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THE WORLD ECONOMY IN THE ERA OF TURBULENCE

The present research considers the impact of the four shocks of 2020–2022 on the world economy, with the main focus on cyclical processes. The first shock is considered to be the 2020 COVID-19 lockdowns, which were of non-economic origin and which interrupted the recovery phase, creating panic and a short-term liquidity squeeze. The second shock was created in 2020–2021 by the financial authorities of the world's leading countries and the EU (as well as the IMF), which provided a unique financial stimulus for the economy in order to prevent a chain reaction of demand contraction. The third shock was related to the recovery in the commodity markets in 2021 and was expressed in an acceleration of inflation. Its consequence was, to a large extent, the turmoil in the U.S. and EU banking sector in March 2023. Finally, the shock of sanctions in 2022 perpetuated both the uncertainty for global capital accumulation in general and inflationary trends in particular. Four shocks to the world economy accelerated the change of phases along with the number of their typical characteristics in the business cycle. At the beginning of 2023, the financial authorities of the U.S., EU, and other countries had to balance between curbing inflation and preventing recession using very cautious policy instruments.

Geoeconomic blocs use collective bargaining power to pursue a favorable position in the international economy, and to convert economic power to political capital. Geoeconomics laid the foundation for the EU's power and its subsequent ability to project values and norms. Elevating liberal ideals above a realist foundation represented by geoeconomics has put the cart ahead of the horse and instigated the decline of the entire edifice. The Single Market set the foundation for geoeconomic power by protecting domestic markets, opening external markets, and cementing internal cohesion. While the common currency and successive enlargements were intended to further augment geoeconomic power, they have instead fueled divisions among member states and intensified zero-sum relations with non-member states.

ECONOMIC GROWTH AND THE CYCLE

This article examines the role of intangible factors (negative expectations, lack of confidence, and uncertainty shocks) in the development of financial crises. These factors can trigger conventional crisis mechanisms (such as the formation of credit booms), intervene when fundamentals are weak, or act autonomously (e.g., in the case of a bank run). The first part of this paper presents a brief review of the literature along two dimensions: the development of second-generation models of currency crises, and an analysis of the impact of intangible factors, informed by new ways of measuring them. In particular, the study finds that uncertainty about economic conditions and policies has a significant negative impact on output (mainly by reducing investment activity) but also significantly weakens the effect of fiscal and monetary stimulus measures. In the next part, we discuss alternative approaches to assessing economic agents' confidence in their governments and central banks, the different types of uncertainty, and the development of such parameters in Russia.

INTERNATIONAL TRADE AND INVESTMENT

This paper examines the different motives for introducing trade barriers and identifies five types of protectionism. While the 20th century was dominated by "lobbyist protectionism" and "industrialiser protectionism," the period following the global financial crisis of 2008–2009 has been a time of "geostrategist protectionism" and "populist protectionism." Finally, the introduction of a carbon border adjustment mechanism in the EU could be the beginning of the spread of "benevolent protectionism." The proposed taxonomy of protectionism shows why, despite the consensus among economists on the benefits of international trade, protectionism remains so prevalent. It also helps to explain why developed countries, once the main proponents of free trade and globalization, played a major role in the intense growth of trade barriers in the 2010–2020s.

This article presents an analysis of current trends in technological globalization, focusing on comparisons of the scale and dynamics of the development of the science and technology sectors in various countries. In particular, the article highlights the trends toward outstripping growth of the research and development sphere in non-Western countries, toward an increase in the share of the private sector in investment in research and development, to the transformation of China into one of the world's technological leaders, and the expansion of its technology companies in other countries. The article compares the structure of research and development by country and industry measurements and provides information on the benefits and limitations of the current model for including China in technological globalization.

COUNTRY VIEW

International cooperation is a less well-known characteristic of developing economies. It is often associated with concessional financing and humanitarian initiatives and understood as a means of exerting "soft power", whose intellectual origins date back to the Cold War. Unlike in power-based interpretations, international cooperation initiatives among developing economies do not take the shape of direct monetary contributions. Instead, they are mostly focused on shared development agendas, which in practice means technical support, educational and scientific activities, humanitarian support, assistance to refugees, peacekeeping operations and other partnerships implemented with the support of multilateral and regional agencies. Brazilian initiatives have been systematically measured since 2005 by IPEA, and they show a significant and increasing effort in terms of the volume of resources involved, as well as a diversified set of initiatives. Brazil's international cooperation accounting procedures are in line with the TOSSD methodology, as well as with the UNCTAD pilot project on the quantification of South-South Cooperation for Development. All methodologies revolve around the issue of measuring the progress of the Sustainable Development Goals. Most of the projects benefit African and Latin American countries, while other initiatives counterintuitively benefit individuals from developed countries. In 2021, the estimated total volume of official resources destined for Brazilian international cooperation surpassed US$ 1.3 billion, a significant figure for a developing country. The initiatives directly implemented by the state and local governments of the Brazilian federation are still rather unexplored. This fact supports a general perception among policymakers in Brazil: future methodological improvements will inevitably reveal higher levels of expenditure and shed light on the intricacies of the Brazilian participation in the International Development Agenda.

REVIEWS

Dear colleagues,

HSE University's School of World Economy is pleased to present the **Contemporary World Economy Journal**, which will be published quarterly in both Russian and English.

The launch of the Journal is an important step for us. Russia has very few academic journals on the world economy. Consequently, there is almost no academic discussion in this field. This slows down the development of the discipline—creating a research community, increasing the number of specialists, the provision of expertise for policymakers, and informing the general public. As a result, the breadth and depth of the understanding of global economic processes in the economic community is lacking, leading to incorrect and late perceptions of global trends, underuse of opportunities for international cooperation, and errors in decisionmaking.

Professional discussion of international economic problems has never been more vital than today, when the object of study is undergoing probably the most sweeping changes of the past half-century. The competitive advantages of the largest national economies and the nature of the relationships between them are changing; globalization processes are transforming (and in some areas stopping); the era of high inflation in the developed world is returning; the scope of the debt crisis is expanding; financial stability faces new threats; digital technologies and green transition are changing key industries; inequalities within the leading countries are reaching critical levels; and humanity is still searching for ways to achieve the Sustainable Development Goals.

The Journal aims to outline the field of knowledge of the "World Economy," and to become a platform for discussing global economic problems and Russia's place and opportunities in the global economy. As a bilingual journal, it is also intended to serve as a tool for the exchange of opinions between Russian and foreign authors, bringing the views of Russian economists to their foreign colleagues, and the content of international discussions to Russian-speaking audiences.

The launch of a journal on the world economy is a harmonious addition to the HSE University's work in this area: the Annual Conference on the Global Economy, the World Economy section of the Yasin (April) International Academic Conference on Economic and Social Development, academic seminars at the School of World Economy, and the GlobBaro HSE monitor.

The Journal will publish articles focusing on the problems of economic agents' interaction in the global environment. These problems can be divided into a number of large blocks:

- Economic growth and cycles in different countries and regions.
- Social development, poverty, and inequality in income, consumption, and wealth.
- Demography, uneven growth and changes in the population age structure; migration problems.
- International trade and economic integration, supply chains and issues regarding their regulation.

- International finance, financial crises, and mutual influences of various countries' monetary policies.
- International companies' activities on the global markets, their competition, strategies, and functions.
- Provision of energy resources, the institutional and technological transformation of the world's energy sector.
- Sustainable development (including the implementation of the Sustainable Development Goals), resource and environmental problems, including issues pertaining to the green transition of the world economy.
- Economic consequences of technical change, including the transition to a digital economy.
- Development of the major countries and associations with a focus on their economic and political systems.
- Country economic comparative studies and the impact of development transformations in leading countries (especially the United States, BRICS, and the EU) on global processes.
- Global economic cooperation and governance.
- Russia's participation in the world economy and its position in each of the areas mentioned above.

Research methods can be both qualitative and quantitative. We welcome the academic analysis of the stylized facts observed in the world economy, based on the formulation of hypotheses and the analysis of statistical data. At the same time, we equally welcome new ideas, generalizations, and the identification of new patterns in global economic processes. A special emphasis in the Journal's work is placed on stimulating academic discussion. For example, the journal welcomes feedback on previously published research and will publish reviews of articles and books, as well as materials from roundtables, including those organized by the Journal itself, to discuss current events or published articles.

We will be glad to reach out to new contributors, partners, and readers and very much look forward to building a first-class journal with you.

Yours sincerely,
Chief Co-Editors

Leonid Grigoryev
Igor Makarov

The Shocks of 2020–2023 and the Business Cycle

Grigoryev, Leonid

> "...the economists are at this moment called upon to say how to extricate the free world from the serious threat of accelerating inflation which, it must be admitted, has been brought about by policies which the majority of economists recommended and even urged governments to pursue. We have indeed at the moment little cause for pride: as a profession we have made a mess of things."
>
> "The Pretense of Knowledge," Alfred Nobel Memorial Lecture, delivered on December 11, 1974, by Friedrich von Hayek

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This research paper uses the results of the project "Assessment of the Consequences of Anti-Russian Sanctions on the World Economy," carried out as part of the competition of project groups of the Faculty of World Economy and International Affairs of HSE University in 2022-2023.

This article was written in March 2023.

Abstract

The present research considers the impact of the four shocks of 2020–2022 on the world economy, with the main focus on cyclical processes. The first shock is considered to be the 2020 COVID-19 lockdowns, which were of non-economic origin and which interrupted the recovery phase, creating panic and a short-term liquidity squeeze. The second shock was created in 2020–2021 by the financial authorities of the world's leading countries and the EU (as well as the IMF), which provided a unique financial stimulus for the economy in order to prevent a chain

reaction of demand contraction. The third shock was related to the recovery in the commodity markets in 2021 and was expressed in an acceleration of inflation. Its consequence was, to a large extent, the turmoil in the U.S. and EU banking sector in March 2023. Finally, the shock of sanctions in 2022 perpetuated both the uncertainty for global capital accumulation in general and inflationary trends in particular.

Four shocks to the world economy accelerated the change of phases along with the number of their typical characteristics in the business cycle. At the beginning of 2023, the financial authorities of the U.S., EU, and other countries had to balance between curbing inflation and preventing recession using very cautious policy instruments.

Introduction: The world has been changing for a long time

The global business cycle school of thought goes back centuries and has been an integral part of economic growth theory in developed economies. Business cycle theories can be traced from Karl Marx and Clément Juglar in the 1860s to Ben Bernanke and Kenneth Rogoff in the 2010s. Business cycle theories involve a battle of approaches, assessments of established patterns between economic indicators, and patterns of transmission of fluctuations from country to country. In addition, they include expectations concerning the behavior of firms, private banks, workers, consumers, financial markets, governments and central banks. Understanding the patterns of fluctuations in economic activity on a path from A to B is much more difficult than assessing the prospects for medium-term growth over the same period between points A and B.

Global development parameters started to change significantly after the global crisis of 2008–2009, which originated in the financial sector and was sudden and deep. Up to 2019, changes in the nature of connections and the logic of fluctuations in economic activity were discussed (Romer 1999; Reinhart, Rogoff 2014). At the same time, the international community was concerned about sustainable development goals, mitigating the consequences of climate change, and the apparent crisis in global governance, which could influence the course of the business cycle.

The successes of growth and the resilience of many parameters in the early 2000s brought about two important phenomena not only in the world economy, but in its research field. These were the assumption of the normality of growth and development along with the gradual disappearance of large swings in economic activity. In that sense it is worth mentioning the 2004 Nobel Prize-winning real business cycle model by Edward Prescott and Finn Kydland, which denied the importance of financial shocks as triggers of crises (Prescott 2004).

Surprisingly, the theory survived unscathed for only four years before the devastating Great Recession was brought on by the financial shock of 2008 (on

September 15, the investment bank Lehman Brothers went bankrupt). The fight against it dragged on for several years, using the "quantitative easing" approach, which recently earned Ben Bernanke a Nobel Prize, but this time for fighting banking crises (Bernanke et al. 2022). This study aims to make sense of shock distortions in previously established mechanisms of the cycle under the influence of external shocks. This immediately begs the question: what external shocks are we aware of and prepared to take into account? This paper aims to improve our understanding of and analyze the impact made by the four shocks as they appear in the 2020–2022 timeframe, namely:

a) The COVID-19 pandemic shock in the form of lockdowns and its impact on the healthcare sector;
b) The shock of unique (in scale and time) anti-crisis responses by governments and central banks in 2020–2021, employing fiscal and monetary incentives;
c) An early recovery in the commodity markets and rising raw material prices under (a) and (b) in 2021–2022;
d) The sanctions shock in 2022 as a global economic issue and the EU energy collapse as a key component of it or as an individual shock.

The extraordinary feature of the current situation is that all four shocks—each in its own unique manner and in various contexts—disrupted the normal flow of the cycle. However, it raises the question of what constitutes a conventional cycle. Arguably, since Marx and Juglar, cycle theory has gradually drifted towards analysis of an alternation of "recessions" and "rebounds" with transitions into upturns and overheating. The real business cycle theory reassured us with its "end of cyclical history" of crises, but this did not materialize (Grigoryev, Ivashchenko 2010). In this regard the IMF working paper Collapse and Revival (Kose, Terrones 2015) should be mentioned, as well as the work of Reinhart-Rogoff (Reinhart, Rogoff 2014) which was also focused on alternating recessions and recoveries, but not on qualitatively different cycle phases (which could be useful at this time).

Modern approaches to the cycle theory have largely been shaped by neoclassical economists and monetarists (and, by default, by advocates of anti-inflation and fiscal moderation). The Great Recession of 2008–2010 provided a very challenging experience of the practical application of anti-crisis measures (Keynesian in fact, if not by intention) in the U.S., with a deficit of 10% of GDP in 2009 (Grigoryev 2013). Nevertheless, this crisis generally fitted the traditional pattern as long as we accept some specific reasons for its severity—a huge bubble, a mortgage crisis and excessive deregulation of the financial sector—as a fact, not as a mark of distinction. The quantitative easing and theoretical innovations in banking theory by Bernanke and his colleagues (Bernanke 1991 onwards), for which he was awarded the Nobel Prize in 2022, were in fact based on a rethinking of the experience of the Great Depression of 1929–1933.

As a result, the transition from crisis to recovery for developed economies in the second decade of the 21st century was rather peculiar: a long period of "credit squeeze" due to Basel 3, a relatively weak investment recovery, and an exit from the debt crisis instead of entrepreneurial expansion (Grigoryev, Podrugina 2016;

Podrugina 2021). The global economy approached the fateful year of 2020 in an unusual state. Growth showed no signs of overheating, commodity prices were rather stable, interest rates were low, and debt was conventionally high but stable. It is important to mention that since 2015, two major international agreements were also in place (the Paris Agreement on climate change and the UN Sustainable Development Goals) which are aimed not only at ensuring energy transition but also at coordinating world development trajectories. However, global governance was clearly in decline and progress in these areas was limited (Bobylev, Grigoryev 2020; Grigoryev, Medzhidova 2020). Generally, there was not much overheating by 2020, frictions between countries were already significant, and coordination on climate and other issues was weak.

In his 1988 book, the author (Grigoryev 1988) attempted, for the sake of simplicity, to provide a seven-stage structure for the business cycle. It is presented here in a concise form:

- A: the acute phase of the crisis, the "liquidity squeeze", is followed by a decline in private consumption, employment, and incomes, with a downturn in inflation and interest rates, and the start of a fall in commodity and energy prices;
- B: the "flat phase" of the crisis, personal consumption, is at its lowest point, investment falls, and there are bankruptcies, tax cuts, and deficits. The decline in housing construction (as in 2005-2008) drags on;
- C: a "depression" in Marxism, in fact a turn towards slow consumption growth while investment continues to fall;
- D: the start of recovery with low labor and commodity prices, with interest rates still low, to the point of the pre-crisis maximum, but sometimes followed by a "credit squeeze";
- E: early recovery – rapid growth with low factors of production prices, credit expansion (in the 2010s Basel 3 squeezed it);
- F: the "broad back of upturn": moderate growth rates, everything appears to be fine, but imbalances are building up, and prices gradually rising;
- G: "overheating and bust": – rapid growth in income but not in production, incomplete investment projects, rising debt and imbalances, peak inventories – a "liquidity squeeze" (see phase A), and financial shock. This is where the trigger (explosive bankruptcy or something similar) usually appears.

In terms of the proposed scheme, the lockdown shock occurred during the "broad back of the recovery" (F) in 2020, although the issue of a possible downturn had been in discussion from 2018 onwards. This is a surprising occurrence—the massive lockdowns of Q2–Q3 2020 disrupted the logic of the recovery in several ways: the abruptness of the shock, the concentration of shutdowns in services (and especially for the wealthy strata), and this happened before the overheating of the economy, rising interest rates and similar things (as is typical for phase G). However, the key feature of the "services output" crisis itself was that it interrupted the upswing not only before the "liquidity squeeze" and another trigger, but also before a significant

accumulation of imbalances and an excessive increase in debt. The long period of the credit squeeze, and the rather stringent Basel 3 measures in general, gave the impression that a normal recession could take the form of a "growth cycle".

Bernanke's work on understanding the experience of the Great Depression in the U.S. in 1929–1933 changed economic thought from the need for rigidity in the financial system to the easing of monetary policy (Bernanke 1983). And the global economy lived in this—somewhat artificial—environment of low interest rates under the control of Basel credit tightening until 2019 (Podrugina 2021; Grigoryev, Podrugina 2016). This created a regime of not only low inflation and interest rates, but also high debts and low deposit rates. Now interest rates are rising for other—anti-inflationary—reasons, creating the effect of a suddenly discovered bubble. In the face of high inflation and uncertainty for regulators and economists, one can turn to Friedrich von Hayek's Nobel Lecture of 11 December 1974, "The Pretense of Knowledge." At that time, in the midst of a crisis, he said something that is quite relevant to the current situation (see epigraph).

From ascent to the shock of lockdowns

The economic activity of industries and the dynamics of important parameters of markets and countries can remain within the established "norm," defined by the average growth rate and the range of fluctuations over the relevant period. When sudden shocks occur, whether economic, natural or political, it is the parameters of the indicator's decline (rarely, growth) that can change. Technical analysis immediately changes the average rate of increase over a long period, which naturally raises questions about the nature, stability, and duration of the changes: is it a new trend, a new type of fluctuation from an old trend, or a completely new trend and level of fluctuation? This is the problem that arises after every major—especially sudden—crisis: 1929, 1973, 2008, 2020 (starting years). Uncertainty about the future evolution of demand, prices and technological progress affect the actions of economic agents, investors, companies (their investments) and governments (fiscal authorities and economic policy). The most obvious signals are, of course, the depth of the decline in demand by sector and commodity, and the dynamics of prices and costs. However, economic policy signals can be hugely important, and geopolitical signals can play an important role at sensitive times in history.

In the past, it has been witnessed that periods of rapid economic growth have had their own drivers and beneficiaries (Grigoryev, Ivashchenko 2011). After World War II, there was rapid growth in the U.S., Europe and Japan in 1950–1960, then the consumer boom in oil-exporting countries after 1974, followed by the rise of the Asian Tigers. The Soviet Union and COMECON gradually slowed down until the late 1980s, while Japan stagnated. Growth slowed in the European Union, which tried to solve the problem by expanding as soon as the opportunity arose after the collapse of its neighbors' planned economies. The 1990s saw the opening of markets in Russia and other former socialist countries, an influx of cheap skilled

labor and raw materials from them, with production cut by 25% or more, favorable to exporters of manufactured goods. Immediately, a gigantic mechanism of growth and exports from China, then India, kicked in. Hence the composition of growth factors changed somewhat every decade and a half, but global growth generally maintained its parameters.

In this context, the conditions for the functioning of the global business cycle have changed. The process of fluctuations in economic activity has never ceased, although the two world wars and the Great Depression produced shocks that had far-reaching consequences for both structural shifts and fluctuations in activity, however we qualify them. Each crisis defines the depth of the decline in demand and output, the spread across firms and individuals, industries and sectors, and the degree of imbalance in performance.

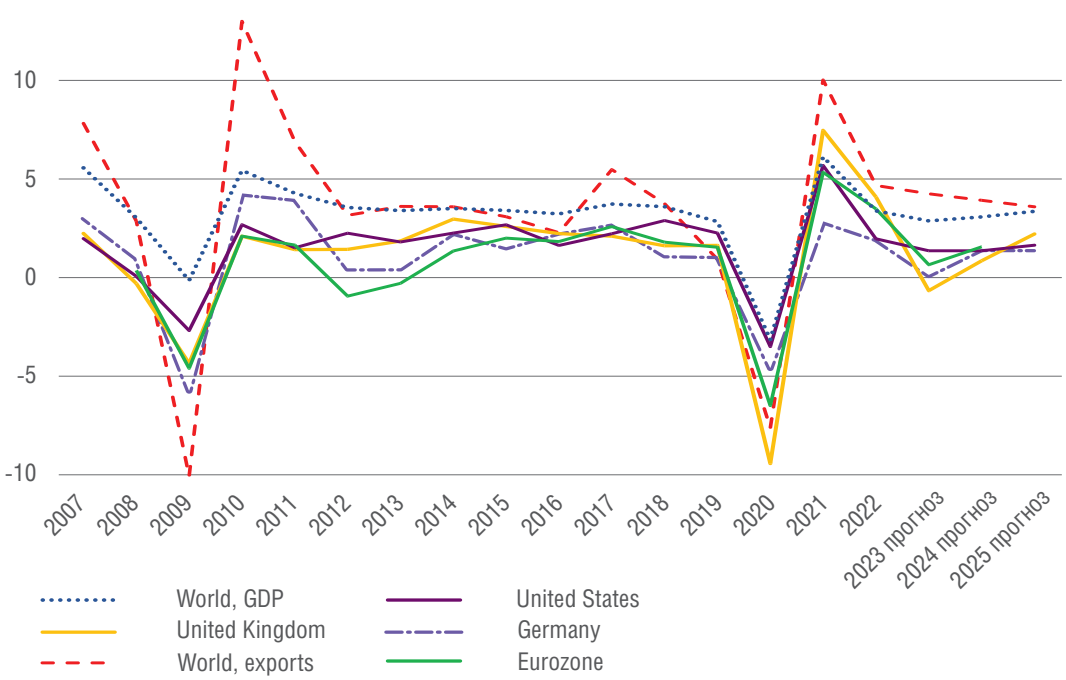

Figure 1. Global cycle dynamics: annual growth rate, 2007-2022, including forecasts for 2025. World = GDP and Exports. GDP = China, Brazil, India, Russia, Germany, United Kingdom, United States, Eurozone.

Source: IMF

It should be noted that the business cycle before World War I was largely based on the railway and banking sectors. After the war, Germany was in stagnation, but its industrial apparatus fell into Hitler's hands intact—there had been no military operations in the country. The Great Depression, which took on a global dimension, set a certain rhythm, especially in the U.S., but World War II

undermined the German economy and mobilized the economies of the U.S. and the UK. From 1949 onwards, a somehow unified world cycle with U.S.-centered crises can be identified. Given the experience of the Great Depression, we can say that, for half a century, the business cycle initially encompassed fluctuating demand, with the crisis spreading through trade channels from the U.S. via Keynesian anti-crisis methods. But in the 1970s, neoclassicism replaced Keynesianism, particularly in the fight against inflation, and anti-crisis methods changed. In the 1990s came the Great Moderation, which, in addition to the change in the type of regulation, had two more specific supporting factors. These were the disappearance of an isolated socialist unit and the global expansion of the market system, with the inclusion of Russia and China in world trade. And China, with its cheap labor costs, with its mass production and (supported by the devalued yuan) exports, also provided an acceleration of growth—some reduction in the inflationary parameters of its developed importers.

There was no high inflation in the 2000s, despite the severe Great Recession of 2008–2010, growing imbalances in the global economy and difficulties in global governance. However, in March 2020, the lockdown threatened to shut down the service sector, collapse employment and create an artificial "liquidity squeeze". It should be mentioned that a sudden non-economic shock in the form of a shutdown of services, especially transport and leisure services, is the opposite of the usual entry into the crisis phase through liquidity squeeze and decline in the consumption of durable goods (see Figure 1, p. 13).

For the first time in the history of crises, the first shock of lockdown disabled a significant part of the services sector, in particular recreation, travel and leisure, which accounts for a large part of the consumption of the fourth and especially the fifth quintile of the population in developed countries. The global economy was fortunate that the pandemic did not occur during the regular "liquidity squeeze", when the chain reaction of declining output, financial markets and bankruptcies would have been amplified by the contraction of economic activity due to lockdowns (Grigoryev 2020). The speed of the contraction of activity also played a rather positive role, as the resources of the financial authorities were not exhausted by prolonged attempts to prevent a recession. Although the recession spread rapidly to most sectors, from services to commodity markets, it did so to firms and households that were still "yesterday" in conditions of normal recovery (Figure 2, p. 15). It was crisis management on the best possible terms in such a situation. The general high level of debt, especially government debt, could not be ignored, but the overall threatening situation called for a comprehensive anti-crisis experiment to prevent a severe crisis in an uncompleted recovery.

More specifically, the lockdowns led to a decline in employment and income in the services sector, in small and medium-sized enterprises, in private consumption (particularly among the wealthier portions of the population), in savings and in the production of goods. Thus, without a liquidity squeeze, there was a decrease in expenses, which was typical of the acute stage of the crisis. Sectors and areas of economic activity were affected very unevenly. In the area of capital investments, a

significant decrease was noticeable in the areas of tourism (deferred projects) and hydrocarbon production (canceled projects).

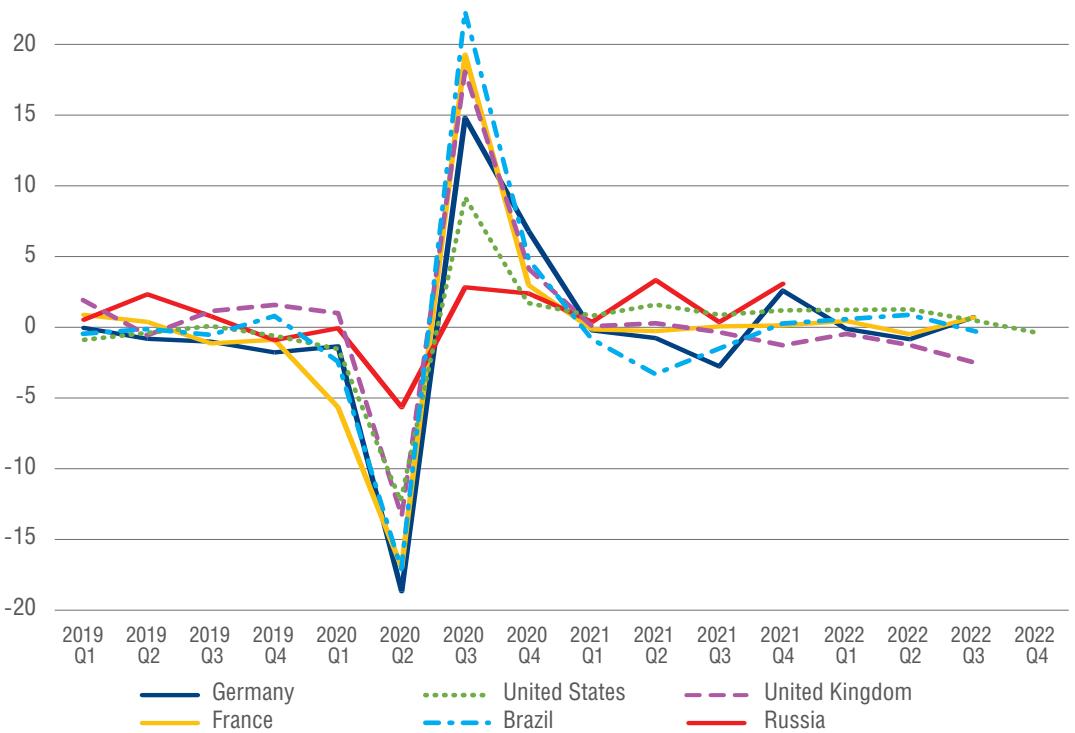

Figure 2. Global cycle dynamics: industrial production 2019-2022, quarterly growth rates, seasonally adjusted

Source: Federal Reserve Economic Data

The shock of the lockdown and the decline in economic activity immediately triggered the second shock of fiscal and financial stimulus to firms and households, designed as an "anti-shock". The speed and radical nature of the lockdowns and the fiscal stimulus, which were introduced almost simultaneously (if the unit of time is one month) was quite extraordinary. Fiscal incentives of the financial authorities were aimed at supporting the poor—the unemployed and small businesses—but some went to the wealthy (who had to decide what to do with their forced savings). In the U.S. and the EU, the total savings rate of the population jumped from 10-12% of disposable income to 24–25% in the second quarter of 2020 (Grigoryev et al. 2021). These huge financial resources have been partly visible in financial markets, where stock indices have displayed a steadiness that is not typical of crises. Besides that, huge financial resources also manifested themselves in consumer markets: in the purchase of durable goods in

the U.S. and in housing construction in a number of developed countries, which was supported by low mortgage rates. Thus, anti-crisis financial measures created prerequisites for an early recovery in the commodity sectors of the economy, as well as for an increase in demand for raw materials and even for energy resources (restoration of car trips, instead of more Covid-hazardous public transport).

Two related shocks: fiscal stimulus and soaring inflation

The second shock of 2020 was a huge fiscal and monetary stimulus through the injection of cheap money during lockdowns due to COVID-19 which created an imitation of financing a way out of the crisis during within one or two quarters of the same year. In 2020, without much academic debate, developed countries took the innovative approach of "flooding" the credit crunch with cheap money. And after a huge infusion of funds by the financial authorities, everything in this crisis became unusual: high stock prices, incentives for a housing boom, a decrease in firm bankruptcies—despite a significant drop in GDP.

The growth of forced savings among wealthier segments of the population due to deferred consumption of services was also fundamentally important. It was largely a crisis based on the contraction of demand for services from relatively rich strata and on unemployment among poor workers in the service sector (Grigoryev 2020; Grigoryev et al. 2021).

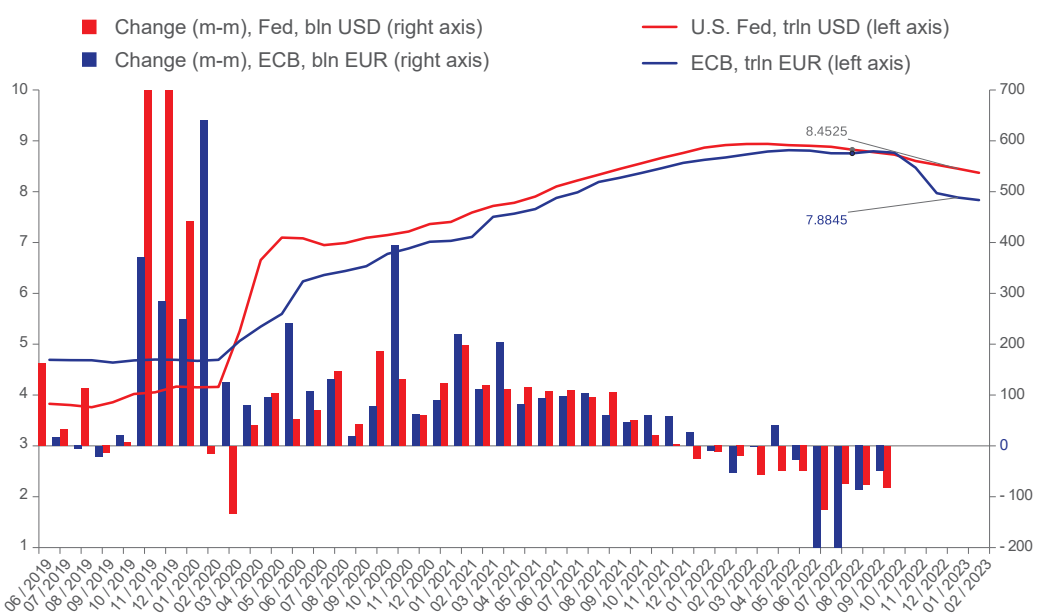

Figure 3. Volume and monthly changes in Fed and ECB assets, USD and EUR, March 2020 to March 2023

Source: European Central Bank, Board of Governors of the Federal Reserve System

Figure 3 (p. 16) quite clearly shows first the panic injections of liquidity into the economy by the Fed and the ECB in the first 5–8 months of the crisis in 2020, which took two and a half years in general, until June 2022. The Fed and the ECB managed to prevent the development of a liquidity squeeze and the transition to a financial crisis. Monetary policy then supported a recovery in production and consumption in commodity sectors and markets, with a relatively delayed recovery in the service industries. After a brief stabilization, the process of financial outflows and rising borrowing costs began, which lasted until March 2023. It can be noted that the Figures of both GDP and industrial production as well as the financial injections by the central banks describe a surprisingly short multiphase cycle: crisis — recovery — price and interest rate hikes, overheating — and deceleration of growth by the central banks. The external shock of the pandemic set in motion the "carousel" of the cycle, which, as it were, spun three times faster and completed a circle in three years instead of nine or more years.

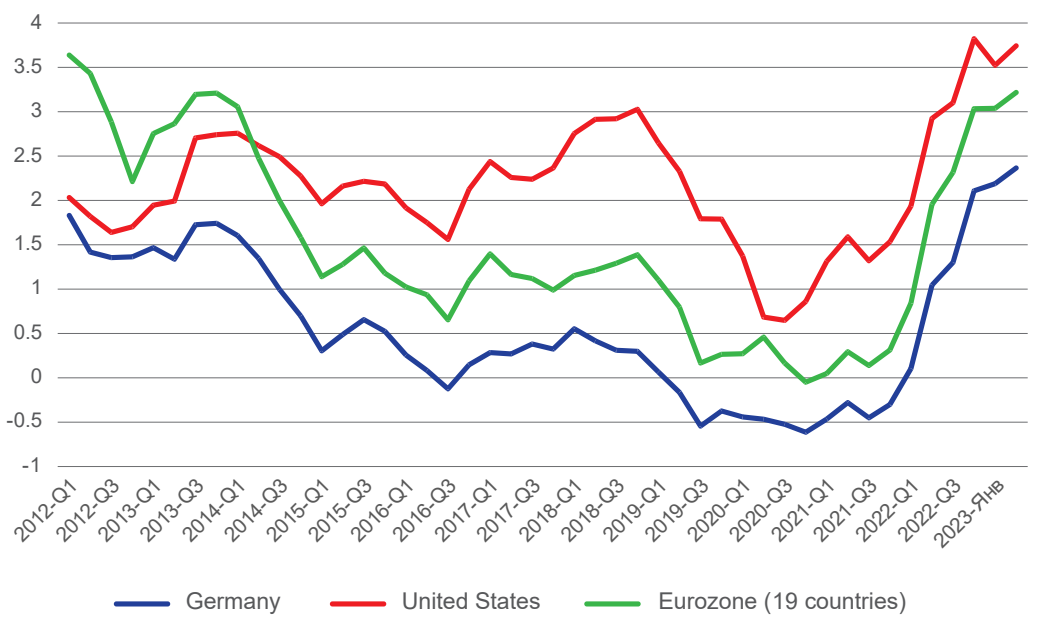

Figure 4. United States, EU, Germany: long-term interest rates on government bonds with a maturity of 10 years, % p.a., Q1 2012 – Q4 2022, January 2023, February 2023

Source: OECD

Since the summer of 2022, observers have been waiting for a turn towards high central bank rates. At the beginning of March 2023, the banking crisis in the U.S., Switzerland and, possibly, other European countries put financial regulators in a difficult position: either strengthen the fight against inflation (raising interest rates) or repeat quantitative easing—at least on a much smaller scale. This is due to the need to respond quickly to inflation when the economy grows. Figure 4 (p. 17) shows

the process of adaptation of the financial sector in 2019–2021, in particular the banking sector, to a relatively low level of interest rates on long-term government bonds, which are considered not subject to default and acceptable to the most cautious investors. This is, strictly speaking, a general rule, and is normal in a subdued environment. However, the sharp rise in central bank rates to 3.5% (ECB) and 5% (Fed) means that liabilities are becoming more expensive at a faster rate than the refinancing of "cheap" 10-year bonds in assets. Huge amounts of government bonds continue to generate "moderate" yields from quantitative easing issues, especially (in the eurozone) the period between Q3 2019 and Q4 2021. Now a lot of financial institutions are trying to close the gaps in the profitability of long-term assets and funding sources, which are rapidly becoming more expensive.

Recovery in commodity sectors and energy prices

The third shock—an early spike in commodity prices in late 2020—was related to three factors: a marked recovery in the commodity markets, a surplus of cheap money in the economy (the 2nd shock), and the effects of underinvestment in traditional energy sectors since 2012 and especially in 2020. The oil and gas industry experienced a shock that also sparked the coal and renewable energy industries and exacerbated the global food situation. This shock has been well documented in the literature (Grigoryev, Medzhidova 2020; Grigoryev, Kheifets 2022). In a nutshell, it can be said that the announced acceleration of the global energy transition (Mitrova, Melnikov 2022) is likely to be slower than expected before the shock discussions took place, not only because of technological constraints, but also because of a lack of global coordination, with diffusing objectives among the key players and the increased complexity of mobilizing financial resources for the mitigation of climate risks.

The high energy price shock was a relatively natural consequence of the rapid recovery in the commodity markets, with cheap credit and declining investment in hydrocarbon production. Something similar happened in 2003–2008, when economic growth outstripped energy supply. In the most recent case, the effect was amplified by four circumstances. First, the prolonged (premature) political pressure on the business from politicians and environmentalists in favor of renewables and against hydrocarbons. To use layman's terms, the EU "overplayed its hand" in the fight for renewables, and global governance collapsed. Second, a liberalized market brings benefits to consumers in a buyer's market. Third, 2021 saw the first natural supply crisis for renewables in Europe (and not just there). Finally, an early surge in Asia led to a withdrawal of U.S. and Qatari supply from the EU. In general, Gazprom was naturally named responsible for the rise in prices. It is difficult to recognize the existence of objective circumstances and consequences due to the action of regulatory mechanisms, so an external factor, as usual, was declared the source of difficulties. The return of gas prices (Figure 5, p. 19) by March 2023 to the level of the summer of 2021 rather indicates that the sacrifice of part of the EU's industrial production and the high overpayment of 2022 were of an extra-economic nature.

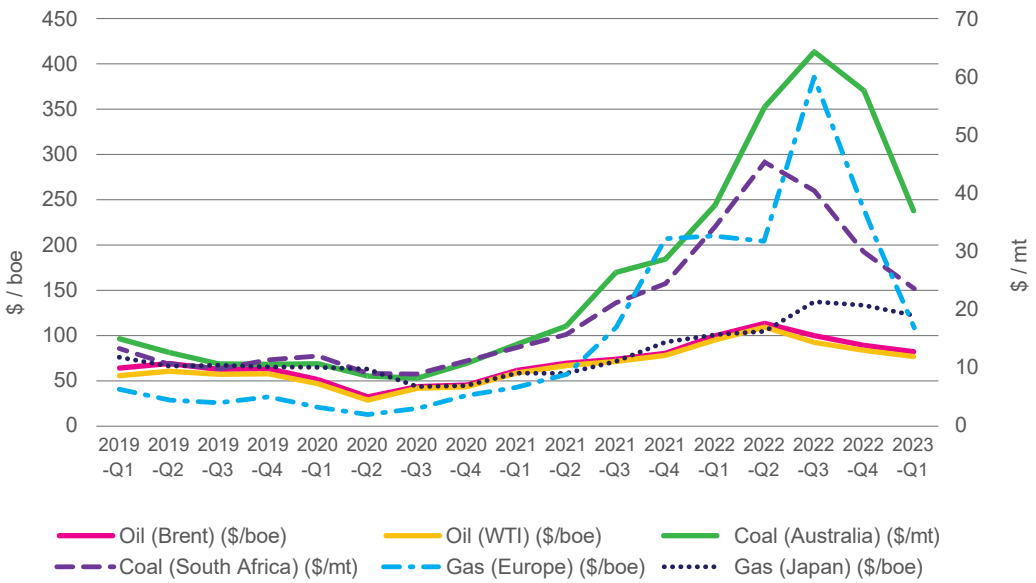

Figure 5. Prices: oil, gas in Europe and Asia ($/boe, left axis), coal ($/mt, right axis), 2019–2023, quarterly.

Source: World Bank

The energy transition as a means of supporting future growth and creating a new source of demand certainly holds promise, but the speed and intensity of its implementation has its own logic and limits. In its simplest form, reinvestment in mineral fuels will have to come first, which the U.S. is already doing (drilling for oil in Alaska) as it sets itself energy security goals. Consumption of oil, coal, and LNG therefore pushes up greenhouse gas emissions until the new turn to renewables. The lack of commercially viable technologies and production capacity is perhaps a major constraint on the rapid spread of the green transition. Proclamations about the rapid impact of the green transition on economic recovery tend to be very optimistic. However, the constraints on the immediate financing needed for crisis management, replacement of existing capacity in the energy sector, etc. are much more cautious. And humanity is running out of time to solve this problem.

Underinvestment in the oil and gas sectors has been going on for quite a long time (Grigoryev 2021). Goldman Sachs noted on the eve of the banking crisis that in the world of oil refining, "underinvestment is enduring" (Goldman Sachs 2023). The IEF report shows an increase in global oil and gas capital investment to $499 billion in 2022 (not adjusted for cost inflation). This is above the 2019 level (much lower than the $700bn in 2014) but insufficient in the medium term. Non-OPEC production could fall significantly by 2025 and 2030, so spending would have to rise to $597bn and $640bn respectively (IEF 2023: 6, 9). So the pressure on prices from the industry generally persists for objective reasons, in addition to political tension and uncertainty.

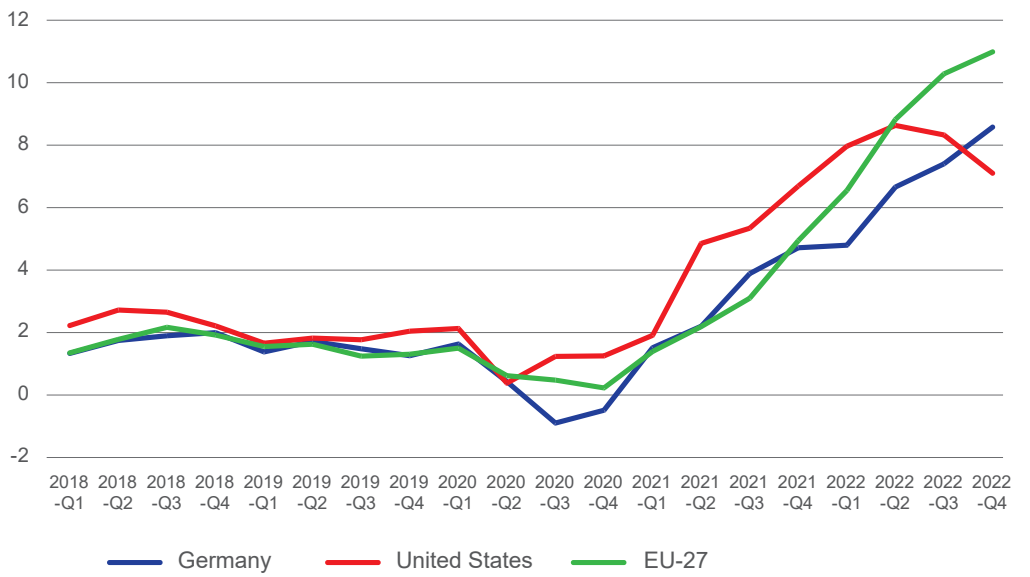

Figure 6. Consumer prices in the United States, EU, and Germany: growth rate, %, quarterly, 2018–2022

Source: OECD

The reversal of energy prices with an upward vector has been going on since the spring of 2021, and the liberalized European market has been perceived as being in crisis, even though there have been no breaches of contract, falls in production or other events usually interpreted as crises. In any case, against a background of initially low inflation in industrial goods and services, energy (together with supply chain disruptions and the labor market) gradually "unwound" inflation in the U.S. and the EU. A mild winter, reduced gas consumption in the EU as a result of austerity measures, and the closure of some industrial consumers caused gas prices to fall to around $500 per 1,000 cubic meters by March 2023. This suggests that a similar price reduction could have occurred in the spring of 2022 in the absence of sanctions.

The development of inflationary processes in 2021–2023 in the U.S. and the EU occurred despite the increase in interest rates. It seems that the transition from low to high inflation follows its own pattern, which cannot be quickly closed by central banks' "interest rate taps". After two years of rising prices, indexation mechanisms are triggered that perpetuate the process (Podrugina 2023; forthcoming). Figure 6 (p. 20) shows how this worked in practice between 2021 and 2022, with two years of inflation looking very severe. The persistence of inflation puts monetary and political authorities in a difficult position, as the social aspects of the issue will have an impact at every election.

As a result of a series of shocks and attempts at rapid regulatory responses, the pattern of the past three years has developed a recognizable (though forgotten)

nature. Decision-making mechanisms in companies and even families are operating more slowly and rationally, as they form their own inflationary expectations.

Table 1. Shocks and cycle phases, 2020–2023

Shocks	Starting phases	Intensity of the shock	A new phase	Consequences
1)Lockdowns 2020 - Q2	Incomplete upturn = phase F	Developed country GDP falls 4.9%	Services crisis - general decline 2020 = phase A	Innovative response by monetary authorities
2)Financial stimulus 2020	Crisis of 2020 - threat of collapse - autumn 2020 - spring 2021 = phase A	Trillions of dollars. Fed and ECB, Finance ministries, and forced savings	Early recovery in commodity markets = phase E	Stability of stock prices, rise in commodity prices
3)Early rise in commodity prices	Recovery in commodity markets 2021 = phase E	Transition from low to 5-7% inflation in the U.S. and EU	Rising commodity prices, as in upswing = phase F	Lower money supply, higher interest rates
4)Trade and energy sanctions in the face of inflation	Growth slowdown with inflation - from March 2023 = phase F	Logistical and export issues, uncertainty	U-turn - stagflation or soft landing = phase B?	Cumulative effect - threat of a banking crisis

Source: compiled by the author

They do not translate the intentions of the regulators into action as quickly as the regulators would like, but rather with lags and/or inertia, biding their time. The result is inertia on the inflation side and a drag on investment. The phase change of the cycle (especially the upturn) has moved faster, as if someone were manually turning the hands of an economic clock at three times the speed. Table 1 (p. 21) shows that there is a risk of a recession in March 2023, exactly three years after the lockdowns in 2020, even if the threat of a banking crisis does not materialize.

The global cycle was transformed by unexpected non-economic shocks. This has happened extremely quickly, with financial authorities and regulators finally pushing the global economy back to the laws of real investment following changes in demand, risk, and profitability in the financial markets. Of course, this will only happen if companies, banks, and families are left to make their own decisions. Legislators and regulators must allow them to make decisions within a common, modified framework. In addition to the welfare of EU citizens and those in other developed and especially developing countries, the “four shocks” have caused a shift in greenhouse gas emissions, bringing back coal and LNG instead of cleaner pipeline gas.

The EU’s costs and investments in reducing Russian hydrocarbon consumption are not equivalent to an effective fight against climate change. A recent UN Climate Synthesis Report (IPCC 2023: 23) suggests that drastic steps will still have to be taken

in the 2020s to limit warming to 1.5°C by 2100, since all issues should be resolved by 2035. The document's hope for temperature limitation is based on the assumption of radical reductions in current greenhouse gas emissions, starting in 2021. In reality, global coordination of emission reduction efforts will be postponed till 2025 at best. Calculations show that 2020–2022 were largely "lost" as emissions continued to rise above 2019 levels. It appears that the lack of global coordination and the intensification of conflicts will lead to a huge increase in the costs of adapting (rather than mitigating) the effects of climate change with a warming of 2°C or more. This is in part the result of the third and fourth shocks, the effects of which will be felt for a long time for three reasons: The "temporary" shift of projects around the world to conventional sources (including the U.S. and China); a focus on "energy security" (everyone has their own interpretation) in many parts of the world; and limited financial capacity in the case of worsening social and debt problems among countries.

The de facto shift from EU climate initiatives to energy security is a delayed slowdown in efforts (in terms of actual focus, spending and policy) to prevent global climate change. The decision to move away from "dependence" on Russian energy supplies has brought some commercial benefits to American, Norwegian, Arab, and African natural gas suppliers. However, switching to LNG means a 25% increase in greenhouse gas emissions compared to pipeline gas. The impact of all gas price developments and the switch in 2022 has increased the cost of EU gas imports from $80.5 billion in 2021 ($31 billion in 2020) to $290.5 billion; and the price of gas for domestic consumers has increased by 30% across the EU (Eurostat, 2023).

The shipwrecked global economy: sanctions and the cycle

Massive economic sanctions against the Russian economy constitute the fourth shock. They have had a noticeable impact on Russia, but the world economy is also experiencing significant difficulties associated with inflation, slowing economic growth, and trade.

Sanctions against the Russian economy were imposed in 2014 and intensified in March 2022. Leaving aside the political reasons and objectives of the sanctions, it should be noted that the choice of specific economic goals and methods was in the hands of the governments of the countries and groups of countries that imposed the sanctions. It should be noted that elements of the "world state plan" manifested themselves in the sanctions process through the reorientation of areas of cooperation and development. Since Russia plays an important role in the production of raw materials, semi-finished products, and individual goods, the investments made in technology in the 1990s were not lost. Thus, the global breakdown in the division of labor between the OECD and China, India (BRICS) and other leading developing countries led to an unexpected shift. Elements of negative "state supply" took the form of bans and controls on certain transfers and shipments. The emergence of ideas and the creation of the first mechanisms to limit energy export prices could generally be described as "state-set pricing", part of a planned mechanism. The world community has failed to establish a coherent

development coordination as part of the UN Sustainable Development Goals from 2015 and has not shown impressive results in the fight to preserve the planet's climate. Sanctions, on the other hand, are somewhat coordinated, at least within the G7 and the EU.

To analyze the economic impact of the sanctions, this work will focus on a few key areas, not for the Russian economy, but for the "global" economy. By this we mean the G7, EU, and OECD countries that imposed the sanctions, and the global economy as a whole in its capacity as the inevitable "recipient" of the consequences of the sanctions. The Russian economy, as important as it is to Russians, accounts for 1.5–2% of the world's GDP. A 2% fall in Russian GDP means changes in global GDP measured in thousandths of a percent (this is even more true for the Ukrainian economy).

Given this approach, here we will briefly overview the changes in world GDP, inflation, energy consumption, and finance that can be attributed to the impact of sanctions as well as their impact on the phases of the global cycle.

A fourth shock in a row could not, of course, have been an isolated phenomenon. Regardless of the political reasons for the sanctions and the governments' intentions regarding their results, it can be concluded that the decisions were made by government officials. The choice was made very quickly and within the limits of their perceptions of the nature of global economic relations, Russia's place in them, and their sustainability. From the point of view of this work, this meant interfering with trade, financial flows, and the expectations of companies and investors, as well as the administrative impact on energy: trade flows, finance, investment, companies, and so on. Blocking Russian financial reserves and transactions by financial institutions, banning imports of goods and technologies, and restricting Russian energy exports to the G7 and the EU (fuel embargoes) as the target of sanctions also automatically meant an asymmetric and multifaceted impact on global economic processes. This would have been the case even if the Russian government had not imposed counter-sanctions and pursued a policy of obstruction and blocking. In this case, this research is an attempt to analyze the "net effect" of sanctions on the global process of cyclical fluctuations.

We note here the applicability of W. Ross Ashby's theorem on the nature of the stability of large systems with a large number of subsystems and interconnections. In such systems, momentum is transferred between subsystems and is extinguished longer than in systems with weak connections (Ashby 1959: 345, 348). The scale of changes in the relations of the world economy with Russia and outside Russia between economic agents (with sanctions in mind) represents an enormous upheaval and entails a difficult-to-measure increase in risks and transaction costs. Taking into account the disrupted plans, the write-off of lost costs, profits and assets, the increased uncertainty, risks and insecurity, we are dealing with a shock of crisis proportions. The administratively driven redirection of oil exports from the Persian Gulf away from India and China to Europe, while Russia shifted oil exports from Europe to India and China, can be considered to be an example of the net cost of sanctions. This is a huge increase in transportation distances, risks,

Table 2. Actual GDP growth rates and IMF projections for 2020–2021–2022–2023, 2024

	actual, 2019	actual, 2020	actual, 2021	actual, 2022	forecast from January 2020 for 2020	forecast from January 2020 for 2021	forecast from January 2021 for 2021	forecast from January 2021 for 2022	forecast from January 2022 for 2022	forecast from January 2022 for 2023	forecast from April 2023 for 2023	forecast from April 2023 for 2024
World output	**2.9**	**-3.5**	**5.9**	**3.4**	**3.5**	**3.3**	**5.5**	**4.2**	**4.4**	**3.8**	**2.8**	**3.0**
Developed economies	1.5	-4.9	5	2.7	1.9	1.4	4.3	3.1	3.9	2.6	1.3	1.4
United States	2.3	-3.4	5.6	2.1	2	1.6	5.1	2.5	4	2.6	1.6	1.1
Eurozone	1	-7.2	5.2	3.5	1.7	1.2	4.2	3.6	3.9	2.5	0.8	1.4
Germany	0.3	-5.4	2.7	1.8	1.2	1.5	3.5	3.1	3.8	2.5	-0.1	1.1
France	1.2	-9	6.7	2.6	1.3	1.4	5.5	4.1	3.5	1.8	0.7	1.3
United Kingdom	0.9	-10	7.2	4.0	1.8	1.5	4.5	5	4.7	2.3	-0.3	1.0
Emerging and developing economies	4	-2.4	6.5	4.0	4.8	4.8	6.3	5	4.8	4.7	3.9	4.2
China	5.9	2.3	8.1	3.0	5.9	5.8	8.1	5.6	4.8	5.2	5.2	4.5
India	4.3	-8	9	6.8	6.9	6.1	11.5	6.8	9	7.1	5.9	6.3
Russia	1.5	-3.6	4.5	-2.1	1.6	2.4	3	3.9	2.8	2.1	0.7	1.3
Brazil	1.8	-4.5	4.7	2.9	2	2.4	3.6	2.6	0.3	1.6	0.9	1.5

Source: IMF - relevant years, January, 2020–2022, April 2023

insurance and costs, all for the same world oil consumption of around 100 mb/d. The same applies to numerous other commodities, creating additional capital investment risks for companies (see Figure 7).

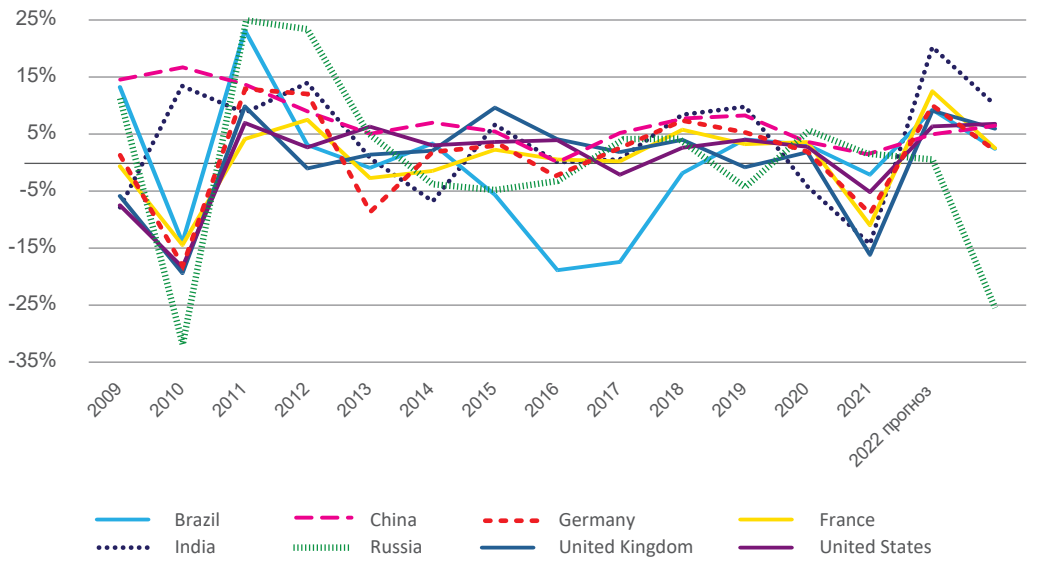

Figure 7. Gross capital investments, 2009–2022 (estimate), %

Source: IMF

The first category of sanctions was restrictions on exports of various manufactured goods to the Russian Federation. Econometricians will be able to calculate the effects of trade multipliers, but they do not look dramatic for exporting countries, although they are certainly painful for exporting companies. This blow of "institutional changes" fell on the world economy, which had just emerged from lockdowns with rising inflation, social complications, and tangled debt problems.

Table 2 (p. 24) enables us to make observations, with great caution, about a "loss of growth" resulting directly from the sanctions and the broader set of uncertainties. In spring 2023, it is still difficult to assess the slowdown of the world economy in the medium term. However, the loss of growth due to sanctions can be illustrated for developed countries using the example of 2022 and the decline in forecasts for 2023. For the eurozone, the IMF forecast from January 2022 promised a 3.9% GDP growth in the same year, and in fact it was 3.5%; for Germany, the forecast was 3.8%, and in fact it was 1.8%; for all developed countries, the projected and actual growth values were 3.9% and 2.7%, and for the U.S. it was 4% and 2.1%. As for 2023, we can compare two forecasts for it: from January 2022 and April 2023. They give the following figures: the world: 3.8% and 2.8%, respectively; U.S.: 2.6% and 1.6%; the eurozone: 2.5% and 0.8%; Germany: 2.5% and -0.1%.

With all the danger of harsh judgments on such an important issue, we can talk about the loss of one percentage point of global growth in 2022–2023, and much

more for the eurozone and Germany, which accounted for the main costs and problems in the fields of inflation, energy and energy and gas-intensive industry. This is an unpleasant but largely obvious fact, the details of which we will leave to the economists of the future. The channels of deceleration are clear: uncertainty and decline in investment, high interest rates on long-term loans, and high energy prices. There will be PhD theses in the future examining how inflation, rising capital costs, and uncertainty have affected economic growth. At the same time, there is already a stream of papers (IMF 2022) on inflation and the emergence of a high-price regime in 2021-2023. The wage-price "inflation spiral" is at work (Podrugina 2023, forthcoming).

Apparently, autumn 2022–winter 2023 was the turning point in the reversal of the dynamics of capital investments. At Davos in January 2023, business leaders hoped for the best, although leading expert Kenneth Rogoff was much more cautious in his analysis, "Too Soon for Global Optimism" (Rogoff 2023). A few days later, the banking crisis began in Silicon Valley and then in Zurich. On 16 March, The Economist published a piece titled "Is the global investment boom turning to bust?" (The Economist 2023). There are already predictions that the world's big tech companies will invest 7% less money in 2023 than they did the year before. Overall, The Economist's graphs show a (real) investment boom of almost one year (2021) in 33 countries in the non-residential sector, with Q4 investment falling compared to Q3 2022. This is probably the shortest investment boom in the business cycle. It seems that the global economy has managed to jump through a full set of cycle phases, to a new investment downturn with high inflation and anti-inflationary measures by central banks since 2019.

Uncertainty is increasing, which observers say could potentially lead to deeper recessions (Kose, Terrones 2015: 128, Fig. 9.6). Earlier this year, a new World Bank report "Falling Long-Term Growth Prospects", as its title suggests, expressed concern about the modest performance of global investment growth. It had already mentioned inflation and other factors discussed in this paper, but not banking issues (Kose, Ohnsorge 2023: 174), and expected a general decline in growth rates. The IMF's annual Global Financial Stability Report (IMF 2023) largely directs central banks towards maintaining financial stability rather than fighting inflation.

This situation is associated with the secondary difficulties of the economic policy of many countries in terms of increasing interest rates to curb inflation. Overall global growth has of course slowed, at least between 2022 and 2024. Poor and developing countries, together with climate change initiatives, will be the hardest hit, becoming "innocent bystanders". This circumstance requires separate consideration, as the situation looks very "progressive" at the declaratory level and in terms of the growth rate of renewable energy use. Without returning to the complexity of implementing major energy transition measures (not in the EU, but globally), let us refer to the AR6 Synthesis Report: Climate Change 2023 (IPCC 2023). Suffice it to say that, according to the report, limiting global warming to +1.5–2 degrees is based on radical emission reductions starting in 2021 (page 23 of the report). Unfortunately, nothing

like this is happening: global coordination has been disrupted, and instead of a radical reduction in emissions, they are increasing beyond the level of 2019. The potential additional costs of adaptation are difficult to calculate, although the approximate global temperature increase should be calculated at least from 2025.

The logic of global business cycle phases suggests that 2023 could be seen as a "growth cycle" rather than a full recovery after the 2021–2022 rebound. Structural changes, especially in the energy sector, will have a positive impact in the medium term. The March banking crisis (2023) was a natural consequence of the first three shocks. It presented U.S. and EU financial regulators with a difficult dilemma: continue to raise interest rates to fight inflation or provide banks with cheap funding again.

In the short term, in March 2023, the Fed and the ECB opted for an increase in credit (5% and 3.5% respectively) and tried to manage banking problems manually, in particular by transferring banks to the management of more sustainable ones, such as Credit Suisse and UBS (the continuation of such moves is probably inevitable). The attempt to avoid panic and bank runs by depositors against weak banks is being carried out manually by the regulators through the distribution of deposit guarantees, and through reassurance by the media (such as the total exclusion of mentions of Lehman Brothers). The tightening of debt policy by the leading countries and the IMF is based on macroeconomic grounds, due to the inertia of the transition from a low interest rate regime to a higher, anti-inflationary one. Uncertainty in the financial sector will dampen global economic growth in 2023, raising the risk of stagflation. This factor will complicate attempts to contain banking shocks.

In terms of almost forgotten theories, we seem to be dealing with the equivalent of a Nordhausian "policy cycle" (Nordhaus 1975), in which the authorities take measures to achieve certain policy goals that have the side effect of increasing inflation. When some goal is achieved, or when the resources and capacity of these policies are exhausted, the authorities are forced to switch to "manual" inflation control, as we saw in the spring of 2023. The outcome of the policy battle between the twin objectives of inflation control and financial stability remains unclear.

Conclusion — the "carousel" is spinning three times faster

Economic shocks (bankruptcies, price rises, commodity price fluctuations, financial imbalances) are historically unpleasant, but they are a "normal", well-known phenomenon that affects the established global business cycle, its parameters, and its nature. Cycle analysis differs from business cycle monitoring mainly in that the latter deals with short time periods and linkages within one or two phases (sub-phases) of the cycle. In a business cycle, fluctuations and trends in accumulation, shifts in the sectoral structure and price relationships are the underlying factors. Shocks turn out to be either

indicators of shifts over time, including those in factor relationships, or simply temporary phenomena. Recognizing their characteristics (distinguishing "disturbances" as temporary and "changes" as permanent) is a complex exercise in itself. Known cyclical patterns help to analyze the business cycle. The impact of the economic policies of governments and monetary authorities—for whatever purpose—can distort the course of events. The nature of the outcome depends on the strength of the regulatory impact and its direction, whether pro- or counter-cyclical. There may be failures or non-economic actions with unclear or opposite results to those desired. It can be hypothesized that the cycle is a more resilient system of relationships than is usually assumed. It tends to revert over time, sometimes in spite of various influences.

The 2020–2022 shocks under review represent a surprising set of impacts that triggered responses that were largely unanticipated by regulators. The first and fourth shocks, COVID-19 and sanctions, were non-economic and unpredictable. The second and third shocks were a consequence of the first, but their nature was unexpected by economists. Their impact on growth and the evolution of the global cycle is not yet fully clear, although it is time to calculate the huge costs to the global economy. In particular, the "overhead" costs of redirecting oil and gas flows "in a direction contrary to logic and logistics" represent a net loss of wealth for the world economy.

Whether and in what proportions this set of shocks will become a means of slowing down the global economy for adjustment and structural change remains to be seen. In applied terms, the prospect of a transition to a "normal" global cycle seems rather simple: slowing growth to get out of a high inflation regime, removing (sooner or later) the uncertainties associated with sanctions, climate policies and the development of effective and efficient policies for poorer countries, which have not fully succeeded after the global financial crisis of 2008–2009 (Morozkina 2019). The threat is the continuation of a triple "twist": slow growth, inadequate anti-inflationary policies, and continued uncertainty for businesses—"growth without a boom". The problems of inequality and social discontent in developed countries may, of course, worsen in line with electoral cycles. Developing countries will struggle to return to the growth levels of 2010–2019, combined with the costs of climate protection that the developed world is so keen to achieve. And at the same time, debt problems will remain.

The shocks have set the carousel of shifts in global business cycle phases in motion three times faster. This raises the suspicion that the G7 and EU governments, as well as the economic and financial regulators, have overestimated their ability to manage cyclical and inflationary processes simultaneously with the dismantling of the established global division of labor.

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Geoeconomic Power EUrope: The Rise and Decline of the European Union

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Abstract
Geoeconomic blocs use collective bargaining power to pursue a favorable position in the international economy, and to convert economic power to political capital. Geoeconomics laid the foundation for the EU's power and its subsequent ability to project values and norms. Elevating liberal ideals above a realist foundation represented by geoeconomics has put the cart ahead of the horse and instigated the decline of the entire edifice. The Single Market set the foundation for geoeconomic power by protecting domestic markets, opening external markets, and cementing internal cohesion. While the common currency and successive enlargements were intended to further augment geoeconomic power, they have instead fueled divisions among member states and intensified zero-sum relations with non-member states.

Introduction

What explains the impressive success of the European Union (EU) and its sudden fall from grace? Academics have explained the intricacies of the EU in various ideological terms, ranging from "normative power" to "transformative power" and "ethnical power." From a realist perspective, Hyde-Price (2008) countered these labels by referring to the EU as a "tragic actor" as policies determined by normative or ethical considerations would either diminish the relevance of the EU due to an inability to successfully pursue the interests of its members, or the EU would engage in destructive moral crusades (Hyde-Price 2008). Geoeconomics is largely

based on realist assumptions about how the world works. This article will outline why geoeconomic theory explains the rise and the decline of the EU.

In the neoclassical realist tradition, values and ideology can be understood as being conducive to the extent that they support power interests and encourage states to act in accordance with the balance of power logic. The EU rose to geoeconomic prominence by building on a solid geoeconomic foundation that allowed it to also project values. Once the primacy of geoeconomics was neglected, the subsequent structural flaws condemned the EU to a rapid and possibly irreversible decline.

Geoeconomics replaced militarized geopolitics as a source of power due to more destructive weapons and a highly interdependent global economy. States intervene in the marketplace to restructure global value chains and convert the subsequent economic power into political influence. The balance of power logic is expressed as a "balance of dependence" as asymmetrical economic interdependence translates into political influence (Diesen 2017; 2021). States preserve their political independence by reducing excessive reliance on asymmetrical interdependent relationships and concurrently increasing the dependence of the other side.

The EU, the Eurasian Economic Union (EAEU), BRICS, the Shanghai Cooperation Organization (SCO), the abandoned Trans-Pacific Partnership (TPP), and, until 2020, the North American Free Trade Agreement (NAFTA), are vital tools for power in the era of geoeconomics. Geoeconomic blocs mirror the logic of military blocs as countries A and B cooperate for common strength against country C. Economic blocs enable states to collectively protect their strategic industries and obtain favorable access to foreign markets, control transportation corridors, and develop financial instruments such as trade regimes, legislation, standards, development banks, and trade/reserve currencies.

This article first outlines the theoretical assumptions about geoeconomic regions. Rather than "transcending realism" and power politics, geoeconomic regions must respond to the undercurrents of self-interested states seeking to maximize their security. Regionalism is a paradox as states have an incentive to pool sovereignty to collectively augment the ability to defend sovereignty. Regions must therefore provide economic benefits to member states that are denied to non-members while avoiding excessively zero-sum relations with external powers to prevent them from employing wedge tactics. Secondly, the article explores the rise of the EU. The Single Market and the Schengen Agreement contributed to developing a huge common market of western European states, with a strong gravitational pull in the wider region. The reduced barriers to trade among member states increased relative to trade and interdependence within the bloc, which translates into common interests and political loyalty. Stability and an internal balance of dependence within the bloc were stimulated, as the initial member states had similar economies with comparable sizes. The EU could protect the strategic industries of its member states such as agriculture, and simultaneously compel external powers from opening their markets. The demand

to adopt EU regulations and political reforms as a condition for accessing the vast European market made the EU a regulatory power.

Lastly, the decline of the EU is explored. The rivalry between federalists and functionalists has continuously been deferred rather than resolved. Similarly, internal geoeconomic rivalry disrupts cohesion within the bloc as member states have pursued diametrically opposite development models of either economic growth by consumption and debt or by production and savings. The political objectives of successive enlargements and the common currency have not been based on sound geoeconomics and may lead to the demise of the EU. While both initiatives have expanded collective geoeconomic influence, they have also brought together vastly different economies and undermined both the economic and political attractiveness of the union. Furthermore, ideology has diminished the EU's ability to reform zero-sum formats with external powers, which has incentivized countries such as Russia and China to implement wedge tactics.

It will be concluded that the preparedness to use economic coercion to maintain internal solidarity can delay decline, although it will make the disintegration more rapid and uncontrolled once the entire edifice unravels. The solution, consistent with geoeconomic principles, is to accept a dual or multiple speed Europe based on different levels of economic and political integration.

The return of geoeconomics

Geoeconomics suggests that power derives from economics rather than military power and territory. The state intervenes in the market to develop a favorable position and to use the subsequent economic instruments to achieve foreign policy objectives. Economic interdependence is assessed as a relative gain as geoeconomics ascribes to realist theoretical assumptions about how the world works (Blackwill and Harris 2016). In an economically interdependent world, "economics is the continuation of war by other means" (Bell 2008: 330). Gilpin thus argued that the power politics that underpin economics suggest that 'realism today necessarily means neo-mercantilism' (Guzzini 1997: 134).

Geoeconomics was mitigated during the Cold War, as the main adversaries of the U.S. were communist states largely decoupled from international markets, while the bipolar conflict negated geoeconomic disputes between capitalist allies. After the Cold War, there was a gradual return to history as "the methods of commerce are displacing military methods—with disposable capital in lieu of firepower, civilian innovation in lieu of military—technical advancement, and market penetration in lieu of garrisons and bases" (Luttwak 1990: 17).

Geoeconomics can be divided into defensive and offensive policies. Defensive policies aim to create a privileged position for one's own companies and markets by providing favorable conditions (Raza 2007). This includes erecting artificial barriers to restrict access to one's own market, both tariff and non-tariff. Bureaucratic hurdles, and industrial, technological, environmental, and health and safety policies can be instrumental in impeding the ability of imported goods to outcompete

domestic producers (Jones 1986; Raza 2007). Market access or technology transfers to foreign competitors can be restricted by protecting intellectual property rights or pursuing more ad-hoc restrictions on national corporations by linking specific technology to national security (Gilpin 2011: 139). Governments can directly subsidise technological developments, or indirectly by funding specific education, competitive infrastructure or, for example, by providing access to technology developed by the military (Luttwak 2010: 65). In the era of geopolitics, it was a common concern that civilian technology would be used for military purposes. In the era of geoeconomics, competitive advantage is attained by transferring government-subsidised military technology to commercial segments.

Offensive policies entail removing similar trade barriers erected by other powers. This can be achieved with anti-monopoly laws or by undermining local producers by dumping excess produce. Similarly, dependence can be enhanced with foreign aid and trade concessions that undercut local producers. The instruments of power in the economic competition include "productive efficiency, market control, trade surplus, strong currency, foreign exchange reserves, ownership of foreign companies, factories and technology" (Huntington 1993: 73). Governments can also manipulate capital availability and accumulation, labor input, and technological advances, as important sources of economic growth. Currency manipulation is considered a form of neo-mercantilism since devaluation protects local industries from imports and assists in penetrating foreign markets (Cwik 2011).

Geoeconomic blocs and the "balance of dependence"

Geoeconomic blocs are a key instrument of power as collective bargaining power creates a favorable position on global value chains and can then assist to convert the subsequent economic dominance into political capital (Baru 2012). States acquire power by developing asymmetrical economic interdependence to maximize both autonomy and influence (Hirschman 1945). Regional economic integration therefore spreads as "self-reliance was never viable on the national level" (Hettne 1993: 227).

The geoeconomic function of a trade bloc replicates the geopolitical utility of military alliances (Hurrell 1995: 340). Powerful states integrate with weaker states in economic and military blocs to strengthen their influence over the weaker member states, and to collectively attain an advantage over adversarial non-member states (Walt 1985: 6). The former German chancellor, Helmut Schmidt, suggested that economic regionalism imitates military bloc-politics since "the struggle for the world product" creates systemic pressures for forming alliances and counter-alliances (Gilpin 2011: 9).

The strength and durability of geoeconomic blocs depend on the cost-benefits assessment of states to pool sovereignty into regional constructs. States can stand outside economic regions to protect their sovereignty, albeit reduced economic competitiveness eventually undermines sovereignty. By pooling sovereignty and integrating into more powerful centers of power, the region can assist with

favorable asymmetrical bargaining power to protect sensitive industries and gain privileged access to foreign markets (Milward 1992). Solidarity within an economic region therefore depends on the intrusive influence of the region being outweighed by material benefits that strengthen sovereignty (Milward 1992). The ability to provide economic benefit is therefore recognized as a key instrument by larger powers to construct regions where they institutionalize political influence (Kučerová 2014).

The geoeconomic strength of a region can be assessed by the compromise or polarization between functionalists and federalists. Functionalist integration suggests that *form follows function* as integration is only pursued in areas where it provides economic, political and security benefits for member states (Mitrany 1965). In contrast, 'federalist integration' infers that *functions follow the form* as the centralization of power and transfer of sovereignty to the region becomes the objective (Mitrany 1965). Pursuing federalist integration is a natural impulse to strengthen internal cohesion by systemically depriving weaker states of the ability to diversify partnerships and decouple from the region. Yet federalism is more likely to have the opposite effect, since power is centralized without demonstrating a clear function or benefit for member states to outweigh reduced sovereignty.

Geoeconomic regions are formed to collectively skew the symmetry of interdependence with non-members, yet the durability of the economic bloc depends on maintaining an internal "balance of dependence." The benefits of an integration project to its member states depend on the similarity of economic size (Sorhun 2014: 288). In the absence of power equilibrium within an institution, or without an external adversary to make the asymmetry acceptable, the weaker states will seek autonomy from the more powerful member of the bloc.

Economic coercion is only sustainable when used in moderation as excessive usage increases the incentives for weaker states to reduce their dependence. The advantage of the more dependent state is the willingness and preparedness to accept significant economic pain to obtain greater autonomy (Hirschman 1945). It is often neglected that the endurance of geoeconomic blocs is subject to the ability to reduce zero-sum formats by providing benefits to non-member states. There will always be an incentive for external powers to employ a wedge strategy to dilute the cohesion of a region that provides benefits and privileges denied to non-member states, and that can enhance collective bargaining power to the disadvantage of non-member states (Wagner 1988). External powers can undermine the internal cohesion of regions with "selective accommodation," which entails providing privileges for specific members on a bilateral basis (Wigell and Vihma 2016).

The geoeconomic rise of the EU: The Single Market and Schengen

The EU has aptly been recognized as the world's most successful regional geoeconomic project in terms of collectively enhancing bargaining power vis-à-vis non-members (Hettne 1993). The EU brings together 27 member states to skew

the symmetry of dependence on other powers. The collective bargaining power of the EU improves the balance of dependence with the U.S. as a requirement for making the Atlantic partnership more tenable and durable in the post-Cold War era. The EU's asymmetrical relations with its neighbors have facilitated "collective hegemony" on the continent (Hyde-Price 2006: 227). Former French President Valery Giscard d'Estaing, a key architect of the rejected EU Constitution, posited that the new purpose of the EU was power:

> Over the decades, the basis of the EU's existence has changed. We've moved from seeking peace to seeking greatness. The goal is clear: we have to become one of the three main players in the world, so that in 20 years, the U.S., China and the EU will control the world's three most important currencies (Rettman 2013).

The same argument was put forth by former UK Prime Minister Tony Blair in his support for the UK's continued membership in the EU:

> The rationale for Europe in the 21st century is stronger than it has ever been. It is essentially about power, not about peace anymore. We won't fight each other if we don't have Europe, but we will be weaker, less powerful, with less influence (Scheuermann 2013).

The Single Market of 1987 and the visa-free travel of the Schengen Agreement were the greatest geoeconomic achievements of the economic bloc by integrating a region of similar economies. These initiatives had the functionalist purpose of harmonizing national and regional interests. Removing barriers to trade resulted in increased intra-EU trade, which translates into political loyalty and solidarity. Asymmetrical bargaining power vis-à-vis external powers enabled the EU to protect its own markets and compel trading partners to open their markets. Economic power could then be converted into political influence by setting political conditionality for removing trade barriers and attaining favorable access to the Union.

The EU can be characterized as a "regulatory power" as it extracts political power from its economic position by exporting its legal framework (Damro 2015). The role as a gatekeeper and negotiator of access for external actors to the Single Market has positioned the EU as a dominant player in the international political economy (Bretherton and Vogler 1999: 47). By establishing more specific political and legal conditionality for favorable trade agreements with its enormous market, Brussels has become a "regulatory power" (Eberlein and Grande 2005; Bradford 2012: 65), or even a "regulatory empire" (Zielonka 2008: 474). The EU can merely regulate its own markets to obtain influence beyond its borders since "the size and attractiveness of its market does the rest" (Bradford 2012: 65). With gradually more European states joining EU-centric structures through membership or partnerships, the costs of remaining outside the regulatory space of Brussels increases due to the economic perils of isolation. European countries such as

Norway and Switzerland which are part of the Single Market but opt to stay out of the EU are placed in a "pay-without-say" model as they must implement EU directives without having a voice in the decision-making.

The influence and geoeconomic power of the European Community (EC) grew immensely after the collapse of communism in the central and eastern European countries. Even before the demise of the Soviet Union, the EC initiated efforts in 1990-1991 to establish an agreement for trade with central and eastern Europe as the economies were opening up (Lane 2016: 49). Favorable trade agreements were conditioned on adopting a legal framework compatible with the Single Market. Conditionality was later formalized with more specific requirements with the *acquis communautaire* in preparation for granting membership. A core-periphery relationship was advanced as weaker states had to accept limited sovereignty under the influence of the strong. Conditionality was largely tied to democracy and good governance. Yet it also provided dual economic leverage for the western Europe core countries by enhancing the collective power of a larger EU and the core asserting influence over the periphery countries by taking advantage of cheap assets, labor, and capital (Lane 2016: 50). The EU uses regulatory power to advance both an offensive and a defensive agenda in terms of market access (Raza 2007). The EU has constructed a bureaucratic or regulatory empire by developing tariff and non-tariff hurdles for access to the market, disadvantaging especially weaker economies and smaller corporations that cannot afford to adjust to increasingly complicated regulations (Eberlein and Grande 2005; Bradford 2015; Damro 2015). Subsidies are utilized to defend what are considered to be sensitive or strategic internal markets. The Common Agricultural Policy (CAP) is the most contentious neo-mercantilist policy that absorbs approximately half of the EU budget (Raza 2007). Concurrently, the EU compels external powers to open up their markets and adapt EU regulations. A case in point is when the EU Commissioner for Energy, Günther Oettinger, threatened economic and political isolation: "whoever leaves the Energy Community indirectly leaves the partnership with the EU. It becomes the next Belarus" (Keating 2012).

Relations with large external powers

Towards the end of the Cold War, the U.S. had become more reluctant to accept the geoeconomics policies of Western Europe. The best example of this shift was demonstrated by geoeconomic rivalry in the airline industry. Western European airlines received formidable support from their governments in terms of subsidies, which allowed them to operate at a loss in order to conquer the U.S. market. European governments provided virtually interest-free loans to their airlines to develop new airliners until they became competitive vis-à-vis their American counterparts. Airbus Industrie GIE penetrated and rose in the U.S. market by running deficits at the expense of the taxpayer, at one time leasing out 23 of its A300 airliners to U.S. Eastern Air Lines for $1 a year (Luttwak 2010: 28). Luttwak (2010: 34) used geoeconomic language to explain the European march against the U.S.:

> Just as in the past when young men were put in uniform to be marched off in pursuit of schemes of territorial conquest, today taxpayers are persuaded to subsidize schemes of industrial conquest. Instead of fighting each other, France, Germany and Britain now collaborate to fund Airbus Industrie's offensive against Boeing and McDonnell-Douglas. Instead of measuring progress by how far the fighting front has advanced on the map, it is worldwide market shares for the targeted products that are the goal.

The free trade argument suggests that the U.S. was benefiting as the European taxpayer was effectively subsidising air travel for Americans and thus elevating their standard of living. However, the 'hidden hand' of the free market did not reallocate the excess U.S. capital and labor to high-skilled professions in dominant positions on the global value chain. Instead, industrial jobs were replaced with low-skilled and low-paid retail jobs. Within a relatively short time, European airliners had risen to the status of world leaders, while without government support, American airlines were pushed towards bankruptcy. Germany then began to apply the same strategy to their car manufacturers, communication industry, superconductors, and other strategic industries (Luttwak 2010: 34).

After the Cold War, there was a new impetus to harmonize interests. The EU had been instrumental in developing parity with the U.S., yet formidable efforts were made toward burden sharing. By harmonizing their interests, the U.S. and EU could collectively claim primacy in the post-Cold War world. Furthermore, the signing of NAFTA gave the U.S. enough economic muscle in response to the growing common market in Europe. Relations with Russia at that time were also to a great extent unproblematic and no major compromises were required to avoid conflict. Throughout the 1990s, Moscow was in a weak position and tended to view the EU as the "good West" in comparison with NATO as the "bad West" (Monaghan 2005). The EU was deemed to be more inclusive and more prepared to harmonize interests with Russia. The prevailing assumption in Moscow was that Russia would gradually be incorporated into a "Greater Europe," or as Putin proposed, an EU-Russian Union. Russia had neither the motivation nor the capabilities to employ wedge tactics against the EU.

The decline of the EU: Conflicting development models

Germany plays a dual role in the EU, as it is the economic locomotive that elevates the relative power of the bloc, yet the geoeconomics of Germany also disrupt the internal balance of power within the Union. The different economic models within the EU distort the symmetry between member states, which undermines the stability and durability of cooperation (Lucarelli 2012). While most EU member states have a so-called "debt model" for economic growth, Germany has taken a neo-mercantilist export-based approach. Culpability for the disharmony within the EU is commonly attributed to Germany's state-led neo-mercantilist practices, while Berlin tends to blame the absence of fiscal discipline on the debt-model of other member states. Much like China, Germany has pursued a "beggar-thy-neighbor"

strategy by strengthening its own economy by accumulating account surpluses and thus compelling its neighbors to adjust (Baru 2012: 53). Focus is devoted to production and export at the expense of German consumers, and foreign producers principally in other EU member states. In contrast to the debt-model of its allies, Berlin encourages savings, discourages consumption, and minimises inflation. The divisions between the surplus and deficit member states have incrementally grown, making Germany the burgeoning economic powerhouse of Europe as the Mediterranean member states sink further into unsustainable debt.

Germany developed an export-based development model driven by wage suppression, akin to China, to acquire manufacturing power and accrue a large trade surplus (Stockhammer 2011). Berlin intervenes in the market by coordinating "constant discussions between labor, government, and industry to arrive at agreements on wages, investment, productivity gains, and prices that will assure continued competitiveness to producers based in Germany" (Prestowitz 2012). Domestic austerity and wage repression limit foreign entry to the German market while making German products more competitive abroad. Furthermore, low domestic wages reduce domestic consumption, which incentivizes German corporations to pursue markets abroad. Favorable loan conditions are also provided to these companies by German banks to prioritize foreign investments with a trade surplus.

Berlin has become increasingly comfortable asserting itself as the de-facto capital of the EU as economic power continues to concentrate in Germany. Subsequently, EU decision-making is being gradually made in Berlin (Brattberg and De Lima 2015). Germany acts per realist assumptions about "interdependence" as relative gain, with EU legislation being used to influence smaller member states without surrendering Germany's own autonomy. For example, the Stability and Growth Pact was intended to promote fiscal discipline with strict limitations on debt, yet Germany and France exempted themselves from the rules in 2003.

With production power and capital transfers from the Mediterranean to Germany, asymmetrical economic relations translate into political influence (Cesaratto 2010; Prestowitz 2012). According to Kundnani (2011: 41), the trade gap within the EU has contributed to a more assertive German foreign policy:

> The concept of geoeconomics now seems particularly helpful as a way of describing the foreign policy of Germany, which has become more willing to impose its economic preferences on others within the European Union in the context of a discourse of zero-sum competition between the fiscally responsible and the fiscally irresponsible. For example, instead of accepting a moderate increase in inflation, which could harm the global competitiveness of its exports, Germany has insisted on austerity throughout the Eurozone, even though this undermines the ability of states on the periphery to grow and threatens the overall cohesion of the European Union.

With economic and political power concentrated in Germany, hostility is growing among other member states. Animosity is strongest among southern and

eastern member states that are disadvantaged by Germany's economic policies and/or the subsequent intrusive political clout. There is rivalry between the German-led federalist model for a post-national Europe and the British-led functionalist model for a Europe of nation-states. Nigel Farage (2015), the leader of the UK Independence Party (UKIP), who contributed greatly to Brexit, accused the EU of failing by facilitating rather than preventing a 'German-dominated Europe'.

Enlargements and the Euro

The common currency and successive rounds of enlargement of the EU have become the two main mistakes creating divergent interests, systemic decline, and possibly the EU's demise (Münchau 2015). The Euro and enlargements are important sources of collective geoeconomic power in the wider world. However, they have also disrupted the balance of power within the EU and further concentrated power in Germany. The Euro was intended to cement internal cohesion as an instrument for political integration, yet it is becoming a source of division as political utility undermines the economic kind.

EU enlargement was intended to enhance the collective market share of global GDP and unite Europe (Borocs 2015). However, enlargement predominantly benefited the German economy and thereby further upset the balance with France and the UK. Bringing together vastly different economies predictably encouraged the disruptive movement of capital and production across borders, and more importantly, the socio-economic consequences of the large-scale population movements from the east to the west. Rapid and extensive demographic changes have revived nationalist sentiments in both Western and Eastern Europe.

The Euro was primarily a federalist project, as unsound monetary decisions were made to promote political integration. A political union is required to develop a fiscal union, and a fiscal union is needed to develop a monetary union. However, without consensus and a mandate for a political union, the EU elites began at the other end by creating a monetary union first, which produced entrenched systemic flaws (Feldstein 2012). A monetary union would create demand for a fiscal union, which would be impossible without a political union. The common currency was therefore a deliberately unsound economic project that would set in motion a chain reaction for political union (Spolaore 2013). One of the architects of the monetary union, Padoa-Schioppa (2004: 14), explained that the common currency was intended to cause a 'chain reaction' towards integration:

> The road toward the single currency looks like a chain reaction in which each step resolved a preexisting contradiction and generated a new one that in turn required a further step forward. The steps were the start of the EMS [European monetary system] (1979), the re-launching of the single market (1985), the decision to accelerate the liberalization of capital movements (1986), the launching of the project of monetary union (1988), the agreement of Maastricht (1992), and the final adoption of the euro (1998).

Bergsten (2012) conceptualises the Euro as a "half-built house" since the inevitable problems emanating from the monetary union force additional integration and centralization of power. Monetary integration therefore created an all-or-nothing logic as a European superstate had to be created, or else member states would be compelled to return to national currencies (Stockhammer 2014).

The Euro provides Germany with a severely devalued currency, while other members struggle with an overvalued currency. Usually strong economies will have soaring currencies due to increasing demand and some balance will be restored as the weaker economies will have their currencies devalued and thus increase the competitiveness of their exports. In the EU currency trap, a core-periphery function emerges to the benefit of Germany and especially at the peril of the Mediterranean member states. Several observers therefore define the Euro as a German currency manipulation similar to that of China (Cesaratto 2010; Baru 2012; Krugman 2013). The currency "trap" has further strengthened German exports at the expense of the competitiveness of Europe's Mediterranean states (Lucarelli 2011). The Maastricht Treaty of 1992 set the initial fundamentals for the internal contradictions of the EU. When the peripheral countries were stuck in the fiscal straitjacket of the Exchange Rate Mechanism (ERM) they were unable to devalue their currencies to restore competitiveness. The European Central Bank (ECB) is compelled to set the monetary policy for the entire bloc, irrespective of the vastly different economies, and lean favorably towards Germany as the main economy (Feldstein 2012). Low-interest rates were designed for a deflationary German economy, yet they fueled a housing bubble in other parts of Europe that were inaccurately perceived as economic growth (Cesaratto 2010). The first chief economist of the European Central Bank, Otmar Issing, described the Euro as a "house of cards" that would inevitably collapse (Worstall 2016).

The Euro further enabled a state-centric neo-mercantilist policy by utilizing an export-led economic growth model and accumulating chronic surpluses. Budget deficits grow in the Mediterranean as production power transfers to Germany and the easy access to cheap money boosts consumption (Krugman 2013). The weak currency has benefited German exporters, while Berlin "has failed to deliver on its side of the bargain: To avoid a European depression, it needed to spend more as its neighbors were forced to spend less, and it hasn't done that" (Krugman 2013). The U.S. Treasury Report condemned Germany for strengthening its own economy at the expense of its neighbors:

> Within the euro area, countries with large and persistent surpluses need to take action to boost domestic demand growth and shrink their surpluses. Germany has maintained a large current account surplus throughout the euro area financial crisis, and in 2012, Germany's nominal current account surplus was larger than that of China. Germany's anaemic pace of domestic demand growth and dependence on exports have hampered rebalancing at a time when many other euro-area countries have been under severe pressure to curb demand and compress imports in order to promote adjustment. The

net result has been a deflationary bias for the euro area, as well as for the world economy (U.S. Treasury 2013: 3).

Responding to EU crises: from carrots to sticks

The chain-reaction thesis of the "half-built house" is paradoxical as further integration is expected at a time of economic and political upheaval. With voters increasingly blaming 'Europe' for causing the seemingly never-ending crisis, it is difficult to sell the argument that 'more Europe' is the answer (Spolaore 2013). Stiglitz (2016) posits that with fewer carrots and less excitement about the European project, Brussels has become more reliant on fear and threats to deter states from decoupling from the EU. Eliminating alternatives to the EU is imperative to its survival. However, the pressure to punish Britain following the Brexit vote or use economic coercion against Hungary and Poland further undermines important trade and the economic functionality of the EU.

While the concentration of power in Germany has been a source of the crisis, it also enables Germany to present itself as the solution by being the locomotive for economic recovery. The financial crisis inflicted both the debt-driven and export-driven economies of the EU, but the fiscally prudent export-driven economies such as Germany rapidly recovered and were presented with the opportunity of using the growing asymmetry to extract political concessions (Stockhammer 2014). Germany has used the crisis and weakness of the Mediterranean states to exert its influence by setting the conditions for saving the Mediterranean member states. As European states crumble under debt, Germany provides financial assistance with the conditionality of falling in line with Brussels. The concentration of power within the EU has thus reached what Brattberg and De Lima (2015) refer to as "Germany's unipolar moment" as the Greek debt crisis became virtually a bilateral affair between Berlin and Athens where the former could strongarm the latter. Similarly, Germany dominated the negotiations with Russia over the Minsk Agreement, and the EU's approach to the refugee crisis (Brattberg and De Lima 2015).

The possible fatal dilemma for the Euro has been that Greece cannot receive a debt re-structuring or a haircut, as this would have a contagion effect on the other debtor states, while not cutting Greek debt would only see it sink further into unsustainable debt and increase animosity towards Berlin. As the leaked emails of Hillary Clinton revealed, the German Finance Minister, Schauble "continues to believe that a complete collapse of the currency union is unacceptable for Germany, as the newly reconstituted Deutsche Mark would be considerably more valuable than the Euro; seriously damaging Germany's export driven economy" (ThePressProject 2016).

The IMF has recognised that the Greek debt is unsustainable, yet Greece is not allowed to default on its debts due to the contagion effect, and the German-led bail-out has mainly been used to repay German banks (Robins-Early 2015). With other Mediterranean states following the path of Greece, they would also expect debt

forgiveness, as the economic burden of servicing the debt prevents a recovery. The sovereign debt crisis continues along the periphery in Portugal, Spain and Ireland, with Italy and France next in line. While Germany has more authority to push ahead with further integration, the resistance among the populations in member states has reached new heights. EU-scepticism has become the new normal, and it appears that saving the EU would require winding back several major projects, including the Euro. Reversal of an "all-or-nothing" project is however unlikely as the EU never conceptualized or formalized a format for reversing integration (Spolaore 2013).

External relations as zero-sum

The post-Cold War Atlantic partnership is challenged by the rise of Asia. Under the Obama administration, the U.S. already demonstrated that Europe was becoming less important. Under the economic nationalism of the Trump administration, economic regionalism suffered as the U.S. was concerned about the shifting internal balance of dependence within NAFTA, TTIP, and TPP. Collective power was argued to come at the expense of the internal balance of power shifting as manufacturing power and treasury gradually transfers from the U.S. to its allies. Trump subsequently put forward the controversial claim that the EU was established to "rip off" the U.S., and in reference to Berlin's neo-mercantilism he argued that "the Germans are bad, very bad." The common complaint from Brussels is that Russia and China engage individual EU member states bilaterally. Yet it should be axiomatic that bilateralism is favored as opposed to unfavorable asymmetries in EU27+1 formats. By comparison, the Russian-led Eurasian Economic Union obtained Chinese support by offering tangible economic benefits to non-members. The Eurasian Economic Union benefits China's Belt and Road Initiative by establishing one customs zone between Chinese and EU borders and making the small individual economies in Central Asia more accessible by harmonizing legislation and technical standards. Mutual recognition of regions is also a solution since the engagement of external powers can enhance the legitimacy of a region (Hettne and Söderbaum 2000: 469).

The failure to establish a mutually acceptable post-Cold War settlement with Russia has also incentivized Moscow to employ wedge tactics. The Charter of Paris for Europe in 1994 and the OSCE Budapest Document in 1994 committed all sides to create a Europe without dividing lines, based on "indivisible security" and "sovereign equality." Instead, the dividing lines were gradually moved towards Russian borders, the West expanded its security at the expense of Russian security, and liberal internationalism promoted a system of sovereign inequality. The rivalry over where to draw the new dividing lines eventually culminated in a major military conflict in Ukraine.

While Moscow initially perceived the EU as the "good" west, the enlargements to the east and unwillingness to harmonize integration efforts with Russia intensified the zero-sum structures of Europe. The EU's "Wider Europe" concept aims to

organize non-member states along the periphery within the regulatory framework of Brussels. Similarly, the European Neighborhood Policy (ENP) in 2004 aimed to organize Europe around the EU. Moscow rejected the ENP as it was structured around bilateral formats between the collective EU and individual neighbors, which maximised asymmetry to the extent it became veiled unilateralism. To assuage Moscow, the EU and Russia instead signed the Common Spaces Agreement of 2005 that agreed to harmonize integration efforts towards the shared neighborhood:

> They agree to actively promote them [integration efforts] in a mutually beneficial manner, through close result-oriented EU-Russia collaboration and dialogue, thereby contributing effectively to creating a greater Europe without dividing lines and based on common values (Permanent Mission of the Russian Federation to the European Union 2005).

The EU undermined the Common Spaces agreement three years later by unilaterally launching the Eastern Partnership in 2008. The Eastern Partnership devotes focus to energy and transportation initiatives such as INOGATE and TRACECA, that aim to reduce reliance on Russia, which is why Russia was the only eastern neighbor not invited. The Association Agreements advanced in late 2013 similarly required the shared neighborhood to make a zero-sum civilizational choice between "us" and "them." The offer from Moscow and Kiev to establish a trilateral "trade commission" with Brussels and make integration efforts compatible was rejected by Brussels as Russian imperialism (Lynch 2013).

The EU's use of economic sanctions instead of accepting a mutually acceptable post-Cold War settlement that recognizes legitimate Russian influence in Europe has convinced Moscow to replace its former "Greater Europe" initiative with "Greater Eurasia." The growing strategic partnership between Russia and China is restructuring global value chains. The rise of Eurasian powers presents a challenge to the ability of the EU to ensure internal cohesion. The EU's share of global GDP is projected to continue a steep decline, which will limit its aptitude to set conditionality and act as a regulatory power. The relative trade with other member states is also declining, which results in economic interests shifting to other parts of the world. As individual member states have greater commercial interests in common with non-members, declining loyalty to the EU is expected to follow.

As German trade and economic interests continue to incrementally shift from the EU to the East, its definition of national interests and subsequently foreign policy will change (Szabo 2015: 69). While Germany's common identity and inter-subjective ties with the west function as an anchor against the geoeconomic wave to the east, the economic engagement with the east presents ideational continuity rather than change as a new "Ostpolitik." A division within the broader west is therefore also probable, as Berlin has never been completely comfortable with the U.S. approach of isolating authoritarian states, and rather subscribed to the belief it is serving liberal democratic values by gradually opening up the east by developing

economic ties.

China's geoeconomics push to the west with the Belt and Road Initiative and new financial instruments has been welcomed and to a great extent been harmonized with Russia. Chinese trade and financial services with Russia are increasingly reducing Russia's reliance on the EU. This trend is likely to escalate as Russia had, in the past, reserved privileged access to its energy markets to the EU due to the political considerations of the Greater Europe project, while the new Greater Eurasia project will devote less significance to Europe. The growing presence of China is also swaying states away from Germany and the EU.

The strategic industries and specific regions of Chinese investment in Europe are indicative of a cohesive grand strategy. China engages Central and Eastern Europe separately from the EU which can elevate these states from playing second fiddle in Europe. Dividing the EU is not an objective in itself, rather a key purpose is to provide these states with greater agency to develop state interests in concert with China when it may be opposed by the rest of the bloc. With Greece being the main maritime bridgehead into Europe, China has bought its stake in the port. Following China's upgrades of Piraeus, it has begun complementing the port with rail projects for enhanced connectivity to Hungary through Serbia. Concerns about Chinese debt diplomacy within the EU are also growing, as China is financing the Hungarian infrastructure project, with Budapest skirting the mandated tender process. Chinese investment in Europe has in general increased rapidly, focusing on the acquisition of strategic industries such as agriculture and manufacturing. A key motivation with mass acquisitions is to obtain technology transfers, while Chinese staff often replace their European counterparts (Le Corre and Sepulchre 2016: 54).

Conclusion

The use of economic coercion to maintain internal solidarity and weaken external rivals may delay decline, although the foundations of the geoeconomic bloc, already starting to decay, will eventually bring about a faster and uncontrolled collapse once disintegration inexorably commences. The initial and extraordinary success of the EU's economic statecraft entailed delivering tangible goods to member states and using collective bargaining power to establish the EU as a regulatory power. Both the Single Market and the Schengen Agreement delivered tangible goods that translated into solidarity and collective bargaining power. Yet the widening and deepening of European integration by expanding membership and launching the Euro has undermined the ability to deliver public goods and disrupted the internal balance of dependence.

Furthermore, the internal solidarity of the EU is challenged by wedge tactics since it has failed to create incentives for cooperation by foreign powers. The U.S. has an interest in converting Europe's security dependence into geoeconomic loyalty to limit EU trade with China, Russia, India, and other U.S. rivals. Succumbing to such pressures disconnects the EU from important centers of power, which

weakens the EU's economic prowess and the ability to provide tangible goods for its member states, while also fueling excessive reliance on the U.S. at the expense of the EU's strategic autonomy.

The best approach for the EU is a controlled reversal and return to the EU's geoeconomic fundamentals of the pre-Maastricht era that ended in 1992, and adjustment to the emergence of a multipolar world by adopting a swing strategy. However, reduced rationality remains a key impediment for the EU as is evident from the lack of appreciation of the economic foundations needed for its internal cohesion and bargaining power with external actors.

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The Intangible Drivers of Financial Crises. Part 1

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Abstract

This article examines the role of intangible factors (negative expectations, lack of confidence, and uncertainty shocks) in the development of financial crises. These factors can trigger conventional crisis mechanisms (such as the formation of credit booms), intervene when fundamentals are weak, or act autonomously (e.g., in the case of a bank run). The first part of this paper presents a brief review of the literature along two dimensions: the development of second-generation models of currency crises, and an analysis of the impact of intangible factors, informed by new ways of measuring them. In particular, the study finds that uncertainty about economic conditions and policies has a significant negative impact on output (mainly by reducing investment activity) but also significantly weakens the effect of fiscal and monetary stimulus measures. In the next part, we discuss alternative approaches to assessing economic agents' confidence in their governments and central banks, the different types of uncertainty, and the development of such parameters in Russia.

Introduction

Financial crises (FC), which, according to Reinhart and Rogoff (2008), were first documented in the 14th century, continue to be an important part of the global economy. Their negative impact affects all aspects of the economy, including budgets, inflation, production, the banking sector, and household income, and ultimately leads to enormous losses. Furceri and Zdzienicka (2012) estimate the decline in GDP in the first year of the debt crisis at 3-5% relative to trend. Similar results were found by Sufi and Taylor (2021). According to their calculations, which take into account all financial crises since 1870, GDP is on average 5% below

the previous trend three years after the start of the crisis. It is important to add that the post-crisis contraction in GDP is not temporary, but long-lasting: the fall in output that occurred immediately after the crisis persists (metaphorically speaking, it "leaves scars"), and in some cases the gap with the previous trajectory actually widens over time (Cerra, Saxena 2023, Chen, Mrkaic, Nabar 2019).

Globalization, which has greatly increased trade, financial, and information connectivity between nations, has recently led to the internationalization of FCs. For example, in 2009, during the "Great Recession"[1], almost half of the 85 large and medium-sized economies with a share of world GDP[2] of at least 0.1%[3] were in recession (before the crisis, in 2007, only 1% of countries were in recession). Overall, the world economy (aggregated by PPP) contracted by 0.1% in 2009 instead of the expected growth rate of 3.9%. In other words, the global damage to the world economy in that year alone is estimated at USD 3.4 trillion (equivalent to 4% of the global GDP). However, the total losses are incomparably greater if the long-term consequences are taken into account. Another recent feature is that the arsenal of tools for dealing with financial crises has been steadily expanding, and the measures it contains (such as maintaining near-zero interest rates or "quantitative easing") are increasingly longer-term rather than ad hoc. As a result, anti-crisis policies are gradually becoming chronic; measures introduced in the midst of a crisis are then maintained for many years, often paving the way for subsequent crises. As a result, macroeconomic policies in most of the world's leading economies in the 21st century have actually focused on mitigating the effects of the last financial crisis or preventing the next one. Another relatively recent trend is that crises are becoming more complex: they tend to affect all or many components of the financial system at the same time. Given the growing scale and variety of financial crises, the need for a "unified theory of business cycles" that would encompass all types of shocks–real, trade, financial, etc.–has become increasingly urgent (Grigoryev, Ivashchenko 2010). Berger, Richter, and Wong (2022), for example, took a step in this direction.

The concept of a Financial Crisis is broadly defined as an abrupt and unexpected change in financial sector conditions (serious problems in the banking system or debt markets, exchange rate spikes, etc.). Commonly, all crises are classified into four types: banking crises, balance of payments crises ("sudden stop"), currency crises, and debt crises. To keep our description relatively consistent, we focus mainly on currency and debt crises interpreted as broadly as possible. We define a currency crisis as a sharp depreciation of the managed exchange rate of a national currency, a change in the exchange rate policy regime under market pressure, or the forced adoption of serious and usually painful measures to protect the status quo (such as the sale of significant amounts of foreign exchange reserves or a substantial increase in the refinancing rate). A debt crisis implies any situation in which the government and/or a large part of the non-public sector breaches its obligations to creditors (not only formal ones,

1 The international financial crisis of 2008-2009.

2 Calculated in PPP terms.

3 Together, these economies account for 97% of global GDP.

but also informal ones, for example, by eroding the real value of the debt through inflation). The general conclusions of this paper are fully applicable to other types of financial crises. For a general description of the different types of financial crises, see, for example, Claessens, Kose (2013), Sufi, Taylor (2021).

The enormous impact of crises on the global economy has led to intense focus on the causes of their emergence, mechanisms of their propagation, the means of their prevention and mitigation, and other similar issues. For a long time, the focus of such an analysis was on classical fundamental factors with specific quantitative dimensions (such as the size of public debt, external imbalances, etc.) that were familiar to all actors. A few decades ago, the range of indicators used to study crises began to expand to include selected "intangible" factors (IFs). The latter are characterized by the fact that they exist only as perceptions of economic agents (households, investors, public authorities, etc.) and are therefore not directly measurable. Of course, each agent knows only his/her own expectations and assessments.

IFs such as inflation and exchange rate expectations or consumer confidence were the first to be considered in economic research. Initially, intangible factors were presented as a function of fundamentals, whenever possible. Thus, the concept of "rational expectations" reduced everyone's expectations to the best predictions that could be made on the basis of available macroeconomic information. IFs, which were introduced later, are not reduced to macroeconomic indicators but require the consideration of discrepancies between the expectations of different participants, asymmetry in available information, coordination problems of agents, potential irrationality of their decisions, and other similar factors. This has led to a significant broadening of the arsenal of tools for analyzing crises: first game theory methods, then behavioral and experimental economics, psychology, etc. The inclusion of immaterial factors in the analysis is a clear step towards a more realistic description of crisis mechanisms, since the notion of the economic actor as a representative agent guided by rational expectations has long been recognized as a rather limited representation of reality.

Recently, a number of new models of crisis initiation and evolution have been proposed that take greater account of the role of intangible factors, while some indicators have been constructed to quantify the main NFs. New research has shown that intangible factors (such as economic agents' expectations) are often of comparable importance to conventional effects and are often closely linked to the latter in the context of crisis mechanisms. The ongoing reassessment of the mechanisms of financial crises has led to adjustments in the way crises are handled. For example, the ECB has cited the need to dampen negative self-fulfilling expectations as a justification for a program of "direct monetary operations,"[4] i.e. the purchase of euro area bonds on the secondary market (Draghi 2012).

Despite the fact that globally NFs have gained prominence in contemporary theoretical and empirical work on the crisis and are already taken into account

[4] Was adopted in 2012 to implement the ECB's stated objective of "taking any necessary measures to safeguard the euro."

in practical decision-making, their role in Russia seems to be not yet sufficiently understood by economists and state authorities. Both an understanding of international experience and active efforts to measure and analyze the impact of intangibles on the Russian economy are needed to ensure that they are included in the standard arsenal of anti-crisis programs or macroeconomic sustainability measures. This study attempts to make progress in these directions. We will also show how accounting for intangibles can contribute to the prevention and mitigation of new financial crises.

Literature review

Due to the sheer number of studies on the subject, we will only mention selected works on the general characteristics of financial crises and key publications highlighting the role of intangible factors.

Recent studies clarify the channels and nature of the impact of financial crises on the economy. In particular, they confirm the importance of the previously identified link between financial crises and preceding credit booms and/or financial bubbles.[5] During a boom, the rate of credit growth increases by a factor of 2 to 3 compared to normal credit growth, and the subsequent credit contraction occurs 10 to 15 times faster than during the downturn phase of the normal business cycle (Claessens, Kose, Terrones 2010).

Further evidence of this link is that "credit booms" and "bubbles" are good predictors of the forthcoming development of FCs. For example, after three years of accelerated credit and asset price growth, the probability of a financial crisis in the next three years rises to 40% compared to 7% under normal conditions (Greenwood et al. 2022).

The crisis mechanism is triggered after a boom is replaced by a credit crunch. The trigger for this transition is sometimes an unexpected event that changes the mood or expectations of economic agents, but more often the reasons are objective - for example, related to a sharp increase in debt servicing costs (Drehmann, Juselius, Korinek 2018). The credit crunch further leads to a decline in investment and a sharp fall in output; the mechanisms of this process are discussed in detail by Bernanke (2018).

The above findings seem to suggest that fundamental factors play a crucial role in shaping crises. In reality, however, this view does not take into account the next level of analysis - the causes of booms and busts. Most authors see the availability of "cheap money" as a fundamental reason for their emergence. For example, Dell'Ariccia, Igan, and Laeven (2012) use the U. S. subprime crash as an example to show how the expansion of credit at low interest rates lowered borrowers' creditworthiness requirements and thus laid the groundwork for the subsequent financial crisis. Jimenez et al (2014) confirm, on the basis of a large

[5] This refers in the first case to an accelerated (i.e., not explainable by fundamentals) increase in credit to non-financial companies or households, in the second case to an unjustified rise in the prices of certain financial assets (most often shares or real estate).

dataset (containing information on 23 million loans granted by Spanish banks), that lower interest rates lead to an increase in the credit risks assumed by banks. This occurs through forced lending to borrowers with no (or poor) credit history, a lack of reliable collateral, etc. Cheap money also plays a leading role in "bubble inflation" (Brunnermeier, Rother, Schnabel 2020).

However, in many cases, intangible factors also contribute significantly to credit booms and bubbles. In particular, the expectations of economic agents regularly deviate from rationality due to the frequent extrapolation of past trends into the future. Using panel data from 17 developed countries over the period from 1870 to 2015, Richter and Zimmermann (2019) show widespread "inertial" expectation formation by banks, which take good performance in the previous period as a sign of economic recovery and expand lending.

For their part, government forecasts also systematically overstate the future, much of it due to "bottom-up" macroeconomic planning (Carrière-Swallow, Marzluf 2021). Such optimism ultimately leads to excessive debt accumulation by governments, firms, and households, creating conditions for crisis (Beaudry, Willems 2022).

International experience leads us to agree with the well-known thesis of Reinhart and Rogoff (2008) that economic agents are characterized by unjustified optimism, not only in forecasting but also in assessing the current situation. After analyzing the history of crises over a long period of time, they come to the conclusion that "this time will be different," a syndrome typical of investors: even when there are clear and well-known signs of credit booms and busts from the past, investors still repeatedly neglect the coming danger.

Another explanation for credit booms and busts focuses on investor motivation, which is driven by intangible factors. Such models describe how booms or busts can arise as a result of differences in the information available to agents, their preferences and behavior (e.g., the prevalence of "herding behavior," where less experienced agents repeat the actions of more experienced ones), heterogeneity in investors' valuations and expectations. Scherbina, Schlusche (2014) and Xiong (2013) provide a brief overview of this class of models as applied to the study of bubbles.

Intangible factors may combine with fundamental factors in the mechanisms of crisis formation, but they may also play distinct roles on their own. One example is the Nobel Prize-winning model of "bank panic" (Diamond, Dybvig 1983), which shows that the crisis of a solvent bank can be triggered by self-fulfilling negative expectations of depositors. Put simply, if a large enough number of depositors expect a run, they will rush to withdraw their money and a real banking crisis will occur; otherwise, depositors will continue to leave their money in the bank and no crisis will occur. As a result, the outcome does not depend on the fundamental characteristics of the bank (its solvency or liquidity), but is entirely determined by the opinion of depositors, who may have no direct knowledge of the true state of affairs. Subsequently, a number of more sophisticated models of bank runs have been proposed (for a review, see Ennis and Keister 2010).

A clear and well-known illustration of the differences between the mechanics of fundamentals and intangibles is provided by first- and second-generation models of currency crises. First-generation models (Krugman 1979; Flood, Garber 1984) show how the presence of fundamental imbalances (chronic budget deficits), combined with unsustainable macroeconomic policies, inevitably leads to a crisis through speculative attack.

In the 1980s, cross-border capital flows were 80% government borrowing, so currency crises were mainly caused by government macroeconomic policy failures, as described by the first-generation models. As a result of the vigorous financial liberalization of the 1990s, private sector capital flows came to the fore. As new complicated financial instruments emerged, capital market regulation became more important and banks' asset-liability management became more sophisticated. The financial crises from Latin America to East Asia in the 1990s were markedly different in nature. The analysis of their mechanisms led to the emergence of second-generation models that focused on the issue of coordination between different actors. Obstfeld (1986), for example, considers a situation in which there is no need to devalue as long as external investors continue to buy government debt denominated in the national currency. However, if they fear future devaluation and stop buying, the central bank is forced to lower the exchange rate. The onset of a crisis is determined solely by investor expectations (whatever they may be) and has nothing to do with the fundamentals. Obstfeld (1996) builds a more elaborate model in which investors independently decide on a speculative currency attack, which is successful if enough investors participate. The required number of participants depends on the strengths or weaknesses of the fundamentals. It is shown that three situations are possible: a) when the fundamentals are weak (large imbalances, small reserves), an attack and devaluation are inevitable; b) when the fundamentals are strong, devaluation does not occur; and c) in the intermediate zone (which can be quite broad), the outcome is determined by self-fulfilling expectations of investors. In such a situation, any one of these options can occur, i.e. the crisis is unpredictable. Whether or not it occurs depends on the coordination of investors, which may result from the accidental spread of a signal (such as a sovereign rating upgrade or downgrade) or from other, completely unforeseeable events. Another possibility is that it will not happen at all.

Similar models were developed for self-fulfilling debt crises. Calvo's (1988) study is particularly noteworthy. He considered a situation in which a government defaults on all or part of its debt obligations if the benefits of such a decision exceed the losses (in this case, the default is strategic). The interest rate on borrowing is determined by investors' estimates of the expected value of losses from default. It is shown that two equilibria are typical: "good" (when investors do not expect a default, do not price its risk into the interest rate, and it does not occur) and "bad" (when investors buy debt at a higher rate, taking into account the probability of default, and the government partially defaults). Given the same fundamentals, both the first and the second equilibria can occur; therefore, the default is only determined on the basis of investors' expectations.

Another important model (Cole, Kehoe 2000) assumes that the government is solvent but not liquid, i.e. it cannot service its debt unless it is refinanced by investors. If the number of investors willing to buy the government's bonds is insufficient, the government has to choose between default and other options such as cutting spending, raising taxes, or tapping additional reserves. Each investor independently forms expectations about the actions of other investors and the government, and makes decisions based on them. It is shown that under fairly natural assumptions, as in the currency crisis model, there are three zones: with relatively low government dependence on debt refinancing[6] default is ruled out, with very high dependence default is inevitable, and with moderate dependence there are multiple equilibria (i.e., the outcome is determined by investors' self-fulfilling expectations).

Finally, there is a group of studies that consider weaknesses within the financial system and/or distorted incentives for its actions as the main source of crises (these are conventionally referred to as third-generation models). For example, in one of the first papers of this generation, McKinnon and Pill (1995) show how financial liberalization combined with bank deposit insurance can stimulate a credit boom and eventually lead to a banking and currency crisis. As noted below, such mechanisms played an important role in the financial crises of the 1990s.

The above basic models have been developed in numerous other studies, many of which have been motivated by a desire to describe the mechanisms of the severe Eurozone debt crisis that emerged as a result of the "Great Recession." Some of these models are discussed below.

The other major group of "intangible factors" relate to the degree of predictability of the economic situation. More than 100 years ago, Knight (Knight 1921) introduced the important concept of "uncertainty," but it has only recently become an active tool of economic analysis. The literature has a long history of studies on the effects of economic risks. However, uncertainty differs fundamentally from risk in that there is a lack of information on both the magnitude of possible adverse shocks and the probability of their occurrence. In such a situation, the risk-averse entrepreneur postpones actions associated with irreversible costs, i.e., he pauses capital investment, reduces orders for raw materials and components and suspends hiring. Households, in turn, make additional savings in case of unforeseen challenges. Reduced bank lending is another important channel of uncertainty. Alessandri and Bottero (2020), after analyzing data on two million applications received by Italian banks from corporate borrowers between 2004 and 2012, show that high uncertainty simultaneously reduces the probability of a loan being granted and increases the time until it is granted. These effects lead to the manifestation of self-fulfilling negative expectations: domestic demand, consumption, investment, and production fall, while unemployment rises.

The concept of uncertainty as an intangible factor that changes under the influence of significant and unpredictable events of any kind - economic,

[6] This situation arises when debt is small and/or long-term borrowing dominates its structure.

geopolitical, natural, etc.–is now well established (e.g., in the event of a major military conflict, disruption of world oil supplies, outbreak of a pandemic, etc.). However, the source of uncertainty is often destabilization caused by the onset of a financial crisis. In both cases, increased uncertainty has a negative impact on economic activity, although the mechanisms may differ. In the case of external sources of uncertainty, this intangible factor acts as a channel through which shocks (among other factors) affect the economy, while when uncertainty arises as a response to the onset of a crisis, it becomes part of the overall crisis mechanism, exacerbating its negative effects. Although uncertainty shocks can act as primary or secondary to other crisis factors, they have an additional independent effect on the economy over and above the other effects (Caldara et al. 2016).

Empirical studies confirm that increased uncertainty plays a significant role in the overall negative impact of crisis shocks. For example, between 1981 and 2014, global financial uncertainty accounted for almost one-fifth of the variation in global economic growth and one-seventh of the variation in global inflation (Kang, Ratti, and Vespignani 2020). During the Great Recession, uncertainty accounted for more than one-third of losses in the U.S. economy (Bloom 2014). Baker et al. (2020) estimate that uncertainty associated with the pandemic accounts for about half of the decline in the U. S. economy in 2020. In terms of the mechanisms through which uncertainty affects output, the most important channel is reduced investment, while reduced consumer demand is an additional channel (Bloom 2014). Other researchers come to similar conclusions: For example, Meinen and Roehe (2017), analyzing data for the largest European countries for 1996-2015, show a significant impact of uncertainty on fixed investment.

A feature of the impact of uncertainty on output is its nonlinear nature. When uncertainty is close to the normal level, its fluctuations do not have a noticeable impact on the economy. However, in a pre-crisis or crisis situation, when uncertainty spikes, the impact on the real sector becomes really strong (Jackson, Kliesen, Owyang 2018).

Another intangible factor that complements the previous one is "economic policy uncertainty" (EPU). This refers to the uncertainty of economic agents about what decisions will be taken by the government and the central bank (e.g., on the size of the budget deficit or the refinancing rate). The source of this uncertainty is the commitment of the authorities to discretionary measures, as well as the occurrence of non-standard situations that require an urgent response (such as economic sanctions, the outbreak of a pandemic, etc.). The negative effects of economic policy uncertainty on investment, production, labor market, and financial markets have been convincingly confirmed empirically in a number of studies. For example, a one standard deviation increase in the EPU index increases the probability of a recession by 14% and reduces the probability of its end by 27%, all other things being equal. In other words, EPU simultaneously increases the probability of a financial crisis starting and its duration (Nguyen 2022).

For an in-depth analysis of the roots of economic uncertainty, different sources of uncertainty are often considered, such as political (Leblang, Satyanath 2008) or

geopolitical risk (Caldara, Iacoviello 2022). Fedorova, Musienko, and Fedorov (2019) constructed a political uncertainty indicator for Russia; the geopolitical risk index for our country is regularly calculated using a common methodology (the results are discussed below). The components of the ECU and EPU are also studied, such as financial uncertainty (i.e., uncertainty about financial conditions in the country), uncertainty about monetary or fiscal policy, etc. Typically, particular types of uncertainty also show a negative impact on economic activity. For example, Husted, Rogers, Sun (2020) show that monetary policy uncertainty, as measured by their proposed indicator, increases the cost of borrowing and reduces economic activity. However, the magnitude of these effects is comparable to the effects of conventional economic policies.

For Russia, oil price uncertainty (OPU) appears to play an important role. The analysis suggests that this indicator has a significant two-way relationship with the uncertainty in individual countries. For example, the EPU index in the largest countries has a direct impact on OPU (Bahmani-Oskooee, Harvey, and Niroomand 2018). Meanwhile, EPU shocks in the U.S., Europe, Russia, and China have a short-term effect on OPU, while China's EPU growth has a long-term effect on OPU (which makes sense, as global oil demand in recent decades has been largely driven by China's consumption patterns). At the same time, rising OPU has a negative impact on the industrial output of oil-exporting countries and, in the case of emerging markets (such as Russia or Mexico), on the exchange rate of the national currency (Smiech et al. 2021).

Indicators of the intangible drivers of financial crises

Let us consider ways to measure key intangible indicators that play an important role in the mechanisms of financial crises.

Level of credibility

Credibility in monetary or fiscal policy implies the confidence of economic agents that the central bank or government is willing to follow its stated policy and achieve its objectives, even at the cost of implementing difficult and unpopular measures. This implies a combination of high-quality macroeconomic policies and a strong political will to achieve the set goals. For brevity, we limit our discussion to the credibility of fiscal policy.

What are the benefits of maintaining a high level of confidence? It reduces the risk for investors and, thus, makes government borrowing cheaper. It also increases the government's flexibility in crisis situations: it can spend heavily on anti-crisis measures without losing access to capital markets, as investors remain confident that the government will subsequently return the budget deficit and public debt to safe levels. In particular, high confidence limits the impact of many negative shocks, including increased uncertainty. Government taxes, spending and borrowing are the main source of uncertainty in economic policy, so it is particularly important to maximize the predictability of decisions in this area. Otherwise, there is a risk that even relatively small negative shocks will lead to a reduction in aggregate demand, an increase in interest rates and a decline in output.

Among the various approaches to measuring confidence in fiscal policy, the indicators proposed by End, Hong (2022) appear to be the most convincing. They suggest that high confidence should be indicated by the convergence of independent forecasts and expectations with the government's announced fiscal policy parameters. The key indicator used in this paper is the budget balance for the following year (expressed as a percentage of GDP). The government's target is the deficit (or surplus) approved in the budget law, while agents' expectations are characterized by the forecasts of Consensus Economics, which collects monthly forecasts from over 700 independent sources.

For each country, three complementary indicators have been considered A) the average (over the whole period of the forecasts of the indicators of the country by the experts of Consensus Economics) deviation of the independent forecasts of the budget balance from the official indicators, B) the average absolute deviation of the same forecasts, C) the variance of the forecasts between different sources. Indicator A shows whether the official budget forecasts, as judged by external experts, contain systematic biases (e.g., excessive optimism). Indicator B characterizes the accuracy of the official budget figures from the perspective of the experts. Finally, indicator C characterizes the homogeneity of economic agents' expectations (it should serve as one of the consequences of confidence in the government's fiscal policy).

Symbolically, in the sample of 41 countries[7] considered by End, Hong (2022), the largest "optimistic bias" in official forecasts, as well as the largest absolute deviation from independent estimates, are characteristic of the countries most affected during the last two international financial crises (the Great Recession and the pandemic): Ireland, Greece, India, Spain and Portugal. The budget projections of the Swiss, Czech, and Dutch governments are perceived as the most accurate.

Analysis based on constructed indicators confirmed the assumption that confidence significantly reduces the cost of borrowing and improves a country's credit rating. According to End, Hong (2022), confidence-building factors include the existence of basic budget rules, independent monitoring of compliance and multi-annual budget planning. All these factors are designed to make budget execution predictable, of which the budget deficit is the most important for investors. Accordingly, the intermediate outcome of these institutions should be, above all, an accurate forecast of the budget deficit.

Oil-exporting countries cannot adequately control and predict their oil and gas revenues; moreover, it is a sound policy for them to moderate the use of such revenues. For Russia and other oil-exporting countries, therefore, credibility depends on meeting the announced targets for non-oil and gas deficits as closely as possible. Such a comparison is different from the one discussed above, but it is an important prerequisite for trust in government.

Figure 1 (p. 61) shows the dynamics of the two characteristics of Russia's non-oil and gas deficit of the federal budget: the statutory value for the corresponding year

[7] The sample comprises mainly developed countries, with emerging markets represented by Argentina, India, Mexico and a few smaller countries.

(without taking into account subsequent amendments to the law) and the actual value. As in the case of the confidence indicators considered above, it is possible to identify various characteristics of fiscal policy: a) prudence (the average difference between the actual and the plan), b) accuracy (the average absolute deviation of the actual from the plan). As can be seen from the graph, for most of the period under review, the government's fiscal policy was prudent (the planned deficit was very rarely exceeded) and fairly accurate. However, both indicators deteriorated significantly in 2009-2011 and 2020-2022. The estimated values of the indicators in question for the different periods are shown in Table 1 on p. 61 (the precautionary indicator is positive when the actual deficit is lower than the planned one). We note that after the widening of the gap between planned and actual deficits in 2009 and the significant overrun of the planned non-oil and gas deficits, the government restored the former ratio rather quickly. The same target is currently relevant.

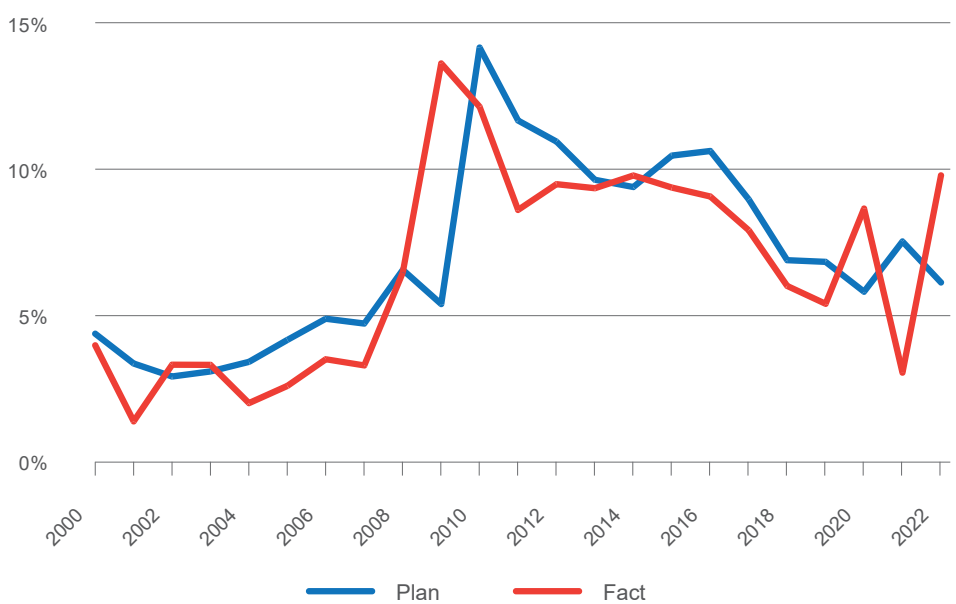

Figure 1. Non-oil and gas deficit of the federal budget (plan/actual)

Source: author's calculations, data from the Federal Ministry of Finance.

Table 1. Gap between planned and actual non-oil and gas deficit of the federal budget (% of GDP)

Average by period	**2000-2008**	**2009-2011**	**2012-2019**	**2020-2022**
Planning caution	0.9%	-1.1%	0.9%	-0.7%
Planning accuracy	1.0%	4.5%	1.0%	3.7%

Source: author's calculations based on data from the Federal Ministry of Finance

Economic conditions uncertainty (ECU)

To date, a fairly wide range of indicators of uncertainty has been developed, varying in terms of their objects (the world economy, a group of countries, a single country, regions of a country - although the latter scenario is rather rare) and their approach to measurement.[8] These approaches can be divided into several groups:

Based on market indicators

Such indicators are typically derived from data on the volatility of expected stock or bond prices. The best known method is the one proposed by Bloom (2009), which uses the VIX measure of the volatility of stock index options. The same author has shown, both theoretically and empirically, that an increase in uncertainty measured in this way leads to a reduction in investment and labor demand.

Based on econometric structural models

Indicators of this type are based on the fact that uncertainty is characterized by the deviation of the actual values of the main macroeconomic indicators from the forecasts of qualified experts, i.e. by the degree of unpredictability. Accordingly, the desired indicator can be constructed as a weighted average of the conditional volatility of a wide range of macroeconomic indicators. The most famous work applying this approach was published by Jurado, Ludvigson, Ng (2015). An indicator of this type of uncertainty for Russia was constructed by Prilepski (2022).

Based on media coverage

Uncertainty is assessed by the frequency with which words or phrases related to economic events and forecasts are mentioned in the country's leading publications. An example of this approach is presented by Alexopoulos, Cohen (2015), who propose to measure the uncertainty of economic conditions by the number of stories in the New York Times, the leading newspaper in the United States, that contain the word "economy" or "economic" combined with the word "uncertain" or "uncertainty."

Based on surveys of economists/managers or analysis of their forecasts

Uncertainty is derived from the analysis of experts' macroeconomic forecasts or managers' expectations regarding the demand for their companies' products, their companies' production, etc. The assessment of uncertainty can be determined both by the content of the answers (as in Altig et al. 2022) and by the degree of divergence between them (Claveria 2020). For example, a long-term analysis of U.S. industrial production forecasts by a panel of Federal Reserve Board experts found that the standard deviation of their forecasts increased by an average of 64% during recessions. A related approach is to assess the confidence of experts in their forecasts. For example, since 1992, the Philadelphia Fed has asked economists to indicate the probability distribution of different variants of expected growth

[8] An overview of the different ways of constructing and using uncertainty indicators is provided by David, Veronesi (2022).

rates. The analysis suggests that as a recession begins, both the degree of divergence between different experts' forecasts and the dispersion of individual experts' expectations (i.e. their uncertainty) increases (Bloom 2014).

Although these approaches do not provide identical estimates, the uncertainty estimates constructed in different ways have some common features, in particular they all show a negative relationship with economic activity and rise sharply in recessionary periods. However, an analysis of the papers that directly or indirectly compare different indicators of uncertainty suggests that the best way to describe it is the macroeconomic uncertainty indicator developed by Jurado et al. (2015). In particular, this indicator can be considered the most exogenous, i.e., when used, there is no doubt about the direction of causality within the observed relationships (Meinen, Roehe 2017).

Economic policy uncertainty (EPU)

In addition to general economic policy uncertainty, a wide range of indicators have been developed to describe uncertainty in monetary, fiscal, trade, regulatory and other policy components. The methods used to construct such indicators can be classified into the same types as those used to assess economic uncertainty discussed above. Thus, Bauer (2012) proposes a method to estimate monetary policy uncertainty from the volatility of expectations of the future refinancing rate, while Husted, Rogers, Sun (2020) construct the same indicator based on text message analysis.

Beckmann, Czudai (2021) measure fiscal policy uncertainty from the spread between professional forecasts, while Anzuini, Rossi, Tommasino (2020) estimate structural models describing the volatility of the fiscal policy response to changes in the level of public debt (i.e., the dependence of the primary fiscal balance on changes in debt). Basic indicators of trade policy uncertainty are considered, e.g., Handley, Limao (2022).

In regard to economic policy uncertainty in general, the most authoritative indicator is the EPU indicator based on media content analysis developed by Baker, Bloom, Davis (2016). This indicator is based on counting articles in 10 leading U.S. publications that contain a combination of three categories of terms: a) "economy/economics", b) "uncertain/uncertainty", c) "Congress/White House/Federal Reserve/deficit/legislation/regulation". This approach was later extended to a wide range of countries.

From a practical point of view, the simplest way to assess uncertainty is through textual analysis. However, there are concerns about using this approach in countries where there is a high degree of government control over the media. Such control can lead to restrictions and misrepresentations in the content of publications - and therefore in the measurement of uncertainty. Yet many of the world's largest economies rank low in the world press freedom rankings, with countries such as China, India, Turkey, and Russia in the bottom quintile of this ranking[9] for 2022.

[9] https://rsf.org/en/index

A regularly updated series of World Uncertainty Indexes (WUI) and Economic Policy Uncertainty Indexes (EPU) are now freely available. The first of these indices is calculated by the Economist Group's Analytical Unit, based on an analysis of the text of Economist Group reports on the country in question, following the methodology proposed by Ahir, Bloom and Furceri (2022). WUIs are published for 143 countries on a quarterly basis since 1950.[10] The GDP-weighted average of the indices for all countries in the sample forms a global uncertainty indicator. In addition, monthly uncertainty indices are calculated for 71 countries (including Russia) using the same methodology (from 2008). The EPU indices are calculated monthly by the Economic Policy Uncertainty research team for 24 major economies, including Russia, and for the world as a whole (as a weighted average).[11] For almost all countries in the sample, rankings begin in 1997 or earlier. A wide range of other material on uncertainty is also available on the same website. These include monthly updated series of geopolitical uncertainty indices and a set of policy uncertainty indices for the U.S. (monetary, fiscal, trade, financial regulation, etc.).

Figures 2 and 3 (p. 65) show the World Uncertainty Index (WUI) and the Economic Policy Uncertainty Index (EPU) for the world and Russia respectively. It is relatively easy to relate their dynamics to global events. The highest values of the WUI index relate to two adjacent periods: 2019 (the U.S.-China trade conflict and Brexit) and 2020 (the start of the pandemic). The next peaks of this indicator relate to 2016 (the result of the Brexit referendum in the UK), 2022 (the start of hostilities in Ukraine), and 2017 (the inauguration of U.S. President Donald Trump). The EPU indicator shows a broadly similar dynamic, although it varies considerably from period to period. The maximum values of this indicator are recorded in 2020 (pandemic), 2022 (military operation in Ukraine), 2019 (U.S.-China trade war and Brexit), and early 2017 (start of Donald Trump's presidential term). Surprisingly, during the "Great Recession" (2008-2010), the increase in the EPU was significantly lower than the recorded peaks, while the WUI hardly reacted at all to this crisis.

As can be seen in Figure 3, the differences between the two indicators in question are much greater for Russia than for the world economy. The record increase in the WUI in mid-2012 coincides with the peak of the European sovereign debt crisis, which also had a significant impact on the global WUI, while the highest EPU values occurred, as expected, during the pandemic and the start of the military operation in Ukraine. However, other variations in these indices do not always lend themselves to interpretation; moreover, the relatively weak response of the EPU to the "Great Recession" and the almost complete lack of response of the WUI index is again surprising.

Much more in line with intuition are the dynamics of economic uncertainty as constructed by Prilepski (2022). This indicator has two sharp spikes: in late 2008 and early 2009 (the "Great Recession") and in late 2014, when the fall in oil prices and the move to a floating exchange rate led to a sharp appreciation of foreign currencies. This once again confirms the advantages of the Jurado (2015) approach, which is second

[10] https://worlduncertaintyindex.com/

[11] https://www.policyuncertainty.com/

only to the more popular indicators based on the analysis of news texts in terms of the complexity of their updating. For this reason, the ECU and EPU indicators are widely used in research as a measure of uncertainty in conditions and policies.

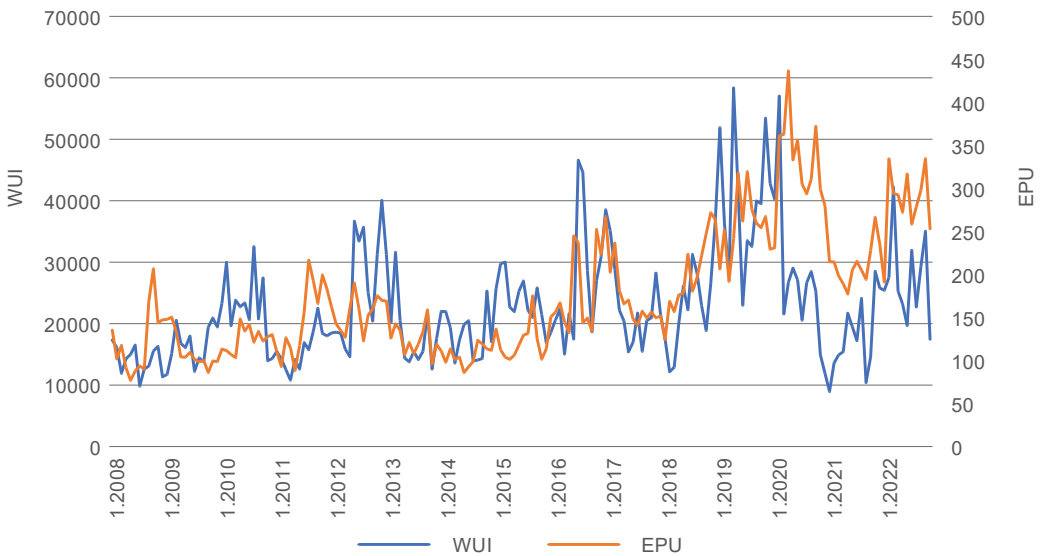

Figure 2. Indicators of global economic uncertainty

Source: author's calculations based on Ahir, Bloom, Furceri (2022).

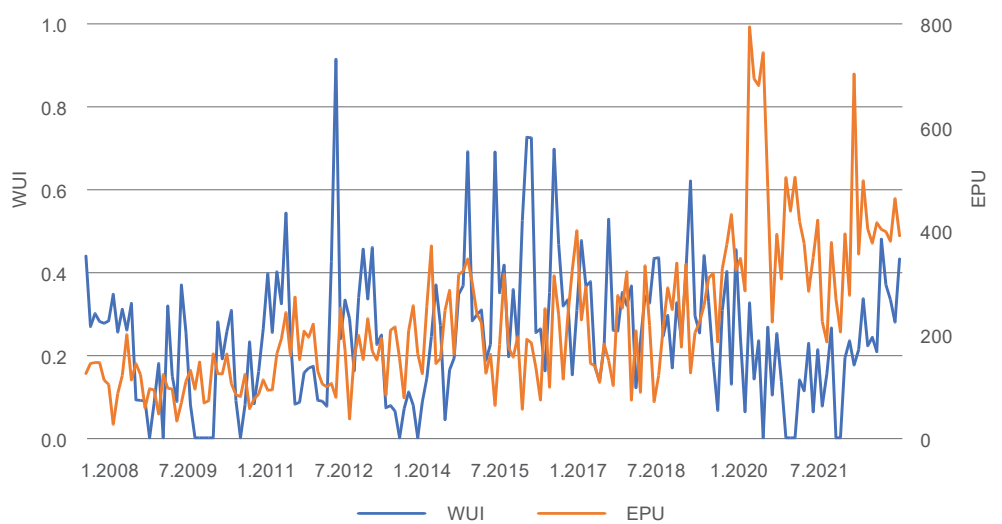

Figure 3. Индикаторы неопределенности для России

Source: author's calculations based on Baker, Bloom and Davis (2016).

Let us briefly focus on another indicator mentioned above, the Geopolitical Risk Index (GPR). It is measured monthly for 43 countries (including Russia) based on

the frequency of use of words referring to military threats, terrorist threats or acts, arms build-up, initiation or escalation of hostilities, etc.,[12] the results are published at https://www.matteoiacoviello.com/gpr.htm. The GPR dynamics for Russia shown in Figure 4 (p. 66) have three small peaks and one very large one. The first two (short, several months each) began in September 2001 and September 2002, respectively, and most likely reflected the global geopolitical tensions that arose after the terrorist attacks on the Twin Towers in New York in the first case, and the U.S. invasion of Iraq in the second. The next wave, during which the GPR tripled compared to the calm period of 2003-2013, was obviously related to Russia's annexation of Crimea. Finally, the fourth wave occurred after the start of the military operation in Ukraine, during which the GPR increased by almost seven times the base level. The average GPR values for the different periods are shown in Table 2.

Table 2. Average GPR values by period

Period	July 2003 - Jan. 2014	Feb. 2014 - Aug. 2014	Oct. 2014 - Oct. 2021	Nov 2021 - Feb. 2023	The total for Jan. 2000 - Feb. 2023
Average value of GPR	0.5	1.5	0.9	3.3	0.8

Source: author's calculations based on Caldara, Iacoviello (2022).

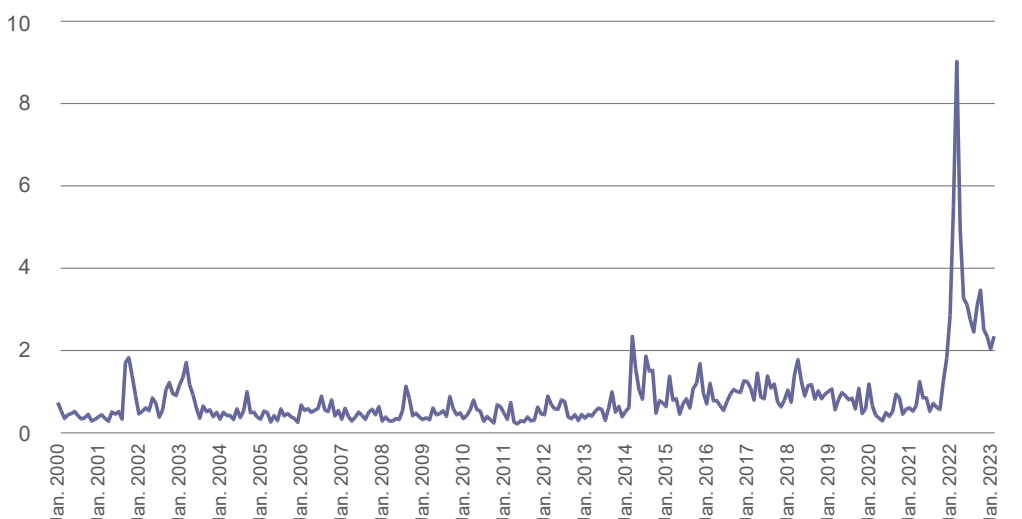

Figure 4. Geopolitical Risk Index for Russia

Source: author's calculations based on Caldara, Iacoviello (2022).

The article continues in the next issue of Contemporary World Economy.

[12] Measurement method proposed by Caldara, Iacoviello (2022).

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Taxonomy of Trade Barriers: Five Types of Protectionism

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Abstract

This paper examines the different motives for introducing trade barriers and identifies five types of protectionism. While the 20th century was dominated by "lobbyist protectionism" and "industrialiser protectionism," the period following the global financial crisis of 2008–2009 has been a time of "geostrategist protectionism" and "populist protectionism." Finally, the introduction of a carbon border adjustment mechanism in the EU could be the beginning of the spread of "benevolent protectionism." The proposed taxonomy of protectionism shows why, despite the consensus among economists on the benefits of international trade, protectionism remains so prevalent. It also helps to explain why developed countries, once the main proponents of free trade and globalization, played a major role in the intense growth of trade barriers in the 2010–2020s.

1. Introduction

The vast majority of modern economists agree that free trade promotes economic growth. Textbooks on international economics focus on demonstrating the benefits of international trade. David Ricardo's theory of comparative advantage, which

illustrates these benefits, is one of the best-known economic principles. The Booth School of Business in Chicago regularly surveys a standing panel of distinguished economists on various aspects of economic policy. The panel of experts they survey shows unusual unanimity on the effects of free trade. When asked whether experts agreed that "freer trade improves productive efficiency and offers consumers better choices, and in the long run these gains are much larger than any effects on employment," there was not a single negative response (Clark Center Forum 2012).[1]

However, protectionism is still widespread around the world and has increased steadily over the past decade and a half. Indeed, since November 2008, Global Trade Alert has recorded more than 40,000 government actions restricting trade and just over 9,000 liberalizing trade (Global Trade Alert 2023). And it is the developed world that is leading the way in rising protectionism: Of the top 10 countries by number of protectionist measures introduced over the period, only one is not a developed country, in fifth place (China). The share of global imports subject to import restrictions increased from 0.6% to 8.9% between 2009 and 2021, with the largest increase occurring in 2018–2019, when the U.S.-China trade war began (WTO 2022). In 2022, there is a new surge in trade restrictions related to sanctions against Russia. The sanctions are not considered protectionist measures by the countries that impose them, but many of them differ from protectionist measures only procedurally: for example, banning goods from Russia or imposing tariffs on them are examples of standard protectionist practices, albeit with different motivations.

This article seeks to answer the question of why the world is becoming increasingly protectionist given the consensus among economists on the benefits of free trade. Through a review of the academic literature and the practice of protectionist measures, the aim is to identify the key motivations of the states that introduce them and to propose a taxonomy of protectionist measures. Through this prism, the rise of protectionism observed globally in the 2010s–2020s is explained.

In this article, protectionism is understood in a narrow sense—as a set of measures aimed at creating barriers to the import of goods into a country. These measures include import embargoes as well as tariff and non-tariff barriers. The use of subsidies, even those prohibited by the World Trade Organization, is not considered in this paper as they are not directly aimed at creating barriers to free trade, although they do change the rules of the game in favor of domestic producers at the expense of importers.

The article is structured as follows. Section 2 describes the main types of benefits that international trade brings to participating countries. Sections 3–7 describe the five types of protectionism, depending on the objectives pursued by the states that use them. The final section summarizes the proposed taxonomy and draws the main conclusions.

2. The benefits of international trade

The justification of the benefits of international trade in economics goes back at least to Adam Smith. Since then, international exchange has not only increased,

but its sectoral and geographical scope and organizational structures have also changed considerably. New stylized facts have been reflected in new theories, which together identify four main sources of benefits from trade (Makarov 2022).

The first relates to the benefits of specialization and the international division of labor. This approach is usually analyzed in terms of absolute, comparative, and competitive advantages. They can be attributed to higher productivity in a given sector—this is the spirit in which advantages were interpreted by Adam Smith and David Ricardo. Heckscher and Ohlin, on the other hand, emphasized the different endowments of countries with factors of production (Heckscher 1919; Ohlin 1967). Porter has shown that in some countries the market environment (e.g., the existence of complementary industries and government support) may be more favorable to certain industries than in others (Porter 1998). Often, the legal environment and the investment regime are also important. In any case, it makes sense for a country to export what it does best and import the rest. Such a strategy will contribute to higher levels of consumption and welfare.

The second source of benefits from international trade was established in the 1970s and 1980s and is mainly associated with Paul Krugman. Unlike classical and neoclassical authors who analyzed perfectly competitive markets, he began to look at international trade through the prism of monopolistic competition models, characterized by the presence of a large number of varieties of the same goods. These varieties are, for example, car models or toothpaste brands. Krugman, drawing on Dixit and Stiglitz's model of monopolistic competition (Dixit and Stiglitz 1977), points out that in the differentiated product industries characteristic of developed countries, consumers want more choice, and international trade with other developed countries allows this love of variety to be satisfied (Krugman 1980). It is precisely this love that drives active trade between developed countries with similar comparative advantages, as well as bilateral trade in goods from the same industry that are now seen as different varieties catering to different consumer preferences.

A third source of gains from trade—economies of scale—is also associated with differentiated products. As production increases, unit costs fall, partly because of the traditionally high capital costs of modern industry and partly because of learning-by-doing. Companies learn from their own and others' mistakes, optimize processes, implement new technical solutions, etc. For most countries in the world, the size of the domestic market is so small that it does not allow them to take full advantage of economies of scale. A prerequisite for the competitiveness of industries is therefore to enter foreign markets. International trade is what allows firms to take advantage of economies of scale, thereby stimulating economic growth (Krugman 1979).

A fourth source of trade benefits is related to the reallocation of resources within industries. This is evident in the "new-new" theories of international trade that emerged in the early 21st century, which shift the focus of trade theory from the level of countries (or, more precisely, industries within countries) to the level of firms. Entering a foreign market always involves some extra costs that only a

relatively select group of firms, usually the larger and more efficient ones, can afford. This means that exporters tend to be more productive than firms that operate exclusively in the domestic market. Given that exporters are the main beneficiaries of free trade, it can be concluded that it leads to a redistribution of wealth in favor of more productive firms, which raises average productivity and consequently the overall welfare of society (Melitz 2003).

This list of four sources of gains from trade is not exhaustive. Rather, it summarizes the different stages in the development of the theoretical understanding of the international exchange of goods and services. It can also be interpreted as a list of first-order gains which, as their logic develops, are superimposed on the gains of the following levels. For example, the literature has established that trade stimulates technical progress (Keller 2004) (e.g. because of economies of scale and because more productive firms that benefit from trade are more likely to innovate), that it leads to lower trade markups for domestic firms due to increased competition (Feenstra and Weinstein 2017), and that trade between two countries reduces the risk of military conflict between them and helps to reduce military costs (Seitz, Tarasov and Zakharenko 2015). This review of theories does not pretend to cover all possible sources of benefits from trade, but it demonstrates their diversity and the magnitude of the positive effects of international trade on economic growth.

Nevertheless, the world is still a long way from eliminating all barriers to trade. Although protectionist practices are viewed negatively by the vast majority of economists, they are still part of the arsenal of most nations in the world. Moreover, they have become more widespread in recent years. To explain the new upsurge in protectionism after the Great Recession, it is important to understand its possible theoretical background. The five underlying motivations for protectionist measures are discussed in detail in the following sections.

3.The first type of protectionism: “lobbyist protectionism”

The standard neoliberal approach links the introduction and maintenance of tariff barriers to the influence of pro-protectionist interest groups that win a political battle. Most protectionist measures in the world are linked to protecting the interests of national producers who have influence over decision-making. For example, protectionist measures in most countries around the world include tariffs on many products as well as non-tariff barriers of all kinds. For the economy as a whole, such protectionism is in most cases harmful, but the net losses are not evenly distributed among economic agents.

Protectionism hurts consumers first and foremost—imported goods become more expensive for them. However, this loss is spread over a large number of individuals. Each of them loses so little, and their capacity for political consolidation is so low, that they do not represent a serious force in defense of the principles of free trade. At the same time, protectionism generates gains for producers. Overall, these are smaller than the gains for consumers, but they fall entirely on a relatively

small number of firms in the industry, which are highly motivated and can easily band together to lobby the government to impose protectionist measures (Ehrlich 2008). In this way, protectionism can win even when there is a cumulative negative impact on a country's economy (Grossman and Helpman 1994).

According to this interpretation, protectionism is the result of rent-seeking behavior, i.e. behavior that does not aim to increase welfare but to redistribute it in one's own favor through the privileges received, in this case from the state (Tullock 1997; Krueger 1974).

The history of U.S. trade policy provides many examples of "lobbyist protectionism." For example, between 1914 and 1997, the U.S. banned the import of avocados from Mexico on phytosanitary grounds, the risk of some insect pests entering U.S. orchards. During this period, Mexican avocados were freely exported to Europe, and since the 1970s, numerous USDA inspections have not found significant pests in Mexican crops. However, lobbying by Californian avocado growers delayed the lifting of the ban on Mexican avocado imports until 1997 (Lamb 2006), when it was included in the agreements in preparation for the North American Free Trade Agreement (NAFTA). The lifting of the ban on Mexican avocados has brought significant benefits to the U.S. economy. For example, in the 2019/2020 fiscal year, avocado imports from Mexico brought $4 billion in value added, 3,351 jobs, $2.2 billion in worker income and $1.1 billion in tax revenue to the U.S. (Williams and Hanselka 2020).

Another example of "lobbyist protectionism" in the U.S. that is still in place today is the U.S. sugar support program. In addition to production quotas for domestic companies, the program also uses tariff quotas and exemptions in U.S. trade agreements with other countries for sugar. These policies keep U.S. domestic sugar prices well above the world average (by more than 100% in some years), with losses to the U.S. population of between $2.4 and $4 billion (Beghin and Elobeid 2017). Like the restrictions on avocado imports, this is a classic example of a policy that benefits a narrow group of economic agents involved in the business in question at the expense of the masses of consumers across the country.

The reason that U.S. trade policy provides the most obvious examples of "protectionism for sale" is because of the relative transparency of U.S. lobbying. Associations of manufacturers of certain products have perfectly legitimate representatives in Washington D.C. and contribute to the election campaigns of U.S. politicians. In many other countries, the patronage of protectionist practices by big business takes different forms but is no less widespread. For example, the literature provides evidence of this kind of protectionism in Turkey (Mitra, Thomakos, and Ulubaşoğlu 2002) and Indonesia (Mobarak and Purbasari 2006), while Borchert et al. (2012) show how special interest protectionism in transport and communication services exacerbates the continental curse of landlocked developing countries.

To conclude the section on "lobbyist protectionism," we note that not only protectionism can be rent-seeking, but also any other kind of trade policy. For example, Rodrik (2018) convincingly argues that modern trade agreements, which focus less on removing barriers to international trade and more on standardizing

rules of doing business (including aspects such as intellectual property protection, government procurement rules, labor and environmental standards), are largely the result of rent-seeking behavior by multinational corporations (Kim, Milner 2019). In effect, this is a different kind of trade lobbying: while companies use protectionism to protect their rules of the game by isolating themselves from the global market through trade barriers, they use trade agreements to try to extend their familiar rules of the game to foreign markets.

4. The second type of protectionism: "industrialiser protectionism"

"Lobbyist protectionism" is bad for national prosperity. But not all protectionist measures are. In some cases, trade barriers can be beneficial, not just for individual interest groups, but for economies as a whole.

The strongest argument for protectionism is the need to protect new industries. It was first used by U.S. Secretary of the Treasury Alexander Hamilton, who wrote as early as 1790 that it was impossible to build up a domestic industrial base without import duties. They are designed to provide firms with a large domestic market and allow them to take advantage of economies of scale (Bairoch 1995). A little later, a similar argument was developed by Friedrich List, the author of the concept of the national system of political economy, who proposed a proactive role of the state in economic development and noted that Great Britain moved to a policy of free trade only after it had become the industrial and technological leader of the world. Spreading the ideas of free trade to other states deprived them of the opportunity to replicate the original path (List 1856). List's ideas were embodied in both Germany and the Russian Empire. Moreover, as proof of their validity, modern proponents of "industrialiser protectionism" use the example not of Great Britain, but of the United States, which, in full compliance with List's recommendations, abandoned protectionism later than other developed countries, and then, having become the world's largest economy, just like Great Britain a century earlier, transformed itself into the main proponent of free trade (Reinert 2007).

Attempts to create their own industries through domestic producer support programs were widely used by developing countries until the 1990s. The need to protect infant industries was one of the reasons for them for not joining GATT. In the 1980s, the idea received new support from Paul Krugman's new theory of international trade, which centered on the notion of economies of scale (Krugman 1979). Given the existing diversity in market structures and cost structures (and the resulting peculiarities in achieving economies of scale), trade liberalization is not necessarily the optimal solution. Helping domestic firms to conquer foreign markets, as well as protecting them from foreign competition in their home market, can be part of an effective strategic trade policy, which may incur costs in the short run, but will create firms and industries that are dominant in the long run, leading to higher economic growth (Brander 1986). However, it is assumed that once a firm achieves market leadership and is able to take advantage of economies of scale, protectionist measures can be removed.

The history of attempts at catching-up, both successful and unsuccessful, throughout the twentieth century is the history of strategic trade and industrial policy. One of the most prominent examples is the Korean economic miracle, which was achieved through intense protection of the domestic market from imports, while encouraging competition among domestic chaebols and supporting exports (Lee 1997). Another successful example of building a strong high-tech industry is the Brazilian aircraft industry, which emerged as part of the country's import substitution policy between the 1950s and 1980s. A key player in this industry is Embraer, which was founded in 1969 and remains one of the world leaders in the production of regional aircraft (Helleiner 1992).

Despite isolated examples of effective implementation, "industrialiser protectionism" should not be seen as a one-size-fits-all recipe for success. Firstly, arbitrary government choices of industrial priorities are bound to be mistakes. For every dozen successful examples of effective import substitution programs, there are hundreds of failures. While strategic trade and industrial policies based on export promotion have been largely successful in South-East Asia, they have had far more modest success in Latin America, where the emphasis has been on tariff protection.

Second, "industrialiser protectionism" has always been an excellent cover for traditional "lobbyist protectionism," and it can be very difficult to tell which is which at the outset. Arguments about protecting infant industries and strategic trade policies are typical lobbyist arguments used to preserve or multiply their own rewards.

Third, and perhaps most importantly, the nature of international trade has changed fundamentally over the past thirty years. Modern trade between developed and developing countries is organized in value chains, made possible by advances in information and communication technology. The components of a final good in these chains often cross borders several times. High tariff barriers prevent developing countries from participating in global value chains, and thus from absorbing the technology from developed countries and the jobs created by Western multinationals. It is this motivation that led many developing countries to abandon the idea of industrialization under tariff protection and join trade liberalization efforts in the 1980s and 1990s (Baldwin 2016). For some of them, China, India, Mexico, Southeast Asian countries, this strategy has been successful, albeit to varying degrees. "Industrialiser protectionism" has lost much of its appeal.

5. A third type of protectionism: "geostrategist protectionism"

The widespread use of sanctions restrictions over the past decade suggests that "geostrategist protectionism" should be considered as a separate phenomenon. Unlike "lobbyist protectionism" and "industrialiser protectionism," which aim to create favorable conditions for domestic producers, "geostrategist protectionism" tends to be aimed at harming a target country.

This makes protectionism more akin to sanctions. Traditionally, it has been customary to distinguish between the two. Protectionist measures aim to create advantages, increase competitiveness, and maximize profits. Sanctions, on the other hand, are a kind of power relationship, focusing on political deterrence. The tools of protectionism and sanctions have also been differentiated: the former have used tariff and non-tariff barriers, while the latter have used bans on exports and imports of certain goods, bans on financial transactions with certain companies and individuals, and confiscation of assets (Timofeev 2019).

However, a clear distinction between protectionism and sanctions is only theoretically possible. Moreover, the boundaries between the two become blurred in the context of a political confrontation, such as between Western countries and Russia or between the United States and China. In this confrontation, there is a "weaponization" of interdependence—the refusal or threat of prohibition of a particular interaction in the context of asymmetric interdependence is used to influence the adversary (Farrell and Newman 2019). In such an environment, many trade policies increasingly act as a weapon rather than a means to one's own development: They are designed to maximize damage to an adversary rather than maximize one's own gains, while minimizing negative side effects to one's own economy.

The boundaries between sanctions and protectionist measures are blurred in terms of the instruments used. For example, Russia has repeatedly used sanitary and phytosanitary barriers in recent decades to restrict trade with countries with which it has had political contradictions. In particular, imports of Georgian wines were banned from 2006 to 2013 due to alleged pesticide content; wine imports from Moldova were banned in 2006 and then in 2013; vegetable imports from Turkey were banned in 2016—formally also for phytosanitary reasons, but it was made clear that the ban was in response to the downing of a Russian Su-24 aircraft by the Turkish air force.

If the use of non-tariff barriers (technical standards or sanitary and phytosanitary restrictions) is compatible with WTO rules, the imposition of additional tariffs on products from WTO members is prohibited. This has significantly reduced the scope for "geostrategist protectionism." However, due to the paralysis of the WTO dispute settlement mechanism and the general crisis of this organization, such restrictions are gradually becoming a thing of the past. For example, in 2022 a number of states (including the U.S., Canada, the UK, Australia, and Japan) withdrew Russia's MFN status and imposed a 35% tariff on all or part of its imports not already subject to sanctions. This is a prime example of combining the deterrent motivation characteristic of sanctions with the tools of standard trade policy.

The line between protectionism and sanctions is also increasingly difficult to draw in terms of motives. The deterrence of a country's technological development, which is the goal of "geostrategist protectionism," can be seen not as an end in itself but as a condition for making the country's own

economy more competitive in the long run. This may follow from the new trade theory, which focuses on economies of scale. Modern high-tech industries are characterized by huge positive returns to scale. The development of virtual platforms reinforces this and, as a result, some markets are subject to the "winner takes all" principle. The technological deterrence of competitors becomes a tool to secure this victory.

The trade war launched by the U.S. against China should obviously be seen in this context. For a long time, the Chinese economy was a perfect complement to the U.S. economy, creating a codependency between the two countries that became the basis of globalization in the 2000s. China provided the U.S. with cheap consumer goods and, in return, received direct investment from U.S. companies, which acted as an entry point for advanced technologies into the Chinese market (Roach 2014). However, as the Chinese economy developed, it shifted from complementing the U.S. economy to competing with it. The share of high-tech products in Chinese exports is already one and a half times higher than in U.S. exports (30% versus 20% in 2021). The "Made in China 2025" plan, adopted in 2015, aims to transform the country from a "global factory" to a producer of high-tech products in 10 categories (including information technology, robots, aerospace equipment, green technology, medical equipment, etc.) in which China is targeting global leadership (McKinsey 2015). Unsurprisingly, it is these industries that have received the largest increases in import tariffs under the Donald Trump administration.

To some extent, the U.S. approach to deter its main competitor is similar to the strategy it used against Japan in the 1980s. It is significant that Robert Lighthizer, who directly led the U.S.-Japan trade negotiations thirty years ago, was appointed U.S. Trade Representative under Donald Trump. The "voluntary export restraints" that the U.S. imposed on Japan, along with the high U.S. import tariffs on a whole group of important goods, including cars (Satake 2000) and semiconductors (Irwin 1996), can also be interpreted as "geostrategist protectionism." The result was the stalling of the Japanese economic miracle and the loss of Japan's status as a major rival to the U.S. in high-tech sectors.

The U.S. is unlikely to achieve the same success with China, especially since China, unlike Japan, which has remained militarily and politically dependent on the U.S. since World War II, has not taken a passive, consensual position in the trade war. Moreover, China's retaliatory measures can also be interpreted as "geostrategic protectionism". For example, Kim and Margalit (2021) convincingly show that China's trade war activities primarily targeted import restrictions on those American goods whose production was concentrated in areas that favored Republicans in elections. Moreover, such a strategy worked in the sense that the residents of these districts were made aware of the trade war, felt its negative effects and blamed it on the Republican Party, thereby reducing its support in congressional elections (Kim and Margalit 2021; Blanchard, Bown and Chor 2022). Thus, once again, the adversarial motivation typical for sanctions is combined with the standard protectionist toolkit.

6. The fourth type of protectionism: "populist protectionism"

One of the main drivers of protectionism today is related to the distributional effects of free trade. These have been known for a long time. According to the Stolper-Samuelson theorem, countries that specialize in the production of capital-intensive goods will raise the incomes of capital owners and lower the incomes of labor (Stolper and Samuelson 1941). Recent international trade theory suggests that trade redistributes wealth from less productive firms operating domestically to more productive firms operating abroad (Melitz 2003). This leads to a concentration of wealth in large firms and their shareholders and, further down the chain, in the regions where these firms are located.

These distributional effects of trade in developed countries are very similar to the effects of technical progress: it also brings undeniable net benefits to society, but at the same time tangible losses to some parts of society—primarily unskilled workers (Rodrik 2011). Unsurprisingly, it is difficult to disentangle the two in quantitative assessments of the causes of inequality. Given that international trade, like technical progress, generates net welfare gains, the losses suffered by the losers could be compensated by the winners (through tax redistribution) and mitigated through educational development, retraining and training for unskilled workers. In reality, however, this does not work.

First, there is ample evidence that the distributional effects of trade in developed countries are disproportionately larger than the benefits of trade. Given the low levels of tariff protection already in place in most developed countries, the gains from further liberalization would be relatively small. For example, the gains to the U.S. economy from the highly ambitious Trans-Pacific Partnership (including the U.S., as originally envisaged) have been estimated at 0.5% of GDP per year by 2030, of which only a few per cent are due to lower tariffs (Petri and Plummer 2016). At the same time, even in liberalized economies, the distributional effects of tariff cuts can remain very significant. For example, Rodrik estimates that in an economy with an average tariff level of 5 per cent, the amount of redistribution from labor to owners of capital as a result of free trade would be $45.5 for every dollar of gains from free trade (Rodrik 2018). Compensatory redistribution on this scale is hard to imagine.

Second, the last decade has seen a politicization of inequality in the United States and Europe. Rising prosperity for the rich, against a backdrop of stagnating or even falling real incomes for the middle class and the poor, has sharply increased tensions over any phenomenon that increases inequality. International trade is not the most important of these, but it is much easier to oppose than the robotization of industry or the rise of the "education premium." In this way, protectionism becomes a tool in the hands of the populists through the support of the masses.

Donald Trump's first three waves of tariffs, which included increases in duties on solar panels (30%) and washing machines (20 to 50%), as well as steel (25%) and aluminum (10%), are a prime example of "populist protectionism." Numerous papers have shown the negative impact of this measure on the U.S. economy. Amity et al. (2019) calculate that Trump's trade policy causes a net welfare loss of

$1.4 billion per month and costs consumers $3.2 billion per month. Fajgelbaum et al. (2020) estimated that the net loss to the U.S. economy was 0.04%. Even in terms of employment, where the tariffs appear to have been targeted, the effect is negative: some positive impact on jobs in iron and steel production is offset by lower employment in industries that use steel and aluminum (which employ 80 times as many people) (Cox 2021) due to their higher costs and retaliatory trade restrictions in partner countries. Blanchard et al. (2022) suggest that Trump's trade policies led to the eventual loss of between 5 and 40 Republican Party seats in Congress in the 2018 elections. In contrast, however, the U.S. tariffs themselves contributed to support for the Republican Party, and the overall losses are related to retaliation, especially the highly effective (in terms of electoral impact) retaliation used by China. As for the electoral effects, there is no doubt that anti-free trade rhetoric helped Trump win the 2016 presidential election. Moreover, despite the overall negative outcome of his trade policy, in the 2020 presidential election in two states (Georgia and Wisconsin), additional popular support for the protectionist measures he initiated allowed Trump to pass the 50% electoral threshold, while the negative impact on his rating from retaliatory measures, although greater in volume, did not play an electoral role (Lake and Nie 2022).

The Trump example has shown that promises of protectionist barriers can benefit a politician, given that in developed countries free trade hits a large part of the population (albeit in relatively small amounts), which also tends to exaggerate the role of international trade in their problems. The situation is similar in the European Union, where withdrawal from the European integration is gaining popular support in some countries even in the face of the negative net effects of such a move. In this sense, Brexit is also a form of "protectionist populism."

And even after protectionist trade policies have been implemented and their negative economic effects are already evident, they remain extremely resilient. This is arguably particularly characteristic of the American electoral system, in which individual states play a disproportionately large role in electoral outcomes, so that policies (including protectionism) that gain support in those states may be politically preferable, even if they result in national setbacks. It should be noted that the Biden administration never lifted many of the restrictive measures imposed by Donald Trump, although it did manage to reach agreement on lifting barriers against the UK, Japan, Canada and Mexico (the last two—introduced under Trump). Even with regard to the EU, there is no discussion of a complete removal of tariff barriers, although they have been eased compared to the original version established under Trump administration. The vast majority of the new tariffs against China remain in force.

In conclusion, "populist protectionism" is characteristic of developed countries. And it is not just a question of the political system, which forces decision-makers to focus on the opinion of the electorate, but also of the purely economic basis of the phenomenon. According to the Stolper-Samuelson theorem, free trade leads to a fall in labor incomes only in developed countries with a significant stock of capital. In developing countries, the opposite is true: the wages of unskilled workers should

rise. This does not necessarily happen in practice due to inertia and low labor market flexibility (Topalova 2010), but free trade certainly does not have a negative impact on the incomes of the general population in developing world, so "populist protectionism" does not make sense here.

7. A fifth type of protectionism: "benevolent protectionism"

"Benevolent protectionism" is protectionism in the name of the public good. It is most obviously implemented for the environmental protection. Stricter environmental policies in developed countries make domestic producers less competitive compared to importers from countries that do not have such policies. In these circumstances, new border barriers that protect domestic firms will make them more amenable to stricter environmental regulation that would otherwise be inconvenient for them.

Under WTO rules, environmental concerns can be used to restrict market access for certain goods, but in practice this has long been almost impossible: most conflicts between free trade and the prevention of environmental damage have been resolved in favor of the former. The trade disputes over tuna imports from Mexico to the U.S. to protect dolphins are well known, as is the embargo on shrimp imports to the U.S. from countries that do not use turtle-safe nets. Overall, the U.S. holds the record for the highest number of environmental disputes under the GATT/WTO, and in each case it has de facto failed—the restrictions imposed by the U.S. have been found to violate the agreement. Under the product/process distinction, the WTO has developed a practice of recognizing claims against a producer only if they relate to the product itself and not to the manner in which it is produced (Howse and Regan 2000).

Now, however, the situation has changed significantly. First, the WTO is in crisis, and at the same time the principle of product/process distinction has become increasingly questionable (Howse and Regan 2000). Second, the issue of global climate change has risen to the top of the international political agenda over the past decade. The attention it has received in many countries, and the nature of the climate system as a global public good, make a much stronger case for using the full range of instruments available to protect the climate than for protecting dolphins or turtles. Third, the impact of policies to reduce greenhouse gas emissions on the competitiveness of businesses is so significant that the debate on the need for compensation trade barriers to reduce the burden of climate regulation on businesses in the most heavily regulated countries is inevitable.

In 2019, the European Commission announced plans to introduce a Carbon Border Adjustment Mechanism (CBAM): a system of measures designed to "level the playing field" in the implementation of climate policy for European producers and importers of carbon-intensive goods. CBAM will be implemented from 2023, initially in a transitional phase. So far, the six product groups (iron and steel, aluminum, cement, fertilizers, electricity, and hydrogen) that are most exposed to "carbon leakage," i.e. the risk that European producers will lose competitiveness

due to stringent climate regulation in the EU (European Commission 2022), have been regulated. The CBAM is not a trade policy measure in the strict sense. Payments under the scheme are not made by exporters of products to the EU, but by European buyers of imported goods. This fact, together with the synchronization of the payments with the price of emission allowances in the EU emissions trading system, allows European regulators to insist that the new scheme is WTO compatible. The countries affected by the introduction of the CBAM do not fully agree with this (Durán 2023), but the issue is a legal one. For the purposes of this paper, the important point is that CBAM is a trade barrier—a full-fledged form of protectionism.

However, such barriers can be expected to proliferate over time. They are a logical consequence of the uneven climate policies: if some countries want to do more than others, compensatory border mechanisms are the only way for them to do so without damaging their economies. In the United States, the possibility of introducing carbon border adjustments was considered as early as 2009, when it was outlined in the Waxman-Markey bill to create a domestic emissions trading system (Makarov 2012). Since then, no discussion of climate policy in the U.S. has been complete without mention of border barriers to prevent carbon leakage. Significantly, they are even recommended in the Economists' Statement on Carbon Dividends published in 2019 (The Wall Street Journal 2019). The letter, which became the most representative public address in the history of the American economic community, was signed by 3,640 economists, including 28 Nobel laureates. Clearly, the vast majority of them are in favor of free trade ideas.

Perhaps the idea of carbon border adjustments will become international. Nordhaus (2015) came up with the idea of a climate club—an association of countries with an active climate policy that introduces a carbon border adjustment mechanism against third countries that are not willing to set comparable climate targets. Such a mechanism would both protect companies in enthusiastic countries from “carbon leakage” and encourage other economies to join the club in order to gain access to their markets. The idea, albeit in a slightly modified form, is already virtually implemented within the G7 (G7 Germany 2022).

While the idea of carbon border adjustments has already become mainstream in economics and international relations, and has been translated into real trade policy measures, the issue of “benevolent protectionism” is still at the level of debate for other public goods. However, this may change in the future. For example, progressive taxation, proposed by many economists to fight inequality (Pikkety 2017; Saez and Zucman 2019), may lead to leakage of industries abroad no less than climate policy. Firms will find it easier to adopt such a measure if they are protected from foreign competition by a parallel border adjustment. The same logic applies to the maintenance of labor standards and the fight against social dumping, such as sweatshops and child labor. Such practices give countries that use them a competitive advantage in attracting foreign investment, triggering a "race to the bottom" on labor standards (Davies and Vadlamannati 2013). Trade barriers against firms from such countries are seen by many as

a solution. Di Taglia and Rodrik (2020) show from surveys that there is a high demand in the United States for protectionist countermeasures to defend the high labor standards of developed countries against "unfair" competition from developing countries. As inequality continues to grow, its politicization in the developed world increases, and the role of the WTO in regulating international trade declines, we can expect to see the spread of "benevolent protectionism" to protect high labor standards and progressive tax practices, just as we are seeing the spread of "benevolent protectionism' to combat climate change.

8. Conclusion and discussion

The five types of protectionism outlined above allow us to systematize the motives behind the introduction of trade barriers in different countries. Of course, it is not always possible to fit every protectionist measure into just one of these groups. For example, "industrialiser protectionism" may serve as a cover for "lobbyist protectionism," but de facto both objectives—protection of new industries and protection of producers' rents—may be pursued simultaneously. "Geostrategist protectionism" can be implemented simultaneously with "populist protectionism"—such a combination is part of the tariffs against China imposed on the initiative of Donald Trump (e.g. increasing tariffs on solar panels from China). "Geostrategist protectionism" can also be very profitable for lobbyists and can be implemented under their influence. For example, the food embargo imposed by Russia in 2014 not only hit farmers from Western (mainly European) countries, but also brought significant benefits to Russian producers (Volchkova and Kuznetsova 2019), while increasing market concentration in the industry (Yanbykh, Saraikin and Lerman 2020). This allows us to observe elements of "lobbyist protectionism" in the embargo as well.

The taxonomy proposed in the paper (Table 1, p. 86) helps to explain the reversal of protectionism that occurred after the 2008–2009 crisis. Over the past decade and a half, protectionist measures have been increasingly adopted by developed countries, which had previously been the main proponents of free trade. In contrast, developing countries, which are characterized by higher tariff and non-tariff protection of their own markets, have maintained a trend toward liberalization.

This kind of inversion is linked to two processes. First, the massive application of "industrializer protectionist," characteristic of developing countries, is a thing of the past. Since the late 1980s and early 1990s, most developing countries have abandoned the idea of import substitution, seeing another faster and more reliable route to industrialization—attracting Western capital and integrating into global value chains.

Second, the practice of "populist protectionism," typical of developed countries, is on the contrary gaining ground, due to the polarization of their population and the politicization of inequality against the background of the objective negative effects of free trade on income distribution in the developed world.

In the near future, "benevolent protectionism" can be expected to spread as concerns about the environment and sustainable development continue to grow. As this type of protectionism is also characteristic of developed countries, its widespread use will only exacerbate the observed inversion.

Table 1. Examples and characteristics of each of the five types of protectionism

Type of protectionism	Goal	Which countries usually implement	Examples	Result for the general welfare in the adopter country
"Lobbyist protectionism"	To support domestic producers	All	A ban on avocado imports in the USA (1914-1997), restrictions on sugar imports in the USA (current), high import duties on cars in Russia (since 2001)	Negative
"Industrialiser protectionism"	Launch industrialization, develop infant industries	Developing	Support for aircraft manufacturing in Brazil (1960s-1970s), protectionism in the Republic of Korea and Taiwan (1970s–1990s)	Positive if successfully implemented
"Geostrategist protectionism"	Deterrence of a political rival nation	All	Voluntary export restrictions in Japan in the 1970s and the 1980s, part of U.S. trade tariffs against China since 2018, Russian embargo on wine imports from Georgia in 2008–2013, tomato import embargo from Turkey in 2016–2018, sanctions against Russia in 2022	Negative; may be positive if political power is converted to economic power
"Populist protectionism"	Gaining electoral support	Developed	U.S. trade tariffs on steel and aluminum from China, EU, Canada, and Mexico since 2018	Negative; positive impact on welfare distribution may be observed
"Benevolent protectionism"	Securing public goods	Developed	U.S. embargo on tuna imports from Mexico in 1990, European carbon border adjustment mechanism in the EU since 2023	Difficult to assess due to difficulties valuing public goods

The last decade has also been characterized by the widespread use of "geostrategist protectionism." It is used by both developed and developing countries. However, in the latter it is usually a retaliatory measure or directed against other developing countries. This is because developing countries value trade more and are less willing to give it up and thus tend to pursue a policy of liberalization. Examples at the rhetorical level include Xi Jinping's speech defending globalization at the Davos Forum in 2017, and at the practical level, the African Continental Free Trade Area, which came into full force in 2021 and represented a breakthrough for trade liberalization processes in Africa, or the Comprehensive Regional Economic Partnership, which was launched in 2022, with China and ASEAN countries as the main drivers.

In this context, talk of full-scale deglobalization is something of an oversimplification. At the level of trade policy, globalization processes are indeed

reversing in the Western world. However, the fact that it has been the main driver of globalization in the past should not imply that the same trend is spreading to other parts of the world. Developing countries are more aware than ever of the benefits of international trade and are continuing the trend toward greater economic openness.

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Notes

[1] Many of the experts interviewed, it is worth noting, added caveats to their positive responses.

The Evolution of Technological Globalization

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Abstract

This article presents an analysis of current trends in technological globalization, focusing on comparisons of the scale and dynamics of the development of the science and technology sectors in various countries. In particular, the article highlights the trends toward outstripping growth of the research and development sphere in non-Western countries, toward an increase in the share of the private sector in investment in research and development, to the transformation of China into one of the world's technological leaders, and the expansion of its technology companies in other countries. The article compares the structure of research and development by country and industry measurements and provides information on the benefits and limitations of the current model for including China in technological globalization.

Introduction

Contemporary discussions of key trends in the development of the global economy include a widespread notion of deglobalization processes associated with the growing manifestations of protectionism, the formation of regional trade and economic blocs, the expansion of the arsenal of potential sanction pressures, and the challenges of overcoming the global Covid-19 pandemic, etc. This study examines the significance of the features of technological globalization to global economic growth. According to economic theory, the formation and efficient operation of research and development (R&D) is the basis of technological development as "creative destruction" (according to Joseph Schumpeter). The increasing number of nations that place their own R&D at the heart of their innovation systems is a solid foundation and driving force of globalization. By using trade and direct foreign investment mechanisms, catching-up nations can rapidly establish new industries by borrowing technologies. However, only the development of their own R&D sector guarantees a transition to a path of endogenous innovative growth. The rapid expansion of high-tech industries in major developing nations, particularly China and India, has improved their standing in global trade, value chains, and investments. Successes in establishing one's own R&D base enhance international competition for innovation leadership and access to innovation resources such as new knowledge, qualified professionals, and intellectual property. The COVID-19 pandemic has, on the one hand, accelerated the development of a variety of technologically advanced industries; on the other hand, it has exacerbated processes that had been developing in recent years, such as the monopolization of certain markets, the fragmentation of the legal regime governing international trade and investment, protectionism, and sanctions regimes. Moreover, there is a growing realization that complex value chains pose additional security threats and necessitate the development of new methods to protect national interests in the face of pandemics, natural disasters, and military conflicts. The concepts of technological sovereignty, security, and critical technologies are currently dominating discussions regarding the long-term development priorities of many nations. These circumstances heighten the significance of relying on proprietary R&D and sectoral innovation systems operating within national regimes.

Economic science has demonstrated that dynamic technological development and the creation and constant updating of knowledge and technology are supported by both the national scientific potential, which is the state's responsibility, and the private research base of businesses, which creates monopoly advantages in the markets and exclusive intellectual property rights. The renewal of productive forces is driven primarily by competition based on such advantages. Theoretically, this conforms to the tenets of the theory of innovative development which was developed by a number of economists, from Joseph Schumpeter to Paul Romer, who established the unique significance of business research and development. A group of researchers at the Massachusetts

Institute of Technology concludes that Schumpeterian "creative destruction" may not be the best way to improve the efficiency of the invisible hand of the market, but it enhances capitalism, increases productivity, and ensures the overall growth of global prosperity (Aghion 2021).

This theoretical context defines the article's two primary goals: first, to systematize the available statistical data on the global scale and structure of R&D by country and industry; and second, to illustrate the characteristics of the current limitations of R&D development in China, a potential leader in technological globalization. This study's research methodology is distinguished by its international comparison of data on scientific research, with an emphasis on the role of the entrepreneurial sector, sectoral R&D priorities, and proportion of basic research.

Scale, dynamics, and organization of global R&D investments

All global science and technology sector development indicators point to the 2000s as a time of successful, progressive technological globalization. Growth in all types of innovative activities, including research, patenting, ventures and startups, export and import of technologically sophisticated goods and services, and direct foreign investments in new businesses, resulted in adjustments to the global economy's operation and an acceleration of key dynamics. This study focuses on R&D, considering it to be the most direct "proxy" for technological globalization, which is fully reflected in international statistics. As shown in Figure 1 (p. 94), all regions of the world have increased their R&D expenditure. Over the course of twenty years, global spending quadrupled, reaching nearly $2.5 trillion, or 2.5% of the global GDP. Southeast Asia has demonstrated the most impressive growth in the field; in 2000, its scope was inferior to that of the United States and Europe, but by 2019 it had surpassed the technological leaders of the 20th century. Latin America, Africa, and Australia represent a small, but rapidly expanding portion of the world's total.

It is also important to note that neither the severe economic crisis of 2007–2008 nor Covid-19 and the recessions and crises it spawned had any effect on the support for R&D; governments and businesses, despite harsh conditions, declining budget revenues, and declining profits, continued to provide funding for scientific institutions, laboratories, and university research units. In contrast, the dynamics of foreign trade in high-tech goods, investments in ventures and startups, and direct investments were heavily influenced by external factors and subject to short-term fluctuations and long-term deviations from typical trends.

As shown in Table 1 (p. 95), the United States is the global leader in R&D investment, with China rapidly gaining ground. During the 2000s, China had a significant advantage in terms of the growth rate of this sector. The historically unprecedented double-digit average annual growth rates of expenditures on technological development enabled China to restructure and modernize its

national economy, establish new highly competitive industries in cutting-edge fields, and pave the way for future breakthroughs. In the 1970s and the 1980s, Japan advanced rapidly toward new frontiers in the technological realm. However, in recent years, it has slightly slowed its pace. The relative knowledge-intensiveness of its economy still places it ahead of both the United States and China. The leader in this field is the Republic of Korea, which also exhibited high growth rates in the late 20th century and established a number of cutting-edge industries and major high-tech corporations with a global presence. India lags far behind developed nations and China in terms of the scale of R&D and relative indicators of knowledge intensity, but the country's high rates of innovation indicate that it has chosen the path of innovation and is confidently moving in the right direction. In the 2000s, European Union nations increased their annual R&D expenditures by 5 to 5.5% on average. This expansion was primarily attributable to the largest nations, namely, Germany, France, and the United Kingdom.

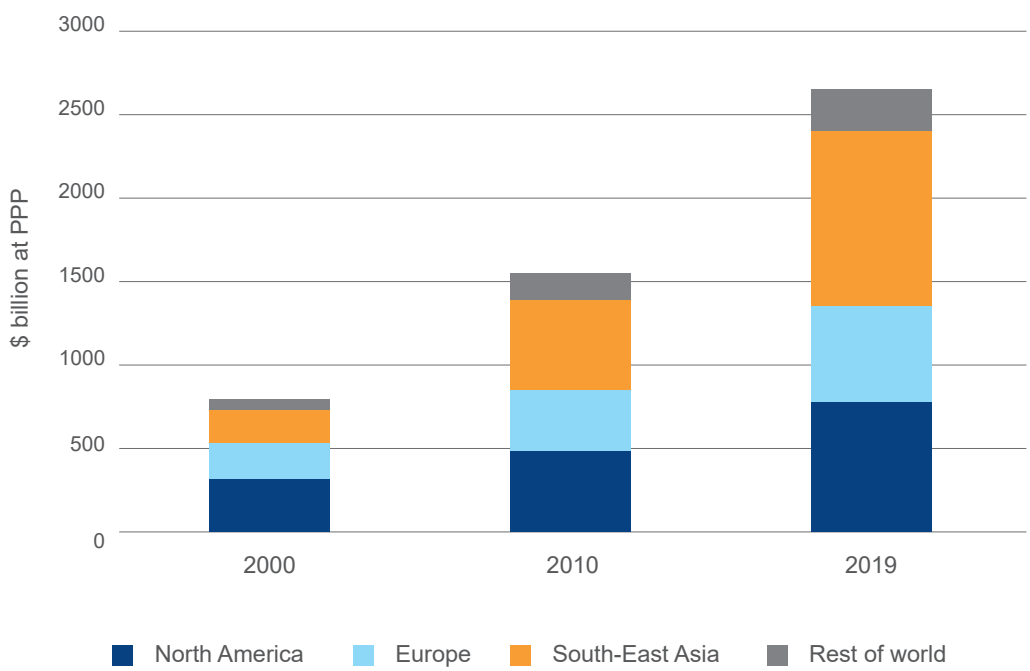

Figure 1. Global R&D expenditures, by region: 2000, 2010, and 2019

Source: Boroush, M., 2020. Cross-National Comparisons of R&D Performance. Research and Development: U.S. Trends and International Comparisons. Science and Engineering Indicators. January 2020. National Science Foundation. Available at: <https://ncses.nsf.gov/pubs/nsb20203/cross-national-comparisons-of-r-d-performance>

Table 1. International Comparison of the Scale and Dynamics in R&D Financing by Leading Countries, 2000-2019

	R&D expenditures, total, 2019, $ billion at PPP	R&D expenditures to GDP - knowledge intensity, %	Average annual growth rate of expenditures on R&D, %		
			2000-2010	2010-2019	2000-2019
United States	668	3.13	4.3	5.6	4.8
China	526	2.23	20.5	10.6	14.1
Japan	173	3.20	3.6	2.4	3.3
Germany	148	3.19	4.9	6.1	5.2
South Korea	102	4.64	10.9	7.8	8.9
India	59	0.65	9.4	4.4	7.2

Based on: Boroush, M., Guci, L., 2022. Cross-National Comparisons of R&D Performance. Research and Development: U.S. Trends and International Comparisons. Science and Engineering Indicators. April 2022. National Science Foundation. Available at: <https://ncses.nsf.gov/pubs/nsb20225/cross-national-comparisons-of-r-d-performance>

Russia and the post-Soviet states (CEE and CIS) are currently on the periphery of global trends of high dynamics of resource support for research and development relative to the size of the economy. In some countries, this level has increased slightly, whereas in others, it has decreased. There has been no significant increase in state budgets or business expenditures. Even the most developed countries of Central and Eastern Europe—the Czech Republic, Slovakia, Slovenia, Latvia, Lithuania, and Estonia—lag behind the global average in terms of science intensity (1.4%-1.5% of GDP) and are two to three times behind the global leaders in technological development (Sherstnev 2022). During this period, the Russian Federation experienced a modest increase in internal expenditures on R&D but it lagged behind in GDP growth, resulting in a stabilization of the R&D-to-GDP ratio between 1.0 and 1.1%. In some years, the science intensity of the Russian economy decreased. Russia is currently ranked ninth in the world by R&D spending (PPP), trailing China by 12 times and the United States by 13 times (ISS RAS, 2021: 64).

Active technology import in the 2000s led to an increase in indicators of so-called "imputed knowledge intensity" (taking into account R&D costs incurred by foreign suppliers of high-tech products) in a number of sectors of the Russian economy, thereby bringing the country's technical level to global averages. This resolved the competitiveness issues of energy, agriculture, metallurgy, machinery manufacturing, and the financial sector, but led to critical levels— 90–100%—of import dependence of certain industries. In the context of sanctions imposed by developed nations in response to the events in Ukraine, the production of automobiles, aircraft, and offshore oil and gas, among others, has ceased. The

government took steps to increase "parallel imports" (the importation of technically complex products through third countries without licenses or other permits) as well as imports from China and other friendly nations. This situation highlighted the importance of technological sovereignty, which requires a nation to rely on indigenous scientific and technological capacity.

The data on business R&D expenditures organized by industry (Table 2, p. 96) most accurately reflect the principal directions of the technological race in the global economy.

Table 2. Global business spending on R&D, by country and industry, 2020, billions of euros

	United States	EU	China	Total*
ICT goods	83	26	38	143
ICT services	111	14	23	146
ICT total	194	40	61	289
Health	94	37	8	139
Automotive and other transport	19	62	15	97
Industrial equipment	9	11	17	37
Construction	1	2	18	21
Chemistry	5	6	2	13
Financial Industry	5	6	6	19
Energy	3	5	7	17
Aviation, space, defense	5	5	6	16
Other	9	6	7	28
Всего	**344**	**184**	**148**	**676**

* the sum of expenditures for these nations; the total expenditures of 2,500 companies in this database are €908,6 billion in 2020, a 6% increase over 2019. Based on European Commission, 2021. The 2021 EU RD Investment Scoreboard. JRC/DG RTD.

The three consolidated industries—ICT, healthcare, and automobile manufacturing—are the current leaders in technological advancement in terms of funding and global economic significance. ICT is a leader in the United States and China, while the automotive industry is a frontrunner in the European Union. In general, U.S. businesses outperform European and Chinese firms, but Chinese firms have outperformed European firms in the field of ICT; these proportions confirm the current pattern of global competition, as recognized by specialists. Less obvious are the relatively modest funding levels for the defense and aerospace industries (tens of times less than ICT and healthcare). Evidently, these areas are primarily financed by state budgets and not by businesses. However, even in the United States, where federal defense spending on R&D

is the largest, it is still less than the funding for innovative developments in digitalization and healthcare.

Numerous small- and medium-sized supplier companies provide system integration of their scientific and technological activities to automotive industry titans in the European Union. In addition, Siemens and Robert Bosch in the field of electronics; ASML Holding, Infineon, STMicroelectronics, and NXP in the semiconductor industry; SAP in software development; Medtronic (Ireland) and Philips Healthcare (Netherlands) in medical equipment manufacturing, as well as other companies, hold strong positions in the global innovation and technology industries. At the beginning of the twenty-first century, the technological achievements of Nokia and Ericsson in telecommunications inspired the optimism that European companies would occupy a prominent position in the global ICT industry. However, leading telecommunications companies Vodafone, Orange, and Deutsche Telekom have not become global leaders because they are primarily European market players (Konina 2021). Experts list the primary reasons for the relatively weak competition from Europeans in the ICT sector: market mistakes by corporations themselves, insufficient domestic demand, lack of long-term support and funding at the EU level in the late 1990s and the early 2000s, and insufficient innovation efficiency have slowed the growth of European information companies.

The ICT situation in Russia is ambiguous. In terms of microelectronics production and information and communication technologies, the nation is at least a decade behind world leaders (there are no domestic current-generation microchip manufacturers or microchip production equipment) and is fully reliant on imports. Russian companies are up-to-date in software development and providing of a vast array of information services. Examples include Russian developers of transportation services, unmanned land vehicles (Yandex, NAMI, Cognitive Technologies, and others), and facial recognition devices (NtechLab).

Global competition has intensified in terms of the technological growth of the global economy. In geopolitical battlefields, the United States and other Western nations view the retention of advanced scientific and technological achievements as a central strategy. Currently, the United States and China are engaged in an uncompromising struggle for technological leadership. Among their top priorities is the creation of tools for resolving institutional problems and dilemmas related to globalization, with a focus on achieving a balance between national and international aspects of innovation policy. It can be argued that the United States continues to lead the world in innovation, as its national innovation system possesses a number of significant advantages, such as flexibility and agility, strong corporate scientific and technological culture, and a stock market that responds appropriately to industry innovations.

According to the Special Competitive Studies Project, which was published in September 2022 by a research team led by Eric Schmidt, a co-founder and former executive at Google, there are substantial differences between industry

leaders. China already dominates certain subindustries, including the production of 5G communication systems and lithium batteries (80% of the global market). Biotechnology (including genomic research and new pharmaceuticals), cloud computing, and artificial intelligence systems are dominated by the United States (Chauhan 2021). This position of preeminence has resulted in globally significant innovations such as the Covid vaccine based on Crispr technologies (gene editing) and a new computing architecture for artificial intelligence that has enabled the transition to large models. It is a known fact that China has not yet created a vaccine using gene editing technologies, despite the political urgency of the Covid issue in the country.

The development of digital technologies implemented primarily by private knowledge-intensive businesses in developed nations has resulted in the formation of large monopolies that dictate many current directions of scientific and technological advancement. Data characterizing the comparative scale of modern business research activity by country and industry indicate that research on all types of businesses is increasingly related to the advancement of information technology, both directly and indirectly.

In terms of both volume and growth dynamics, the research potential of the largest companies in the information and communication sector surpasses that of other high-tech industries. In the ten years since 2010, spending on research and development (R&D) by the five largest U.S. and three largest Chinese corporations, known colloquially as FAMGA (Facebook-Meta, Apple, Microsoft, Google-Alphabet, Amazon) and BAT (Baidu, Alibaba, Tencent), has increased more than sevenfold and reached $121.3 billion by 2020. Comparatively, this represents approximately 10% of the R&D expenditure of the 2,500 largest companies in the world. As of 2019, FAMGA's share of innovation and technological spending across all types of national R&D spending, including business spending in the United States, was 15.4% and 22.1%, respectively.[1] The figures for China and the BAT Group were significantly lower. However, Chinese companies began the transition to innovation much later than their American counterparts did.

The digital business sector emerged as a major beneficiary of the COVID pandemic, as evidenced by stock market performance. The market capitalization of Apple, a digital technology and stock market leader, surpassed $3 trillion at the beginning of 2022, allowing the company to raise additional funds for innovation and development. Simultaneously, the Chinese government enacted restrictions on the presence of the country's largest digital corporations on U.S. stock exchanges. Between 2021 and 2022, this has limited borrowing opportunities in the rapidly expanding U.S. high-tech market.

The digital sector's long-term bet on new knowledge, technology, and global innovation has created a dominant segment of innovation systems, which has attained heightened political significance. Digital businesses pursue technological and innovation policies that increasingly conflict with state

[1] U.S. R&D estimates for 2019 from: Boroush, M., 2020.

interests by using their own resources. In addition, their activities in the field of mass communication generate new political challenges and give rise to new forms of regulation, such as the emergence of technological protectionism and new legislative strategies to combat digital globalization.

The pandemic has become a catalyst for accelerating the development and use of digital technologies across all industries and social spheres. Digital companies have accelerated the evolution of medical services, creating new business opportunities in the healthcare industry. Apple is increasing its number of iPhone applications for medical monitoring, Microsoft is offering healthcare cloud services, and Alphabet is investing heavily in biopharmaceutical research. Amazon intends to make significant technological advancements in healthcare. Amazon launched a network of clinics that were legal in 32 U.S. states on November 15, 2022. The clinics provide online consultations and treatments for twenty distinct medical conditions, ranging from acne to allergies. Amazon's historical background for this project includes the acquisition of One Medical (790 thousand customers) for $3.9 billion, the establishment of their own online pharmacy, and experience in providing digital health care for its employees. Insurance companies, which have been heavily criticized in the United States, do not participate in the provision of these services. Amazon's CEO believes that the healthcare industry is ripe for technological disruption (The Economist 2022a).

In the context of technological shifts, "creative destruction" has also begun in the financial sector. New financial technologies include online payment systems, artificial intelligence (AI) advisors for credit transactions, crowdfunding technologies, cryptocurrencies, and other blockchain-based financial systems. According to experts, these innovations are upending established business practices, blurring the lines between industries, and reshaping the structure of financial markets (Podrugina and Tabakh 2022). Consumers of financial services value these innovations' benefits (e.g. speed, accessibility, anonymity), whereas banks and other financial institutions see a potential competitive advantage. The new fintech sector has proven to be significantly more effective than traditional institutions, but it has posed a number of risks and resulted in the partial prohibition of certain transactions. Serious concerns among national and international regulators will not result in a total ban on these technologies, but rather in the development of new regulatory methods and tools as well as innovative solutions at all levels of management in this field (Ivanova 2022).

These and other examples suggest that the value of digitalization processes and, consequently, the attitudes of the market, society, and state have undergone a transitional phase. A new economic and sociopolitical phenomenon is the development of digital technologies and transformation of a number of digital platforms into global monopolists. This indicates that innovation policy issues have transcended purely economic debates, acquired a unique political urgency, and revealed not only the vulnerability of theoretical perceptions of the public good, but

also profound global differences in values that can serve as the basis for new global regulation and long-term state strategies governing technological supremacy.

Technology globalization in China: characteristics and challenges

China's model of technological globalization during the 1990s and the 2000s was characterized by the large-scale attraction of foreign direct investment to build manufacturing and service enterprises, establishment of advanced economic sectors on that foundation, accession into the WTO to increase technological imports (primarily high-tech components, but also know-how and other forms of intellectual property), export of finished products, copying of advanced technologies, rapid increase in R&D funding, and the establishment of economic incentives to form a national innovation system.

According to estimates by both Russian and foreign researchers, the rapid development of the Chinese economy and the re-equipping of the majority of industries with modern technical and technological bases were made possible by investments from the United States, Japan, Germany, the United Kingdom, and the Republic of Korea. "They brought to China new goods, production means (tools, machinery, equipment), technology, know-how, patents, inventions, engineering, and managerial skills" (Varnavskiy 2022).

It should be emphasized that the fundamental basis for long-term scientific and technological success, ensuring the development of a country, is its own science, or more generally, a research and development field. In this regard, China has achieved remarkable success. As shown in Table 1, total R&D expenditure increased by double digits. According to data from 2021, China has invested 2.8 trillion yuan ($386 billion), or 2.4% of its GDP in science, indicating a slight increase in the knowledge intensity of the economy over the past two to three years. Significant advancements were made in fields such as manned space navigation, lunar and Martian exploration, subsurface and deep-sea exploration, supercomputers, satellite navigation, quantum computing, nuclear power technologies, new energy technologies, large aircraft production, biomedicine, and biopharmaceuticals. China has joined the ranks of innovative nations (according to the report of the Central Committee of the Chinese Communist Party to the 20th Congress).

Owing to the government's constant support and promotion of innovative activities, Chinese scientists have achieved great success in applied research and development related to the development of new industries and knowledge-intensive private and public sector companies. China surpasses both Japan and the European Union in total R&D funding for this sector, approaching parity with the United States.

In terms of funding (Table 3, p. 101), China is more than three times behind the United States, and in terms of quality results (Nobel Prizes and other prestigious awards, highly cited journals and articles in advanced fields, and university rankings), it also lags behind European countries. Quantitative and qualitative

gaps in basic science are extensive and difficult to close, as demonstrated by the experience of other nations.

Table 3. Scale and structure of R&D funding, by stage, $ billion at PPP, 2019

	Total costs	Basic research	Applied research	Developments
United States	668.4	102.9	132. 9	432.6
China	525.7	32.7	59.3	434.7
Japan	173.3	21.7	32.2	112.3
India	55.1	7.9	12.2	10.8
	As a percentage of total costs			
United States	100	15.4	19.8	64.6
China	100	6.0	11.3	82.7
Japan	100	12.5	18.6	64.8
India	100	14.4	22.2	63.4

Sources: National Center for Science and Engineering Statistics, National Patterns of R&D Resources (2019–20 edition); Organization for Economic Cooperation and Development, Main Science and Technology Indicators (September 2021 edition).

Moreover, over the past three years, in the midst of political controversies, trade war, and the Covid-19 pandemic, cooperation between Chinese and foreign scientists, particularly American scientists, has slowed significantly. This was evidenced by the sharp decline in all types of collaborative publications. Collaboration between Chinese and American scientists has been a relatively recent phenomenon. Prior to 2000, there was almost no publication by dual-affiliated (U.S.-China) scientists, and the 18 years that followed saw a rapid increase in collaborations that outpaced the dynamics of U.S. scientists collaborating with scientists from other countries. By 2021, the number of such articles in refereed databases dropped to 12,000 from the 2018 peak of 15,000. Notably, the collaboration and publication of U.S. and Chinese scientists with colleagues from other nations continues along the same trajectory as in the past and has been historically stable. However, the scope of the interactions with other nations is many times smaller. Under the new conditions, it is possible that the previous level of Chinese-American interaction is no longer attainable (Van Noorden 2022). The decisions of the 20th Chinese Communist Party Congress reaffirm that science and technology are the most important methods and tools for addressing long-term modernization challenges, but China's reliance on its own resources is becoming increasingly pronounced (The Economist 2022b).

High business activity is an important advantage of China's research and development. Three-quarters of China's national R&D expenditures are carried

out and financed by the private sector, reflecting the predominant orientation of research toward the market and profit generation for innovative companies. Such indicators are typical of the most technologically advanced nations, including the United States, Japan, and the Republic of Korea (see Table 4, p. 102). In European nations, business participation in overall R&D activities is somewhat lower. In India, only 37% of R&D funding comes from the private sector, which is comparable to the R&D structure of the Russian Federation (33% in 2020). International comparisons reveal that the lower the share of business investment in R&D and the higher the share of public investment in R&D as a proportion of the total national R&D budget, the less efficient the spending, the slower the development in advanced high-risk areas, and the less state developments are transferred to industries and services.

Table 4. Structure of funding and implementation of R&D, by country, 2019, %

	R&D funding			R&D implementation		
	Business	Government	Universities and NGOs	Business	Government	Universities and NGOs
United States	74.5	9.7	15.7	65.0	21.0	14.0
China	76.4	15.5	9.1	76.3	20.5	3.2
Japan	79.2	7.8	13.0	78.9	14.7	6.4
R. of Korea	80.3	10.0	9.7	76.9	20.7	2.4
France	65.8	12.4	21.8	56.7	32.5	10.8
India	36.8	56.1	7.1	36.8	63.2	0.0

Based on: Boroush, M., Guci, L., 2022. Cross-National Comparisons of R&D Performance. Research and Development: U.S. Trends and International Comparisons. Science and Engineering Indicators. April 2022. National Science Foundation. Available at: <https://ncses.nsf.gov/pubs/nsb20225/cross-national-comparisons-of-r-d-performance> (table RD-7).

China's 2020-2025 five-year plan projects an average annual growth rate of 7% for scientific expenditures. A predicted slowdown in economic growth may make it harder to achieve this goal, since in a context of increased politicization of economic regulation it may be difficult for businesses to raise funds for innovative projects. The Chinese Communist Party's long-term objective is to reach the average science intensity of the GDP of OECD countries by 2035, which currently stands at 2.7%. Specialists have questioned the feasibility of this objective. This objective is further complicated by the CPC's declared policy of strengthening and enhancing the significance of state-owned enterprises, which could reduce incentives for small and medium science-intensive businesses and foreign investors. The declared priorities of development, such as the military complex, agriculture, and green energy, are not always commercially attractive to modern knowledge-intensive businesses (The Economist 2022b).

The country's innovative potential is hampered by conflict with the United States, also known as the trade war. However, the disagreements between the nations extend beyond trade disputes; this is a new phase in the competition for technological advantage as the basis for geopolitical leadership. As Chinese manufacturers approached the forefront of technological advancement and transitioned from playing catch-up to pursuing their own strategies, in 2018, the United States began imposing various sanctions against Chinese companies, primarily high-tech companies (Danilin 2020). The stated reasons for the sanctions pressure include the prevention of leaks of dual-use technologies, accusations of unauthorized access to defense technology secrets, cyberattacks against government agencies, etc. Numerous Russian and Chinese experts believe that with the rapid development of Chinese high-tech, claims and contradictions have assumed a critical nature, posing threats to U.S. global leadership and hegemony.

The first effort to resolve the U.S.-China trade dispute was a large bilateral trade agreement (signed on January 15, 2020 by Donald Trump and Chinese Vice Premier Liu He). The eight-part document addresses trade issues, including the trade volume of food and agricultural products, financial issues, terms of dispute settlement, and, most importantly, technological development and technology transfer issues. The agreement begins with a section on intellectual property, as China's spotty record regarding this area is of great concern to the United States. When both parties signed the agreement, it meant that China acknowledged the issue and accepted the proposed solutions. This topic was translated into practical terms in the second section of the agreement, which addressed the technology transfer and localization conditions. It is known that the Chinese government required foreign companies entering the Chinese market to agree to localize production, train Chinese specialists, and transfer technology to Chinese companies. This occurred, for instance, with the manufacturing of wind turbines and solar panels; as a result of the transfer of foreign technology, as U.S. experts assert, China has become one of the largest manufacturers of wind turbines and the undisputed leader in the manufacturing of solar panels.

In the new trade agreement, the parties "confirm the priority of technology transfer on voluntary, market conditions," and China pledges not to require foreign companies to transfer technology. Building on these commitments, China adopted the Foreign Investment Law in 2020, which established an institutional framework for attracting, protecting, and regulating foreign investment. All laws and regulations that do not comply with this law will be abolished over the following three years. Chinese experts argue that this development has increased the country's openness to the outside world, and that this openness will continue to increase in the future.

In spite of these steps and a series of other reciprocal steps made by China, the "technological war" between the U.S. and China continues, becoming more acute in 2022. In June, the U.S. passed the so-called Chips and Science Act, which aims to limit the supply of state-of-the-art microelectronics production technologies to China and provides for an increase in scientific and technological capacity in the

United States. The total amount of direct and indirect subsidies provided to the U.S. microelectronics sector and the national science fund will exceed $300 billion over several years. Beijing links the law on microchips to a new U.S. initiative to establish the Chip-4 group (U.S., Japan, South Korea, and Taiwan), an alliance of four leading chip manufacturers. The goal of the group is declared to be "blocking the development of the Chinese microchip industry and monopolizing the industry of high-quality microchips."

In August 2022, the U.S. Department of Commerce imposed a ban on the export of electronic design automation software to China. In October, the Administration introduced new restrictions on exports to China, this one regarding advanced semiconductors and equipment for their production, as well as bans on the employment of U.S. specialists in Chinese companies that are subject to sanctions. Experts believe that these sanctions against Chinese microelectronics, in terms of their impact, will prove to be as serious as those previously adopted against the telecommunications company Huawei (its market position has deteriorated significantly).

The situation in the Chinese high-tech sector is also compounded by the increasing intensification of internal CCP politics, which is increasingly limiting the presence of its major companies, especially digital businesses, in global capital markets (especially on U.S. stock exchanges), instead orienting big business toward CCP political and ideological priorities, increasing pressure on social networks, the video game industry, e-commerce, and artificial intelligence. Priorities for national security and technological sovereignty are increasingly coming to the forefront in China.

The aforementioned trends of decreasing international interaction, limiting the powerful forces behind the global division of labor and scientific cooperation, and shifting national development priorities toward state enterprises and central government-controlled R&D programs may pose unforeseen challenges and threats to the CCP's stated goal of becoming a world superpower with a developed economy in the foreseeable future (Institute of World Economics and Politics, CASS Research Center for Hongqiao International Economic Forum 2022: 182).

* * *

Thus, in the 2000s and the 2010s, technological globalization was marked by new and important trends that distinguished the era from earlier global economic processes, as the above statistical and empirical data suggest.

First, there was accelerated growth in the research and development field beyond the leading group (the U.S., EU, and Japan), in countries that were previously passive in this area, especially in Asia. The developed R&D sector qualitatively changes the foundations of economic growth, creates human and intellectual-creative potential for new solutions, patents, startups, and new industries and services. There has been an increase in the knowledge intensity of the global economy and the formation of stable bases of technological development in regions that have recently joined the new stage of the global division of labor, with a special

role of fast-growing high-tech industries. The Covid-19 pandemic accelerated the development of R&D as a critical source of solutions for emerging problems. At the same time, the economic growth slowdown, fragmentation of global value-added chains, and increased priorities of security and technological sovereignty led to the fragmentation and individualization of many previously open global processes, slowing down the development of a number of R&D areas.

Second, a structural transformation of the R&D sphere was noted, owing to an increase in the share of the entrepreneurial sector, which surpassed the importance and role of state investment in R&D. This shift was most striking in the field of information technology. The cross-cutting, breakthrough nature of these technologies, the high economic return of the transformation of all types of business, and the special social and political significance of digitalization are the sources of growth of capitalization and the high investment activity of digital corporations. The mastery of advanced frontiers of information technology, especially in the field of microelectronics, is considered a major strategic advantage in geopolitical competition and has led to new disputes between the U.S., China, and Taiwan.

Third, during the 2000s, China exhibited unprecedented double-digit growth rates in R&D, which accompanied the industrialization of its economy and its integration into global value chains through increasingly sophisticated products and services. On account of these factors, the People's Republic of China has become the leader of the developing world, with Chinese corporations successfully pursuing global expansion in all regions and countries, provoking opposition from the U.S. and European regulators. The 20th CPC Congress proclaimed a policy of long-term strengthening of the foundations of scientific and technological development and attainment of leadership in this field. China continues to seek its own path to modernization while overcoming structural imbalances in the innovation system, competitors' resistance, and difficulties in transitioning from catch-up development to mastery of new areas of science and technology.

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International Development Cooperation: The Case of Brazil

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Abstract

International cooperation is a less well-known characteristic of developing economies. It is often associated with concessional financing and humanitarian initiatives and understood as a means of exerting 'soft power', whose intellectual origins date back to the Cold War. Unlike in power-based interpretations, international cooperation initiatives among developing economies do not take the shape of direct monetary contributions. Instead, they are mostly focused on shared development agendas, which in practice means technical support, educational and scientific activities, humanitarian support, assistance to refugees, peacekeeping operations and other partnerships implemented with the support of multilateral and regional agencies. Brazilian initiatives have been systematically measured since 2005 by IPEA, and they show a significant and increasing effort in terms of the volume of resources involved, as well as a diversified set of initiatives. Brazil's international cooperation accounting procedures are in line with the TOSSD methodology, as well as with the UNCTAD pilot project on the quantification of South-South Cooperation for Development. All methodologies revolve around the issue of measuring the progress of the Sustainable Development Goals. Most of the projects benefit African and Latin American countries, while other initiatives counterintuitively benefit

individuals from developed countries. In 2021, the estimated total volume of official resources destined for Brazilian international cooperation surpassed US$ 1.3 billion, a significant figure for a developing country. The initiatives directly implemented by the state and local governments of the Brazilian federation are still rather unexplored. This fact supports a general perception among policymakers in Brazil: future methodological improvements will inevitably reveal higher levels of expenditure and shed light on the intricacies of the Brazilian participation in the International Development Agenda.

I – Introduction

One lesser known dimension of the international insertion of an economy is the provision of cooperation initiatives to other countries, particularly those made possible with the country's own official and budgetary resources.

International cooperation initiatives are most often associated with the provision of credit under differentiated conditions and humanitarian programs. In terms of foreign policy and national interests, the rationality for this type of initiative is associated with the logic of "soft power", as proposed by Nye (2004): a country manages to influence partners and eventually derive business opportunities from this relationship without the use of force, from cooperation projects that can also be beneficial to both parties.

However, the international framework for supporting the development agenda is underpinned by both monetary and non-monetary contributions. Especially in partnerships between developing economies, cooperation can be effective via measures that involve the transfer of knowledge and the sharing of practices in technical, educational, and humanitarian cooperation activities, among others.

In the case of cooperation between developing economies, the similarity of the conditions among partners can lead to more efficient results than projects financed by industrialized countries. In addition to the similarity between policy transfer contexts, countries in the Global South see common realities and problems in the structure of the international system that facilitate dialogue and communication. It is less a case of exercising persuasive power and more of partnership.

International cooperation as an instrument of foreign policy is a creature of the last 70 years. The ideological conflict aggravated by the end of World War II led the two main contenders to adopt a set of measures gravitating around two options: either what were conventionally called democratic power structures or adherence to the Marxist-Leninist principles, which formed the basis of the "non-Western" side.

Strictly speaking, both sides were considered imperialist by several developing countries. The South-South cooperation as a political project emerged between the 1950s and 1960s as a "third way" for the elaboration of countries' own

initiatives, aiming to avoid unequal relations with the two hegemonic states and other former European metropolises.

Although the rationality for its existence stems from the struggle of the countries of the South for the reduction of inequality in the international system, international cooperation for development also constitutes a channel of influence for developed countries. Designed as an instrument to support the economic development of lower-income countries, its genesis was essentially the expansion of financing at subsidized prices in lower-income countries, as part of the exercise of non-military power over developing countries, although explicitly exercised.

For some years now, Brazil has been conducting various projects to promote international cooperation for development and has a unit in the Ministry of Foreign Affairs dedicated exclusively to this work. Since 2010, the Brazilian Cooperation Agency (Agência Brasileira de Cooperação) has been working closely with the Institute of Applied Economic Research (IPEA, Instituto de Pesquisa Econômica Aplicada) to quantify and analyze the Brazilian contribution to the international development cooperation agenda. The partnership between the two institutions has increased the stock of knowledge of international cooperation initiatives implemented by several institutions of the federal, state, and municipal governments of Brazil.

The expression "soft power" seems to make little sense in the case of Brazil, either because Brazilian diplomacy does not seek a hegemonic position in any sense or because the concept was developed to interpret the behavior of developed countries. However, given the volume of resources involved, the diversity of beneficiary countries and the variety of forms of cooperation, it is possible to argue that the Brazilian case is innovative in terms of strategies for providing support in numerous sectors and economic activities.

This article discusses the Brazilian experience of the provision of cooperation for international development in six sections. The next section brings a very brief historical retrospective of international cooperation activities and their evolution over time. The movement gradually became a mechanism for reducing the differences between industrialized economies and less affluent countries, and progressively became an instrument of technical complementarity between developing economies.

The third section discusses the main formats and modalities in which international development cooperation takes place, either in direct operations between countries or with the intermediation of international institutions. The very conceptualization of international cooperation has changed over time, as well.

The fourth section contains a brief reference to the relationship between international cooperation operations and the commitments made under the United Nations 2030 Agenda. The setting up of a monitoring system to identify cooperation operations compatible with the Sustainable Development Goals is today at the heart of the debate on how countries implement their activities.

The fifth section presents the basic data of Brazil's recent experience of international development cooperation. The non-monetary nature of operations (except financial contributions to multilateral organizations) is a central theme, as well as indications of the main modalities of cooperation promoted by the country, in addition to its sectoral economic impact. The sixth and closing section brings in the main aspects of the Brazilian experience of international cooperation, highlighting desirable adjustments and proposing policy measures.

II – The evolution of international cooperation

The post-World War II period was characterized by the transfer of massive resources from the United States to the reconstruction of Western European economies, with similar measures adopted by the Soviet bloc for the same purposes. The Marshall Plan provoked resentment from non-European countries which had also participated in the conflict, and which also faced economic difficulties due to the consequences of the war. This sentiment was politically capitalized in the context of the independence of several nations, while the division into ideological blocs potentiated the rivalry for the implementation of initiatives that could reduce economic difficulties in developing countries.

The 1950s-60s were characterized by the emergence and consolidation of a multilateral structure of institutions responsible for providing official aid and development assistance. In the United Nations, the focus on technical assistance over these two decades was the axis of creation and operation of several specialized multilateral agencies. The 1970s brought skepticism about the validity of cooperation between rich countries and developing economies. The perception was that dependence was being reproduced due to the structural inequalities and the conditionalities frequently imposed. In this context, technical cooperation initiatives between the countries of the South began to flourish.

South-South cooperation had its roots in the 1940s, and was strengthened as a political movement in the 1950s-60s. The 1970s, however, crystallized the potential for cooperation between countries in the South, as well as political coping strategies and economic trade and investment agendas. It was in this context that initiatives were developed between the countries of the South; they materialized in the form of the Buenos Aires Plan of Action (BAPA) of 1978. Knowledge sharing between Southern countries was particularly important in agriculture. In the 1970s, there was also a significant increase in the price of fresh products in general, with a food supply crisis in some countries, a situation that stimulated economic and political relations between the countries of the South.

To navigate the new waters, donor countries and international organizations began to consider issues related to poverty reduction, income inequality and access to wealth, demographic growth and rural-urban migration, making the focus on effectiveness and participation in development assistance more specific. Similarly, the financing of smaller-scale projects, especially in the areas of health, education

and sanitation, gained relevance, and the use of experimental techniques for quantitative evaluation of development projects rose.

The 1980s was characterized by crises in developing economies, affected by shocks in oil and other commodity prices, with profound impacts on the volume and importance of relations between the countries of the South in the global context. This was also a period of significant increase in the availability of statistical data. Thus it became possible to count on detailed information about production, income distribution indicators, composition of expenses and others.

With the end of the Cold War, the political component of foreign aid lost intensity, with fewer resources available and less prominence on the international agenda. Development had also come to be understood as a process that enables countries to stop being dependent on foreign aid, opening up productive and creative potential. The expansion of more liberal ideologies in major developed economies has led to a reduction in the role of the state and significant budget cuts, with significant reductions in international aid flows. The second half of the 1980s and the early 90s was marked by the strong conditionalities and pro-market reforms associated with sending official development aid.

The crises that characterized the end of the twentieth century were compounded by the theme of indebtedness of several economies, especially smaller ones. Debt relief has become one of the main modalities of development aid, with processes managed by multilateral institutions and conditionalities whose long-term beneficial effects have proved doubtful. The agenda also included conditionalities to curb practices related to corruption and money laundering.

Since the 2000s, international institutions linked to development assistance have competently rescued the environmental component that has existed since the Brundtland Report, bringing "sustainable development" to the center of the debate. As successors to the Millennium Development Goals, the 2030 Agenda and the Sustainable Development Goals (SDGs) represent a decisive element in guiding international development cooperation efforts until 2030.

III – What is International Development Cooperation?

The concept of International Development Cooperation has undergone several changes over time, with greater complexity in terms of the number and type of participating actors, sources of funding, implementation arrangements, objectives, and governance structures. The non-existence of a global central authority gives a political dimension to the issue: it depends on the actions of states and their mutual interests. However, there is a more practical dimension, associated with issues of justice and minimum standards of existence: international development cooperation (IDC).

Roughly speaking, there are two non-exclusive views on how International Development Cooperation can be operationalized: (i) by Official Development Assistance (ODA); (ii) by South-South Development Cooperation (SSDC). These two visions have as common areas the focus on technical assistance/

capacity development and its association with Sustainable Development Goal 17 ("Partnerships and Means of Implementation"), of the United Nations Agenda 2030 (IPEA, 2022).

Official development assistance (ODA) is defined by the OECD Development Assistance Committee (DAC) as government assistance with specific objectives: the economic development and social welfare of developing countries. Development assistance flows are resources provided on concessional terms by official agencies, including state and local governments, or by their executive agents. The concessional equivalent is the measure of effort considered by the donor.

The discussion on the coordination of development assistance by wealthier economies began with the formation of the Development Assistance Group (DAG) and the inclusion of the word "Development" in the name of the then Organization for European Economic Cooperation (OEEC) in 1960. In this context, one of the most enduring concepts in Development Cooperation is that of Official Development Assistance (ODA), which has remained unchanged for four decades (1972 to 2012). The modernization that began in 2012 was designed to include the contributions of countries not linked to the ODA-OEEC system and philanthropic entities, and update the possibilities and instruments of financing, in addition to providing more accuracy in the relationship between the development cooperation agenda and expenditures on humanitarian assistance, international security, and debt relief.

The South-South Development Cooperation has its political origin in the decolonization initiatives of the African and Asian peoples of the mid-1940s and 1950s. The most widely accepted starting point is the 1955 Afro-Asian Conference, called the "Bandung Conference". Solidarity between the countries of the South would be forged six years later at the Belgrade Conference (1961), the starting point for the Non-Aligned Movement (NAM). With proper coordination and organization, NAM members were instrumental in the creation of the G-77 in 1964. The New World Economic Order was consolidated, with an emphasis on the protection of economies, and management of national resources aimed at the development of local industries and renegotiation of terms of trade in international trade.

As an important milestone for the separation between political, economic and cooperation agendas, in 1978 the first United Nations Conference on Technical Co-operation between Developing Countries took place in Buenos Aires. The Buenos Aires Plan of Action (BAPA) established the principles of South-South Technical Cooperation for Development, such as non-intervention in internal affairs, autonomy, solidarity and horizontality.

In 2009, the "Nairobi Declaration" refined definitions for the characterization of SSDC. In 2018-2019, a second Conference was again organized in Buenos Aires. The resulting document particularly recommends strengthening SSDC monitoring and evaluation systems, developing methodologies to assess their impact and effectiveness, and recommending that countries engage in multilateral and regional fora for this same purpose (Schleicher et al., 2022)..

IV – Measuring South-South cooperation in the context of the 2030 Agenda

Adopted in 2015 by the heads of state and government attending the celebrations of the 75th anniversary of the United Nations, the 2030 Agenda implies a multidimensional vision of development. More ambitious than its predecessor, the agenda has 17 goals and 169 targets, divided into the three dimensions of sustainable development – economic, social, and environmental.

The action plan reflects a concept centered on promoting people, the planet, peace, prosperity, and global partnership. Diagnosis starts from the recognition that reducing extreme poverty is a global challenge and is a necessary condition for achieving the desired levels of justice on the sustainable development agenda. Efforts aimed at meeting the objectives of the agenda are monitored by global indicators related to its goals. Governments are also encouraged to develop their own national indicators associated with targets and objectives.

Through the Institute of Applied Economic Research (IPEA), Brazil has, since 2010, been disseminating the statistics regarding Brazilian cooperation for international development, in the reports entitled Brazilian Cooperation for International Development (COBRADI, *Cooperação Brasileira para o Desenvolvimento Internacional*). Between 2010 and 2018, the Institute produced five reports, creating Brazil's first historical series on this topic.

Unlike the cooperation initiatives disseminated by developed economies, Brazilian cooperation does not focus on the components of loans or transfers of budgetary resources to other countries. Brazilian actions are predominantly of a non-financial nature, comprising initiatives distributed by modalities of technical, educational, scientific, and technological cooperation, and of humanitarian aid, assistance to immigrants and refugees, the cost of United Nations peacekeeping forces, contribution to international organizations, and capital contributions to multilateral banks.

The challenge of monitoring the 2030 Agenda has made the existence of common and integrated metrics fundamental. Total Official Support for Sustainable Development (TOSSD) is an attempt to build a minimum international statistical framework to monitor international development cooperation and interventions supporting progress towards sustainable development goals. The TOSSD methodology was developed with the support of OECD and refined by a Task Force composed of experts from developed countries, developing countries, multilateral organizations, and civil society institutions. Briefly, the methodological structure of TOSSD includes: a) official development assistance; b) other flows of official resources; c) South-South cooperation; d) triangular cooperation; e) expenditure on international public goods, and f) private resources mobilized through official interventions.

Due to considerable differences of opinion on how participation of the countries of the South in the International Development Cooperation should be monitored, a Working Group on Measurement of Development Support was

created, within the scope of the Inter-agency and Expert Group on Sustainable Development Goals Indicators (IAEG-SDG), which developed differentiated criteria for the measurement and quantification of SSDC within the scope of Agenda 2030, particularly its indicator 17.3.1.

The results from the discussions of the working group is the possibility that countries such as Brazil, Mexico, Costa Rica, India, Colombia and others can propose methodological contributions from a different perspective from developed parties, which offer financial transfers. In the former's view of cooperation, both spending and quantification of non-monetary efforts are central to understanding SSDC. Another consequence of the broader involvement of some developing economies in methodological discussions was to change the list of potential recipients, making it more diverse and closer to reality.

In order to improve the Brazilian statistical system on the subject, in 2020 IPEA decided to voluntarily participate in the TOSSD task force debates. This implied not only methodological approximation, but also a commitment to provide the estimated indicators to the OECD on a regular, annual basis (Schleicher & Barros, 2022).

Following the Brazilian tradition of dialogue and broad partnership with all countries and institutions, Brazil also decided to support UNCTAD (United Nations Conference on Trade and Development) in the development of a pilot project on the methodology of quantification of South-South Cooperation for Development. Brazil is one of the countries that helped develop the methodology under the IAEG-SDG. The COBRADI survey conducted annually by IPEA provides information to both the OECD and UNCTAD, as well as being the source for Brazil's official report on international development cooperation (COBRADI Report).

V – Brazil on the recent agenda for International Development Cooperation

IPEA is the Brazilian institution responsible for the production of national statistics on international development cooperation. As the Institute has been mapping Brazilian initiatives since 2005, it is possible to identify some durable characteristics of the contemporary Brazilian IDC.

The cooperation provided by Brazil is essentially divided into three frameworks. In the South-South Cooperation for Bilateral Development, cooperation takes place directly between Brazil and a developing country. In the Trilateral Cooperation, cooperation can take place: (i) between Brazil and two developing countries; (ii) between Brazil, a developed country and a developing country; (iii) between Brazil, an international organization and a developing country, when cooperation takes place within regional/sub-regional organizations or arrangements. The third framework, the decentralized SSDC, occurs between subnational entities in Brazil and subnational entities in another developing country.

Regardless of the framework, the cooperation provided by Brazil includes a range of different areas, such as technical, humanitarian, educational, and scientific

cooperation, peacekeeping operations, refugee assistance, and contributions to international organizations.

In terms of the volume of resources involved, the main component of Brazilian international cooperation is its contribution to various international organizations and contributions to International Financial Institutions (IFIs). This set represented on average 68% of the total annual expenses computed by Brazil between 2005 and 2021. Of these resources, a significant percentage refers to contributions to agencies of the United Nations System and International Financial Institutions (IFIs). The trend of the proportion of contributions is expected to fall in the coming years, since the coverage of the statistical system tends to expand with methodological improvements promoted by the IPEA since 2020.

Technical cooperation is predominantly bilateral and channeled mainly through the Brazilian Cooperation Agency. Cooperation with partners from the South has a greater focus on other Latin American countries, followed by sub-Saharan African countries, in particular Portuguese-speaking countries, and some Asian countries, especially those with lower per capita income. However, it also includes one-off initiatives with some high-income countries in North America, Western Europe, the Middle East, and Asia. The aforementioned character of universality and partnership is supported by the data: on average, there are more than 100 countries/international institutions where there is a record of some type of cooperation by Brazil. Between 2019 and 2021, South-South Cooperation for Development corresponded to approximately 40% of Brazil's total initiatives.

Another striking feature of recent Brazilian International Cooperation is its focus on capacity development actions and projects. Whether due to its own capacity to provide cooperation or due to the characteristics of solidarity and horizontality that define most SSDC projects, the exchange of practices and knowledge is the Brazilian value proposition. Although it is possible to say that Brazilian technical cooperation has a predominantly South-South character and contributes to global governance structures, it is possible to identify initiatives that also include a South-North dimension, with horizontal cooperation with developed countries.

In humanitarian cooperation, the countries that benefit most are in Latin America, the Caribbean, and Africa, as one would expect, in view of the country's commitments to rapprochement with its neighbors and historical links with the African continent[1]. Sending food, medicines, vaccines, equipment and support personnel to deal with extreme situations are the main activities in this modality. The pandemic showed the importance of humanitarian cooperation: According to the IPEA (2021) humanitarian cooperation was the only cooperation modality offered by Brazil that saw an increase between the years 2019 and 2020, from R$ 21 million to R$ 94 million, in a scenario where the total amount was reduced from R$ 2.6 billion to R$ 1.5 billion.

[1] Not only in these regions: for example, support was sent to Lebanon in 2021, when the Port of Beirut was blown up.

Another dimension that has shown significant performance is scientific and technological cooperation. Again, the regions of Sub-Saharan Africa, Latin America, and the Caribbean are the main focus. Sharing knowledge and know-how, strengthening public management processes and fostering international research networks characterize both types of cooperation. In 2021, 90% of Brazilian cooperation initiatives were in scientific and educational modalities (IPEA, 2022).

Brazilian international cooperation also includes an educational dimension. At academic levels from undergraduate to post-doctoral courses, scholarships for foreigners are the main instrument here, and these include the provision of international airline tickets and participation in events. Students come not only from Portuguese-speaking countries, as might be expected, but also from the most diverse regions of the planet, including several developed countries.

The methodology for capturing information on educational cooperation by IPEA was improved and expanded in the collection of data for the year 2021, with data collection directly from federal and state public universities, as well as through the processing of the primary databases of official development agencies such as CAPES (Coordination for the Improvement of Higher Education Personnel), CNPq (National Council for Scientific and Technological Development) and FAPESP (São Paulo State Research Foundation), among others.

International cooperation can also be done on the territory of the supplier country, not only abroad. This is the case, for example, of activities to support refugees and asylum seekers in Brazil. Accommodation, medical support and basic food for at least some time are important elements to enable the integration of these individuals in the host country. In the case of Brazil, there are several dozen nationalities who have benefited from these initiatives. These activities are developed, for the most part, in conjunction with the United Nations Refugee Agency (UNHCR) and through the transfer of resources to selected NGOs with expertise in this area. The 2021 COBRADI Survey estimated the number of refugees and asylum seekers at 162,000, since they receive direct assistance from the Brazilian state and/or are integrated into social assistance and education policies.

The set of international cooperation activities also includes Brazilian participation in peacekeeping missions coordinated by the United Nations. Brazil has participated in a significant number of these missions over time, in the most varied regions of the world. According to data from the COBRADI Survey, in 2021 Brazil spent USD 260,000 in support of the United Nations Interim Force in Lebanon (UNIFIL).

IPEA (2022) brings the most comprehensive quantification to date of Brazilian international cooperation, with an expansion of the scope of agencies – federal and subnational – data providers, as well as the consideration of previously unexplored data, such as that related to the health sector (care for non-residents), the judiciary and an unprecedented level of data detail regarding the educational sector, among various other innovations. Researchers have also begun to consider the international cooperation of subnational entities, with significant contributions from the State of Sao Paulo, Goiás, Minas Gerais and the Federal District.

It was estimated that in 2021 the volume of resources involved in international cooperation by Brazil exceeds USD 1.22 billion, which is the highest nominal value of the entire historical series that began in 2005. Although the value is a record, it must be clarified that it contains an extraordinary contribution made by the Brazilian government to the New Development Bank (the "BRICS Bank"), on the order of USD 631 million, an amount that should not be repeated in coming years. The Table 1 below shows the expenses disaggregated by the modality of international cooperation.

Table 1. Expenses and Volume of Brazilian Cooperation Initiatives for International Development, by Modality (2021)

Modality of International Cooperation	Total Spend (in millions of USD)	Number of Initiatives	Total Spend (%)
B - Financial Contributions to Programmes and Funds	1062	231	86.36
C - International Cooperation Projects	0.36	16	0.03
D - International Technical Cooperation	53.92	305	4.38
E - Scholarships and Student Expenses	55.33	6421	4.50
G - Administration Costs	4.79	8	0.39
I - Support for Refugees, Applicants, Protected Persons	18.66	2	1.52
J - In-kind Donations	23.95	228	1.95
K - Research and Development	10.84	663	0.88
Grand Total	**1230.71**	**7874**	**100.00**

Source: IPEA, 2022

The amounts referring to financial contributions to programs and funds dominate Brazilian spending on international development cooperation in 2021. However, there are several contributions made by Brazil in 2021 that do not fall into the category of "mandatory". If the value of the contribution to the NDB were not considered, the percentage of mandatory contributions would fall to 65%, a value close to the historical average of Brazil's cooperation. Considering that spending on mandatory contributions represents Brazil's international commitments, and knowing that such commitments depend on adherence to treaties and approval by the National Congress, the percentage of such spending should be stable in relation to the total spending on the Brazilian IDC. As already mentioned, the expansion of the population of interest for the production of national statistics may decrease the proportion of contributions in the total spent by Brazil with IDC.

A second trend that may be intensified is the share of spending on education, and research and development modalities, in relation to total spending. In 2021,

the amounts of spending in this modality exceeded the activities and projects of international technical cooperation, even considering that Brazil was one of the countries most affected by the second wave of the COVID-19 pandemic, in the first half of 2021.

Table 2 (p. 119) shows the expenditures and total initiatives disaggregated by economic-industrial sector. The classification used by Brazil is the "International Standard Industrial Classification" (ISIC), a statistical system used by the United Nations to classify economic data. Brazil is currently the only country participating in the TOSSD task force to use the UN classification.

Table 2. Expenses and Volume of Brazilian Cooperation Initiatives for International Development, by Economic Sector (2021)

Economic-Industrial Sector	Total Spend (in millions of USD)	Number of Initiatives	Total Spend (%)
A - Agriculture, Forestry and Fisheries	8.009	26	0.65%
B - Mining and Quarrying	0.467	2	0.04%
C - Industry and Production	0.627	5	0.05%
D - Energy, Gas and Electricity	0.253	5	0.02%
E - Water and Sewerage	0.657	4	0.05%
F - Construction	41.288	2	3.35%
H - Transport and Storage	0.001	3	0.00%
J - Information and Communication	0.688	13	0.06%
K - Financial and Insurance Activities	726.270	46	59.01%
M - Professional, Scientific and Technical Activities	12.90	713	1.05%
N - Administrative and Support Services Activities	0.247	9	0.02%
O - Public Administration and Defense	8.293	210	0.67%
P - Education	58.828	6490	4.78%
Q - Health and Social Care	46.398	250	3.77%
R - Arts, Entertainment, and Recreation	0.446	3	0.04%
U - Activities of Extraterritorial Organizations and Bodies	325.33	93	26.43%
Grand Total	**1230.71**	**7874**	**100.00%**

Source: IPEA, 2022

Financial and insurance activities, and those of extraterritorial organizations and bodies dominate total spending, with an amount that represents 85.44% of total

spending. The high value corresponds to the payment of capital in Development Banks, classified as "International Financial Institutions" (IFIs). In essence, contributions in sector K constitute capital payments in institutions that will fund development projects in several countries in the South, such as the NDB.

Another highlight, although lower, in the total expenses, corresponds to the activities related to education and research and development, for the reasons previously mentioned. Such expenditures, as well as those related to technical and scientific activities, tend to grow in value in future surveys, due to the increase in the participation of Higher Education Institutions (HEIs) and other Brazilian public research institutions.

In the case of the health and social care sector, the high value should not be surprising, since Brazil is an example of international best practice, due to its Unified Health System (SUS, *Sistema Único de Saúde*)[2]. The exchange of practices, the transfer of knowledge and donations of medicines and equipment are regular features of the history of international cooperation and Brazil's relationship with its partners in the Global South (Buss & Burger, 2021).

One of the main innovations of the 2021 COBRADI Survey was the disaggregation of data by Sustainable Development Goal (SDG). The data refer to Brazil's external spending to advance the SDGs in other developing countries. Table 3 (p. 120) presents the 2021 expenses disaggregated by SDGs.

Table 3. Expenses and Number of Brazilian Cooperation Initiatives for International Development, by Sustainable Development Goal (2021)

Sustainable Development Goal	Total Spend (in millions of USD)	Number of Initiatives	Total Spend (%)
SDG 01 - No Poverty	1.913	7	0.16%
SDG 02 - Zero Hunger	34.778	41	2.83%
SDG 03 - Health and well-being	66.185	260	5.38%
SDG 04 - Quality Education	69.490	6443	5.65%
SDG 05 - Gender Equality	0.055	4	0.00%
SDG 06 - Clean Water and Sanitation	0.327	4	0.03%
SDG 07 - Affordable and Clean Energy	0.326	5	0.03%
SDG 08 - Decent Work and Economic Growth	63.722	71	5.18%
SDG 09 - Industry, Innovation and Infrastructure	740.985	677	60.21%
SDG 10 - Reduced Inequalities	19.842	8	1.61%
SDG 11 - Sustainable Cities and Communities	3.418	15	0.28%
SDG 12 - Responsible Consumption and Production	0.391	3	0.03%

[2] For information on the SUS system and health policies in Brazil see Giovanella (2012)

Sustainable Development Goal	Total Spend (in millions of USD)	Number of Initiatives	Total Spend (%)
SDG 13 - Climate Action	0.740	7	0.06%
SDG 14 - Life Below Water	1.140	11	0.09%
SDG 15 - Life on Land	1.709	12	0.14%
SDG 16 - Peace, Justice and Strong Institutions	49.144	197	3.99%
SDG 17 - Global Partnership	176.541	109	14.34%
Grand Total	**1230.71**	**7874**	**100.00%**

Source: IPEA, 2022

The expenses and initiatives for international development cooperation in Table 3 do not differ from what could be expected, considering that Brazilian spending is mostly concentrated in various contributions to international institutions. The concentration on SDG 9 is explained by the same logic discussed earlier for financial and insurance activities: high capital payment amounts for international development banks, whose central mission is investment in infrastructure projects, innovation, etc. Similar logic to the contributions to SDG 17, essentially linked to the means for the implementation of the SDGs, constitutes a "transversal" objective. The same education trends discussed for the data shown in Table 1 can also be viewed in the context of SDG 4.

A rather peculiar characteristic for the 2021 data on Brazilian cooperation for international development is the concentration of spending in three clear groups. The first group could be characterized as "social assistance", bringing together spending related to SDGs 2, 3 and 4. The second group gravitates towards SDGs 8 and 9, with the majority being economic issues of growth, labor, and industry. Finally, the third group concerns broader governance/institutions issues (SDG 16) and partnerships for development (SDG 17), exceeding R$1 billion.

The largest Brazilian effort in International Development Cooperation is concentrated on education and health, a result that is also not surprising, given the relative size of these sectors in the Brazilian economy and on the national public policy agenda. The unexpected feature is the number of initiatives linked to SDG 9, as the large expenditures relate to a few capital payment initiatives to IFIs. One explanation is that SDG 9 comprises various financial support to international research and development projects of which Brazil is a part.

VI – Final remarks, based on the Brazilian experience

The previous section showed the significant volume of resources that Brazil has allocated to international development cooperation activities and the diversity of modalities. It also showed that these activities greatly contribute to the advancement of the Sustainable Development Goals.

The experience gained since the beginning of the quantification of international cooperation activities promoted by Brazil leads us to believe that by expanding the scope of coverage of data collection with the inclusion, for example, of more teaching and research units and initiatives by subnational governments, values should increase significantly, further highlighting the country's prominent global role in terms of cooperation.

Until now, international cooperation initiatives by subnational governments have been, at most, presented in an individualized way, nurturing a dimension that has been conventionally called "paradiplomacy", that is, initiatives with international impact from subnational entities.

However, it makes sense to claim that there is a formalized mechanism for collecting information related to all international cooperation initiatives. This would allow a better knowledge of the various initiative projects of the three levels of the Brazilian public administration, and it could obtain a more precise idea of what is being done at each moment.

This is not an academic concern: the systematic information on the set of international cooperation measures made by the country paves the way for the identification of opportunities for the intensification of economic and political relations with other countries, as well as leading to an external image of the country more consistent with the efforts actually made.

In parallel to efforts to achieve centralized calculation of the various projects, there should also be a progressive shift from the axis of quantification of expenses, activities and deliveries to the axis of studying the impacts of international cooperation activities by Brazil. As it is about the use of public resources, measuring the effectiveness of projects should be a basic condition. This conclusion is in line with the recommendations of BAPA+40 on the need to improve the statistics and methods of measuring the effects of SSDC.

To date, the data known and processed in relation to the Brazilian IDC relate to projects developed by public sector agencies, both at the federal level and by subnational governments. It is recognized, however, that there are several initiatives by the national private sector that are clearly identifiable as international development cooperation, in addition to being completely aligned with the idea of a multisectoral partnership advanced by the 2030 Agenda.

Last but not least, the full picture should include the mapping of possible loans at different rates to developing countries, provided that these are not transactions linked to commercial transactions, but being strictly focused on cooperation. That is, those initiatives that are directly linked to the special financing of development priorities in Brazil's partner countries in the global South.

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Review of the 10th World Economy Annual Conference, The World Economy in the Era of Turbulence

On 28-29 November 2022, the Department of World Economy held the 10th World Economy Annual Conference, The World Economy in the Era of Turbulence, which was focused on the impact of new global challenges on foreign trade, international finance, and the energy and resources sector. The conference was attended by representatives of universities and research centers in Russia, Turkey, Poland, Kazakhstan, and Armenia. The participants presented more than 25 reports and the debates were lively. A hybrid conference format combining offline and online participation, as well as simultaneous translation into English, made the conference as accessible as possible to all interested parties.

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The conference was opened by Victoria Panova, the Vice Rector of the National Research University Higher School of Economics (NRU HSE). In her opening statement, Panova noted the unprecedented nature of the challenges faced by the international community, resulting, in her view, in a fundamental restructuring of global value chains, energy trade flows, and the international system of investment cooperation, and the need for a new economic order. Participants were encouraged to engage in discussions that could lead to new approaches and rules for international economic interaction that would take into account the interests of all countries rather than individual groups.

The conference programme consisted of **four sessions:**

- On the Brink of Recession: What Is the Scale of the Possible Crisis?
- Special session: Book presentation, *The World Economy in a Period of Big Shocks: Key Ideas*
- Sanctions Forever? How Russia and the World Economy Will Live Without Free Trade
- Joint session with the Laboratory of Climate Change Economics of NRU HSE: Energy Typhoon: How will the International Energy Landscape Change in the Long Term?

The first session was opened by Professor Leonid Grigoryev, the founder of the conference and the scientific head of the School of World Economy, with an introductory report on the topic "The World Economy Transcends Rationality." Professor Grigoryev noted that the scale of the global governance crisis of 2022 is much higher in terms of its destructive impact on the development of mankind and

society in all fields than any positive outcome of the decisions and measures taken. He said that the logic of the trends and cyclical processes taking place in 2020-2022 has been broken, and that it has become almost impossible to refer to previous experience in the search for solutions. It is vital to create a mechanism to address global problems, independent of any cycles, although its development would require joint agreements. At the same time, according to the speaker, the manifestations of crisis of 2022 are not yet creating a full-scale economic crisis, even though their consequences for the socio-political environment may be very serious.

The main thesis of the report by Professor Marek Dabrowski on the topic "Global economy in the early 2020s: the main challenges and 'counter-flows' " was that the problems that are now being observed certainly have an impact, but the global economy as a whole is driven by the actions of countries and their politicians over the past 15 years. Referring to the main trends— declining economic growth, global imbalances in labor supply and demand, decreasing productivity growth and world trade, inflation and more—the expert noted the reasons for each of these, though added that they appeared long before today's short-term shocks. As a result, Professor Dabrowski argued, the international economy may expect further stagnation, crisis in the public debt market, increased protectionism, "green" transformation, uncertainty regarding growth in productivity, and a number of other challenges.

In his talk, expert Sergei Shatalov focused on the impact of the crisis on emerging markets. Key indicators of the vulnerability of many large developing countries to external shocks have negative outlooks. In India, Brazil, Turkey, and Egypt, both balance-of-payments and budget deficits are high; in the absence of economic policy adjustments, they can be expected to widen further, being followed by increased debt difficulties. Fiscal deficits in China, South Africa, and Egypt are projected to remain high. Shatalov summarized his position on the impact of the current crisis on developing countries in three points: (1) to date, only a few major developing countries have taken proactive measures to counter the crisis; many other countries in this group are facing a real risk of a new debt crisis; (2) net exporters of energy sources are comfortable so far, but reduced demand due to the crisis may cause problems in some of these countries as well; (3) China is unlikely to be the main driver of global economy growth again, as it was after the global financial crisis of 2008–2009.

The final reports of the first session were mostly focused on a closer examination of the causes of the expected recession and its impact on selected groups of countries and regions. The report of Marcel Salikhov, President of the Institute for Energy and Finance Foundation, was centered on the growing risks of recession-inflation, rising prices of energy sources, and tightening monetary policy. The phenomenon of the current situation is that countries with very high inflation are those that carry out an unconventional monetary policy. The specific feature of the current energy crisis is the synchronized rise in prices in different markets (coal, gas, electricity), not only in the oil market, which creates a huge burden for countries. However, the world economy is adapting, and moreover, governments,

particularly in Europe, are using different economic support measures, thereby final prices are rising less rapidly. Noting a number of other positive aspects, the expert concluded that there were no preconditions for a deep recession and that it might not exist in some countries and regions of the world.

Maryam Voskanyan, Head of the Department of Economics and Finance at the Russian-Armenian University, discussed the issue of ineffective macroeconomic regulation using the example of Armenia. Constrained macroeconomic policies and the maintenance of macroeconomic stability have proven to be effective in economically developed countries, but in small developing economies they have slowed growth in the long term. She identified the peculiarities of Armenia's fiscal policy: a high tax burden, frequent changes in tax legislation, inefficient administration leading to an increase in the share of the shadow economy, and inefficient budget spending. The country's monetary policy, namely the inflation-targeting regime, also serves to constrain economic growth. In conclusion, the expert noted that the current period of development of the world economy creates opportunities for small developing countries to develop new and more effective approaches to macroeconomic management and escape the "poverty trap."

The report by Anastasia Podrugina, Associate Professor of the School of World Economy at the NRU HSE, focused on the world economy's transition to a regime of high inflation—characteristics of the behavior of inflation in this regime as well as the criteria of the transition. The report also highlighted the similarities and differences between the global economy in 2022 and the crisis of the 1970s. In 2022, the world economy shifted to a regime of high inflation—a regime in which prices in different industries are correlated and therefore the inertia of inflation is high. In the new environment, the probability of a soft landing is low, and central banks will have to choose to fight either inflation or recession, with the risk of stagflation greater for the EU than for the U.S.

As part of the **second, special session** of the conference, a presentation of the monograph "World Economy in a Period of Big Shocks" prepared on the initiative of the School of World Economy, and representing the results of research work of its team of authors during 2020–2022, was given. After the opening speech by RAS Academician Natalya Ivanova, who noted the fundamental nature of the book and the originality of its structure, built not on a regional approach but on key areas of concern, the authors of the leading sections, Igor Makarov, Alexander Kurdin, Oksana Sinyavskaya, Vasily Kashin, and Leonid Grigoryev, presented their studies. They noted that the events taking place now are fundamentally changing the world economy. Although they are not fully reflected in the monograph, this in no way lessens its significance, because it describes the fundamental trends that were either born or strengthened in the period after the Great Recession of 2008–2009. These include a slowdown in global investment activity, a deceleration in the development of the BRICS countries, a shift in focus from the problems of economic growth to the problems of economic development, rising inequality especially within countries, digitalization of the world economy, energy transition and green transformation, etc. Most of these trends intensified during the COVID-19

pandemic. The upheavals of recent years can be understood only through the imbalances and contradictions of the previous decade.

The **third session**, on the widely discussed issue of sanctions, which are clearly painful for the Russian economy, was opened by Alexander Knobel, Director of the Institute of World Economics and Finance of the Russian Foreign Trade Academy. The moderator stressed the high urgency of this issue, noted the impossibility of a complete absence of free trade and isolation of Russia from the world economy, and pointed to the need to take into account the time frame when discussing whether sanctions are permanent.

The opening report of the session was made by Ivan Timofeev, Director General at the Russian International Affairs Council. Timofeev noted the unambiguous character of the sanctions and their unprecedented nature. He also discussed the blurring of the line between the concepts of "sanctions" and "trade wars" in 2020–2022. He agreed that the Russian case was unusual in terms of the number, quality, and speed of the imposition of sanctions, but noted, in terms of effects and consequences, that an analysis of the current sanctions could be based on the findings of the literature on past cases. First, sanctions in the vast majority of cases do not lead to changes in policy, as the situation in Russia confirms. Second, the country's economy has remained stable and generally under control, as can be expected from previous international experience i.e. the economic situation in countries under sanctions may deteriorate without them actually collapsing. Third, the behavior of "black knights," or friendly countries and their companies, is not unambiguous. In conclusion, the speaker highlighted the very slow and asymmetrical application of Russia's retaliatory sanctions.

The reports of the third session were devoted to a great variety of issues concerning the impact of sanctions on specific aspects of the Russian and world economies. Alexander Zaytsev, Associate Professor of the School of World Economy, discussed the current dynamics of world trade, adaptation of global value chains in response to the challenges of COVID-19, the logistics crisis and growing geopolitical tensions, as well as import substitution policies as a common response to the disruption of global supply chains.

Ivan Deseatnicov, Assistant Professor of the Faculty of World Economy and International Affairs, presented a study on the impact of export controls aimed at restricting U.S. technology exports to China and Taiwan's trade with mainland China. Results of calculations showed that in the period of 2017–2021 there was no negative effect of export restrictions on Taiwan's trade with mainland China. The researcher assumed that the profitability of the market outweighs the increase in the cost of obtaining licenses under export restrictions.

Rakhim Oshakbayev, director of the TALAP Center of Applied Research, considered the impact of anti-Russian sanctions on Kazakhstan and the Eurasian Economic Union (EAEU) in general. First of all, the expert noted the limited rationality of sanctions and the ambiguity of their negative effect. He further stressed the absence of restrictions on Russian companies to conduct operations on the territory of Kazakhstan, which was provided by the support of the authorities

of the country and their dialogue with the business, primarily the financial sector. The legal foundations of the EAEU have also demonstrated their operability and in many ways have meant the negative impact of sanctions has been lessened, not only on Russia, but also on the Eurasian space as a whole.

A report by Alexander Kurdin, Deputy Dean at the Faculty, and Karina Ionkina, researcher at the Department of Competitive and Industrial Policy at the Faculty of Economics, Lomonosov Moscow State University, looked at import substitution and its economic consequences. Highlighting two key arguments for import substitution policy, such as national security, and positive externalities, experts presented a number of international cases. Remarking on the example of the Russian railcar building industry, the speakers offered two key conclusions: support should be provided to a wide range of manufacturers in order to eliminate the monopoly situation and not to support industries that are fully dependent on individual imported components, since in this case liberalization may be more appropriate.

Director of the Institute of Scientific Information on Social Sciences of the Russian Academy of Sciences Alexey Kuznetsov gave a talk on Russian direct foreign investments under sanctions pressure, focusing on the policy of the European Union in this matter. As a result of the EU's actions on the assets of Russian companies, the question arises as to what the EU will look like in terms of investment attractiveness in a few years' time in the eyes of the rest of the world. According to the speaker, the EU's costs of attracting new investments are very high and have not yet been fully assessed by Europeans.

The final report of the third session, presented by Igor Makarov, Head of the School of World Economy, focused on answering the question: why, despite a general consensus on the benefits of free trade reached by economists, is protectionism still prevalent in the world? The speaker highlighted four types of protectionism, such as "lobbyist protectionism," "industrialiser protectionism," "populist protectionism," and "geostrategist protectionism," and stressed that in recent years there are increasing reasons to talk about the fifth type of protectionism, "benevolent protectionism," an example of which is carbon border regulation in the EU.

The **closing session** of the conference, which looked at the problems of world energy and the "green" transformation of the world economy, was opened with a report by Makarov. He expressed the view that the current geopolitical crisis, accompanied by the increase in energy prices, the disruption of energy cooperation between Russia and the EU, and an increase in the overall level of political confrontation, is leading to the loss of at least several years in the fight against climate change. The report identifies four scenarios for the development of the climate agenda up to 2030. These are shaped depending on two conditions: the success or failure of the world economy in overcoming the economic crisis and the intensification or weakening of geopolitical confrontation in the world. Only one scenario, in which the crisis would be resolved and international cooperation restored, envisages a "green reboot," meaning an acceleration of actions aimed at

reducing greenhouse gas emissions to the level required to keep the temperature increase within 2.5 degrees above the pre-industrial period (with the possibility of staying within 2 degrees with further acceleration of the development of climate policy after 2030). In none of the scenarios, however, would it be possible to keep the temperature increase within 1.5 degrees, which is the top temperature target of the Paris Agreement.

Vyacheslav Kulagin, Head of the Department of World and Russian Energy Sector Studies of the Energy Research Institute of the Russian Academy of Sciences, listed short- and medium-term trends in the world's energy markets, identifying their impact on individual countries, regions, and market players in his report, "Transformation of Energy Markets in the New Realities." The speaker explained the impact of the 2022 crisis on greenhouse gas emissions and the achievement of the objectives of the Paris Agreement and presented two global scenarios of economic and energy development: a "geopolitical disconnect" and "mutually agreed development." According to the expert, the world has embarked on the path of the first scenario, but this could change if countries realize that in order to achieve national interests, cooperation is a better solution.

Sergey Kapitonov, analyst at the Project Center for Energy Transition and ESG at Skoltech, focused on Russian gas exports and their medium- and long-term prospects. The expert noted the fall in the volume of gas supplies from Russia to Europe to the level of the 1970s with the result that a process of de-industrialization of a number of European industries can be observed. However, in future, European countries may completely abandon Russian energy. In this situation, Russia has several options to compensate for its losses: developing the domestic market, the diversion of gas supplies to other countries, and developing production of high value-added products with a view to a potential transition to a "greener" export. In conclusion, the speaker expressed the hope that cooperation between Russia and Europe was not yet finished and could continue in a new direction.

In his report "Energy of the World: Emotions and Realities," Leonid Grigoryev noted that the energy sector has become a special complex of problems and trends, which encompasses not only an important sector of the world economy, but also fields affecting the planet's climate, technological progress, and geopolitics. Under the Sustainable Development Goals, the energy transition has overshadowed other goals. Progress in the energy sector and the transition to "green energy" in the long term seem, in all likelihood, essential. In the Professor's opinion, the question is when new technologies for mass commercial applications will be ready, and how the processes of global coordination of financing, technology production and transition will be organized. While the problems have worsened, GDP growth has generated both increased energy demand and greenhouse gas emissions.

In his report "Climate and Changes in Global Priorities," Sergey Bobylev, Head of the Department of Economics of Environmental Management at Lomonosov Moscow State University, drew the attention of conference participants to the fact that climate risks over the past three years are recognized as the most important for mankind. However, the achievement of carbon neutrality and the transformation

of the environmental determinant of economic development into the dominant one requires radical economic transformation and will lead to structural and technological changes, reforms of traditional sectors, and regulatory changes. The expert focused particularly on consumer behavior, specifically the different impact of consumption in developed and developing countries on the global economy and the complexities of changing traditional patterns of consumption.

The critical role of raw materials in the "green" transformation was the key theme of the report by Sedat Alatas, research fellow at the Laboratory for the Economics of Climate Change at the NRU HSE. Explaining the increased dependence of mankind on the increasing diversity and volume of production of a number of materials (lithium, cobalt, tungsten, gallium, copper, etc.), the speaker pointed to their critical role in the transition from fossil fuels to renewable energy sources. According to recent estimates from international institutions, a "green" transformation will lead to a continuous increase in demand for these materials. However, their supply is fraught with a number of risks and it may not be possible to meet demand quickly enough, which may slow down the "green" transition.

The final report of the session was presented by Alexandra Morozkina, Deputy Dean for Research at the Faculty of World Economy and International Affairs at HSE, on the assessment of the impact of building hydroelectric power stations on ecosystem services. Morozkina noted that building of hydropower plants impacts ecosystems at all stages of the project, from pollution during the construction phase to loss of biodiversity due to landscape change (land inundation, deforestation). The net effect of the construction of 44 hydropower plants in Russia is negative, even if one takes into account the positive effect of the reduction in emissions due to the replacement of thermal power plants.

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The questions raised by the speakers on the fundamental processes taking place in the contemporary world economy gave rise to a broad and lively debate. The conference did not provide definitive answers to most of these questions, but it did contribute to their understanding and to the examination of the most controversial and contradictory trends. The organizers hope that the 10th Annual Conference on the World Economy "The World Economy in the Era of Turbulence" will promote further research, professional networking, and the exchange of knowledge and opinions in the field of the world economy.

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