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# COVID-19: ANALYSES AND FORECASTS

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## HOW CAN COVID-19 CHANGE GEOPOLITICS AND ECONOMY?\*

**Leonid Grinin**

*National Research University  
Higher School of Economics, Moscow;  
Institute for Oriental Studies,  
Russian Academy of Sciences, Moscow*

*The current COVID-19 pandemic may become one of the thresholds in the transformation of the world order as well as of many political, social and other relations within the World System.<sup>1</sup> Together with the infection there has also started a recession which has been long anticipated. The two processes have created a synergetic effect with a very negative impact on economy and life. In the present paper the author makes predictions in what way the unfolding negative processes will affect economy in the short run and in the medium and long term, as well as how the balance of power in the world will shift and which great power will win and who will lose; and in what way will this affect the world order and many other aspects of life.*

**Keywords:** *coronavirus, pandemic, recession, world order, the balance of power, internal political struggle, the anti-Trump forces.*

### **1. COVID-19 Pandemic as a Trigger of the Global Economic Crisis**

The pandemic of an infection disease with a relatively high mortality rate, of course, is not a new phenomenon. For example, in 2009, the H1N1 virus, according to some reports, took the lives of 100 to 400 thousand people in just one year.<sup>2</sup> However, the lethality from SARS-CoV-2 (which causes infection disease COVID-19) today has far exceeded 400 thousand reaching 1,700,000.

In general, the attention to the pandemic in 2009 and 2020 differs enormously from the very beginning. This time both the authorities responsible for decision-making and ordinary people have been really intimidated and disoriented. Despite the ten month's experience of struggle with the pandemic, this disorientation is still obvious in the going from one measure to another with some of these measures being absurd and also in the actual admission of one's helplessness.

But the main and fundamentally new point is the unprecedented measures to ensure population safety. These measures, which, perhaps, were applied before only during military actions, have produced and continue to produce a devastating effect on the

economy of many countries and on the world economy in general. In fact, the quarantine measures were applied to a different extent almost everywhere.

It is very important to point out that the coronavirus pandemic has triggered the global economic crisis which we are going to analyze below.

Another important and even key point of the situation is the directed and coordinated activities of the media (both national and global) which make one think that there are some powerful and mostly supranational forces that try to make use of the pandemic for their own interests and goals.

Although these forces do not reveal themselves openly, nevertheless, one may assume that some of them hope to reinforce their positions in the world pharmaceutical industry, in particular in the vaccine market. In this context, Bill Gates and Antony Fauci (the director of US National Institute of Allergy and Infectious Diseases starting from 1984) are especially often mentioned. Another force in the USA, which is objectively interested in the fear mongering, is the anti-Trump globalist-oriented coalition which took the opportunity to exacerbate economic difficulties in the country and contributed to the growth of mass unemployment with all the consequences that come with it. They hoped for a shift in the voters' mood and subsequent voting against Donald Trump who always had a good state of economy as his strong card. The democrats' task in this case was to prolong the state of emergency as long as possible and to give the economy no opportunity to recover and return to normal functioning and also prevent people from coming out of it and calming down before the election time.

As it had been expected, they played the card of return of epidemic in autumn. This became possible because the media controlled by the global capital (primarily, by the American) and other means of influencing allowed the forces in the USA to somehow impact the rest of the world; so the pandemic in this or that way should have continued in other countries as well, thus, undermining their economy.

One should admit that the plan has worked to deteriorate American economy to the level when population would start blaming Trump for this and by means of the pandemic to make people vote by mail. The voting (although with serious violations and frauds) resulted in favour of Biden and democrats.

At that, Trump's opponents show not the slightest bit of concern about the relative drop of the GDP and so every Trump's attempt to maintain the economic level were violently criticized. Even today the unemployment level in the United States remains at the level of about 11 million unemployed persons (and in some periods it used to exceed 30 million). And it is obvious that the return of economy to normal state will be slow.

As early as in 2005 the author of the present article formulated the main contradiction of the current epoch consisting in the opposition between global interests and the US parochial interests. The contradiction will increase also due to the fact that the US political forces more obviously use the foreign policy as a means to achieve domestic goals, especially to win at the elections (Grinin 2005: 17; and also Grinin 2018; Grinin, Korotayev 2020). At that, the struggle of the larger part of the global community with growing egoism of America that ignores common interests, will form the major intrigue of the current global contradiction. After Donald Trump's coming to power this became especially obvious since the contradiction has expanded when the United States started to ignore even their allies' interests. After the democrats' return to power, this tendency will most probably increase in certain respects.

### The Forthcoming Economic Crisis and the Pandemic

It is known that economic development is cyclical in nature. In the most general sense, this is due to the fact that the opportunities for economic growth get exhausted for various reasons: resources become too expensive so that the competition for them intensifies while sales drop, credit is exhausted as well, financial bubbles inflate, production costs rise, *etc.* As a result, an economic cycle ends with a cyclical crisis, which may unfold in various forms. Crises are often associated with a collapse in stock prices, with a sharp drop in production, and with mass financial failures and bankruptcies. But sometimes crises are realized in the form of a relatively slow decline, which has a protracted nature. Like wars and revolutions, all crises have some common features, but at the same time, they pass in different ways and each has its peculiar features. Crisis can be considered as a part of an economic cycle, when the potential for growth is temporarily exhausted while the proportions which are more adequate for the society's available opportunities are forcibly restored. Crisis is just a part of a cycle when structural contradictions and inconsistencies in a society become insurmountable for a while, and then partially resolved, opening opportunities for the start of a new cycle.<sup>3</sup>

And this cyclical economic development has not been eliminated, despite all efforts. At the same time, various pro-cyclical and counter-cyclical actions of financial regulators and governments can significantly affect the nature of the economic cycle (also called the Juglar cycle, see Grinin, Korotayev, Malkov 2016), in particular, shorten or extend its duration. In particular, in the 1950s and 1960s, by increasing the interest rates the Federal Reserve System (the Fed) affected economic cycles in the USA, which ended earlier than they should, and besides, the economic crises were mild and unpainful. Recently, on the contrary, the countercyclical measures have been very actively taken, in particular, through the interest rate reduction almost to zero or even negative figures, by artificially supported loans, active saturation of the market with finances, buy-back operations and by providing direct assistance to individual players. After the 2008 financial crisis, the scope of measures was enormous (and at the moment these measures became extraordinarily generous).

As a result, the main disproportions of the cycle preceding the 2008 financial crisis have not been eliminated, namely: the slowdown and even decline in labor productivity growth, over-lending of business and public spheres, excessive national debt, low or even reduced share of investments in GDP, reduction of the real sector of national economies and excessive role of the financial sector. On the contrary, the financialization of the world economy took on exaggerated proportions, which only exacerbated the weaknesses indicated early in this analysis. As a result, due to the cheap loans, one could observe the emergence of many enterprises with a weak ability to compete, which even were called 'zombie companies' and which yielded poor returns, not to speak about their becoming innovative.

As a result, the world economy has weakened, and growth rates have slowed. The global trade also began to slip. The growth rates were supported only by huge financial injections into economy. The global economic crisis actually reached its peak already in 2016, but thanks to the governmental and central banks efforts the bubbles would not deflate on the stock exchanges, and the economic growth was supported by the growing national debt and some fiscal measures (like, *e.g.*, large tax cuts and amnesties in the

USA). Thus, the onset of the crisis was delayed for three to four years. Like many other experts, we predicted the onset of the crisis around 2020 (Grinin and Korotayev 2014b, 2018). In 2019, the expectation of a recession became widespread, since all the resources were exhausted and the American and other countries' financial authorities undertook massive interventions to save the markets.

There is an important rule in the theory of economic cycles, which implies that some kind of a trigger is required to launch a crisis and go into a recession. And the larger the economic disproportions and contradictions, speculations and risk operations, the smaller trigger is needed. Two events coinciding in time triggered the current crisis of 2020: the oil price war and a sharp decline in oil prices and, to an even greater extent, the outbreak of the coronavirus pandemic. The pandemic became the main trigger of the economic crisis and this occurred for almost the first time in the two-and-a-half centuries' history of world economic crises (although similar pandemics had some influence on the crises in the eighteenth century). And especially characteristic point of the current entering recession is that economy is undermined not by the economic but by political measures. However, we should repeat that even without pandemic the world economy would have entered a recession during this year.

## **2. The Effects of the Pandemic on the World Economy in the Remaining Months of the Year**

In any case, the negative effect of the coronavirus pandemic has appeared enormous and will preserve for a long time. In the second quarter of 2020 the USA suffered the worst drop: the number of new applications for unemployment (albeit under the new liberal rules) reached a catastrophic figure of 33 million, and the production decline year by year reached 9 per cent (or 32 per cent to the first quarter compared to the first quarter according to the American evaluation system).

An extremely important point is that the outbreak of the coronavirus pandemic coincided with the collapse of stock markets, the drop in oil prices and the oil price war between Saudi Arabia and Russia, and, in general, with the start of recession, as mentioned above in this analysis. Both processes created a synergistic effect in terms of negative impact on economy. In March, the stock indices fell by more than 30 per cent. However, the subsequent development paths of the stock markets and real economy have dramatically diverged. The former have quite actively recovered by autumn and have even achieved new records. Meanwhile, the real economy, although it slightly recovered in the third quarter due to the partially eliminated lockdowns, still remains very far from recovery. And the world GDP fall will achieve 4–4.5 per cent in 2020. Respectively, certain decline or absent growth will be observed in most countries.

Such a divergence between stock markets and real economy is explained by the fact that in the recent fifteen years the domination of financial sector in decision-making became obvious. Actually, the authorities' major task was to prevent the fall of stock markets for which sake the Central Banks make huge financial injections. In 2020, the FRS injected not less than three trillion dollars into the American stock markets, and considerably larger though indirect means.

Countries with fiat currencies somehow managed to maintain their economies by increasing domestic debt and emission. Countries that import oil and energy will be

able to somewhat alleviate losses, but, of course, not completely. The positions of oil-exporting countries have deteriorated due to the decreasing demand for energy resources.

In many economies, the online sales have increased to the detriment of offline sales. And this trend may subsequently affect the deterioration of economies in many cities, exacerbate problems in national budgets, and also become one of the reasons for the growing unemployment. Significantly more noticeably than in other sectors of the world economy, in 2020 the negative consequences are observed in such sectors as international trade, international tourism, air and other transportation, and other similar sectors.

Note that although the overall slowdown is observed everywhere, in almost all countries, however, the low-income countries generally slow down less than high-income ones, that is, they grow noticeably stronger than high-income countries. The latter as well as a number of oil-exporting countries, including Russia, obviously demonstrate a negative growth.

### 3. The Impact of the Pandemic on the Global Economy

In addition to the above said, we trace the synergistic effect of the pandemic and recession on the changes in financial policies of the United States and other high-income OECD countries. The United States and Europe (and Japan conducted it some time ago) have now started to increase money issuance and domestic debt at an unprecedented scale. The FRS emission only for the year 2020 may amount the sums that have been emitted during the previous decade. In fact, there is a merge of financial authorities and the state's opportunities with large private funds and individual players. For a while, this has brought a positive effect since it has slightly slowed down the collapse of markets and contributed to their recovery. But this has been done only by reducing the rate of economic growth after 2020. This will be especially noticeable in the United States, where financial and political authorities will have to maintain stock markets and decrease interest rates, and take some measures to prevent bankruptcies, *etc.* All this will make the US economy less competitive, while the American people will still live more and more beyond their means (on the account of constantly growing debt). In the long run, this will weaken dollar. So, in the coming years, one can expect the introduction of negative interest rates in the United States; and also the US and Europe will likely borrow the Japanese practice when Central Banks directly purchase shares in the stock markets.

We can also observe an intensified competition between Trump and the Democratic Party regarding the question which side will give more money and assistance to the American citizens in 2020. Such populism has undoubtedly increased the US national debt by several trillion dollars (it can be assumed that by more than 3 trillion dollars) in just one year which can make the further growth of the US national debt almost uncontrollable, while the Fed is likely to become the main creditor. Similar processes will also intensify in Europe and Japan.

One can also expect a further slowdown of the economic growth in China after 2020, as well as an increase in the necessity for the Chinese leaders to change the economic model. This necessity emerged already more than ten years ago (see Grinin 2011, 2013; Grinin, Tsirel, and Korotayev 2015). However, it is highly doubtful that China is

ready for a radical change in its economic model of GDP growth through excessive investment and boosting the economy with loans. Therefore, on the contrary, we can expect increased money issuance and all kinds of support for the economy, which will increase imbalances in it and create conditions for future systemic crises. It is also likely that falsifications of statistical data will probable expand and create the illusion of faster economic growth.

The weakening of the global economy, as well as of economies of high-income OECD countries, in comparison with the 2000s and even with the 2010s, perfectly fits the concept of a crisis-depressive phase of global economic development at the downswing phases of Kondratieff waves. So, at the moment we are passing through the downswing phase of the fifth Kondratieff wave (Grinin and Korotayev 2014a). We proceed from the fact that the governments and financial authorities of high-income OECD countries and China are not ready to let the recession spread in a natural way, so they intend to support thousands of economically doomed enterprises and unprofitable projects, greatly increase the injections of money into economy and support low, zero and even negative interest rates (this will probably allow simultaneously supporting the rapid growth of the national debt with less effort). Hence, one may expect that the new medium-term (7–11 years long) Juglar cycle will last longer.

If we consider that the recession began in 2020 (and it has started in terms of GDP while the stock exchanges have recovered), then the previous Juglar cycle lasted more than 11 years. This became possible only due to the easier monetary policy and the increase of national debts in the USA, high-income OECD countries and China, thus, there were made all possible attempts to push back the recession and to help potential bankrupts. Eleven years is a period which is considered to be the full term for a Juglar cycle. In general, the downswing phases of the medium-term cycles are somewhat longer than their upswing phases. Therefore, we can assume that the onset of the medium-term cycle, which is still in the phase of unfolding recession, will probably be also noticeably longer than the last one (2008–2020). It will be longer, because the states will try in every possible way to avoid the bursting of stock-exchange and other bubbles, entering the recession, liquidating low competitiveness firms, zombie companies, *etc.* from the market.

#### **4. Which of the Great Powers Wins More, and Which Loses the Most from the Current Coronavirus Pandemic**

Early this year we have supposed that since in the USA the anti-Trump forces would try to play the pandemic card to win at the elections, the USA may lose more than others. On the victory wave, the democrats hardly think about it now, but the results of their Pyrrhic victory will soon manifest themselves.

At the same time, China seems to have temporarily won, because it has opportunity to legally refuse unprofitable deals with the USA. We suppose that democrats will continue to implement the policy of constant pressure and demonizing China (similar to the US strategy towards Russia); however, for some time they will have other things to worry about. So China will have a kind of respite. In addition, China has won ideologically and raised the prestige by proving to Chinese people and many states that it is capable to take large-scale and effective measures to combat the epidemic. Today, China

is one of those few countries that have managed to completely stop the spread of the epidemic. However, in future China will have hard times since the struggle with the USA will likely exacerbate (see below) and it is now clear that America is ready to use any means in the struggle with competitors.

Europe has obviously lost since it still remains under severe restrictions while its economy is falling.

Russia also faces increasing risks. The threats posed by long-lasting low oil prices and expanded by the unprecedented destruction of economy because of the self-isolation regime and disappearance of enterprises in the spring of 2020. As a result, the government took huge obligations to help economy and population. Besides, the inner demand has been decreasing for several years running. This makes the financial and economic and consequently political situation in the country quite uneasy.

In the medium term:

1) In general, the current major players may weaken while the countries with population growth and expanding economy may gradual gain strength.

2) Countries that do not have a freely convertible currency may start to withdraw from agreements which prevent their central banks from issuing currency. It may result in weakening the position of dollar, that is, the position of the United States.

3) Since the fight against coronavirus quarantine violators undoubtedly increased the ability of states to control their citizens through new technologies of artificial intelligence. The digital control technologies (up to the digital ‘slavery’) are actively introduced both in the authoritarian countries, like China and Russia, and in Western countries.

## 5. The Global Balance of Power

In the short term, this balance will hardly change; however, if the recession turns quite serious, then a gradual shift of the global balance of power will start. More precisely, the process will intensify, which has already been going on for a rather long time. In general, we denote this process as the World-System reconfiguration (Grinin and Korotayev 2012, 2016). It is associated with the gradual destruction of the former order based on the US hegemony and creation of conditions for the emergence of a new world order (Grinin, Ilyin, Andreev 2016; Grinin, Korotayev, Tausch 2016). Unfortunately, this process is ‘natural’, that is, spontaneous and destructive. And the current temporary abandonment of citizens' basic rights, temporary closure of borders, *etc.* along with the recession will provide an impetus for the forthcoming significant changes.

In particular, there may start the weakening of the current global and regional centers of power (probably, all of them but to varying degrees). In the USA, the internal struggle has reached the level of a hybrid civil war, which will weaken the country and make its foreign policy a complete ‘hostage’ to the internal political struggle.

It is clear that the USA is increasingly losing its leadership functions (see Kissinger 2001, 2014; Buchanan 2002; Kupchan 2002; Todd 2003; Wallerstein 2003; Mandelbaum 2005; Kennedy 2008; Zakaria 2008; NIC 2008, 2012; Lachmann 2010: 195, 197; Grinin 2010, 2019; Grinin, Korotayev 2010a, 2010b, 2015, 2020; Grinin, Korotayev, Tausch 2016; Grinin, L., Grinin, A., Korotayev 2017a; see also Komlosy, Hofbauer 2019). It is very important that this weakening has caused the global ‘disorder’ in recent

years; moreover, it is the US actions that significantly impact this situation (Grinin, L., Grinin, A., Korotayev 2017a, 2017b). The ‘disorder’ has even more increased after Trump came to power – among other things because of his aspiration to change the long-standing relationships (Grinin, Korotayev 2020).

We may argue that this evidences the exacerbation of the above-described contradiction. The democrats may accelerate this weakening in certain respects. For the purposes of the present forecast it is important to emphasize that in 2020, the coronavirus pandemic will become a new turning point in changing the US position in the world. It will also be a new turning point in weakening the US hegemony and at the same time in strengthening the struggle against such changes. This can be manifested in intensified struggle to weaken potential rivals and undermine their positions in the world.

It is also important to indicate that the Republic and democracy underlying the U.S. political system contradict its imperial position. This contradiction is not superficial, but systemic, the Republic and democratic values will increasingly conflict with the Empire; thus, since the United States cannot renounce either the Republic or the Empire, all these factors will have a great and unpredictable impact on political processes in the United States and negatively translate into the world. In other words, the US enormous power over the world and thereby the resulting responsibility for the world order comes into a violent contradiction with the archaic political system and actual irresponsibility of the American political establishment who tends to ignore the consequences of the foreign policy course, which relies primarily on intelligence services and power (a policy which has been called ‘the big-stick policy’), but is not suitable for the rational governing of the Empire.<sup>4</sup> This is a very important point for this analysis, since this contradiction between the US archaic political system and the foreign policy obligations will intensify and aggravate. Hence, in the near future some unexplained ‘zigzags’ and turns in the US foreign policy are quite probable irrespective of which administration comes to power.

In particular, one may expect that the United States will reinforce their anti-Chinese policy, and use any pretext against China. The United States are already playing a card of the Chinese responsibility for the spread of coronavirus under the pretext of allegedly wrong actions taken by China, which harmed the United States. And they also express absurd (but dangerous) ideas to demand compensation from China for the damage to the USA from the epidemic amounting up to trillions of dollars and threat to impose new sanctions. There even appear ideas extremely dangerous for the USA to reset to zero the American debt to China which is more than a trillion dollar. These twists may involve the relations with countries which traditionally consider themselves as the US allies. At first, the democrats may improve the relations with allies and return to the Paris agreement, but in general in the coming years the latter may expect deterioration of relations with the USA along with new financial requirements, forbidden contacts with Russia and other countries and even sanctions. The United States may become even more impossible to negotiate with than they used to be in recent years. The COVID-19 epidemic may become an important threshold in the growing struggle between the so-called globalists (representatives of the largest American business and finance oriented at the global market) and the business structures, focused on the US domestic consumption market and industrial sector.

Since the internal struggle fully involves the American foreign policy interests, there are concerns that in the coming four years the party struggle in the USA will follow the already tested scenario, yet instead of Russia they will demonize China (but of course, Russia will not be forgotten either). Consequently, the attempts to punish PRC may lead to increasing tensions in the World System which will undoubtedly shake the existing world order and significantly polarize the world.

In countries like Russia, the current problems can completely halt economic growth, which will lead to their loss of economic power, which they may try to compensate by a more active and somewhat aggressive foreign policy. However, in the medium term, the deterioration of the economic situation in Russia can lead to an aggravation of the internal political situation and increase the threat of social and political destabilization (which has already started in Belarus).

Saudi Arabia may face not less difficult situation especially in case of long-lasting low oil prices. The Saudis have already started to take unpopular fiscal measures. The country may face the revival of behind-the-scenes political power struggle; meanwhile, the decrease of their currency reserves may reduce the Saudi authority in the Arab world.

It should be noted that changes in the world order and the crisis-depressive development (which we expect in the medium term and partly in the long term<sup>5</sup>) are very closely related. It is in such periods of weak economic development that turbulent phenomena intensify in world politics, the world order is shaken, and the search for some new principles begins. It should be added that according to the theory of production revolutions (Grinin, L., Grinin, A. 2015, 2016a, 2016b; Grinin, L., Grinin, A., Korotayev 2017a, 2017b, 2020), the modern era attributes to the third revolution – the Cybernetic (after the Agricultural/Neolithic and Industrial Revolutions).<sup>6</sup>

This revolution has three phases. The first phase (of rapid innovative development) lasted between 1955 and 1990. The next phase of rapid innovative technological development is expected to start between 2030 and 2040. It will merge with the sixth technological paradigm, which is formed as a result of the sixth Kondratieff wave (about the Cybernetic Revolution and the sixth Kondratieff wave see Grinin, L., Grinin, A. 2015, 2016a, 2016b; Grinin, Korotayev, Tausch 2016; Grinin, L., Grinin, A., Korotayev 2017a, 2017b, 2020). The period from the 1990s to the 2030s is the intermediate phase of the Cybernetic Revolution.

This phase has certain characteristics, namely: 1) there are less breakthrough technological innovations but they are improved and diffused faster and more actively in the majority of countries throughout the world.<sup>7</sup> 2) For a new technological breakthrough to occur, it is necessary to equalize the level of development of countries around the world. This is exactly what has been happening, so the low-income countries are catching up with high-income countries due to the fact that the growth rates in the former are noticeably higher than in the latter. We define this process as the Great Convergence (Grinin and Korotayev 2015). And we expect it will continue in the 2020s. 3) For a new technological breakthrough to occur, the World-System center should weaken and many old political, social, international relations must be changed. All this can happen only due to the phenomenon, which we defined above as the World-System reconfiguration. Respectively, this reconfiguration consists in pulling up the political component of the modern world to the economic one (which is far ahead of the political one [Grinin L.,

Grinin A. 2015; Grinin and Korotayev 2012, 2016]). It is clear that economic and financial globalization has gone much further than political globalization. Accordingly, the pulling up of the political component is a painful, turbulent, conflict, and sometimes revolutionary process. It is no accident that globalization has stalled in its old form. Economic globalization regresses (let us remember at least the introduction of import tariffs and the virtual collapse of the WTO, so coronavirus has completely drew globalization back), while the political one ‘clears its way’ to move forward. The pulling up of the political component will be carried out as a result of the started formation of a new world order. But for this purpose, it is necessary to destroy the old order and of course, this is a painful and dangerous process. The coronavirus pandemic is another step in this direction. It follows from what has been said that the next 10–12 years or more are expected to be economically and politically difficult and conflicting; one can also expect the rise of new major players, here we mean India in the first place.

Thus, we will expect a stable rise only in the early 2030s, when the new sixth Kondratieff wave may start. However, it is hard to say how strong the economies and financial sectors will be. It is possible that markets will burst much earlier despite all the efforts of governments. In this case, one can expect not one long, but two short business cycles.

### Final Remarks

According to our forecasts (Grinin L., Grinin A., and Korotayev 2017a, 2017b), the sixth technological paradigm (that will support the upswing of the 6<sup>th</sup> Kondratieff wave) will be produced by the so-called MANBRIC-convergence, that is, the convergence of the following technologies:

- Medical technologies.
- Additive technologies (3D printers, *etc.*).
- Nano technologies.
- Biotechnologies.
- Robotics.
- Information technologies.
- Cognitive technologies (including AI).

We also anticipate that the core of the MANBRIC paradigm will be constituted by medical technologies. We also argue that the formation of this paradigm will be characterized by the breakthrough in medical technologies which will be capable to combine many other technologies into a single system of MANBRIC-technologies.

Let us note that the COVID-19 pandemic has given an obvious impetus to the intensification of medical research and related MANBRIC-technologies along with the increasing funding of such researches and attention to them. Thus, paradoxically, the fight against the pandemic may speed up the emergence of the new technological paradigm and, thus, the onset of the upswing of the new (sixth) Kondratieff wave.<sup>8</sup>

### NOTES

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<sup>1</sup> The implications of the COVID-19 pandemic for the world economy and geopolitics have already become an object of rather active research (see, *e.g.*, Atkeson 2020; Baker *et al.* 2020; Fer-

nandes 2020; Guerrieri *et al.* 2020; Heisbourg 2020; Hofbauer and Komlosy 2020; Kosmehl 2020; McKee and Stuckler 2020; Ozili. and Arun 2020; Sharif, Aloui, and Yarovaya 2020; Snooks 2020a, 2020b). However, many aspects of this issue have been studied sufficiently.

<sup>2</sup> To be more precise, the disease complications, only to some extent associated with H1N1 virus, have become one of the main causes of deaths, since mostly elderly and sick people die.

<sup>3</sup> For more details about the nature of economic crises, see Tugan-Baranovsky 1954; Mitchell 1927; Schumpeter 1939; Haberler 1964; Bernanke, Gertler, and Gilchrist 1998; Minsky 2005; Grinin, Korotayev, Malkov 2016; Grinin, Korotayev, Tausch 2016; Grinin and Korotayev 2014a.

<sup>4</sup> About archaic features of the American political system and its considerable weaknesses see Friedman 2011: Ch. 1; Lachmann 2010: Ch. 7; Grinin, Korotayev 2020.

<sup>5</sup> Conditionally, we consider the medium-term to last for about ten years and long-term – from 10 to 30 years.

<sup>6</sup> Not to be confused with the popular but unscientific idea of the Fourth Industrial Revolution.

<sup>7</sup> Examples: very large computers in the starting phase in 1950–1970 and very small personal computers in the 2020s. A similar pattern can be observed with respect to mobile phones. While in the 1950–1970s the innovative technologies appeared mainly in high-income OECD countries, however, in the 1990–2020s all these innovations quickly spread to less developed countries.

<sup>8</sup> Note that some rather congruent ideas have already been expressed by Hannes Hofbauer und Andrea Komlosy (see Hofbauer and Komlosy 2020).

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