological and production processes. This may be globalization's beneficial effect on wars given its multidimensional nature.

Global integration, according to [18], increases cultural uniformity, which promotes world peace.

However, in some cases, globalization can even become a catalyst for conflict because global markets can facilitate weapons acquisition by individual countries.

The authors of the work [14] studied the impact of war on GDP per capita. The authors conclude that despite the war's positive effect on the development of the military-industrial complex, GDP falls due to the destruction of physical and human capital and lack of investment in physical and human capital.

According to scientists, conflicts are the primary barrier to the economic growth of low-income nations. In light of this, achieving the economic objective of closing the economic development indicators gap should become a barrier to the planning of new wars.

Based on the above, it is advisable to formulate the following main hypotheses: an objective assessment of the economic and social consequences of war can influence the duration of the war; small countries have the possibility to withstand wars in the 21st century.

## **1.2 Methodology of the research**

The impact of war on economic and social processes has been studied in the works of scientists from slightly different positions. However, considering the outlined problem's complexity, we think it reasonable to use a comprehensive approach to studying the impact of war on economic and social processes.

The main methodological approaches, which were taken as a basis for developing the methodology of this study and were previously presented by scientists, related to the issues of the impact of war on: GDP dynamics [14], migration processes and poverty [16], opportunities for economic recovery [9]. The paper [20] examine war's direct costs (human and economic). The scientists [21] suggested returning to the concept of "wartime" as a

phenomenon of the 21st century that impacts international relations and global politics. The relationship between time and war is stressed by academics, who also point out that little research has been done on the subject. After all, the longer the conflict, the greater the economic and social consequences.

The article's methodology is based on the fact that the study of the economic and social processes of the countries participating in the war is on the one hand extremely important and, on the other hand - quite difficult.

The importance of such an analysis lies in the fact that an objective assessment of the immediate and especially long-term consequences of war allows the leadership of countries and the world community to make timely decisions regarding the economic mechanisms of influence on the aggressor to prevent war. The analysis of war allows us to present its consequences in a systematic way in terms of characteristics that are important in the 21st century: the preservation of human life, development opportunities, and which were not important before - such as the conquest of someone else's territory. In order for society, even that of the aggressor country, to comprehend the effects of the war from the position of their country's growth and the perspective of future generations, emphasis on the economic and social costs should become a forceful argument.

The complexity of the research is because in the attacked country, there are real difficulties with operational monitoring of the situation, and the aggressor country closes data and tries to hide information about the actual state of the economy.

It is practical to research the conflict using operational and retrospective analysis techniques, the outcomes of which may be quickly used to create projections for the socioeconomic developments of the warring nations.

Operational analysis of the economy is important to determine how long the aggressor country will have the economic resources to continue the war. A retrospective analysis of the consequences of the war is important for the general public: and to establish the extent of the damage and determine the amount of reparations when the aggressor country wants to return to the system of international economic and legal relations; and to assess the prospective losses of the aggressor country.

The development of forecast trends in the development of countries after the war should demonstrate the long-term consequences of the war, which should become an additional economic argument both for the aggressor country and the global community regarding the use of anticipatory political measures to prevent an active war.

The study of the war in this article will be carried out according to the following main stages: analysis of costs in the military sphere, analysis of the military and economic potential of the countries participating in the war, analysis of the consequences of the war for the participating countries and the global economy.

### **1. Analysis of expenditures on the military sphere.**

The military sphere is not only an important part of the global security system but also a driver of the development of the national economy. Considering the importance of military enterprises as workplaces, the importance of innovations and new technologies in the field of defense, which are carried out not only in the interests of business but also with significant government support, should be emphasized. On the other hand, ground-breaking discoveries made in the military help to address a number of social issues.

The following basic indicators are used to assess the importance that individual states attach to issues of defense through the development of the military sphere:

military spending in value terms and as a percentage of a gross domestic product;

state spending on defense research and development;

the dynamics of patenting in the field of weapons and military equipment worldwide and in individual countries.

Understanding future battles and technical prospects for ensuring global security require close attention to military breakthroughs and new technology.

2. An important stage of the analysis is **the analysis of the military and economic potential of the countries participating in the war**, which makes it possible to assess the duration and consequences of such a conflict. The nation's resources determine the outcome of each military conflict. Comparing the economic and military potential of the war participants allows: firstly, to predict the duration of the war and, secondly, to determine the methods of influence on the war-initiating country in the context of limiting the necessary resources. Assessment of economic potential requires analysis of the following indicators: territory size, population, total GDP and GDP per capita; GDP dynamics in recent years; the volume, dynamics, and commodity structure of the country's export and import; the level of globalization of the country's economy, among others. The country's military potential involves monitoring military expenditure, total military personnel, and air force personnel by category.

3. **The analysis of the consequences of the war** should be carried out at two levels: at the national levels of the countries participating in the war, as well as at the global level, taking into account the time horizon of monitoring - in terms of operational consequences and general consequences for the entire period of the war.

It is possible to predict the potential length of the war by dynamic (operational) monitoring of the chances that a country under military attack will survive and the chances that the aggressor country will keep waging war.

The following objects are included in the analysis's operative stage:

- losses of the state, which consist of actual direct losses from the destroyed infrastructure (property of the state, regions, business, civilian population);
- deferred losses of the state - losses due to a decrease in the country's human potential and potential GDP losses, losses due to a decrease in the country's investment attractiveness, state budget losses due to the need to increase unforeseen costs for one-time liquidation of the consequences of the war, etc.

Determination and valuation of the country's total losses for the entire war period are necessary to determine the amount of reparations after recognizing the losses incurred.

It is required to do an analysis for both nations:

- macroeconomic indicators (GDP size before and after the war, GDP dynamics, volumes, and dynamics of exports and imports);
- degree of economic globalization of the nation;
- demographic indicators (the number of the employed people before and after the war, the number of migrants, and the number of human lives lost);
- revenues and expenses of the state budget before the war and the size of the budget deficit during the war and after the war in order to determine the possibilities of balancing them.

Globalization, which has developed dynamically in recent years, has led to the synchronization of the functioning of world markets and the spread of negative manifestations to an increasing number of world countries. Regional wars have an impact on the economic and social processes of the respective regions, and individual wars have an impact on the global economy. That is why the beginning of hostilities requires research:

- economic process dynamics and business activity dynamics (GDP dynamics);
- the roles of the countries participating in the war in the global economy (export-import) in terms of individual commodity groups;
- circumstances of specific commodity categories on the global markets;
- monitoring of inflationary processes;
- environmental conditions;

- migration's dimensions and trends.

Separate consequences require developing and implementing a rapid response plan and a set of measures to support the country and its population. Restoring a country that has suffered aggression requires developing a large-scale, long-term plan with strategic goals, budgets for implementation, and substantiation of their funding sources.

Considering the difficulty of obtaining individual data, the analysis was carried out according to certain indicators presented above.

## 2 Results

Wars in the 21<sup>st</sup> century have significantly more significant negative effects than in the past. At the time of the mercantilists, the expediency of war was explained by the opportunities to increase the country's resources and gain advantages. However, in current circumstances, conflict is accompanied by the following from an economic perspective:

- firstly, by the destruction of significant resources previously invested in the development of the respective territories;
- second, the use of significant resources for the conduct of war that could be used to solve existing urgent human problems;
- thirdly, the emergence of significant global effects not only for the countries participating in the war but also for the global economy as a whole.

Thus, if we consider the recent wars in Syria and Afghanistan, the key effects for the countries were the fall in GDP, a decrease in the population's income level, and large-scale migration (Table 1).

**Table 1.** Macroeconomic indicators of Syria and Afghanistan.

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Syria</b>											
GDP, current US	252.5	73.6	44.12	22.55	22.0	17.62	12.45	16.34	21.45	22.52	18.81
GDP per capita growth, annual, %	4.4	4.2	-24	-23.1	-6.2	0.6	-2.8	1.4	2.4	5.2	-11.7
GDP per capita, US	11820	3050	2094	1039	1135	916	707	942	1268	1334	1075
Number of refugees, thousands of people	1	23	260	358	2272	3692	4566	4827	5479	5672	5556
<b>Afghanistan</b>											
GDP, current US	15.86	17.81	19.91	20.15	20.5	19.13	18.12	18.75	18.05	18.8	20.12
GDP per capita growth, annual, %	11.3	-2.7	9	2	-0.7	-1.6	-0.5	0.1	-1.2	1.5	-4.6
GDP per capita, US	526	512	557	569	565	556	553	553	546	555	520
Number of refugees, persons	6434	3011	16184	16861	300421	257553	59770	75927	72228	72227	72278

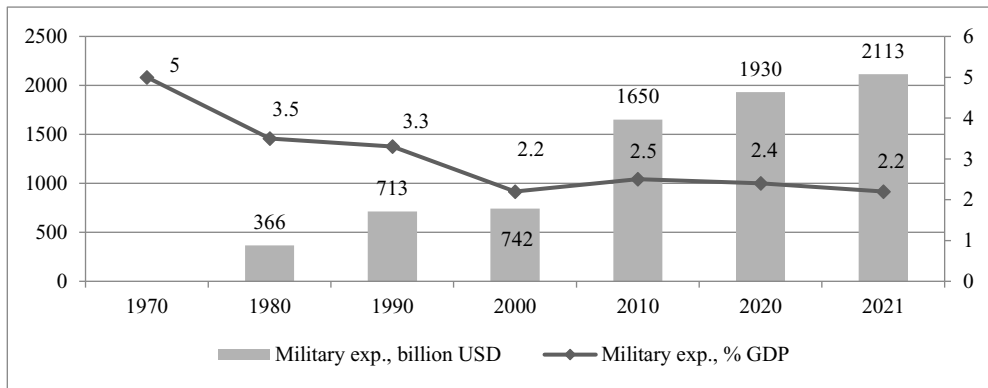
Source: [22].

The examples of the wars in Syria and Afghanistan show that despite significant human and material losses, civilized society cannot ensure their quick end.



The war in Ukraine opened a new page of military aggression and actualized the issue of redistributing the GDP of the world's countries to finance the defense industry.

Despite certain theoretical conclusions regarding the civilizational movement of society in the direction of reducing the number of wars, the global economy remains quite militarized. The primary patterns seen over the previous 20 years must be noted, taking into account metrics like overall military spending and its percentage of GDP (Fig. 1): the value of military expenditures is gradually increasing and, in 2021, exceed 2 trillion. dollars USA; the share of military spending in the value of global GDP gradually decreased from 5% in 1970 to 2.2% in 2021. From 2010 to 2020, the average annual growth rate of military spending was 1.99% against a 2.56% GDP growth rate.

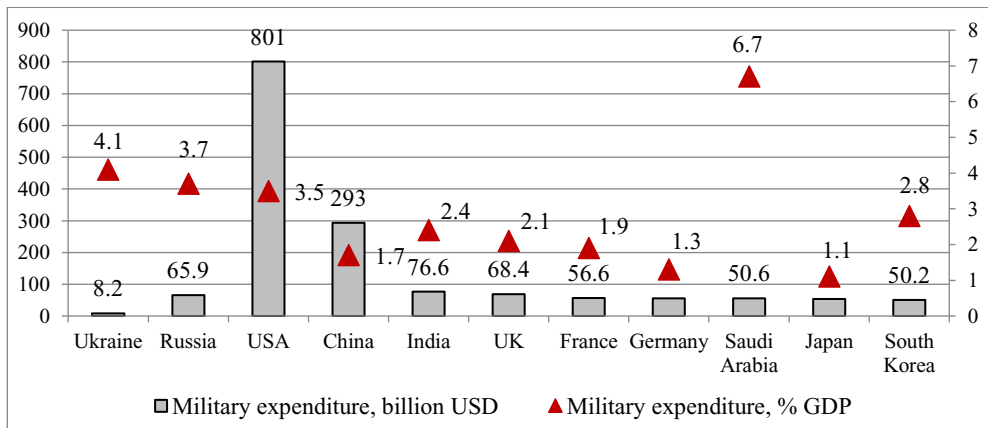


**Fig. 1.** World military expenditure.

Source: [22].

As noted in the paper [23], military expenditures in the coordinates of the "cannon-oil" concept no longer affect economic growth to such an extent that it should have become a factor in reducing such expenditures.

Most countries finance the army by 1-3% of GDP (Figure 2). The top spenders in terms of absolute amounts are the USA, China, India, and a number of EU nations. In terms of the share of GDP, Saudi Arabia is the leader.



**Fig. 2.** Military expenditure several countries.

Source: [22].

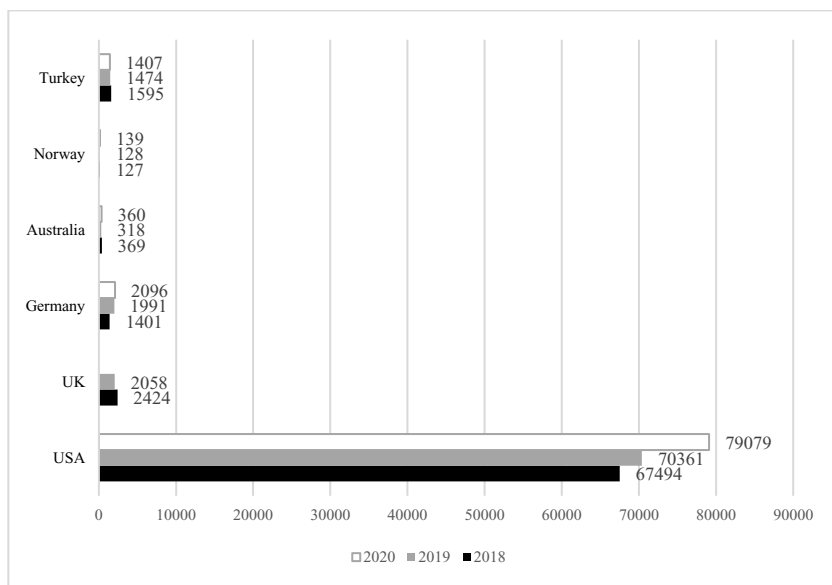


However, the argument for increasing spending on the army, quite often, on the political plane and has nothing to do with economic expediency. Thus, in connection with Russia's war against Ukraine, the leadership of several countries announced an increase in spending on armaments next year. There was a change in the priorities of the planned budgets for the following years. Military spending, energy, and agriculture - these sectors have become priorities, while spending on education and social services will be reduced [24].

Countries with the most significant budgets for military development are the most likely to encourage the development of weapon innovations. The military advantage of the US is based on a powerful budget, the priority of which is spending on research and development both inside and outside the government. So, out of the 25 largest companies in the world for producing weapons and military equipment, 11 are from the USA, 7 are from China and 2 are from Great Britain. Total US investment in defense and military research (government plus business) still exceeds China's corresponding investment. However, China has tripled its basic science investment over the past decade. The existing trend will bring China to first place in the coming years.

Leading companies producing weapons and military equipment spend from 2-3 to 10-16% of their revenues on research, development, and similar activities.

Public spending on defense research in the United States is substantial and growing. So, in 2020, these costs increased: by 11.1% in the USA, by 11.8 in Australia, and by 3.9% in Germany (Fig. 3).



**Fig. 3.** State expenditures on defense research and development in individual OECD countries in 2018-2020, million dollars. US at actual PC prices.

Source: [25].

The relationship between the government and business, not only in terms of production and implementation but also in terms of scientific research, is the foundation of the international security environment in the OECD countries. Taking into account the current dynamics of military expenditures and expenditures for the development of science in the military sphere, it is safe to say that they will continue to grow.

## 2.1 Research of the economic potential of the war participant countries at the beginning of the war

The war in Europe in the 21st century was started by a country several times higher than the object of the attack by specific indicators.

European integration policies and the possibility for economic growth were factors in the conflict that Russia launched. This reason entirely agrees with the conclusion of the scientists [26] who noted that in a lawless environment, stronger states might fear that their security will be undermined by the economic growth of weaker states and may try to restrain it.

The primary indicators that provide a sense of the scope and outcomes of how Russia and Ukraine work show that the largest country in the world invaded a nation that, by some measures, is much smaller (table 2).

**Table 2.** Comparison of the economic potential of Ukraine and Russia.

Indicators	Ukraine	Russian Federation	Excess, times
The size of the territory, thousand km <sup>2</sup>	603,7	17098	28.3
Population, million people	41	147	3.6
GDP, current billion US\$, 2021	200	1780	8.9
Share in world GDP, %	0.21	1.85	8.8
GDP per capita, US\$, 2021	2451	10219	4.2
Exports of goods and services, % of GDP, 2021	40.7	30.8	0.8
Imports of goods and services, % of GDP, 2021	41.9	21.3	0.5
<b>KOF Globalization Index 2020 (place)</b>	74.95 (44)	71.94 (49)	-
Military exp., billion USD (2021)	5.9	61.7	12.3
<b>Real GDP growth at market prices in percent, %</b>			
2021	3.4	4.7	-
2022	-45	-11.2	-
2023	0.8	0.6	-

Source: [22].

Russia has the largest territory in the world. The population of Russia is 3.6 times larger than the population of Ukraine. In other words, Russia is a much larger country that attacked a smaller country in terms of geographical size, potential for natural resources, human resources, and macroeconomic capacity. The most impressive is the excess of Russia in terms of military spending – 12.3 times. On the other hand, even the given macroeconomic indicators of Russia testify to the inefficiency of using the country's existing potential from the point of view of the logical strategic goals of the development of an ordinary country.

The economic potential of a country is the basis of its ability to create a gross product in the form of goods and services. The improvement of the key macroeconomic indicators and the standard of living of the populace serve as a measure of how effectively the economic capacity of the nation is being utilized. However, Russia's share of world GDP was 1.85% even before the war. And with the beginning of the war, there was a reorientation of the country's income to the resource support of the war.

Russia has a comparatively high degree of economic integration. Thus, the globalization index allows the country to take 49th place out of 196 countries worldwide. The share of exports of goods and services in GDP largely indicates the importance of world markets for developing the economy. The country's dependence on imports is quite significant.

Summarizing the prerequisites of the war that took place at the time of its announcement, it should be stated that the initiator of the war was a country that has powerful natural resources and economic potential, is fairly integrated into the world economy, but at the same time has a high level of militarization (including nuclear weapons). A positive answer was given to the rhetorical question of whether it is possible to fight with trading partners.

## **2.2 The impact of the war on Ukraine**

Russia's unprecedented military actions led to: the occupation of 20% of the country's territory; loss of human lives and physical assets (property, housing, production, social and transport infrastructure); population migration; slowing down or stopping business processes; loss of labor force; relocation of enterprises from the east to the west.

The amount of one-time losses that Ukraine suffered from the Russian invasion is already 564.9 billion dollars [27]. Currently, the structure of destruction is as follows: 119 billion dollars. USA – infrastructure losses (destroyed and damaged almost 8 thousand km of roads, dozens of railway stations, and airports); 112 billion dollars. USA – GDP loss in 2022; 90.5 billion dollars. USA – loss of civilian population (10 million square meters of housing, 200,000 cars, food supply for 5 million people); 80 billion dollars USA - losses of enterprises and organizations; 54 billion dollars. USA – losses of direct investments in the Ukrainian economy; 48 billion dollars USA – state budget losses.

According to the latest data, at least 129900 residential buildings were destroyed and damaged, of which 114700 were private houses and 15100 were multi-apartment buildings. Direct losses due to the destruction of high-rise buildings amount to \$42.3 billion, and another \$5.4 billion in damages were caused to owners of private buildings. As of July 27, 2022, 2217 educational institutions and 903 medical institutions were destroyed [27].

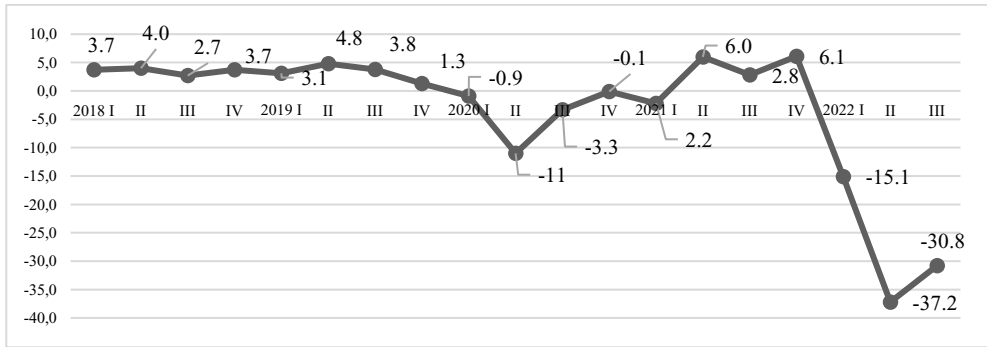
According to the UN, more than 14 million people have left their homes; A large part of the population left the country, creating a challenge for Europe and the world in terms of large-scale migration. The countries that received the most Ukrainian migrants were Poland (1274 thousand), Germany (971 thousand), the Czech Republic (413 thousand), Italy (160 thousand), and Great Britain (112 thousand) [28].

In Ukraine, 745 enterprises have been relocated since the start of the relocation program, of which 558 have already resumed work.

The war contributed to a global food crisis. Numerous nations rely on wheat shipments from Ukraine, but since February, Russia has closed Ukrainian ports, sharply cutting grain exports.

The specified losses significantly impacted the macroeconomic situation, which is dynamically deteriorating. Only the most important signs of the war's widespread economic and social effects will be presented.

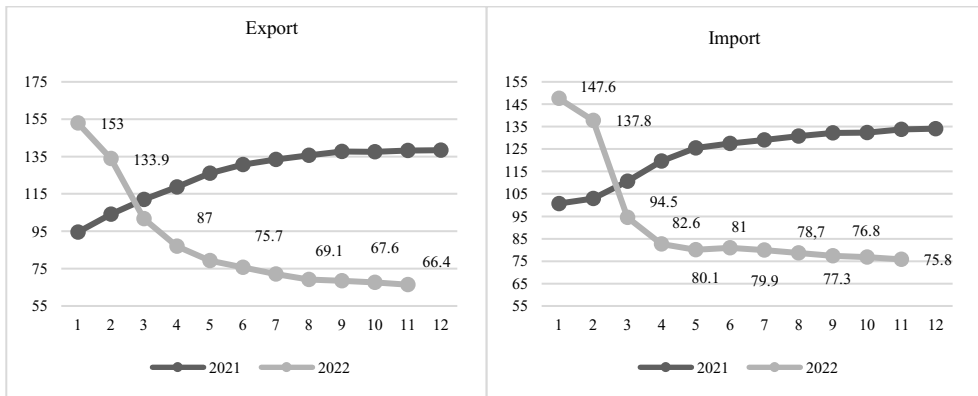
**1. Dynamics of GDP.** In recent years, the dynamics of Ukraine's GDP averaged 2-4% annually. The pandemic caused a deterioration in economic activity, but the drop in GDP in 2020 was not significant. The war instantly led to a decline in GDP growth rates, which in 2022 amounted to -15.1% (I quarter), -37.2% (II quarter), and -30.8 % (III quarter) (Fig. 4).



**Fig. 4.** GDP growth rate in Ukraine.

Source: [27].

**2. Destabilization of the country's foreign economic activity.** Significant changes occurred in the dynamics and structure of Ukraine's international trade as a result of the conflict, which resulted in the actual destruction of property or the blocking (sea ports) of many export-oriented businesses. Dynamics of export and import (Fig. 5) of Ukraine by month in 2021 and 2022.



**Fig. 5.** Dynamics of export and import of goods, in % to the corresponding period of the previous year, cumulatively.

Source: [27].

As a result, Russia used food as a weapon at Ukrainian ports, giving the world an unprecedented example of its power. Because of the war, more than 20 million tons of grain intended for export, particularly for use within the UN World Food Program framework, were blocked.

**3. Inflation for 2022 was 30%.** A reduction in exports, a change in the commodity structure of imports, a drop in state budget revenues, and their reorientation to military purposes led to a revision of the national currency rate, which helped to stabilize foreign exchange reserves and maintain overall macroeconomic and financial stability. Let's analyze the pre-tax financial results of Ukrainian enterprises for January-September 2022. With the exception of financial and insurance operations, as well as the information and telecommunications sectors, we should draw attention to the losses of businesses in the great majority of economic sectors. This led to a significant decrease in state budget

revenues. The deficit of the state budget of Ukraine needed to cover current expenses in 2022 amounted to 5 billion US dollars per month.

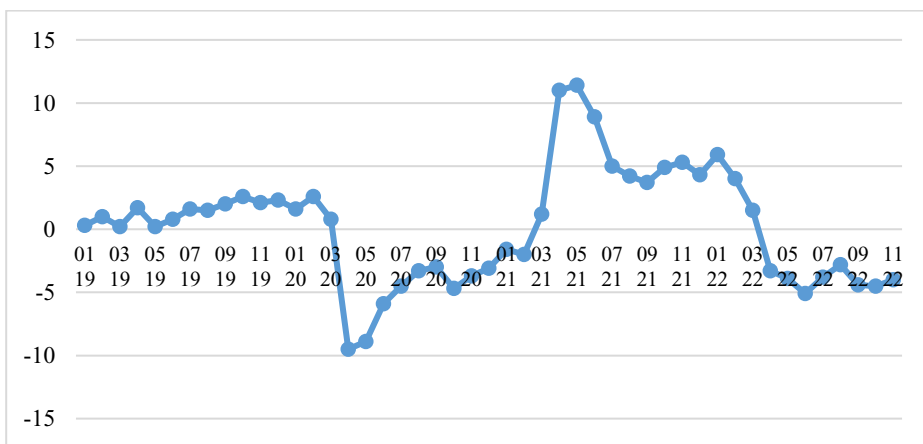
**4. Significant transformations in the labor market.** The physical destruction and relocation of enterprises and organizations, migration, and mobilization led to the loss of personnel potential by some enterprises and the forced reduction of employees by others. Overall, the unemployment rate rose to 40%, while in 2021, it did not exceed 10%.

Despite a certain adaptation of the economy to the conditions of the war in general, private consumption and investments remained very low due to the unprofitability of enterprises, disrupted logistics flows, and projected risks regarding the duration of the war.

### 2.3 The impact of the war and sanctions on the Russia

Russia's war against Ukraine raised several questions in politics and global security. However, from an economic point of view, the expediency of waging war with trading partners in conditions of a high level of internationalization of the economy is important and debatable. Russian territory was not only the largest, but it also played a significant role in world economic activity. And although Russia's GDP in the world GDP was only 1.75% before the war, the country was the world's largest exporter of fossil energy resources.

The recent pandemic-related macroeconomic dynamics (Fig. 6), which were based on the revenue from the export of energy carriers, were unstable. In recent years, Russia's share of fuel exports was more than 40-42% of GDP, while the share of high-tech exports did not exceed 9% of GDP. Revenues from oil and natural gas exports make up about 50 percent of Russia's federal budget. Before the war, Russia's economy could be characterized as export-dependent, energy-dependent, and import-dependent on high-tech products.



**Fig. 6.** GDP growth rate in Russia.

Source: [29].

In response to the military aggression, the world community developed and adopted a number of individual, corporate and sectoral sanctions aimed at using economic levers to end the war. The primary objective of the sanctions was to reduce Russia's capacity to fund the conflict.

The following should be mentioned in the lengthy list: blocking all Russian aircraft from entering EU airspace, forbidding financial transactions with the Russian Central Bank, imposing economic sanctions on the finance, energy, transport, and technology sectors, and prohibiting Russian banks from using SWIFT. The embargo on the import of oil and oil

products, which will come into force in January 2023, should significantly limit Russia's income.

The financial system of Russia due to sanctions has already lost: 40% of market capitalization, 300 billion dollars of reserves of the Central Bank of the Russian Federation, 4.6 trillion rubles in the form of frozen Eurobonds, 10% of the capital of the banking system, 563 billion rubles of frozen retail assets, as well as assets held in depositories [29, 30].

Despite the economic sanctions, Russia's revenues from oil, gas and coal exports in the first six months of the full-scale war against Ukraine amounted to about 158 billion euros, far exceeding the costs of the invasion, which are estimated at 100 billion euros [29].

The Russian economy was able to adjust in some ways in the summer of 2022 after the first shock in February-March. The export of energy sources provided stable income, the decrease in import volume allowed to stabilize the exchange rate.

But the unfavorable patterns persisted through the end of the summer and into the fall. The sanctions began in mid-summer, as they had a limited effect and are only beginning to take effect. As a result of the fall in the production volumes of individual goods for July, they were: coal - 6%, gas - 25%, wood - 20%, plywood - 43%, cars - 81%, household appliances - 57%, tires - 43%, steel - 12 %.

Long-term systemic effects will arise in connection with the reduction of imports. Russia's import dependence by individual product groups in 2022 was: for goods of daily demand - 75%, sports goods - 48%, auto parts - 95%, toys - 92%, telecommunications equipment - 86%. High-tech import restrictions will cause a technological backwardness because machine-building companies are already reverting to outdated technologies.

The slowdown in the dynamics of economic growth occurs due to the termination of the world's leading companies from their activities in Russia. In total, 51 companies have finally left Russia, 1126 are leaving, and 491 are waiting. Such a state is accompanied by the limitation of investments and the implementation of their gradual withdrawal. All this indicates a gradual reduction in the demand for labor.

**Table 3.** Predictive indicators of Russia, %.

Indicators	2019	2020	2021	2022 (f)
GDP growth	2.2	-2.5	4.6	-11.2
Export	0.7	-4.1	3.2	-30.9
Import	3.1	-12.1	16.7	-35.2
Inflation rate	4.5	3.4	6.7	22.0
Budget Deficit	1.93	-4.0	0.72	-2.0

Source: [28, 30].

Against all the immediate and long-term effects, Russia continues to increase its war spending. Current costs for military payments in 2022 amount to 80 billion per month. These are payments without equipment, without clothing, and without the injured. The Russian Federation's draft budget for 2023 shows that defense spending will climb to \$5 trillion from its baseline amount of 3.6 trillion rubles. However, Russia plans to hide the purpose of almost a quarter of its budget spending in 2023 and will significantly increase defense spending to wage a protracted war against Ukraine. The draft budget of Russia for 2023 foresees 6.5 trillion rubles, or 112 billion dollars, for classified or unspecified expenses.

War requires the use of resources not only for producing weapons but, above all, in the form of losses of human capital. The planned mobilization, which led to both the exodus of many young men from the country and their involvement in a considerable number of young men in the war, was a systematic error for the ongoing development of Russia (approximately 200,000 people). These processes lead to the withdrawal from the economy

of the most productive part of the population this year. They will worsen the social structure of Russia in the long term.

When assessing the long-term consequences of the war in Russia on its economy, the following should be noted:

- loss of export revenues due to economic sanctions of the world community and inability to take advantage of inclusion in global trade;

- loss of export earnings as a result of international economic sanctions and failure to benefit from inclusion in global commerce;

- decline of human capital as a result of intellectual mobility and mobilization;

- differentiation of regions according to the level of economic development due to income inequality.

## **2.4 The impact of the war on the global economy**

Russia's war against Ukraine significantly negatively impacts the global economy, which has already manifested itself in many economic processes and will have long-term secondary effects.

Fundamental mechanisms of the impact of war on the global economy:

### ***1. Inflation was caused by the increase in energy and food prices.***

Russia is one of the world's largest producers and exporters of oil and gas. The war immediately increased the risks of energy supplies from Russia. There was also a significant decrease in the volume of purchases of energy carriers due to the sanctions introduced by the EU and the USA, which caused a dynamic increase in gas and oil prices on world markets. Prices of agricultural products were added to energy prices. Ukraine exports sunflower oil – 42% share of global exports, maize – 16%, barley – 10%, and wheat – 9%. The blockade of Ukrainian ports led to an increase in grain prices as well. All these factors led to inflationary processes in many countries of the world.

Instability in the commodity market, which significantly impacts inflationary processes, will persist in the future. According to IMF experts, inflationary processes are expected in advanced economies at 5.7% in 2022 and 2.5% in 2023, in emerging and developing economies of 8.7% in 2022 and 6.5% in 2023 [31]. Inflationary processes are expected to affect bank interest rates and the monetary system.

### ***2. Change in logistics flows in the energy market.***

Russia is the second largest producer of gas and the third largest oil producer, accounting for approximately 17% and 12% of global production, respectively. The logistics of energy supply involves not only the creation of the appropriate infrastructure but also the consideration of political factors.

Limitation and price control of the export of energy carriers from Russia require effort and time. However, Russia began to use energy carriers, namely gas, as a weapon to blackmail EU countries regarding support for Ukraine. In 2021, Russia's share of natural gas imports to the EU was 39%. EU countries are phasing out Russian gas gradually. After the detonation of the Northern gas pipelines, it can be stated that, in general, the history of wars has shown an example of the use of economic levers for making political decisions on the part of the exporter. Currently, importers are changing logistics and trying to influence Russia's political decisions regarding the war.

Due to the sanctions, which provide not only the rejection of EU countries from energy carriers from Russia but also the impact on the prices of oil and gas from Russia, with the aim of reducing budget revenues and financial opportunities to continue the war. Revenues from oil and natural gas export make up 50% of Russia's budget. Incomes from oil alone



amount to 10-15 million US dollars per month. During the war, Russia redirected oil supplies to China and India, increasing budget revenues.

**3. Migration caused by war is a significant challenge for migrants and destination countries.** The countries of the world, especially the EU countries, have experience in adapting to migrants. Still, these processes are always associated with several problems: creating conditions for simultaneous reception of a large number of people, carrying out their social adaptation and employment, and solving problems in the labor market.

The world had the largest migration flows in recent years due to the war from Syria - 6,761,000 people, and Afghanistan - 2,610,000 people. However, the Russian war caused the largest migration - more than 12 million people, of which 7,536 were relocated to the territory of European countries [28]. Solving migration problems, for example, from Ukraine, in the conditions of the destruction of their housing and property, is a significant challenge for both Ukraine and the host countries.

**4. Global economic growth and GDP growth rates in EU countries began to slow down.** According to IMF economists, global GDP growth would decrease from 6% in 2021 to 3.2% in 2022. In EU countries, growth rates will decrease to 3.1% compared to 5.3% in 2021, while European emerging market economies will slow to 0.9% compared to a significant growth rate of 6.5% in 2021 [31]. This applies to Poland, the Czech Republic, and Slovakia - the countries that receive the largest number of migrants and provide significant assistance to Ukraine.

### 3 Discussion

The research conducted from the standpoint of searching for optimistic scenarios for ending the war and overcoming its consequences allows us to express such warnings regarding the ongoing war, taking into account the discussion about the role of time in wars in the 21st century.

In 2022, Ukraine's economy faced a sharp drop in GDP and the large-scale destruction of its economic potential for further development. The nation therefore wants the war to end as quickly as possible. However, the war's end for Ukraine means the loss of sovereignty. And therefore, time could be better in priority to the goal of survival. To ensure the survival of Ukraine in 2022, the world community spent 28.1 billion US dollars. The cost of military aid is even greater. The fact that, for the first time since World War II, the world community is providing aid to Ukraine on a consolidated basis shows that a small country can survive and maintain its independence in the war of the 21st century.

The 21st century is characterized by the dynamic development of globalization processes, which leads to an increase in the level of internationalization of the economy of an individual country, including an aggressor country. The complexity of economic interactions between nations increases the degree to which nations throughout the world depend on trade in goods and services, technologies, etc. This should become an argument for decreasing interest in wars. However, for Russia, economic arguments not only did not become a safeguard but were also not taken into account at this stage of the war.

Therefore, an objective assessment of the war's economic and social consequences did not occur and therefore this is not an argument for preventing or suspending the war. The proposed theory was founded on the idea that social and economic issues matter more than political ones, which are not taken into account. The fact that Russia, after the entry into force of sanctions, that will significantly affect revenues, continues military aggression shows that the country can wage war for a long time, regardless of its economic consequences. And this question remains open.

In general, it is suggested that the following algorithm be used to do research on how conflict affects societal development:

1 stage. Study of the economic potential of the countries participating in the war. Such an analysis makes it possible to assess the ability of countries to support the conduct of war economically.

2 stage. Assessment of the consequences of war in various spheres. Negative effects are so multifaceted that they require a systematic study, the basis of which should be the impact classification. For the purpose of categorizing the effects of war, it is advised to apply the following criteria:

a) according to the time of manifestation of influence - some effects occur practically instantly, as well as those that have a long-term manifestation;

b) by the scale of influence – it is expedient to analyze the impact on the development of the countries participating in the war and the global economy;

c) according to the content of the impact following the concept of sustainable development, the war's consequences are felt in the social, economic, and environmental spheres.

Stage 3 – Evaluation of the mobilization resources of the war economy of the participating countries because the war economy is significantly different from a simple economy and requires reorientation according to the classic "guns-and-butter" model.

Stage 4 – Assessing the extent of damage to the country that has suffered aggression. This stage aims to determine the cost characteristics of the losses in the affected country.

Stage 5 – Analysis of the effects of sanctions of the civilized world relative to the aggressor country. The world community, in the context of limiting the economic resources of the aggressor country, implements a sanctions program, the effects of which are multifaceted and long-lasting, but forecasting these effects and understanding the nature of their action are necessary for future application against the aggressor countries.

Stage 6 – Determining the amount of resources needed to restore the country (according to the Marshall Plan model) that suffered from military aggression.

From the perspective of identifying causes and effects, the suggested algorithm can serve as the foundation for complicated war studies.

## 4 Conclusions

As before, the wars of the 21st century are aimed at solving political issues by military methods. A feature of the wars of the 21st century is the emergence of quick and long-term effects not only in the countries at war but also at the level of the global economy. In such circumstances, the militarization of the world continues to guarantee the ability of individual nations to preserve their independence, and nations who are unable to defend themselves militarily risk losing their sovereignty.

Ukraine faced threats to its existence as a state and the preservation of people's lives. The methods and goals of the war waged by Russia came from the 19th and 20th centuries. The economic logic of the 21st century, namely cooperation and globalization, is neglected. Using energy carriers, Russia was able to materialize threats against other nations, particularly EU nations. That is another feature of this war that the aggressor country used its exports as a tool for political blackmail of other countries.

The energy and food sectors of the global economy, and the financial sector, including inflation and the risks of sustainable economic growth, became sensitive areas that were affected by the war.

The ongoing war demonstrated an unprecedented attempt by the civilized countries of the world through economic sanctions to influence the aggressor country's political decisions and reduce the Russian economy's ability to finance military expenditures.

The following should be mentioned as some of the serious repercussions of the aggressor nation:

the loss of sales markets for a large number of products and the gradual loss of oil and gas export volumes, and therefore the gradual reduction of "energy" revenues;

restricting access to the nation's currency and gold reserves, which were stored in Europe and the USA;

a significant reduction in the import of a wide range of goods, among which there is a large share of high-tech products, which forms the trajectory of movement in the direction of technological backwardness, since the country is transitioning to technologies that were used earlier.

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