Journal of Digital Economy Research. 2023. 3. P. 6–47
DOI: 10.24833/14511791-2023-4-6-47

Received: 09.09.2023
Revised: 09.10.2023.
Accepted: 02.11.2023

GEO-ECONOMIC FRAGMENTATION IN THE CONTEXT OF DIGITALIZATION: FORMATION OF NEW CONTOURS OF THE WORLD'S MACROECONOMIC SYSTEM AND RUSSIA'S SUSTAINABILITY UNDER SANCTIONS ATTACKS

Albert R. Bakhtizin

Abstract. The article considers the phenomenon of geo-economic fragmentation in the context of digitalization of social life and in the formation of new contours of the macroeconomic system. Particular attention is paid to Russia's sustainability in the conditions of sanctions attacks. The author analyzes the data presented by major international organizations, predicting the consequences of global tectonic processes. The study highlights the problems arising from growing debt, limited resources and increasing global population. It is noted that in these conditions the US often initiates quick decisions, such as redistribution of commodity markets, which leads to complex consequences for the whole world. The article considers the problem of the emergence of macro-regions and crystallization of new poles in the global macroeconomic system, and assesses the possibility of forming a multipolar world. The conclusion is that international organizations forecast short- and medium-term geo-economic fragmentation, and the reconfiguration of ties and the division of the world into macro-regions are unable to lead to a sharp decline in macroeconomic indicators, which is confirmed by the analysis of trade relations between different countries and regions.

Keywords: Geo-economic fragmentation, digitalization, global macroeconomic system, sanctions attacks, international trade, multipolar world, macroeconomic indicators

For citation: Bakhtizin A.R. (2023). Geo-Economic Fragmentation in the Context of Digitalization: Formation of New Contours of the World's Macroeconomic System and Russia's Sustainability Under Sanctions Attacks. *Journal of Digital Economy Research,* vol. 1, no 4, pp. 6–47. (in English). DOI: 10.24833/14511791-2023-4-6-47

Information about the author:

Albert R. Bakhtizin, Doctor of Economics, Corresponding Member of the Russian Academy of Sciences.
Central Economic and Mathematical Institute of the Russian Academy of Sciences.
117418, Moscow, Nakhimovsky prospect, 47 a.
albert.bakhtizin@gmail.com

Geo-economic fragmentation

Over the last decades, the world's macroeconomic system has developed a multitude of problems related to increased debts, limited resources, increasing population, etc. The fastest solutions initiated primarily by the US are redistribution of commodity markets, creation of hotbeds of tension in order to transfer gold and foreign exchange reserves to themselves, etc. The instruments of pressure on countries are diverse and all of them are part of hybrid wars, the escalation of which is only gaining momentum. One of the intermediate results of these processes will be the disintegration of the world into macro-regions and the crystallization of new poles in the world macroeconomic system. The Russian President Vladimir Putin repeatedly spoke about the construction of a new configuration of world relations, defined as a *multipolar world* [7]. The article considers the analytics of major international organizations with an assessment of their vision of the situation and forecasts of the consequences of global shifts, and then presents the results of our own calculations.

IMF studies show that the stronger the geo-economic fragmentation, under which experts understand the process opposite to globalization, the higher the costs associated with additional expenses (duties on goods, technological costs). Estimates vary from 0.2% to 7% reduction in GDP for different countries depending on the degree of fragmentation [8].

IMF specialists define five periods of globalization dynamics, characterized by its own configurations of economic systems and links between countries [8]. Under globalization they understand the process of freer flow of population, goods, services, capital, technology across national borders, which generally leads to greater economic integration of all countries.

The measure of globalization is the ratio of the sum of exports and imports of goods and services to GDP, and the corresponding data for the whole world are shown in Figure 1.

In the first period from 1870 to 1914, called by researchers as the *"period of industrialization",* trade between countries was supported by the gold standard. This mechanism was believed to contribute to the stability of economic systems and control inflation.

During the second, *"interwar period"* 1914-1945, the level of globalization declined sharply due to international conflicts, the rise of protectionism, and the division of international trade into regional blocs.

The third, *"Bretton Woods period"* 1945-1980 was characterized by the dominance of the U.S. as a power with a national currency which became the world currency and by agreement had a rigid price peg to gold ($35 per troy ounce). But IMF experts also note that the expansionary fiscal and monetary policy of the United States, providing for high military and social expenditures, eventually made this system unsustainable [8].

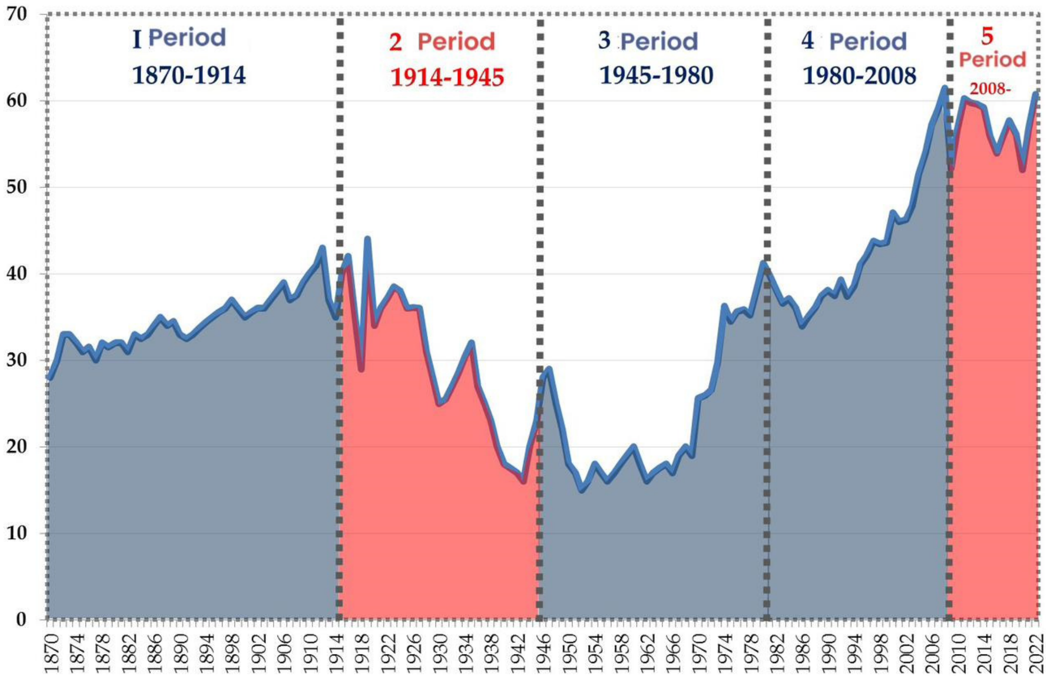

Figure 1. Trade openness indicator (ratio of the sum of exports and imports of goods and services to GDP, in %) [33; 15]. Source: IMF calculations and World Bank data [8; 21]

During the fourth *"liberalization period"* 1980-2008, many trade barriers were removed, cross-border capital flows increased, and the complexity of the global financial system and the interconnectedness of processes within it grew.

The fifth, current *"period of increasing geopolitical tension"* identified by IMF researchers since 2008 began after the global financial crisis and is characterized by a sharp increase in trade restrictions and weakening of political support for open trade. The number of annually imposed trade restrictions, initiated mainly by the United States, has increased more than 11 times in 10 years [31] (Fig. 2). The most striking manifestations of geopolitical tensions are the trade war between the US and China, as well as the situation around SWO, which significantly affected financial and trade flows.

The U.S. has taken restrictive measures to supply China with high-tech goods, software, semiconductor manufacturing technologies, etc. According to IMF estimates, geopolitical fragmentation will reduce economic opportunities for developing countries and hinder poverty reduction, and countries will be pushed into regional and economic blocs.

The U.S. also put more than 1,000 Chinese companies on sanctions lists under far-fetched pretexts, strengthened control over biotechnology, artificial intelligence, influenced the Netherlands to limit the supply of microchips to China, etc. [34].

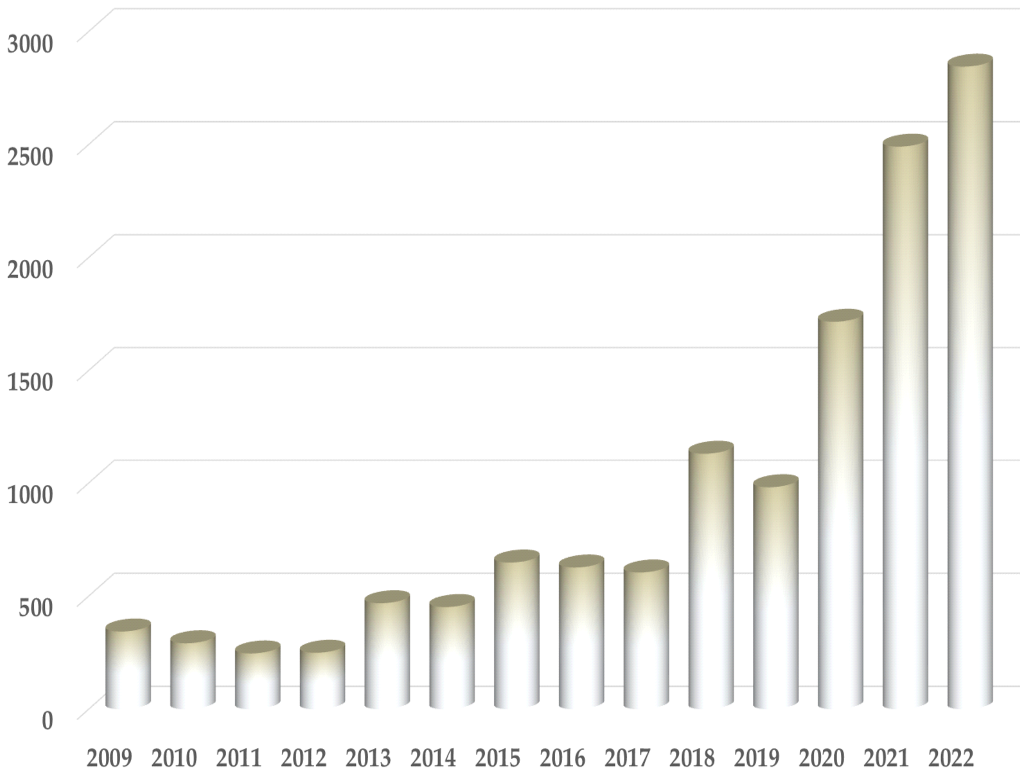

Figure 2. Number of trade restrictions imposed annually worldwide
Source: IMF calculations [31]

On the other hand, despite the large-scale US sanctions against China's semiconductor industry, in September 2023, Huawei released a new Mate 60 Pro smartphone with a 7-nanometer processor [26]. After this high-profile event that shook the smartphone market, the US government launched an official investigation into the origin of the Chinese chip.

After the start of the SWO, a number of countries banned oil exports from Russia, resulting in a significant shift in trade flows (Figure 3). The European Union switched to Norway, the UAE and the USA, which increased the length of tanker routes by 20%. In turn, Russian oil supplies have significantly increased to China, Turkey and India [24].

Thus, the largest international organization in the field of analytics is recording the restructuring of the global trading system and we will look at its implications below.

In the paper *"Geoeconomic Fragmentation and Commodity Markets"* IMF researchers estimated the economic consequences of the fragmentation of world trade using an equilibrium model [25]. The analysis used data on the 48 most influential countries in the world and, in particular, statistics on trade flows between them. The results showed that fragmentation has a particularly negative impact on trade in minerals, as their extraction is more concentrated than crop production (with the exception of palm oil and soybeans). For example, prices of rare earth minerals could rise by almost 500%, according to IMF calculations.

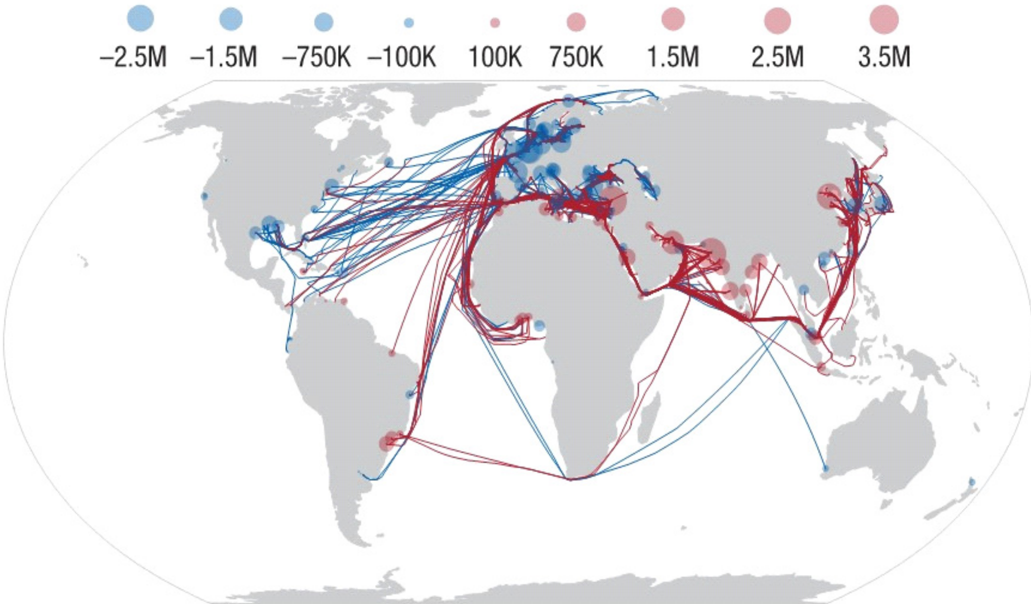

Figure 3. Dynamics of tanker shipments from Russian ports from Q2 2019 to Q2 2023. The size of the bubble indicates the magnitude of change in the volume of shipments for the destination port and is measured in tons, while the lines denote routes. Decrease is indicated in blue and increase - in red. Data source: PortWatch automated online system used to identify ships with a tonnage of more than 300 tons, original figure taken from IMF analysis [24; 28].

The main conclusion is that a fragmented world is more unstable due to high price volatility, exacerbated by shrinking commodity markets and the increased money supply needed to balance supply and demand.

But what is more important is how the fragmented world is seen from the authors point of view reflecting the IMF's opinion. According to the aforementioned report, there are two blocs in the world: the first one is called "U.S.-Europe+", which includes 141 countries, and the second one is called "China-Russia+", which consists of 52 countries. Moreover, the first block includes countries defined by Russia as friendly (for example, Turkey, Brazil, UAE and many others), thus the IMF assumes the possibility of reorienting trade flows to the detriment of economic benefits, but in favor of political agreements.

The study *"Geopolitics and Financial Fragmentation: Implications for Macro-Financial Stability"* from the IMF shows that geopolitical tensions lead to financial fragmentation due to the redirection of cash flows, as well as to a decrease in credit, with countries with emerging financial markets suffering more [22].

The IMF paper *"Geoeconomic Fragmentation and Foreign Direct Investment"* assesses the impact of geoeconomic fragmentation on the world economy through the lens of FDI. According to the IMF and FDI Markets data on 300 thousand investment transactions realized from Q1 2003 to Q4 2022, there has been a major restructuring of FDI destinations in the world. Some of the results in Table 1 show, according to researchers, that the Asian world is losing out compared to the United States in attracting FDI and investing in new production [23].

Table 1. Redistribution of foreign direct investment among the world's macro-regions (measured in percentage points of the cumulative change from Q2 2020 to Q4 2022 relative to the period Q1 2015-Q1 2020). - Q4 2022 relative to the period Q1 2015-Q1 2020)

Investors							
VII	26,39	7,06	5,32	11,45	-3,71	-24,68	18,57
VI	-22,09	-6,95	-17,84	-31,30	-44,29		-31,93
V	-3,20	-8,72	-11,68	-2,37	-23,66	-49,23	-4,38
IV	27,65	2,92	9,88	18,07	-22,30	13,89	-11,50
III	7,52	-11,72	9,29	-0,85	-9,84	-19,68	8,61
II	18,55	27,35	14,87	34,00	5,90	-13,33	27,64
I		9,21	0,59	19,41	2,26	-40,61	21,64
	I	II	III	IV	V	VI	VII
	Recipients						

Source: FDI Markets and IMF calculations. The heat map shows the change in FDI by macro-region as a percentage point of the cumulative change (19.5% decline) over the period indicated above. Green (red) fill indicates positive (negative) numbers. Calculations were made for the following macro-regions: I - USA, II - Americas (without USA), III - Developed European countries, IV - Developing European countries, V - Asia (without China), VI - China, VII - Rest of the world.

As the researchers note, the Asian region is becoming less and less attractive for the US and developed European countries from an investment perspective, and the decline in FDI from the US to China is one of the largest. At the same time, U.S. FDI in developing European countries has been steadily increasing. More details on the structural shifts in FDI from the US are shown in Fig. 4, where geopolitical allies (e.g. Canada and Korea) and opponents (China, etc.) can be seen, implying that political factors dominate over economic factors.

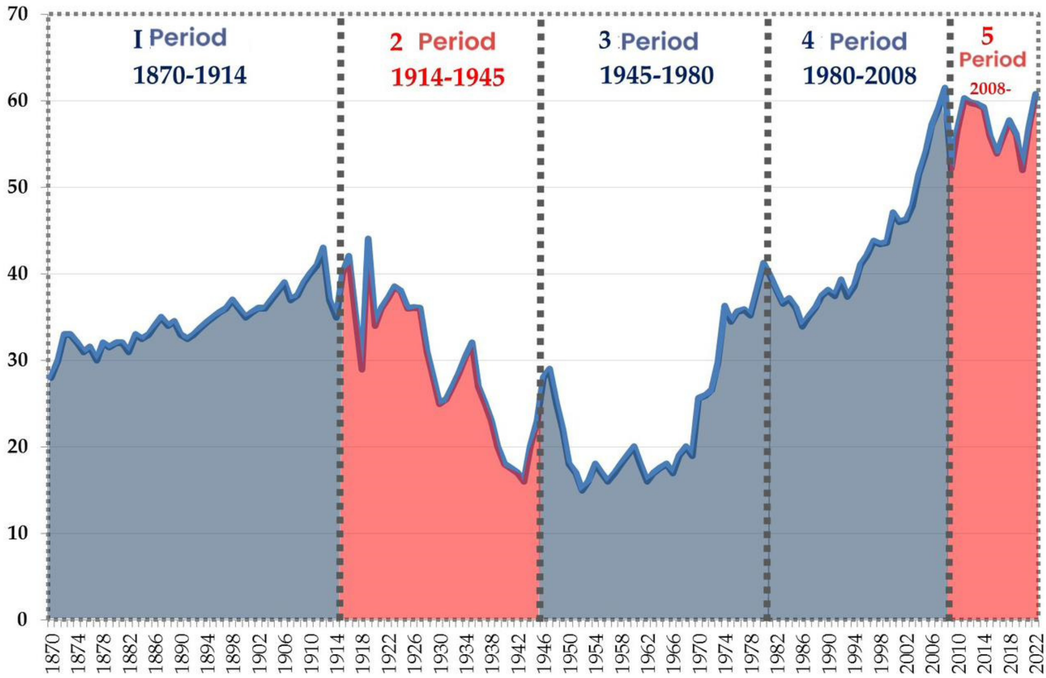

Figure 4. Changes in U.S. foreign direct investment directed to various countries around the world (measured as percentage points of the cumulative change from Q2 2020. - Q4 2022 relative to the period Q1 2015-Q1 2020)
Source: FDI Markets and IMF calculations

The long-term economic consequences of FDI fragmentation were estimated using a cross-country dynamic stochastic general equilibrium (DSGE) model. A scenario of fragmentation, specifically a 50% reduction in FDI, would lead to a marked decline in global output of about 2% in the long run (Table 2). The model assumes that FDI contributes to capital accumulation and technology transfer that increases productivity in recipient countries [23].

Table 2. Long-term GDP losses due to FDI fragmentation, as a percentage of the scenario without fragmentation

U.S. Bloc	U.S.	-0,54
	EU and Switzerland	-1,75
	Other developed countries	-1,49
China Block	China	-2,15
	Southeast Asia	-6,59
	The rest of the world	-4,65

Non-Aligned Countries	India and Indonesia	0,30
	Latin American and Caribbean countries	0,19
WORLD		-2,02

Source: IMF calculations

The latest top IMF paper *"World Economic Outlook: Navigating Global Divergences"* from October 2023 identifies Russia's conflict with Ukraine as the main factor of global fragmentation, imbalance in world markets and price growth [24]. For example, the partial general equilibrium model was used to estimate the consequences of wheat price growth in the "USA-Europe+" bloc due to lower yields. Thus, the corresponding shock, defined as three standard deviations, leads to an increase in the price of wheat by 4.41% in the case of an integrated world and by 8.79% in the case of a fragmented one.

The application of the dynamic stochastic general equilibrium model to estimate the change in GDP in the case of commodity market fragmentation shows the results shown in Table 3. As can be seen, the impact of fragmentation varies depending on the commodity group and block of countries. GDP is least affected by changes in oil supply, as buyers and sellers can quickly switch to trading partners within their bloc. It is also noteworthy that fragmentation has a more negative impact on economic growth in the China-Russia+ bloc than in the U.S.-Europe+ bloc and in the world as a whole.

Table 3. GDP change, in percentage points from the inertia scenario (three-year average)

	Crude oil	Natural gas	Minerals	Minerals
World	-0,03	-0,10	-0,23	-0,31
US-Europe+	-0,06	-0,05	-0,10	-0,25
China-Russia+	0,03	-0,18	-0,46	-0,42

Source: IMF calculations

In general, the range of global GDP decline, depending on the scenario of fragmentation of markets for goods and services, as well as financial flows and technologies, is from 0.2% to 12%%.

A joint study by the IMF and the Center for Economic Policy Research *"Geoeconomic Fragmentation: The Economic Risks from a Fractured World Economy"* identifies potential problems of global fragmentation [9]:

1) In addition to the SWIFT international payment system, parallel and poorly interoperable systems may emerge, leading to higher transaction costs.

2) The introduction of digital currencies in an environment of geo-economic fragmentation may worsen relevant regulation and supervision.

3) It is possible to reduce the share of the dollar in cross-border transactions.

4) Financial globalization may be replaced by financial regionalization, leading to greater macroeconomic instability during crises.

Another study *"The Impact of Geopolitical Conflicts on Trade, Growth, and Innovation"*, which also considers the economic consequences of the fragmentation of world trade due to geopolitical conflicts, is interesting because it reflects the view of the WTO - an international organization specializing in the regulation of trade and political relations between its member states and apparently possessing the most detailed database on trade transactions between countries [14].

A multi-sector, cross-country general equilibrium model was constructed and used for estimation, in addition to trade, accounting for the diffusion of technological innovations among actors in the economic system.

The classification of country blocs is also interesting. The researchers defined the Western and Eastern blocs, and to determine whether a particular country belongs to one of them, a database was constructed, including information on the similarity of decisions in foreign policy. This indicator was calculated for each pair of countries depending on their votes on various issues during the UN General Assembly. In this way, it is assumed that countries voting in the same way have similar interests in foreign policy that influence trade relations. The indices calculated for the period since 1945 are shown in Fig. 5, where the corresponding values are normalized so that "1" represents maximum proximity to the United States and "-1" to China. The results are quite expected - Europe, Canada, Australia, Japan and South Korea fall into the Western bloc, while Russia, India, most of North Africa and Southeast Asia fall into the Eastern bloc. In turn, Latin America and sub-Saharan Africa have median values and cannot be unequivocally assigned to one of the blocs.

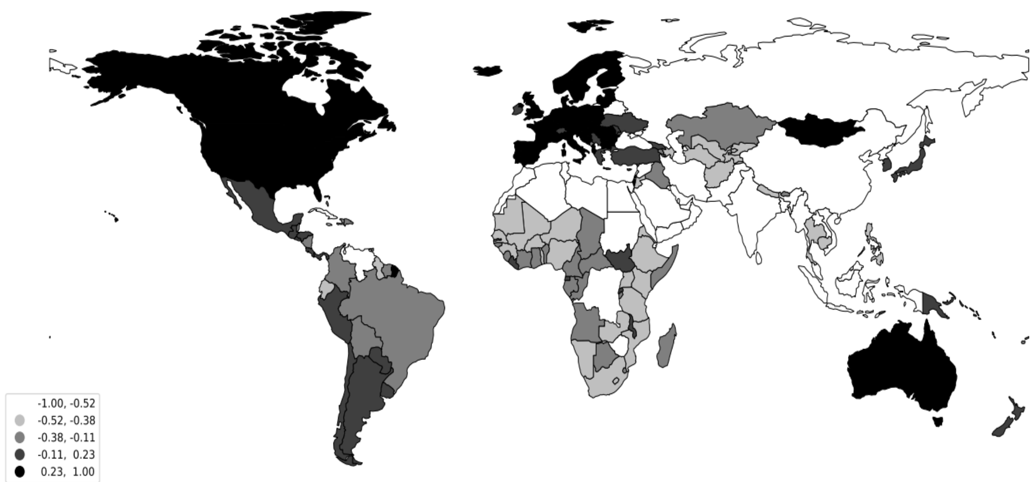

Figure 5. Foreign policy similarity index by countries of the world
Source: WTO calculations

The researchers have calculated a wide range of experiments - up to a virtually complete trade gap between the countries of the Western and Eastern blocs (by 98% of the current level). In the case of such a scenario, the level of welfare in all countries would decline markedly, but it would be asymmetric across the blocs. Thus, the decline in welfare in the Western bloc ranges across countries from -1% to -8% (with a median of -4%), and in the Eastern bloc from -8% to -12% (with a median of -10.5%). Moreover, in case a country moves from the Western bloc to the Eastern bloc, the decline in the mentioned indicator for it will increase, although there is no convincing argumentation about such a difference in the effect of breaking the ties between the blocs. The conflict in Ukraine is regarded as an example of the predominance of geopolitical interests over economic interests, since almost all countries are on the losing side [14].

Similar results were obtained by the European Central Bank. The study *"The Economic Costs of Supply Chain Decoupling"*, published in August 2023, using a model covering 73 countries and considering their economic systems in the sectoral context, emphasizes the main conclusion - the fragmentation of world trade leads to a decline in the level of welfare in all countries. At the same time, the deterioration of the situation is uneven and varies from 0.7% to 15.2% depending on the degree of openness of the economy of a particular country [12].

In turn, the National Bureau of Economic Research's *"Global Supply Chains: The Looming 'Great Reallocation'"* from September 2023, unlike other studies, explicitly notes not de-globalization, but a *"fundamental restructuring of supply chains"* around the world. Particular attention is paid to the eventful last five years. During this period, for example, China lost market share of the US market by 5 p.p. and at the same time Vietnam increased it by 2 p.p. [27].

The IMF study of October 2023 *"Long Live Globalization: Geopolitical Shocks and International Trade"* analyzes trade relations between 243 countries and territories from 1948 to 2021 [30]. A large dataset was constructed based on 59049 trade flows between pairs of countries, including more than 4 million observations. The dependent variable is the level of globalization, which, as mentioned above, is determined by the sum of exports and imports between the analyzed countries, but independent variables with high statistical significance are more interesting. These include the size of the economies and the geographical distance measured in km between the capitals of each pair of countries, as well as cultural, religious and linguistic commonalities, defined as binary variables. All of the variables listed have positive effects on trade except geographic distance (the further apart the capitals of trading partners are, the higher the costs and less trade flow). Thus, it is possible that the fragmentation of economic space represents a quite natural process explained both by economic reasons and social similarity.

Contours of the new world economic system

Thus, the WTO, the Center for Economic Policy Research and especially the IMF fix and forecast fragmentation of the world economic space in the short and medium term, and the IMF assumes it under two main scenarios [13].

1. Mild fragmentation scenario: "Strategic Decoupling", which envisages a complete breakdown of trade relations between the US-EU alliance and Russia, but with partial preservation of ties with China, except for high-tech products. At the same time, Russia and China are expected to maintain their trade ties with the rest of the world.
2. Severe fragmentation "Geo-economic Fragmentation" (Severe fragmentation scenario: "Geo-economic *Fragmentation*"), assuming a complete breakdown of ties between the US-EU and Russia-China blocs, and switching the rest of the world to the most stable of these alliances.

The results of calculations of these scenarios showed a slight decrease in world GDP - in the first case by -0.3, and in the second case by -2.3%. Note that previous analytical materials from the same IMF showed much more serious consequences [35].

Now let us consider recent studies from leading international organizations, which are interesting not so much for their forecasts, but rather for their vision of further development of the social and economic world systems.

Thus, one of the main OECD scenarios is based on a significant reduction in the volume of trade in goods and services between Russia and the rest of the world by 40%, and the consequence of this option will be a decrease in GDP of our country by -2.6% [11]. Moreover, the opposite impact is also recognized - the loss of real incomes of the population in OECD countries is estimated in the range from -0.4% to -2.9%.

The International Energy Agency (IEA) forecasts an intensification of the struggle for energy resources and markets. It is assumed that by 2030 the world demand for oil will reach its peak (102.4 million barrels per day), but at the same time the U.S. will increase the supply in the market by 4 million barrels per day, and Russia will reduce production by 2 million. Thus, the share of our country in global oil production in the medium term will decrease (Fig. 6), and in general, the restructuring of trade relations in the global energy market is predicted, but its future configuration is recognized as uncertain [20].

In addition to the restructuring of trade relations, military conflicts are also predicted. Thus, through the activation of the biased media, the idea of an inevitable conflict between China and Taiwan is beginning to spread in the global public consciousness. For example, according to Oxford Economics (the world's largest analytical group working in the field of quantitative analysis and forecasting using mathematical models), obtained as a result of surveys of the expert community conducted in September 2023, the main geopolitical risk is a possible China-Taiwan conflict [31]. Moreover, 37% of respondents believe that it may occur in the next two years, and

62% already believe that it may occur in the next five years. The business community is even more pessimistic - 87% of surveyed businessmen believe that this conflict will occur within the next five years, and 70% believe that this process will reduce the level of interaction between the U.S. and China [31].

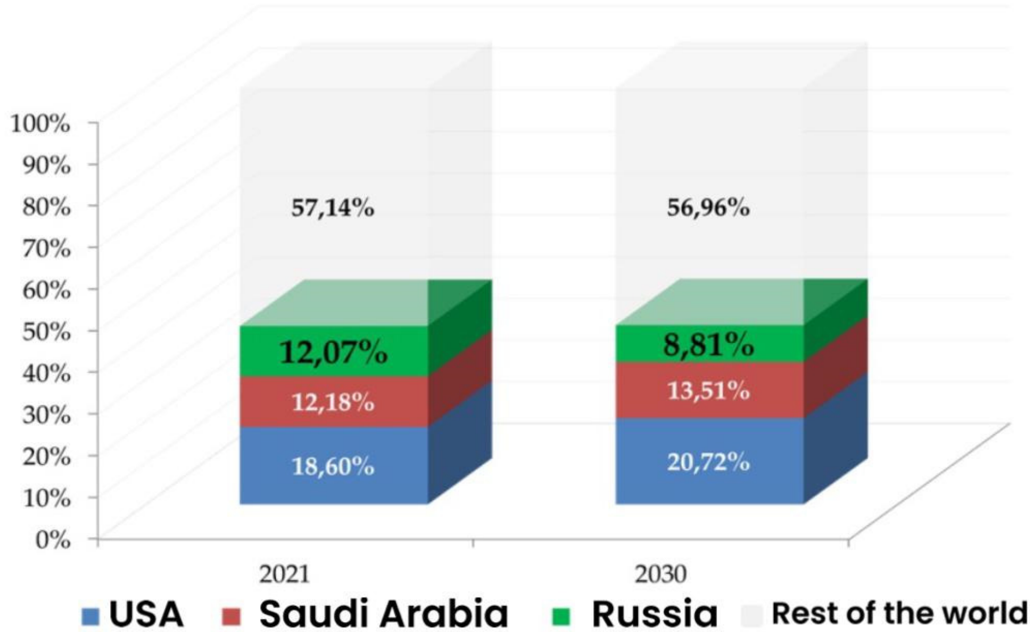

Figure 6. Oil production by individual countries (share of total)

The consequences of this conflict will be a reduction in interaction between the US, the EU on the one hand, and China on the other. Estimated scenarios provide for closing access to new technologies, increasing US duties by 20 p.p., and by 10 p.p. on the part of Japan, the EU, the UK and Canada. China is also expected to retaliate. The GTAP model calculations showed that global GDP would decline by about 1pc annually relative to the baseline scenario and growth would be 1.1% in 2024 and 2.2% in 2025. As for the major contributors, China's GDP would contract by 2.8% relative to the baseline and US GDP by 1.6%. Oxford Economics also estimates that the intensification of the trade war will lead to a more than twofold decrease in exports from China to the US, and to Taiwan and other allied countries by 20%. At the same time, China will partially reorient trade flows and increase exports to other countries of the world by 30% [31].

The actual discord between the countries began long ago, and since 2018, in the process of the trade war unleashed by the United States, it has had a tangible effect of reducing trade (Table 4).

Table 4. Trade dynamics between the US and China [32]

	China's imports to the United States (as a percentage of total imports into the United States)	U.S. imports to China (as a percentage of total imports to China)	China's exports to the United States (as a percentage of total Chinese exports)	U.S. exports to China (as a percentage of total U.S. exports)
2003	12,5	8,22	21,1	3,91
2004	13,8	7,97	21,1	4,23
2005	15,0	7,39	21,4	4,57
2006	15,9	7,49	21,0	5,33
2007	16,9	7,27	19,1	5,61
2008	16,5	7,20	17,7	5,50
2009	19,3	7,73	18,4	6,58
2010	19,5	7,36	18,0	7,19
2011	18,4	7,06	17,1	7,03
2012	19,0	7,36	17,2	7,15
2013	19,7	7,87	16,7	7,72
2014	20,2	8,17	17,0	7,64
2015	21,8	8,95	18,0	7,71
2016	21,4	8,50	18,3	7,96
2017	21,9	8,41	19,0	8,40
2018	21,6	7,31	19,2	7,22
2019	18,4	5,99	16,8	6,48
2020	19,0	6,63	17,5	8,74
2021	18,4	6,76	17,2	8,63
2022	17,1	6,59	16,2	7,46

Recently, the press has increasingly often published articles that discuss the main problems of the PRC, which, according to observers, are related to the aging of the population, high youth unemployment, declining investor optimism, etc. [16]. [16].

In the document "Defense Budget Review for 2024" issued by the U.S. Department of Defense, countering the PRC is a priority for this agency and is number one in almost all sections of the document. In this regard, the planned budget for 2024 is expected to be $842 billion, an increase of $26 billion over the current year and $100 billion over 2022. [17].

For its part, the PRC views the U.S. military expansion as extremely negative. For example, in late February 2023, the official website of the Chinese Foreign Ministry posted an article "U.S. Hegemony and Its Risks," in which the United States is actually accused of actions that have led to humanitarian disasters that have claimed more than 900,000 lives and made refugees of more than 37 million people around the world [34].

Other leading international organizations also associate economic risks with China. For example, OECD analysts identify a sharper slowdown than previously expected in China's economic growth as a key risk to the global economy. They link it to the decline in consumer confidence in Chinese goods and problems in the real estate market. The corresponding estimates show that the decrease in domestic demand in China by 3 p.p. can reduce global GDP growth by 0.6 p.p.. At the same time, structural problems in the Chinese economy will lead to a slowdown in China's GDP growth in 2023-2024 [29]. To maintain its economic, military and technological leadership, the U.S. will use various methods of pressure on other countries, for example: imposing unfavorable monetary policy on peripheral countries through controlled regulatory bodies, collecting technological rents, lowering labor remuneration in dependent countries, provoking military conflicts, creating a negative information background, non-equivalent commodity exchange and others.

One of the directions of weakening the EU, in addition to cutting off Russia's energy resources, is to impose doctrines about the ineffectiveness of energy subsidies in European countries. Thus, the IMF working paper dated September 2023 contains arguments for and against financial support of European enterprises in terms of energy subsidies due to high volatility of prices for fuel and energy resources because of geopolitical tensions [10].

The authors explicitly recommend the provisions in the paper as guidelines for the authorities. In their view, energy subsidies to some extent undermine climate and energy security objectives by hindering the transition to a green economy. In addition, the paper emphasizes that such subsidies mean increased fiscal spending, which reduces the efficiency of the economic system as a whole. One of the arguments against the funding is the possible problems in the political sphere that could arise in case of future subsidy reductions. And in this regard, it is proposed to assess the feasibility of its initial introduction.

The general conclusion is that support of this kind should be limited and targeted. It can be stated that there is a policy aimed at reducing support for industry in the EU in order to worsen their competitive opportunities in the world markets. And this attitude is being developed in the IMF head office in the USA - the main beneficiary of the ongoing processes.

Thus, the following conclusions can be drawn:

1. Currently, almost all international organizations forecast geo-economic fragmentation in the short and medium term.

2. The readjustment of ties and the division of the world into macro-regions will not entail a sharp decline in macroeconomic indicators. By the way, this is also confirmed by a simple analysis of trade dependence between countries. Table 5 shows data for the world as a whole, individual countries and the EU. As can be seen, the main actors of the global economic system (the United States, China, India and Russia) are states with trade dependence below the world average, while the situation is the opposite for the EU, so they will suffer more during trade wars.

Table 5. Ratios of imports and exports to GDP for selected countries of the world in 2022, in % [21]

Place in the world	countries	Imports/GDP	Place in the world	countries	Exports/ GDP
1	Luxembourg	175,1	1	Luxembourg	209,4
2	Malta	156,6	2	Singapore	186,6
3	Singapore	150,3	3	Malta	168,0
EU		54,3	**EU**		55,9
95	Germany	48,3	48	Germany	50,3
128	France	38,1	87	France	34,0
137	UK	36,2	92	UK	32,7
World		30,1	**World**		30,6
154	India	26,9	110	Russia	28,2
158	Japan	18,7	138	India	22,4
161	China	17,5	145	China	20,7
164	Russia	15,6	153	Japan	18,2
173	U.S.	14,6	166	U.S.	10,9

3. The initial estimates of international organizations (IMF, National Bureau of Economic Research, OECD, etc.) published in March-April-May 2022 regarding the depth of the decline of Russia's economy have not been confirmed. It should be also noted that the maximum decline of Russia's GDP in the modern history by -14.5%, which occurred in 1992, was the result of the collapse of the country and the severance of many economic ties, so the limited sanctions pressure could not in principle cause a similar effect in the short term. Moreover, back in 2018-2019, together with the National Supercomputer Center of the People's Republic of China, we calculated the consequences of a trade war between the "China-Russia" and "US-EU" country blocs and, in particular, the effect of a trade embargo on Russian export goods. Depending on the scenario, the range of our country's GDP reduction was from -0.881% to -2.16%, and as real life has shown, in 2022 this indicator just decreased by -2.1% [3; 4]. More relevant calculations we have carried out are given in the article "Hybrid wars in the macroeconomic super-system of the XXI century" [1].

It should be emphasized that forecasts from international organizations have long been a means of manipulating public opinion. For example, the Bloomerg agency analyzed more than 3,000 forecasts for different countries of the world from the IMF for a relatively quiet period from 1999 to 2019 and estimated the average deviation from the actual data to be 2 percentage points. But the main point is different - for the USA in 80% of cases economic growth was overestimated, while for the PRC only in 20% [18].

Scenarios of world dynamics

Over the past 4 years, together with the FSO of the Russian Federation and the D. I. Mendeleev Institute of Demographic Policy, we have been measuring the potential of 193 UN member countries of the world using a large set of statistical indicators and methods of multivariate statistical analysis. The obtained integral indices - indicators of "national strength", determine the power of a country in the multidimensional system of world relations [5].

Fig. 7 shows the leading countries according to this index, showing two centers of power - the United States and China - and potential centers (Russia, India and Germany), which can create coalitions of countries with similar interests. Thus, when forming scenarios, we will also keep in mind the possible formation of new alliances on the basis of potential centers of power.

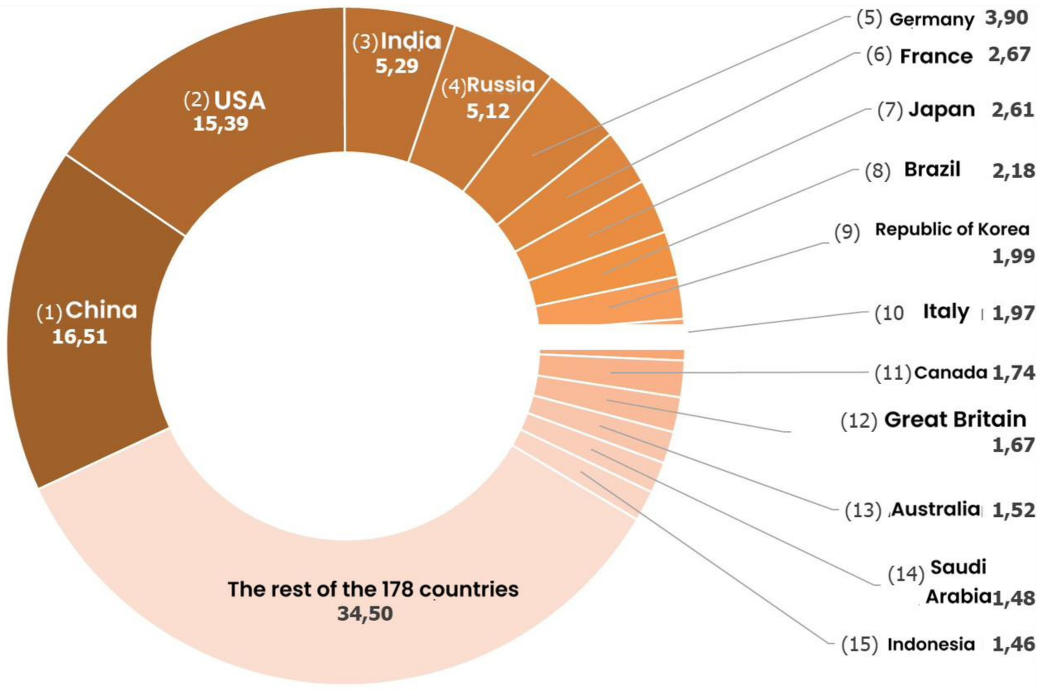

Figure 7. Integral indicators of national strength for the top 15 countries in 2021; the sum of the indicators for all states is 100, source: author's calculation

For the calculations, let's assume two scenarios:

1. China and India joining the U.S.-initiated sanctions pressure on Russia, which means halting exports of Russian goods to these two countries.
2. Formation of the "Russia-Germany" union, entailing an increase in trade turnover by 30% relative to the level of 2021. This scenario is unlikely in the short and medium term, but it will show the potential benefits of such cooperation. Earlier

calculations conducted by The Central Economic Mathematical Institute, showed the maximum technological commonality between the mentioned countries, calculated with the help of unified tables "input-output" for 60 countries in the context of 40 industries and methods of multivariate statistical analysis. Moreover, Russia and Germany are as close as possible. Thus, if it were not for the political decisions taken by the EU, which have negative consequences for the development of the economies, the benefits of cooperation could also be significant.

It should also be noted that the model complex we use has natural limitations in calculating the consequences, which will show only direct damage from the imposed restrictions and partial involvement of compensating mechanisms - restructuring of trade flows [3]. However, more important mechanisms to counteract sanctions are monetary policy measures, development of industries with a large multiplier, etc., but it is difficult to realize them within a single scenario, so when using the model, we will limit ourselves to calculating the consequences of direct impact only.

The obtained results are summarized in Table 6. As can be seen, even the most negative option for our country will not cause the collapse of the economy, and the union of Russia and Germany entails a noticeable increase in GDP.

Table 6. Scenario results: GDP growth/decline, in percentage points relative to the inertia variant

Countries	Scenarios	
	1	2
Russia	-3,5	2,1
China	-0,2	-0,3
India	-0,2	-0,1
U.S.	0,4	-0,1
Germany	-1,1	1,5
UK	-0,3	-0,4
EU	-1,2	-0,6

Another conclusion is that trade wars have a negative impact on practically all participants of the world economic system. And even an insignificant gain for the United States in the first scenario is short-term and not fundamental.

Conclusion

Why did the unprecedented anti-Russian sanctions fail to collapse our country's economy or, as promised by the United States, "tear Russia's economy to shreds"? If we do not operate with volatile indicators (GDP, CPI, etc.), which are derived from a complex system of economic relations, but consider the above-mentioned complex indicator of national strength, showing the potential of a particular country, then our country steadily ranks 3-4 for a long period [5]. Stability is ensured by the complexity of the indicator, which integrates several components: resource, military, scientific, financial, production, etc., as well as by the complex index of national strength. So, to collapse a country with great power, restrictive sanctions alone are not enough. Of course, their gradual impact over a long period of time can weaken any state, including Russia, but the effectiveness of external pressure can be offset by forced internal development and diversification of the industry system.

In addition to national strength, we calculated national security indices, which allowed us to identify Russia's most vulnerable places in comparison with other states in the unified cluster of the world's leading countries. First of all, these are population decline due to high mortality, low birth rate, strong social stratification, as well as the monetary policy of the financial authorities and the deterioration of science and education. A separate study has been devoted to specific indicators, as well as mechanisms to rectify the situation, but it should be noted here that it is these pain points that will be the target of further pressure from the collective West [6]. In this regard, the main efforts of public authorities of our country should be focused on improving the situation in problem areas.

Based on the analysis of the materials of the most quoted international organizations, it can be concluded that the fragmentation of world trade is intensifying, initiated by the United States, not only to punish Russia, but also to weaken Europe, which is more dependent on international commodity exchange. The reconfiguration process will take time due to the inertia of most large economic systems.

References

1. Bakhtizin A.R., Makarov V.L., Loginov E.L., Khabriev B.R., Wu Jie, Wu Zili. Hybrid wars in the macroeconomic super-system of the XXI century // Economic Strategies. 2023. № 2(188). C. 6-23.

2. In the U.S., they do not know how Huawei managed to do it: an official investigation into the origin of the latest processor in the Huawei Mate 60 Pro smartphone has already begun // IXBT.COM URL: https://www.ixbt.com/news/2023/09/08/huawei-huawei-mate-60-pro.html (accessed on 26.10.2023).

3. Makarov V.L., Wu C., Wu Z., Khabriev B.R., Bakhtizin A.R. World trade wars: scenario calculations of the consequences // Bulletin of the Russian Academy of Sciences. - 2020. - T. 90. № 2. - C. 169-179, DOI: 10.31857/S0869587320020097

4. Makarov V.L., Wu C., Wu Z., Khabriev B.R., Bakhtizin A.R. Modern tools for assessing the consequences of global trade wars // Bulletin of the Russian Academy of Sciences. - 2019. - № T. 89. № 7. - C. 745-754.

5. Makarov V.L., Ilyin N.I., Bakhtizin A.R., Khabriev B.R. (2022): National strength of the world's countries: assessment and forecast // Economic Strategies. - 2022. - № 6 (186). - C. 38-51. https://doi.org/10.33917/es-6.186.2022.38-51

6. The main directions of socio-economic development of Russia: justification and assessment of consequences (based on the results of modeling studies of CEMI RAS). - MOSCOW: CEMI RAS, 2023. - 116 c.

7. The creation of a multipolar world is inevitable // Rossiyskaya Gazeta URL: https://rg.ru/2023/10/16/vladimir-putin-sozdanie-mnogopoliarnogo-mira-neizbezhno.html (accessed on 26.10.2023).

8. Aiyar S., Ilyina A. et al. (2023). Geoeconomic Fragmentation and the Future of Multilateralism. Staff Discussion Note SDN/2023/001. International Monetary Fund, Washington, DC

9. Aiyar, S, A Presbitero and M Ruta (eds) (2023), 'Geoeconomic Fragmentation: The Economic Risks from a Fractured World Economy', CEPR Press, Paris & London. https://cepr.org/publications/books-and-reports/geoeconomic-fragmentation-economic-risks-fractured-world-economy

10. Ari, A., Engler, P., Li. G., Patnam, M., and Valderrama, L. (2023). Energy Support for Firms in Europe: Best Practice Considerations and Recent Experience. IMF Working Paper, WP/23/197

11. Arriola, C., et al. (2023), "Challenges to international trade and the global economy: Recovery from COVID-19 and Russia's war of aggression against Ukraine", OECD Trade Policy Papers, No. 265, OECD Publishing, Paris, https://doi.org/10.1787/5c561274-en.

12. Attinasi, Maria Grazia and Boeckelmann, Lukas and Meunier, Baptiste, The Economic Costs of Supply Chain Decoupling (August, 2023). ECB Working Paper No. 2023/2839, Available at SSRN: https://ssrn.com/abstract=4532103 or http://dx.doi.org/10.2139/ssrn.4532103.

13. Bolhuis A. Marijn, Jiaqian Chen and Benjamin Kett (2023): Fragmentation in Global Trade: Accounting for Commodities. IMF Working Paper, No. WP 23/73

14. Carlos Góes, Eddy Bekkers The Impact of Geopolitical Conflicts on Trade, Growth, and Innovation //World Trade Organization Economic Research and Statistics Division, Staff Working Paper ERSD-2022-09, https://www.wto.org/english/res_e/reser_e/ersd202209_e.htm.

15. Charting Globalization's Turn to Slowbalization After Global Financial Crisis // International Monetary Fund URL: https://www.imf.org/en/Blogs/Articles/2023/02/08/charting-globalizations-turn-to-slowbalization-after-global-financial-crisis (accessed on 26.10.2023).

16. China's Xi fights fires at home and abroad // washingtonpost.com URL: https://www.washingtonpost.com/world/2023/09/05/xi-jinping-issues-domestic-global-economy-trouble/ (accessed on 26.10.2023).

17. Defense Budget Overview United States Department of Defense Fiscal Year 2024 Budget Request // The United States government URL: https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024_Budget_Request_Overview_Book.pdf (accessed on 26.10.2023).

18. Economic Forecasting Is Really Difficult. Just Ask the IMF // Bloomberg URL: https://www.bloomberg.com/graphics/2019-imf-forecasts/ (accessed on 26.10.2023).

19. Global Scenarios: Taiwan Tensions // Oxford Economics URL: https://www.oxfordeconomics.com/wp-content/uploads/2023/09/GSS_Webinar_2023Q3_final.pdf (accessed on 26.10.2023).

20. IEA (2022), World Energy Outlook 2022, IEA, Paris https://www.iea.org/reports/world-energy-outlook-2022, License: CC BY 4.0 (report); CC BY NC SA 4.0 (Annex A)

21. Imports of goods and services (% of GDP) // World Bank Group URL: https://data.worldbank.org/indicator/NE.IMP.GNFS.ZS (accessed on 26.10.2023).

22. International Monetary Fund. 2023. Global Financial Stability Report: Safeguarding Financial Stability amid High Inflation and Geopolitical Risks. Washington, DC, April.

23. International Monetary Fund. 2023. World Economic Outlook: A Rocky Recovery. Washington, DC. April

24. International Monetary Fund. 2023. World Economic Outlook: Navigating Global Divergences. Washington, DC. October

25. Jorge Alvarez, Mehdi Benatiya Andaloussi, Chiara Maggi, Alexandre Sollaci, Martin Stuermer and Petia Topalova (2023): Geoeconomic Fragmentation and Commodity Markets // International Monetary Fund Working Paper, WP No. 2023/201, October 2023

26. Kirin 9000s is using SMIC's N+2 7nm tech: TechInsights // Huaweicentral.com URL: https://www.huaweicentral.com/kirin-9000s-is-using-smics-n2-7nm-tech-techinsights/ (accessed 26.10.2023).

27. Laura Alfaro and Davin Chor (2023): Global Supply Chains: The Looming "Great Reallocation" // NBER Working Paper No. 31661, September 2023, DOI: 10.3386/w31661

28. Monitoring Trade Disruptions from Space // International Monetary Fund URL: https://www.imf.org/portwatch (accessed on 26.10.2023).

29. OECD (2023), OECD Economic Outlook, Interim Report September 2023: Confronting Inflation and Low Growth, OECD Publishing, Paris, https://doi.org/10.1787/1f628002-en.

30. Serhan Cevik (2023): Long Live Globalization: Geopolitical Shocks and International Trade // International Monetary Fund Working Paper, WP No. 2023/225, October 2023

31. The High Cost of Global Economic Fragmentation // International Monetary Fund URL: https://www.imf.org/en/Blogs/Articles/2023/08/28/the-high-cost-of-global-economic-fragmentation (accessed on 26.10.2023).

32. Trade Map // ITC URL: https://www.trademap.org (accessed on 26.10.2023).

33. Trade plateaus and restrictions rise, marking a new era for globalization // International Monetary Fund URL: https://www.imf.org/en/Publications/fandd/issues/2023/06/PT-globalization-peak-Stanley (accessed 26.10.2023).

34. US Hegemony and Its Perils // Ministry of Foreign Affairs, the People's Republic of China URL: https://www.fmprc.gov.cn/mfa_eng/wjbxw/202302/t20230220_11027664.html (accessed on 26.10.2023).

35. War slows recovery // International Monetary Fund URL: https://www.imf.org/en/Publications/WEO/Issues/2022/04/19/world-economic-outlook-april-2022 (accessed on 26.10.2023).

36. World Bank Open Data // World Bank Group URL: https://data.worldbank.org/ (accessed on 26.10.2023).