

The Impact of the Global Technological Disruption on Leadership, Using Examples From a Number of Developed and Developing Countries¹

V. Kuzmin, A. Portanskiy

Vladimir Kuzmin—Master of the Faculty of World Economy and World Politics, National Research University Higher School of Economics; 17 Malaya Ordynka Ulitsa, Moscow, 119017, Russia; vlmrkuzmin@gmail.com

Alexey Portanskiy—PhD, Professor of the Faculty of World Economy and International Affairs, National Research University Higher School of Economics; Leading Researcher, IMEMO RAS; 17 Malaya Ordynka Ulitsa, Moscow, 119017, Russia; aportanskiy@hse.ru

Abstract

Recent technological trends and, particularly, the global technology fracture, significantly affect power distribution in the world economy. However, the problems that arise due to these tendencies and their possible consequences for the economic world order remain understudied. This article assesses the impact of the global technology fracture on economic leadership in the context of the contradictions of the West-East development models, taking into consideration both interstate conflicts in the innovative field and the rising power of big-tech companies. Complex index construction is employed to formalize the concept of leadership in the world economy, and a panel data regression model is used for estimating effects of the technology fracture on it. The sample contains data on major macroeconomic and technological indicators for 30 western and 10 Asian countries from 2010 to 2019. As a result, it is concluded that the presence of a clear plan for the implementation of information and communication technologies by the state can have a positive impact on the economic leadership of a country, and the growing importance of technology giants has a negative impact on this indicator. Finally, this article contributes to a better understanding of the economic leadership concept among scholars and draws policymakers' attention to the necessity of new regulations in the technological sphere.

Keywords: world economy, economic leadership, global technology fracture, development model, big-tech, decoupling

For citation: Kuzmin V., Portanski A. (2022) The Impact of the Global Technological Disruption on Leadership, Using Examples From a Number of Developed and Developing Countries. *International Organisations Research Journal*, vol. 17, no 4, pp. 148–175 (in English). doi:10.17323/1996-7845-2022-04-06

Introduction

The rapid pace of China's economic growth at the beginning of the 21st century and its growing geopolitical influence on the world stage have created in American society, including the academic environment, the notion of the Chinese threat as the main strategic risk to American hegemony. The confrontation between the United States and China in the economic sphere

¹ This article was submitted on 24.06.2022.

resulted in the trade war initiated by Donald Trump's administration, and positive expectations of the subsequent administration of Joe Biden were not justified. Moreover, anti-Chinese sentiment in the United States is not declining, which, in the context of disputes about the artificial origin of the COVID-19 virus in a laboratory in Wuhan and the growing claims of the Xi Jinping government to the territory of Taiwan, may lead to a further escalation of the conflict. At the same time, due to the low likelihood of a direct military clash between the superpowers, it should be expected that the main battlefield between China and the United States will be the global economy, leadership of which seems to be the main factor in building a new post-pandemic world order.

The current situation in the world economy is developing in the context of many social, economic and political trends that have a significant impact on the distribution of power in it. One of the most important trends, which is now receiving increasing attention from politicians and the academic community, is the global technological disruption. This concept is traditionally considered in two main planes—the struggle of states for technological superiority and the growing influence of global technology companies.

The first component of the global technological disruption can hardly be called new for the world economy—to some extent, the acceleration of technological progress has always been accompanied by increased competition between the leading economic powers. Moreover, the manifestations of this competition at the current moment in history are quite obvious. For example, the leitmotif of the trade war mentioned above was largely the desire for technological security on the part of the United States. At the same time, the struggle for technological superiority exists not only in the context of confrontation between individual countries, but also in the context of antagonism between the West and the East.

The gap between traditional democratic developed countries and newly industrialized, which are often characterized by autocratic institutions, in the field of high-tech development is rapidly narrowing, which adds an additional dimension to the confrontation for economic leadership due to the weakening of the idea traditionally accepted in western society as an axiom that the democratic path is the only effective one for long term development. In this regard, the second aspect of the global technological disruption also seems to be a threat to western society due to the impossibility to predict the consequences of the growing technological corporations' influence on traditional institutions, which has especially accelerated in the context of the forced transition to online of many socially significant tasks during the pandemic. At the same time, this uncertainty is also recognized by eastern countries, such as China, where Jack Ma, the head of the largest technology company, Alibaba, fell out of favour with the government of the People's Republic of China (PRC) in connection with critical remarks about the national banking system. That once again underlines the state's awareness of the potential influence that such economic agents may have.

Thus, the global technological disruption can be expected to have a significant impact on the distribution of power in the global economy. The nature of this new distribution and its beneficiaries remains a matter of debate. At the same time, the cooperation of the leading powers to restore the world order after the pandemic, which the academic community so often calls for, may suffer significantly, and that, once again, underlines the fragility of the current system.

The goal of this study is to assess the impact of the global technological disruption on the economic leadership of the developed western and developing Asian countries. Based on the analysis, the significance of this phenomenon will be revealed, and the possible consequences of the split in the medium term for the world economy can be predicted.

Global Technological Split in the 21st Century

The Essence of the Global Technological Split and the Reasons for Its Occurrence

Consideration of the technological disruption phenomenon is a primary task in the framework of this study. At the root of its potential influence on the distribution of power in the world economy lie objective reasons both in the form of the nature of the development of world economic relations and the actions of their individual subjects. At the same time, the concept of the global technological disruption is still quite difficult to define, suffering from a lack of formalization of its own boundaries and manifestations. The academic community traditionally emphasizes two main components of the technological disruption: the violation of interaction between the American and Chinese economies, often manifested in the high-tech sector, and the expansion of technology companies, leading to an increase in their economic and social significance [Portansky, 2021].

The main aspect that characterizes the global technological disruption, according to Harvard University professor D. Rodrik, is the fact that the rules by which the modern world economic system operates do not fit the world that has developed in the context of globalization in the second half of the 20th century and the widespread distribution of the fourth industrial revolution [Rodrick, 2020]. Indeed, the deep integration of the main economies of the world, the United States and China, which was the result of globalization, at some point came into conflict, first, with the U.S.' desire for absolute security, which stems from sources ranging from its geographical location to its experience of confronting international terrorism, and, second, with the ideological features of both countries, which are diametrically different on many issues. This contradiction intensified along with the introduction of high technologies in many state-significant areas and their transformation into the main engine of economic growth and the guarantor of the competitiveness of the national economy. According to one of the authors, the censorship of the Google platform in China can be considered as the beginning of the global technological disruption and it is consistent with the idea described above that the reasons for the split were the importance of ideology for the state, which manifested itself in this situation in the PRC's desire to restrict the population's access to objectionable information and the potential impact of digital companies on the social sphere [Portansky, 2021].

The situation described above substantiates three main challenges both for individual states and for the global economy as a whole. The first is the national security of countries in the context of growing geopolitical contradictions. Today, the topic of interference in elections appears in public discourse almost every time they take place in a country that is significant for geopolitics, while the main instrumental object for such accusations is always digital technologies— manipulation of mass consciousness through the media and hacker attacks. The second challenge is the threat of personal data leaks, given that data are now under control not only of the state, but in most cases also in the hands of private companies. For example, in 2018, India's state-owned ID database, Aadhaar, suffered multiple leaks that potentially opened up information on virtually every citizen of India [WEF, 2019]. The third challenge is the threat of monopolization of the digital technology market due to the existence of a competitive advantage for companies that have sufficient resources to be the first to introduce new technologies. This also leads to the opportunistic behaviour of such companies in the framework of solving their socially significant tasks and the emergence of their subjectivity in the political arena, which, for example, manifested itself in the blocking of Donald Trump's Twitter account. This action was regarded by some as an act of political censorship [Rodrik, 2020].

In the academic community, international cooperation is recognized as the main approach to reducing the risks of the global technological disruption. Much attention is paid to the development of universal regulatory norms with regard to the activities of the largest technology companies. At the same time, an important step in the issue of international cooperation is the recognition of the fact that the Asian newly industrialized countries represented by Singapore, Malaysia, Taiwan, and India are beginning to play an increasing role in the global high-tech market, and, consequently, in the entire world economy. In this regard, one of the potential stumbling blocks in matters of international cooperation, taking into account the role of Asian countries, may be the differences in the western and eastern approaches to economic development and the U.S. tendency to set its own political standard for its potential economic partners.

The Current Stage of Confrontation Between the U.S. and China in the Field of Digitalization and High Technologies

A necessary condition for further consideration of the consequences of the global technological disruption for the world economy is a deeper analysis of its two main aspects. Thus, the decoupling of the American and Chinese economies, mentioned above as one of the main manifestations of the disruption, today seems to be one of the main challenges to the world economic system. In the context of the growing influence of high technologies on daily social life and their involvement in an increasing range of tasks to ensure the health and safety of citizens, which was largely caused by the COVID-19 pandemic, and in the context of the imminent mass transition of commercial and public sector telecommunications to 5G networks, the policy of the United States and China toward each other in the field of high-tech regulation is becoming a decisive factor that may determine the future landscape of the world economy.

The years of China's steady and rapid economic growth and the role of the state in supporting national manufacturers that ensure this growth served as the basis for the formation in the United States of the ideas about the high probability of the Chinese technologies transition, which keep pace with economic growth in their development, from the private sector to the military-industrial complex, which could pose a direct threat to American security. This is largely due to the fact that artificial intelligence, robotics, and quantum technologies, as the main areas of innovation, are associated with both the civilian and military sectors. This idea is the basis for the increasingly protectionist U.S. policy toward the Chinese technology sector [Kashin, 2021].

The moment of Washington's direct recognition of the Chinese technological expansion threat may be the Defense Department's Third U.S. Department Offset Strategy of 2014, initiated by the Obama administration, which consists in reorienting the American defence system to the innovation sphere, traditionally characterized in the United States by significant potential in the face of budgetary and resource constraints. At the same time, it is worth noting that, despite the formal shift from this strategy during the presidency of Donald Trump, the United States actually pursued a policy of implementing it through numerous sanctions against China. This trend continued after Joe Biden came to power: he banned the use of Huawei equipment in American telecommunications networks, which is consistent with the previous president's policy of ensuring national security and preventing spying in the context of the introduction of 5G networks [BBC News, 2021a].

At the same time, recognizing the desire of the United States to maintain technological dominance, China in turn announced the Made in China 2025 policy in 2015, the goal of which was to change the export structure toward a more innovation-oriented one and increase overall productivity thanks to significant assistance from the state. However, western countries, especially the United States, perceived this strategy as an attempt to limit the access of foreign firms to the Chinese market through the support of local manufacturers, which subsequently laid the

foundation for a future trade war [Agarwala, Chaudhary, 2021]. One of its most important results was an even greater desire of the PRC to replace foreign technologies, which traditionally were the main ones in many high-tech industries, with national products—the transition from “made in China” to “created in China,” which is perceived by some as a kind of “Sputnik moment” for China [Wang, 2021].

The Impact of Global Technology Corporations on the Economic World Order

The second main component of the global technological disruption today is the growing influence of the largest technology companies on the social sphere, associated with the introduction of an increasing number of digital and innovative goods and services into the daily lives of citizens and the work of the state. This problem becomes especially relevant in the context of the gradual approach of the fourth industrial revolution, which implies the massive use of the latest wave of digital technologies, such as big data, the Internet of things, and blockchain in production. It is generally accepted that such a development of events may also involve the withering away of traditional administrative and political institutions, which will lead to a world that is often associated with the cyberpunk sci-fi genre, and more precisely, to a world where the main functions of the state, including economic, will be delegated to the largest corporations.

In 2020–21 this trend has only intensified due to the pandemic. The growth in the number of users in products by companies such as Amazon, Apple, Netflix, Google, and Facebook (Meta) has also led to greater coverage of user data by these corporations, which is currently one of the main resources of players in the high-tech market. However, the issue of privacy of the received data is often underestimated, which leads to various kinds of leaks. In this regard, a number of representatives of the academic community see in the current state of affairs a historical opportunity to revise the traditional methods of regulating many areas [Fenwick, McCahey, Vermeulen, 2021]. At the same time, the introduction of antitrust laws in this area, which could increase competition in the market and thus force technology companies to comply with standards regarding private information, seems to some scientists an almost impossible task for governments in countries such as the United States [Desai, 2020].

Also, in the context of the pandemic, it is worth noting the even more increased threat of the so-called post-truth phenomenon, on the one hand, arising from insufficient control over the content published within various digital platforms, and, on the other, due to the opportunistic behaviour of large technology companies in matters relating to national policy. Politicians such as Boris Johnson often take advantage of these flaws in the digital order. So, defending the idea of Brexit, he said that Britain’s exit from the European Union (EU) would allow it to receive up to 350 billion pounds a week that could be spent on the health care system, a claim which, despite the refutation by many experts, was replicated in many newspapers and made its own contribution to the results of the referendum [Gilchrist, 2018].

The threat of such fake news is growing as a number of fundamental elements of the economy are transitioning to the digital environment. An example is the 13 September 2021 case of a sharp increase in the rate of Litecoin cryptocurrency caused by false information spread in the media and social networks that Walmart would accept it as a means of payment [BBC News, 2021b]. It is obvious that the dissemination of such news through various aggregators and social networks without any control leads to the formation of false perceptions in society on certain issues, which often has a significant effect on the global economy. In addition, as mentioned above, the largest technology companies now have the ability to shape the agenda themselves by restricting users’ access to certain information, for example, as was the case before the 2020

U.S. presidential election, when Trump's Twitter posts were flagged by the social network as "inconsistent with facts."

One of the main reasons for the growth of the technology companies' influence on society can be considered the emergence of four types of rent that arise in the course of the development in this area. *The first type of rent* is enclave rent, which consists in generating income by controlling the ecosystem of devices and platforms, as well as the data generated by users in the course of working with these products. *The second type* is the expected monopoly rent, expressed in greater market capitalization of companies with expected control over existing and developing assets, which allows these companies to use their high market valuations to obtain less expensive loans, which in turn increases their competitiveness. *The third* is engagement rent, which allows technology companies to increase productivity by providing their users with products that meet their needs through the implementation of big data and various algorithms. *The last type of rent* is reflexivity rent, meaning the opportunities for firms to benefit from the use of algorithmic mechanisms in the operation of their innovative products. Technology companies can, by changing the algorithms of their ecosystems or simply by having a clearer understanding of how they work, create a competitive advantage for themselves against other corporations, information about which is often contained on such platforms [Birch, Cochrane, 2021].

Thus, we can conclude that the global technological disruption is a natural result of the underestimation of Big Tech's potential influence by the state and society and the selfish policy of countries in the field of technological security at the same time. A relevant approach to overcoming the challenges arising from the disruption is international cooperation, taking into account current trends in the global economy.

Economic Leadership in the Context of the Global Technological Split

Further consideration of international economic relations in the context of the global technological disruption is impossible without studying the contradictions between the two centres of power that were laid in the models of their economic development and have finally become apparent today. They, on the one hand, feed the technological disruption, and, on the other hand, to a large extent form its main features.

Structural changes in the national economies of the leading countries of the West and East, generated by technological progress, have become one of the main prerequisites for the introduction of innovative strategies in the economic development models of these states. At the same time, it is important to note that, despite more than half a century of the world after World War II, which has been moving toward increasingly global economic ties, differences between the Western world and the most economically developed Asian countries remain relevant. These differences were laid down in the initial period of the formation of the Eastern countries and they still find their way to reflect in modern models of economic growth in the context of the global technological disruption and the overall increased importance of the innovation sector. The role of these differences and their impact on the distribution of leadership in the world economy is the main reason for the need to study the issue of discrepancies between modern growth models of the western and eastern countries.

First, for a deeper understanding of the differences between these models at the present stage, one should consider their features during the formation period. The economic model of the developed western countries evolved under the influence of liberal democratic ideas, which imply non-interference of the state in the private life of citizens, and, consequently, in their economic activity as one of the components of the social sphere. It was these economic

views that served as the basis for the emergence of the least state-regulated capitalism in western countries and the subsequent hegemony of the British Empire in the world economy in the 18th and 19th centuries, the German Empire in the late 19th century, and the subsequent leadership of the United States. It is also worth noting that despite the role of states in determining economic policy in international trade, in the public sector of the economy the role of the state remained relatively insignificant back then.

The emergence of developing states, in particular the countries of East Asia, as contenders for a significant role in the world economy, is usually associated with the end of World War II and the successive economic growth that followed in a number of these states. The idea underlying eastern economies is the priority of collective values over individual ones, which goes against the western liberal tradition. Their main feature was an export-oriented development model, which distinguished these countries from other newly industrialized countries (NICs), such as Brazil, which pursued an import substitution policy that proved ineffective in the long run. This policy, later repeated by other Asian countries such as China, the Philippines, and Malaysia, was based on relatively cheap labour, which allowed these countries to become an important element in global value chains.

In addition, in contrast to the initial growth model of western countries outlined above, Asian states have largely used the opportunities of the public sector to stimulate their national economies. In China, for example, special economic zones were created, and in Korea, the idea of creating chaebols—large industrial associations—was supported. At the same time, competitiveness in the market was also encouraged through the provision of preferential loans to firms that performed well and whose economic activity was considered successful [Stiglitz, 1994]. As a result, in Korea, at the time of this economic development model's implementation, the size of the public sector differed significantly from the American one during the initial formation of the national economy (see Fig. A1) [Ortiz-Ospina, Roser, 2016]. This indicates significant differences in the economic growth strategies of western and Asian countries and, in particular, the role of the state in it.

At the present stage, the differences between the western and eastern models described above are still relevant. Moreover, they have largely manifested themselves during the COVID-19 pandemic. China was the most effective country in the short term to cope with the impact of the coronavirus and became the only country with a positive economic growth in the second quarter of 2020 compared to the same indicator a year earlier (see Fig. A2) [Global Change Data Lab, n.d.]. The probable reason for this was the mobilization ability of the Chinese state, which is typical for Asian countries with a collectivist culture. In addition, growing inequality in the western developed countries, which became even clearer during the pandemic, remains one of the main structural threats to national economies and is increasingly becoming a reason for discussing the shortcomings of the capitalist model of development.

One of the most striking consequences of the existing contradictions in the western and eastern models of economic development is the confrontation between the United States and China, which largely forms the trends of the global technological disruption. On the one hand, it is a clear illustration of how different approaches to building a national economy can influence the trade and economic relations of countries, and, on the other hand, it reflects the possibility of changing the economic world order in modern conditions. As noted earlier, the question of the essence of the confrontation between China and the United States becomes especially relevant in the context of the global technological disruption, but at the same time it goes far beyond the conflict of states in the innovation sphere described above, which emphasizes the importance of a more comprehensive consideration of this issue.

At the initial stage of the formation of relations between modern China and the United States, which occurred after the reforms of Deng Xiaoping, cooperation seemed as a mutually

beneficial alliance leading to an increase in prosperity for both parties. However, along with the development of the PRC and the strengthening of the two states' interdependence, doubts grew in the United States about the consequences of such a policy, which could lead to the emergence of a new global economic power. These perceptions by U.S. elites of the threat of Chinese hegemony resulted in the establishment in 2000 of the U.S.-China Economic and Security Review Commission, the purpose of which was to monitor, investigate, and submit to Congress an annual report on the national security implications of trade and economic relations between the United States and People's Republic of China [Federal Register, n.d.].

The beginning of the current stage of full-fledged rivalry between the U.S. and China for hegemony in the global economy can be considered the announcement by the Obama administration of the so-called "pivot to Asia" policy, which formally consisted of strengthening the institutions of international integration of the United States and developing Asian countries, as well as of establishing constructive relations with China, which were under threat due to the need to find new balances in the context of too much co-dependence between the two countries [Roach, 2019]. However, on the part of the Chinese elites, this strategy was perceived for the most part as an attempt to contain the growing influence of China in the region.

Despite efforts to find compromises, the lack of agreement between the powers led to an inevitable increase in conflict moods in both states, which, coupled with the coming to power of Donald Trump, known for his protectionist and anti-Chinese rhetoric, marked a new stage in the confrontation between the United States and China. The Trump administration, blaming China for the U.S. trade deficit in merchandise, initiated a series of tariffs such as those on solar panels and components (23 January 2018) and on steel and aluminum imports (23 March 2018), prompting China to respond with similar measures and leading to the start of the trade war. China's strategy in this war can be described as reactive in that it pursued a policy of retaliatory restrictions on trade with the United States, but did not initiate them itself. At the same time, this trade confrontation affects China's main foreign economic strategy, One Belt, One Road, which western countries often see as an attempt by the PRC to increase its own influence in developing countries by cultivating debt dependence of these states on China [Mikheev, Lukonin, 2019].

The subsequent Biden administration, despite expectations of improved relations between the United States and China, continued the policy of limiting Chinese influence and accusing China of violating market principles of trade. In 2021, the U.S.-China trade deal made in January 2020 (the first part of the deal) under Donald Trump, the purpose of which was to end the trade conflict, was called into question. China's commitment had been to increase purchases of agricultural and industrial goods, energy, and services in the United States in 2020–21 by \$200 billion compared to the level of 2017; according to statistical agencies, however, only 60% of those purchases were made, which caused discontent among the American government [Shalal, Lawder, 2022]. In connection with the possibility (according to a number of experts) of a military invasion of Taiwan by Beijing, along with the imposition of sanctions against China in this case, for Washington it remains relevant to build up American influence, including military, in the Asia-Pacific region, as outlined in President Barack Obama's strategy.

Research Methodology

A methodology consisting of two main stages is used to assess the impact of the global technological disruption on leadership in the global economy. The first is the construction of an economic leadership index, which allows a comparison of countries according to their impact on the economic world order. Within the framework of this stage, a definition based on the

geo-economic approach, proposed by one of the authors of this study, seems to be the most relevant for application. It considers economic leadership as the ability of the national economy to directly influence the world economy due, first, to the relatively high macroeconomic indicators of the country, reflecting the scale of the economy, and second, to a fairly high degree of participation of the country in international economic institutions, which forms its institutional influence on a global scale. According to this definition, it follows that the leadership of a country can manifest itself both in a passive form (the situation on the world market changes depending on the situation in the market of a particular country) and in an active form (the consequences of a particular foreign economic policy of the country).

The scale of the national economy creates such conditions under which its structural changes or the economic policy pursued by the government are significant for the world economy and may have an impact on it. Participation in international institutions, in turn, is one of the main channels for the spread of this influence at the global level. Moreover, as an additional parameter of leadership in the global economy, it is also necessary to consider the technological potential of the country, since the ability to be competitive in innovative markets is largely a guarantee of the country's future position within the economic world order.

Based on this definition, a number of parameters have been selected that reflect different aspects of economic leadership. They were also divided into three groups based on assumptions about the aspects of leadership in the global economy that they describe. The first includes variables reflecting the scale of the national economy in comparison with other countries; the second includes variables reflecting the degree of involvement of the country in international economic institutions and the significance of this country for them. The third group includes variables reflecting the country's ability to increase its economic leadership in the future, taking into account the growing importance for the world economy of knowledge-intensive goods and high-quality human capital.

The first group includes the following variables:

1) The share of national gross domestic product (GDP) in world GDP (GDPshare): this parameter in the most general terms reflects the relative scale of the national economy and the country's contribution to the world economy as a whole, but does not take into account the country's importance in certain markets and the general structure of the modern world economy [World Bank, n.d.].

2) The share of the country in world trade (TRADEShare): this parameter indicates the country's influence on the international market of goods and services and its importance as a player in it.

3) The share of the country in the global inflow of foreign direct investment (INVshare): this parameter serves to indicate the importance of the national economy in the international capital market, as well as to determine the country as potentially attractive for investment [UNCTAD, n.d.].

The second group includes the following variables:

1) The share of the national currency in the global turnover of the foreign exchange market (CURRole): this parameter reflects the importance of the country's currency as an instrument for conducting trade and financial transactions, as well as its potential as an instrument for the functioning of the financial systems of various international institutions. This parameter also reflects the degree of confidence of other countries in the stability of the currency and, as a result, in the entire economy of this country [BIS, n.d.].

2) Banzhaf influence index, calculated for the International Monetary Fund (IMF): this parameter reflects the influence that a country can have when making decisions in the International Monetary Fund. This characteristic becomes especially relevant for demonstrating economic leadership when making decisions regarding the issuance of loans to certain countries,

since this is still one of the main instruments for conducting foreign economic policy [IMF, 2022].

3) Banzhaf influence index, calculated for the World Bank (WB): this parameter reflects the influence that a country can have in decision-making at the World Bank. This characteristic seems to be less significant for reflecting economic leadership than the share of voting rights in the IMF, since the activities of the World Bank offer fewer opportunities for lobbying national interests and are less useful for conducting foreign economic policy [World Bank, n.d.].

The third group includes the following variables:

1) Value added in medium- and high-tech production (% of value added in manufacturing) (MidHighTech): this parameter reflects development of the country in the field of high technologies, the competitiveness of its high-tech products, and the importance of such products for the national economy.

2) Research and development (R&D) spending as a share of GDP (RandD): this parameter reflects the extent to which the state economic policy is aimed at developing the knowledge-intensive industry as potentially the main one for the world economy, which, in turn, reflects the country's aspirations to increase its economic leadership in the future.

3) Human capital index (HCI): this parameter reflects the quality of life of the population and its intellectual and productive abilities, which, in turn, can characterize the degree of readiness of the country to change the structure of the economy toward more knowledge-intensive industries, as well as the competitiveness of citizens in the labour market with the demand for higher quality human capital [World Bank, n.d.].

4) Quality indicator of the national higher education system (UNIRanking): this parameter reflects the competitiveness of the national educational system as the basis for the formation of intellectual personnel capable of further developing the country's economy [QS Top Universities, 2018].

To build the index, data were selected for 40 developed western and developing Asian countries for the period from 2010 (the starting point of the global technological disruption) to 2019. The countries covered are: Australia, Austria, Belgium, Canada, China, Cyprus, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, the UK, Greece, Hong Kong, China, Indonesia, India, Ireland, Israel, Italy, Japan, Korea, Lithuania, Luxembourg, Latvia, Malaysia, Netherlands, Norway, New Zealand, Philippines, Portugal, Singapore, Slovakia, Slovenia, Sweden, Thailand, the U.S., and Vietnam.

The procedure for constructing the economic leadership index used in this study is based on the methods outlined in the *Handbook on Constructing Composite Indicators* produced by the Organisation for Economic Co-operation and Development (OECD) [OECD-EU JRC, 2008]. The main element of this procedure is factor analysis using the principal components method with varimax rotation.

To further build a single index of economic leadership, the obtained factors are converted according to the formula:

$$I = \frac{x - \min(x)}{\max(x) - \min(x)},$$

were I —the value of the parameter characterizing one of the components of economic leadership;

x —the value of the original variable after applying factor analysis

Thus, the value of each of the parameters ranges from 0 to 1. The parameters are then combined into an Economic Leadership Index (ELI). The coefficients in front of the param-

eters are placed in accordance with their contribution to the share of the explained variance. The final formula for the ELI looks like this:

$$ELI = \sum_{i=1}^n \frac{\sigma_i^2}{\sigma^2} \times I_i,$$

were n —the number of parameters characterizing the components of economic leadership;

σ_i^2 —proportion of variance explained by i -parameter;

σ^2 —total share of explained variance;

I_i — i -parameter value.

The second stage of the study was to build a panel data regression model for 40 countries for the period from 2010 to 2019, describing the impact of factors illustrating the global technological disruption on the ELI index. A number of factors were selected as the main explanatory parameters, which were divided into three groups—the role of the digital technology sector in the country's economy, digital infrastructure, and parameters reflecting the split in the global high technology market (see Table A1). The first two groups reflect the degree of the digital sector's importance for the country and the degree of potential impact of large technology companies on the lives of citizens. The third group of factors is responsible for assessing the violation of international relations in the field of digital technologies regulation as one of the causes for the global technological disruption.

Also, as an additional parameter reflecting the decoupling of the American and Chinese economies as an aspect of the global technological disruption, the share of China in total U.S. import (Decoup) was used when building the model. This indicator was chosen because reducing the share of China in U.S. import was one of the primary goals of the Trump administration during the trade war. The size of China's share of U.S. import was considered as an indicator, the value of which is the same for all countries but varies from year to year. Thus, it can be taken into account within the framework of this model as a trend component.

In addition, to improve the predictive properties of the model, three additional parameters were used that may explain the country's leadership in the global economy. Traditionally, a country's economic development has been explained in terms of a number of different factors, such as climate, culture, religion, geography, and institutions. It is the latter two that are considered the most significant in the modern academic environment, therefore, this study used additional parameters related to the institutional and geographical characteristics of countries. Two of them (the first group) are indicators of the institutions' quality in the country, calculated for the global competitiveness index (the quality of public institutions (Pub_inst), including property rights, the level of corruption, the efficiency of the state apparatus and security, and private institutions (Priv_inst), such as corporate ethics and openness of companies) and explain the phenomenon of leadership in the economy from the point of view of institutional theory. The third parameter (second group)—the volume of export of rare earth metals by the country (Rare_earths)—is intended to explain the country's leadership in the global economy in terms of a geographical approach to determining the nature of the country's competitiveness. The choice of this particular export indicator is explained by the fact that in modern conditions it is rare earth metals that are the basis for the production of most high-tech products, which makes them a relevant indicator of the country's prospects in terms of natural resources. In addition, this indicator is not as affected by other factors contributing to production (infrastructure, institutions) as it would be if the parameter of exports of final or intermediate products using rare earth metals were considered, which increases its ability to describe the specific natural potential of the country.

Interpretation of the Results

When constructing the ELI, it turned out that the selected factors describe from 84% to 87% of the total variance, depending on the year. Macroeconomic indicators, parameters of countries' technological prospects, and their involvement in international economic organizations were distributed on the basis of their own values of the main components into factors according to the initial assumption set out in the study. In addition, the indicator of the share of the national currency in the global turnover of the foreign exchange market turned out to be a separate factor. This can be explained by the fact that the international currency market is a primarily informal institution, unlike the WB and the IMF, so there are significant differences in their characteristics. Thus, the formation of the fourth factor is not a problem for this study.

After the transformations described in the section on methodology, it turned out that the gap between the two leading economies of the world, the United States and China, despite public perceptions of a possible change of leadership in the global economic arena, is still quite significant (see Fig. A3). This can be explained by the rather low share of the Chinese yuan in the international foreign exchange market, which, nevertheless, is gradually growing (1% in 2010 and 4% in 2019 of the global foreign exchange market turnover). In addition, China lags noticeably behind the United States in terms of its role in international economic institutions, although increasing Chinese influence there is a strategic task of the government. However, the United States, having a significant share of the votes in the governing bodies of the World Bank and the IMF, often blocks initiatives to increase the Chinese quota, realizing the significance of this factor's impact on the economic world order.

The ELI index makes it possible to assess, using a regression model, the impact of the global technological disruption on leadership in the global economy. During the specification of the model, it was found through the Hausmann test, the F-test, and the Breusch-Pagan test that the fixed effects model is preferable. In addition, as a result of the tests, the hypothesis of homoscedasticity of this model was rejected, which indicates the presence of heteroscedasticity.² Table 1, with heteroscedasticity-resistant estimates of the coefficients of the parameters selected during the specification of the model and significant at the level of 0.1, is presented below.

Table 1. Model Estimation Results

Coefficients	estimate	Std. error	t- value	Pr (> t)	
log (Imp_for_gov)	1.32E-01	2.3145e-02	5.6836	2.78E-08	***
basic_serv	-1.21E-02	7.1082e-03	-1.6957	0.0908324	.
log (Network)	-7.13E-02	3.7231e-02	-1.9161	0.0561675	.
log (Bandwidth)	-7.14E-03	2.5334e-03	-2.8188	0.0050949	**
Users	-4.86E-04	2.0608e-04	-2.3591	0.0188699	*
Tariff	8.74E-03	3.2847e-03	2.6594	0.0081879	**
Decoup	-1.15E-02	1.5035e-03	-7.6310	2.23E-13	***
Rare_earths	-6.11E-08	1.7474e-08	-3.4979	0.0005294	***

² Heteroskedasticity refers to the heterogeneity of observations, expressed in a non-identical (non-constant) variance of the random error of the regression model. Homoscedasticity refers to the homogeneity of observations, expressed in the same (constant) variance of the random error of the regression model.

Coefficients	estimate	Std. error	t- value	Pr (> t)	
Pub_inst	3.60E-02	1.1049e-02	3.2600	0.0012236	**
Priv_inst	-4.29E-02	1.1258e-02	-3.8068	0.0001661	***
R -Square : 0.54017					
Adj . R -Square: 0.4758					
F-statistic: 41.1153 on 10 and 350 DF, p-value: < 2.22e-16					

The final model of the dependence of the economic leadership index on factors characterizing the global technological disruption is as follows:

$$\text{Log}(ELI) = 0,13*\text{log}(\text{Imp_for_gov}) - 0,01*\text{Basic_serv} - 0,07*\text{log}(\text{Network}) - \\ - 0,01*\text{log}(\text{Bandwidth}) - 0,001*\text{Users} + 0,01*\text{Tariff} - 0,01*\text{Decoup} - 0,001*\text{Rare_earths} + \\ + 0,04*\text{Pub_inst} - 0,04*\text{Priv_inst},$$

where ELI—Economic Leadership Index;

Imp_for_gov—the importance of digital technologies for the future from the point of view of the state;

Basic_serv—the impact of digital technologies on access to basic services;

Network—the use of social networks by the inhabitants of the country;

Bandwidth—average internet speed per inhabitant in kilobytes per second;

Users—the proportion of the country's residents who have access to the Internet;

Tariff—the average effective level of import tariff for goods of the category “equipment and electronics”;

Decoup—China's share of total U.S. import;

Rare_earths—country's export volume of rare earth metals;

Pub_inst—quality of public institutions;

Priv_inst—quality of private institutions.

This model explains 48% of the total variance of the ELI, which can be considered a rather high indicator since the leadership phenomenon itself is informal and includes many different aspects. It is likely that factors such as soft power in various manifestations, as well as historical features of the development of countries, are responsible for the remaining 52% of the variance.

As for the conclusions that can be drawn from the model, the ambiguous influence of various aspects of the global technological disruption is obvious. First, it should be noted that the importance of technology in the eyes of the state has a positive impact on economic leadership (an increase in this indicator by 1% leads to an increase in the index by 0.13%), as well as the level of tariffs for equipment and electronics (growth the level of tariffs by 1% leads to an increase in the index by 1%). This indicates that the policy of the state to promote the use of high technologies within the country, together with the policy to protect the domestic market from foreign goods, to a certain extent, contributes to increasing the country's importance in the world economy by increasing its competitiveness. This conclusion seems to be particularly relevant in the context of the implementation in certain countries of various strategic plans for the development of national technology sectors (for example, Made in China—2025), as well as in the context of the ongoing trade war. At the same time, the very fact of the United States and China decoupling has a negative impact on the economic leadership of the countries, likely due to the secondary effect of the disruption of economic relations between them, which affects all agents of the world economy. Second, it can be concluded from the model that the strengthening of the relationship of innovative technologies with access to basic services and the overall

development of digital infrastructure, together with the growth in the popularity of social networks, can negatively affect economic leadership (for example, a 1% increase in the number of social network users leads to a drop in the economic leadership index by 0.07%). Perhaps the reason for this trend is that the growth of these parameters contributes to the growth of the influence of technology companies in the market and their introduction into the social sphere of life, which greatly complicates the conduct of domestic and foreign economic policy by the state due to the impossibility of predicting the players' behaviour. Thus, technological giants, which are characterized by the international nature of doing business, replace the state, traditionally responsible for the development of the national economy, and begin to perform some of its socially significant functions, guided mainly by the desire to make a profit, which leads to a decrease in the country's leadership in the world arena.

Comparison of the Impact of the Global Technology Disruption on U.S. and Chinese Economic Leadership

Based on the results of the regression analysis, we can conclude that different aspects of the global technological disruption affect the economic world order in different ways. The model we have built as a part of this study allows us, to a certain extent, to predict how the confrontation between China and the United States for leadership in the global economy will develop in the future.

First, the positive impact of government policy to promote national innovative technologies should be noted. Thus, the Chinese approach seems to be more effective than the American one due to the fact that the PRC is more likely to permit state interference in market mechanisms, including through actions aimed at stimulating certain sectors of the economy. As mentioned above, the Chinese government has high hopes for the Made in China—2025 strategy as a way to achieve technological independence. A similar idea is also set out in the Medium and Long Term Plan for the Development of Science and Technology (2006), which includes the concept of *zizhu chuangxin* (自主创新), or “local innovation,” which refers to the reduction of dependence of national technologies on foreign capital and development [Losacker, Liefner, 2021].

The United States, in turn, is currently suffering from a crisis in its national innovation system due to the fact that after the collapse of the USSR, the main incentive for the interaction of Democrats and Republicans within the framework of the Congress on National Technology Development disappeared, leading to a significant reduction in federal spending on research and development (see Fig. A4). In addition, the traditional American perception that the market and private business can perform any task better than the state, which leads to a lack of necessary regulation of the activities of technology companies and undermines the U.S.' ability to compete with China, also has a negative impact on the incentives to develop their own policy in the field of innovation within the framework of relations between the two states. This has already led to the fact that the U.S. trade deficit in high technology has reached almost \$200 billion, while China is the main exporter to the United States in this area [United States Census Bureau, n.d.].

Second, the negative effect of the development of digital infrastructure and the growth in the number of social network users on economic leadership, associated with the growing influence of technology giants in the national economy, can become a serious problem for both countries. The profits of the pandemic period, along with the development of technologies related to access to an increasing amount of user data, have created conditions for American innovative companies (Apple, Google, Meta) in which their further activities will be inextrica-

bly linked with interference both in the privacy of individual citizens and in the social sphere of society as a whole, which can create serious risks for the state as an institution.

The U.S. government's intention to mitigate the negative effects of these trends can be seen in the gradual development of antitrust laws targeting tech giants and laws aimed at protecting the privacy of Internet platforms and prohibiting companies from censoring content [Feiner, 2022]. However, the effectiveness of such measures is rather controversial, and these measures themselves seem belated due to the fact that innovative companies, during the years of inadequate regulation, have already managed to accumulate an impressive user base, which also includes significant amounts of personal data. In addition, the complexity of such digital platforms makes it difficult to develop laws that can take into account all the details of their functioning, creating conditions for evading the proposed measures.

Considering the Chinese approach to regulating technology giants, one can see that the measures taken in the PRC are more specific and tough compared to the American ones. For example, in April 2021 Alibaba was fined \$2.8 billion for abusing its dominant market position during an antitrust audit and in the second half of the year the PRC government tightened regulation of digital platforms, banning the introduction of algorithms that lead customers to addiction or excessive spending, and issued the Personal Information Protection Act. It is worth noting that similar litigation in the framework of antitrust reviews against the largest technology companies is also taking place in the United States, but their speed, which is one of the determining factors in the context of the rapid growth of these corporations' market power, is significantly inferior to China. Thus, the antitrust investigation into the Google case initiated by the U.S. Department of Justice in 2020 should move to the trial stage no earlier than 2023 [Feiner, 2022]. In addition, a law is currently being discussed in China to reduce the number of hours children under 18 are allowed to play online video games to three hours a week and to ban the establishment of online celebrity fan clubs in order to protect the physical and mental health of minors [Hsu, 2021].

It is obvious that such severe restrictive measures in relation not only to the companies themselves, but also to their users, is intended to undermine the market hegemony of technological giants and are a hallmark of Chinese society, in which state intervention in the privacy of citizens is considered the norm, unlike the western liberal approach to the role of the state. It is also worth noting the impossibility of ensuring a high speed of adoption of these regulatory measures in the U.S. two-party system, where lobbyists play a significant role. In this regard, China's approach to limiting the power of innovative companies, made possible by the one-party regime that has developed in China, looks more advantageous than the American one, which suffers from a lack of restrictive opportunities due to the policy of non-intervention of the state in market processes.

The aspect of the global technological disruption associated with the decoupling of the American and Chinese economies appears to be a negative factor for both states. Indeed, years of interconnectedness between their national economies have meant that disruption of cooperation between China and the United States damages the ambitions of both—in the case of the United States, through limiting consumer access to cheap goods and the ability of companies to outsource and, in the case of the PRC, through the closure the largest market for leading national corporations. In this case, the trade war is not a way to redistribute the economic world order but is rather an obstacle to it, slowing down global changes in the world economy.

Thus, it can be concluded that the lack of a national policy for the development of the technology sector and the inability to quickly provide a sufficient regulatory framework for the activities of the largest innovative companies create risks for the United States associated with a global technological disruption. In this regard, China has a historic opportunity to change the economic world order and achieve its hegemony in the world economy, but the stumbling block

on the way to this is the deterioration of relations between China and the United States, which slows down the development of both states. At the same time, the awareness on the part of the United States of the Chinese threat suggests that we should not expect an improvement in these relations in the near future.

Prospects for Confrontation Between the U.S. and China in the Struggle for Economic Leadership in the Post-Crisis World Order

The global technological disruption goes hand in hand with other processes shaping the present moment, so it is important to consider the context in which the divide will develop and affect the global economy in the future. In particular, the new world order, which will inevitably take shape after the full end of the COVID-19 pandemic, will obviously be characterized by structural changes in a number of aspects of the existing global governance system, including in the distribution of roles in the global economy.³ The confrontation between the United States and China in the quest for economic leadership is likely to be influenced by the consequences of the pandemic, as a result of which new tools of struggle and new forms of confrontation should be expected.

First, a factor that can determine the future nature of this confrontation is the speed and success of the country's exit from the crisis caused by the pandemic. The U.S. and China illustrate two opposing approaches to solving the problem of recovering. As of May 2022, China still adhered to the zero-covid strategy, which implies significant restrictive measures, including lockdown, even in the case of low incidence rates. One of the latest examples of the application of this policy was a complete lockdown in the city of Shenzhen with a population of about 17.5 million people in March 2022, introduced after the increase in the number of cases in the country to 3,400 [Bloomberg News, 2022]. The United States, on the contrary, in the face of a fall in the growth of infections, has recently been progressively scaling back restrictive measures.

At the beginning of the pandemic, the Chinese approach proved to be extremely effective, but with the growth of general fatigue from restrictions and the emergence of a less lethal (while more contagious) strain of Omicron, the Chinese approach began to be criticized as unreasonably rigid and for its negative impact on the economy. Thus, the success that China achieved as a result of overcoming the first waves of the pandemic, which seemed even more significant against the backdrop of the inability of western powers, including the United States, to provide a full-fledged policy to contain the disease, began to level out in the context of the growing effectiveness of policies to lift restrictions. The negative consequences of the zero-covid strategy could undermine China's claim to hegemony in the global economy due to the fact that the Chinese government will have to come to terms with the risks of new lockdowns and their impact on the national economy. In the United States, the long-term effects of social tensions caused by the initial period of the COVID-19 pandemic also appear to be significant, highlighting the need for changes in the social policy of the United States in order to maintain its competitiveness on the world stage.

COVID-19 has also exposed the vulnerabilities of international institutions, primarily the World Health Organization (WHO), and their inability to provide the necessary policy to combat pandemics at the supranational level. In this regard, the issue of continuing the reform of organizations, including the IMF and the World Bank, to further strengthen the representation

³ In this study, the authors did not take into account the likely impact on the new world order and the system of global governance of the consequences of the conflict in Ukraine, which began on 24 February 2022.

of developing countries in them again became relevant. The main initiator of such measures is China, which seeks to reduce the U.S.' role in international institutions. Obviously, such changes can significantly affect the distribution of power in the world economy through an increase in the institutional power of the PRC, that is, through an increase in the number of its possible levers of pressure. However, given the traditionally slow process of reforming global economic organizations and the continuing overwhelming level of influence of the United States in them, the implementation of such a strategy seems to be possible only in the long term under the influence of other factors that shape the world economic order.

The problem of the global technological disruption is inextricably linked to the COVID-19 pandemic. As mentioned above, the disruption of trade relations between China and the United States in the context of the post-crisis recovery is disadvantageous for both sides. Moreover, the rise in bargaining power of technology companies, fuelled in large part by growing demand for digital technologies in the context of self-isolation, creates additional risks for the traditional international order. A variant of the development of events becomes probable, in which a third party, in the form of the largest innovative corporations, becomes a participant in the confrontation for leadership in the global economy. At the same time, the question of the timeliness of the application and discussion of measures to regulate the technology sector remains open.

The complication of the geopolitical situation as a result of the conflict in Ukraine after 24 February 2022 may have a significant impact on the context of confrontation in the global economy. Being interested in building a new system of global security taking into account its interests, Beijing will face the risks of excluding China from a full-fledged economic system through sanctions if it supports Russia in the Ukrainian conflict or conducts a military operation in Taiwan. All this creates uncertainty about the future landscape of the global economy. The economic instruments of conducting foreign policy in the form of sanctions have recently shown that their use can pose a threat to the functioning of the entire world economy, especially when it comes to their possible use in relation to the world's second economy.

Thus, we can conclude that the confrontation between the United States and China in the near future will be formed under the influence of a number of factors that characterize the effectiveness of strategies to overcome the COVID-19 pandemic and the post-pandemic world itself. At the same time, the effect of most of these factors will become apparent only in the long term, along with the elimination of uncertainty regarding the regulation of the technological giants' market power and the clarification of the leading powers' political intentions.

Conclusion

The phenomenon of the global technological disruption was the result of both individual actions of the leading powers and objective market processes. On the one hand, China's growing claims to hegemony in the global economy, the validity of which are confirmed by the analysis of the ELI built in the framework of this study, lead to the fact that, in the further development of economic interaction between the two leading countries, an element of danger is increasing for both. The growing importance of the technology sector and the vulnerabilities arising from this trend, which are expressed in threats to national security and the security of personal data, are only pushing the U.S. and China to pursue a policy of protecting their own interests at the expense of international cooperation. On the other hand, the emergence of technological giants as full-fledged participants in the socio-economic sphere, having leverage of influence on public opinion, leads to an increase in the uncertainty of the role of the state in the future, and at the same time makes it difficult to predict the landscape of the world economy. From this follows not only a moral dilemma about the ability of big business to perform the functions of

organizing the life of society, but also the question of the established international economic institutions' stability.

In this regard, the problem of the impact of the global technological disruption on the world order, in particular, on the confrontation between China and the United States in the quest for economic leadership, seems to be decisive for both politicians and the academic community. Moreover, the consequences of the COVID-19 pandemic will obviously also contribute to making the technological disruption one of the key trends in the near future. It can already be said that the increased need to reform international institutions and the general desire of China to change the balance of power in the world, largely based on the strategy of ensuring Chinese technological superiority, will form new channels of influence for the global technological disruption on the world economy.

This study makes it possible to look at the trends in the distribution of power in the global economy over the past 10 years and assess the consequences of some aspects of the technological disruption for these trends. Thus, based on the definition of leadership in the world economy as the ability to influence the global economic situation through the scale of the national economy and the country's involvement in international institutions, the authors conclude that Asian countries, with the exception of China, do not yet have sufficient tools to maintain a stable growth of their influence. However, the global technological disruption can change the nature of this trend and, at the same time, help to increase the importance of the PRC on the world stage.

According to the constructed regression model, the presence of a clear plan for the introduction of information and communication technologies by the state can have a positive impact on the economic leadership of the country. In this regard, China looks the most advantageous, for quite a long time following the strategy of independence of its technologies and development of its own innovation sector, while the United States continues to adhere to a policy of non-interference through the delegation of functions to ensure technological security to market mechanisms. Also, from our model, we conclude that the factors that contribute to the growth of the importance of technological giants have a negative impact on the economic leadership of the country. At the moment, both the United States and China are aware of the risks associated with this trend, but its regulation is carried out much faster and in larger volumes in the PRC due to the peculiarities of its political structure. This may also contribute to the growth of China's claims to hegemony in the global economy, in connection with which, in the United States, discussions about using Chinese experience in the fight against the market power of Big Tech have become more and more relevant.

The study also confirms the assumption that the growing economic contradictions between the West and the East, in particular, the process of decoupling the American and Chinese economies, cannot contribute to the change in the world order, but only slow it down. This conclusion underlines the need for dialogue to resolve the existing conflict between the U.S. and China and the possible creation of a new system for the functioning of the world economy that takes into account the increased influence of the newly industrialized countries of Asia.

References

- Agarwala N., Chaudhary R.D. (2021) "Made in China 2025": Poised for Success? *India Quarterly*, vol. 77, no 3, pp. 424–61. Available at: <https://doi.org/10.1177/09749284211027250>.
- Bank for International Settlements (BIS) (n.d.) Turnover of OTC Foreign Exchange Instruments, by Currency. Available at: <https://stats.bis.org/statx/srs/table/d11.3> (accessed 3 May 2022).

- BBC News (2021a) US President Joe Biden Tightens Restrictions on Huawei and ZTE. 12 November. Available at: <https://www.bbc.com/news/technology-59262329> (accessed 3 May 2022).
- BBC News (2021b) Fake Walmart News Release Claimed It Would Accept Cryptocurrency. 13 September. Available at: <https://www.bbc.com/news/technology-58545944> (accessed 16 November 2022).
- Birch K., Cochrane D.T. (2021) Big Tech: Four Emerging Forms of Digital Rentiership. *Science as Culture*, vol. 31, issue 1, pp. 44–58. Available at: <https://doi.org/10.1080/09505431.2021.1932794>.
- Bloomberg News (2022) China Locks Down Shenzhen, Province of 24 Million Over Covid. 13 March. Available at: <https://www.bloomberg.com/news/articles/2022-03-13/china-places-all-shenzhen-residents-under-lockdown-afp> (accessed 3 May 2022).
- Desai B.C. (2020) Pandemic and Big Tech. *IDEAS '20: Proceedings of the 24th Symposium on International Database Engineering & Applications* (B.C. Desai (edю)). New York: Association for Computing Machinery. Available at: <https://doi.org/10.1145/3410566.3410585>.
- Federal Register (n.d.) U.S.—China Economic and Security Review Commission. Available at: <https://www.federalregister.gov/agencies/u-s-china-economic-and-security-review-commission> (accessed 3 May 2022).
- Feiner L. (2020) DOJ Case Against Google Likely Won't Go to Trial Until Late 2023, Judge Says. CNBC, 18 December. Available at: https://www.cnbc.com/2020/12/18/doj-case-against-google-likely-wont-go-to-trial-until-late-2023-judge-says.html?utm_term=Autofeed&utm_medium=Social&utm_content=Main&utm_source=Twitter#Echobox=1608313274 (accessed 3 May 2022).
- Feiner L. (2022) 2022 Will Be the “Do or Die” Moment for Congress to Take Action Against Big Tech. CNBC, 31 December. Available at: <https://www.cnbc.com/2021/12/31/2022-will-be-the-do-or-die-moment-for-congress-to-take-action-against-big-tech.html> (accessed 3 May 2022).
- Fenwick M., McCahery J.A., Vermeulen E.P.M. (2021) Will the World Ever Be the Same After COVID-19? Two Lessons From the First Global Crisis of a Digital Age. *European Business Organization Law Review*, vol. 22, pp. 125–45. Available at: <https://doi.org/10.1007/s40804-020-00194-9>.
- Gilchrist A. (2018) Post-Truth: An Outline Review of the Issues and What Is Being Done to Combat It. *Ibersid*, vol. 12, no 2, pp. 13–24. Available at: <https://doi.org/10.54886/ibersid.v12i2.4601>.
- Global Change Data Lab (n.d.) Economic Decline in the Second Quarter of 2020. Our World in Data [Dataset]. Available at: <https://ourworldindata.org/grapher/economic-decline-in-the-second-quarter-of-2020> (accessed 3 May 2022).
- Hsu S. (2021) China's Regulatory Clampdown on Big Tech. ICAS Issue Brief, 1 November, Institute for China-American Studies. Available at: <https://chinaus-icas.org/research/chinas-regulatory-clampdown-on-big-tech/> (accessed 3 May 2022).
- International Monetary Fund (n.d.) IMF Members' Quotas and Voting Power, and IMF Board of Governors. Available at: <https://www.imf.org/en/About/executive-board/members-quotas> (accessed 3 May 2022).
- Kashin V.B. (2021) Voenno-Promyshlennoe i Voenno-Ekonomicheskoe Izmereniya Amerikano-Kitayskogo Sopernichestva [Military-Industrial and Military-Economic Dimensions of Sino-US Rivalry]. *Sravnitel'naya Politika*, vol. 12, no 3, pp. 85–97 (In Russian).
- Losacker S., Liefner I. (2020) Implications of China's Innovation Policy Shift: Does “Indigenous” Mean Closed? *Growth and Change*, vol. 51, no 3, pp. 1124–41. Available at: <https://doi.org/10.1111/grow.12400>.
- Mikheev V., Lukonin S. (2019) Kitay—SSHA: Mnogovektornost' “Torgovoy Voyny” [China-USA: Multiple Vector of “Trade War”]. *Mirovaya Ekonomika I Mezhdunarodnyye Otnosheniya*, vol. 63, no 5, pp. 57–66. Available at: <https://doi.org/10.20542/0131-2227-2019-63-5-57-66> (in Russian).
- Organisation for Economic Co-operation and Development (OECD)/European Commission Joint Research Centre (EU JRC) (2008) Handbook on Constructing Composite Indicators: Methodology and User Guide. Available at: <https://www.oecd.org/sdd/42495745.pdf> (accessed 16 November 2022).
- Ortiz-Ospina E., Roser M. (2016) Government Spending. Our World in Data [Dataset], Global Change Data Lab. Available at: <https://ourworldindata.org/government-spending> (accessed 3 May 2022).
- Portanskiy A.P. (2021) Mirovaya trgovaya sistema: vizovi XXI veka: monographia [*The World Trading System: Challenges of the XXI Century: Monograph*]. Moscow: International Relationships.

QS Top Universities (2018) QS System Strength Rankings [Dataset]. Available at: <https://www.topuniversities.com/system-strength-rankings/2018> (accessed 3 May 2022).

Roach S. (2014) *Unbalanced: The Codependency of America and China*. Yale University Press.

Rodrik D. (2020) The Coming Global Technology Fracture. *Project Syndicate*, 8 September. Available at: <https://www.project-syndicate.org/commentary/making-global-trade-rules-fit-for-technology-by-dani-rodrik-2020-09?barrier=accesspaylog> (accessed 3 May 2022).

Shalal A., Lawder D. (2022) Exclusive: U.S. Calls for “Concrete Action” From China on Trade Deal. Reuters, 7 February. Available at: <https://www.reuters.com/business/exclusive-us-calls-concrete-action-china-meet-phase-1-purchase-commitments-2022-02-07/> (accessed 3 May 2022).

Stiglitz J.E. (1994) Economic Growth Revisited. *Industrial and Corporate Change*, vol. 3, no 1, pp. 65–110. Available at: <https://doi.org/10.1093/icc/3.1.65>.

United Nations Conference on Trade and Development (UNCTAD) (n.d.) UNCTADstat [Database]. Available at: <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx> (accessed 3 May 2022).

United States Census Bureau (n.d.) Foreign Trade [Dataset]. Available at: <https://www.census.gov/foreign-trade/balance/c0007.html> (accessed 3 May 2022).

Wang D. (2021) “Moment Sputnika Dlya Kitaya? [China’s Sputnik Moment?]. *Russia in Global Affairs*, 8 September. Available at: <https://globalaffairs.ru/articles/moment-sputnika-dlya-kitaya/> (accessed 8 September 2021). (in Russian)

World Bank (n.d.) World Bank Open Data [Dataset]. Available at: <https://data.worldbank.org> (accessed 3 May 2022).

World Economic Forum (WEF) (2019) The Global Risk Report 2019. Available at: <https://www.weforum.org/reports/the-global-risks-report-2019> (accessed 3 May 2022).

World Economic Forum (WEF) (n.d.) The Global Information Technology Report. Available at: <https://www.weforum.org/reports/the-global-information-technology-report-2016/> (accessed 3 May 2022).

Appendix

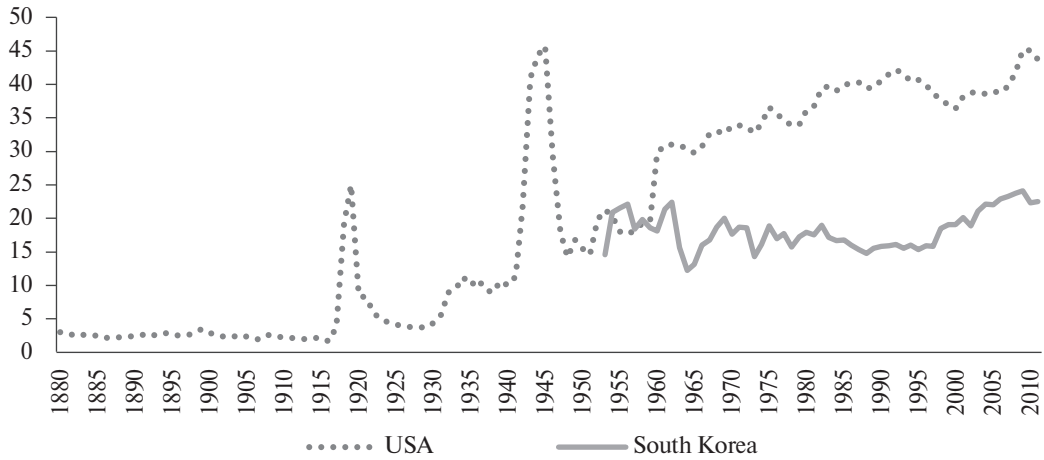


Fig. A1. Government Spending in the U.S. and Korea as a % of GDP, 1880–2010

Source: Global Change Data Lab [n.d.].

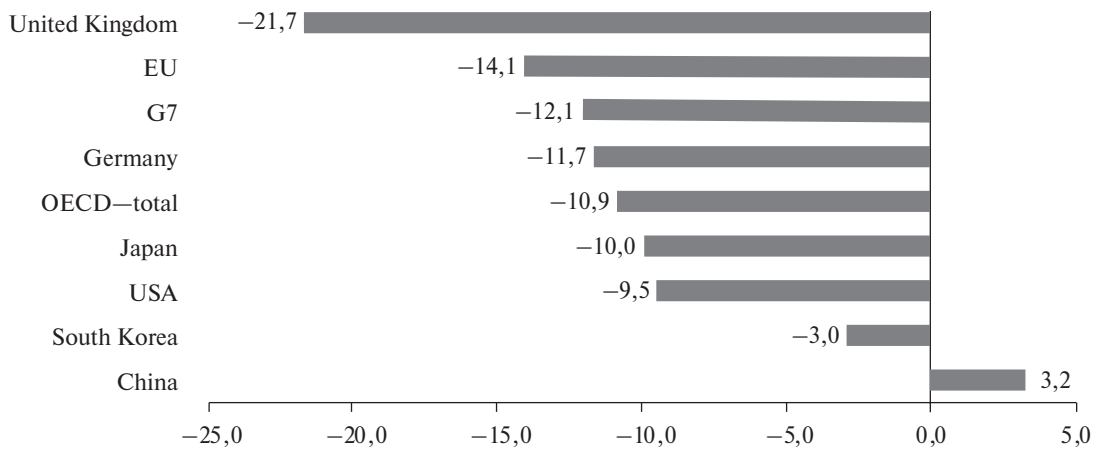


Fig. A2. Economic Downturn in the Second Quarter of 2020 Compared to the Second Quarter of 2019

Source: Global Change Data Lab [n.d.].

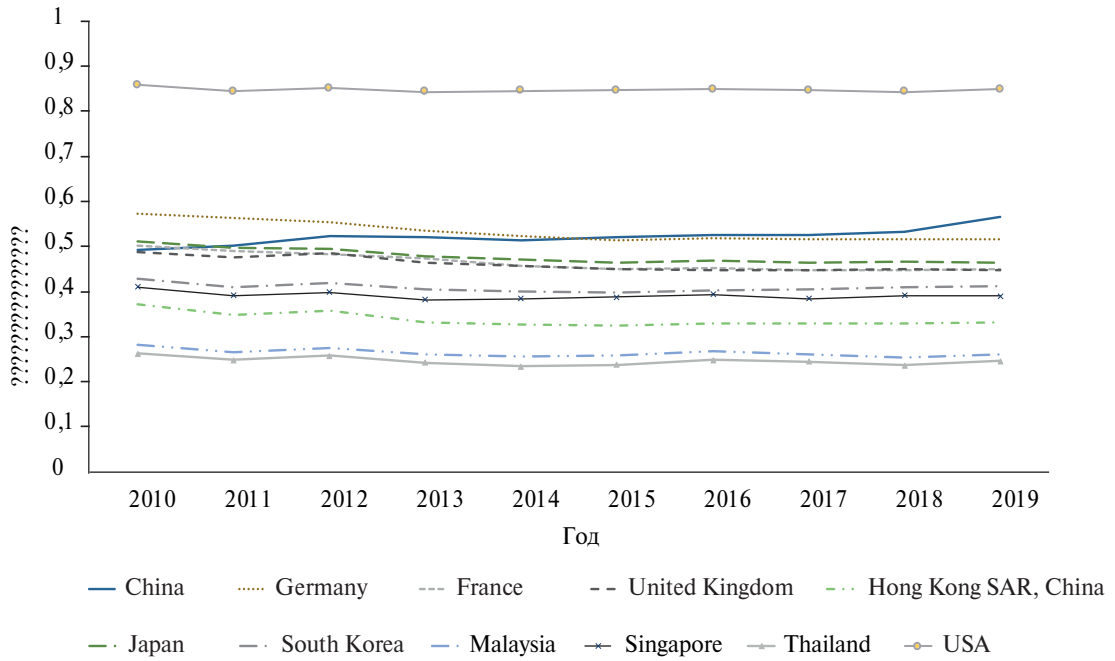


Fig. A3. Economic Leadership Index, 2010–19

Source: Compiled by the authors.

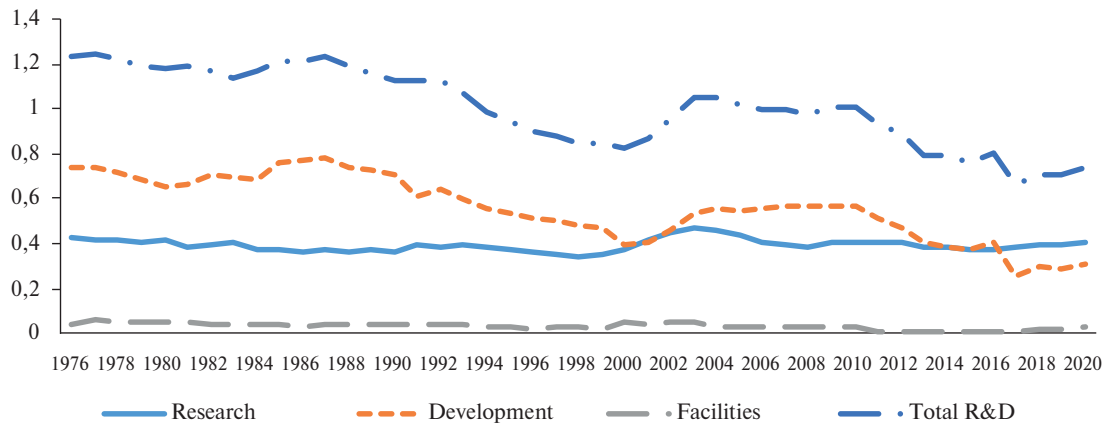


Fig. A4. U.S. Federal Budget Spending on R&D, 1976–2020

Source: United States Census Bureau [n.d.].

Table A1. Factors Illustrating the Global Technological Disruption

Parameter group	Parameter	Parameter Interpretation
The role of the digital technology sector in the country's economy (data based on citizen surveys conducted as part of the Network Readiness Index by the World Economic Forum between 2010 and 2019) [WEF, n.d.]	State promotion of innovative technologies (Gov_pro)	To what extent certain actions of the state contribute to the development of innovative technologies within the country (the value varies from 1 to 7)
	The importance of digital technologies for the future from the government's point of view (Imp_for_gov)	To what extent does the state have a clear plan to support the introduction of information and communication technologies in order to increase the overall competitiveness of the country (value ranges from 1 to 7)
	Impact of digital technologies on access to basic services (Basic_serv)	To what extent technology makes it easier for citizens to access basic services (health, education, etc.) (value ranges from 1 to 7)
	Use of high technologies by national companies (Absorption)	To what extent national companies develop, implement and apply high technologies (value varies from 1 to 7)
	Use of social networks by residents of the country (Network)	To what extent citizens of the country use social networks for professional and personal purposes (value varies from 1 to 7)
Digital Infrastructure [WEF, n.d.]	Average internet speed per inhabitant in kilobytes per second (Bandwidth)	
	Percentage of country's population covered by mobile network (Mob_cov)	
	Percentage of country's population with Internet access (Users)	
Parameters reflecting the split in the global high-tech market [UNCTAD, n.d.]	Average effective level of import tariff for goods in the category "equipment and electronics" (Tariff)	Reflects the country's desire to protect the domestic technology sector
	The country's export volume of semiconductors (Semiconductors)	Reflects the role of the country in the high-tech market as a supplier of one of the main components of modern devices