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"Black Swans" and Social Institutions

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Abstract. The paper considers the COVID-19 pandemic as a manifestation of an upward trend in various kinds of risks on the path of social development. Promoting the adaptive abilities of socio-economic systems becomes an urgent task. We propose to use the experience of various countries in combating the pandemic to analyze the conditions that help to respond effectively to various unforeseen challenges, which are often referred to as "black swans" in modern literature. We present a brief review of the literature that analyzes the differences between countries, which affect their economic development amidst the COVID-19 pandemic. We prove that, contrary to popular belief, the continued growth of GDP can be combined with relatively low COVID-19 mortality rates. This conclusion is based on data from 30 countries for the year 2020. We note that the share of the service sector in the economy has a significant impact on the dynamics of GDP in the context of the pandemic. We focus on the relationship between changes in GDP in 2020 and institutional circumstances. We find that it is possible to curb the decline in GDP growth rates primarily in those countries where the population trusts the government. The decline in GDP in some countries under consideration occurs against the background of relatively high information and personal freedom that contributes to a decline in the level of trust in the government in the context of the pandemic. The regression analysis confirms that almost half of the differences between countries in GDP dynamics in 2020 are negatively related to two factors: COVID-19 mortality and information freedom. If the people have no trust in the government, then the efforts it undertakes to adapt to an emergency situation may prove ineffective, and social activity can become destructive. In the future, it would be useful to compare the adaptive capacity of countries in terms of the rate of recovery of their economies after the pandemic.

Key words: COVID-19 pandemic, social institutions, trust, GDP growth rates, adaptation, cross-country differences.

Introduction

The concept of sustainable development is focused on finding a balanced solution to economic, environmental and social issues within the scope of social development. At that, the very possibility of sustainable development is not brought into question, and technological development is perceived as one of the means of its implementation. In particular, the prospects that open up during the transition to digital technology arouse interest.

Due to the COVID-19 pandemic, there has been a surge of attention to unpredictable events, the so-called "black swans", which have become more frequent [1]. For many, the situation regarding COVID-19 has become one of such events, although N. Taleb himself has a different opinion, believing that there was an opportunity to suppress the pandemic in the United States[1].

The upward trend in various kinds of risks and corresponding losses is becoming more and more noticeable. The report "The human cost of disasters: an overview of the last 20 years (2000−2019)" prepared by the UN Office for Disaster Risk Reduction shows that there has been an increase in almost all types of disasters. Losses from natural disasters alone over 20 years are estimated at almost 3 trillion US dollars[2]. The Global Risks Report 2021, an initiative of the World Economic Forum, covers 35 global risks[3]. Their list was updated in 2020, adding 12 new risks that can have long-term consequences, in particular: digital power concentration, backlash against science, mental health deterioration, youth disillusionment.

As for the economic losses from the COVID-19 pandemic, their estimate has increased several times during 2020. In early March, based on the forecast by Oxford Economics, it was said that by the end of 2020, global GDP could lose 1.1 trillion US dollars[4]. In May 2020, the Asian Development Bank (ADB) said that the losses suffered by the global economy due to the COVID-19 pandemic could range from 5.8 trillion US dollars to 8.8 trillion US dollars. This estimate proved twice as high as the ADB's previous April forecast[5]. In October 2020, the International Monetary Fund (IMF) estimated the loss of global GDP at 28 trillion US dollars. The damage to the U.S. economy from the coronavirus pandemic was forecast at 16 trillion US dollars[6].

However, the experience of the pandemic has made it clear that economic damage is only one side of the losses. The disasters we are living through also have a human dimension: direct losses include the loss of life, and indirect losses − the negative impact on people's health[7]. Psychological, political, and socio-cultural consequences of the pandemic are among urgent issues requiring attention.

Against this background, a theory, according to which "technological and social connections between people on a global scale are becoming more and more complex, and they almost inevitably increase the level of risks that can accumulate and, through a cumulative effect, put the entire stability of the global system in jeopardy"[8], is gaining popularity. The effect is also traced in the fact that modern development is viewed as a "slow catastrophe" [2]. Indeed, unlike natural disasters such as earthquakes, typhoons,

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[1] https://www.newyorker.com/news/daily-comment/the-pandemic-isnt-a-black-swan-but-a-portent-of-a-more-fragile-global-system

[2] UN Office for Disaster Risk Reduction. The human cost of disasters: an overview of the last 20 years (2000−2019). Available at: https://www.undrr.org/media/48008/download

[3] World Economic Forum. The Global Risks Report 2021. Available at: https://www.weforum.org/reports/the-global-risks-report-2021.

[4] https://russian.rt.com/business/article/725315-ekonomika-poteri-koronavirus

[5] https://www.interfax.ru/business/708741

[6] https://1prime.ru/world/20201015/832166974.html

[7] https://news.un.org/ru/audio/2012/10/1015281

[8] Balabanov O. Society of global risks: when disasters and epidemics become the norm. Available at: https://ru.valdaiclub.com/a/highlights/globalnoe-obshchestvo-riska/

and tsunamis, many risks are cumulative. Their negative influence becomes considerable only after some time. It is what happens with climate change, the maturation of economic bubbles, and the concentration of digital power. With regard to the economy of such risks, we can talk about the economy of a slow catastrophe. In other words, we are talking about the accumulation of negative potential in the course of socio-economic development. We understand "slow" catastrophes as the processes and regularities of the emergence of negative trends in the functioning of an object, their subsequent accumulation, development and modification that is difficult to predict, which eventually lead to a violation of the normal functioning of the object, disorganization of its internal structure, destruction of connections with the environment and other negative consequences" [2, p. 32]. A slow catastrophe can occur as a gradual deterioration in the functioning of the system, as, for example, is the case regarding the residual principle of financing science. An explosive realization of the accumulated negative potential is also possible, which is observed in the collapse of financial bubbles.

Certain types of slow disasters have significant distinctive features that should be taken into account in development strategies. Preparing for possible challenges is one of the most important strategic tasks for different levels of management. It is justified that the agenda of science and practice should include the transition from the concept of "sustainable development" to the concept of development in conditions of permanent risks. Accordingly, it is necessary to talk about the problem of adaptation of systems to such conditions at different levels. The experience of the COVID-19 pandemic provides extensive information for studying this problem. We mean an analysis of the circumstances under which individual countries are able to adapt to this disaster more effectively. At the end of 2020, significant differences between nations are observed in terms of COVID-19 mortality[9] and GDP dynamics[10].

It is a fairly common view that adaptation aimed at maintaining GDP growth is achieved amid aggravating mortality rates, and vice versa, a decrease in mortality from COVID-19 occurs when GDP is falling. Ya. Mirkin writes: "There is a new emerging reality − the economy of catastrophes. It shows the features of a military economy, mobilization economy with restrictions on basic freedoms, with prohibitions from the state that go far beyond everyday life, with supervision of everyone and, finally, with punishments... Something new is emerging in the world − economic sacrifices. As during a war, the authorities sacrifice some of the population in order to "make everything work"[11]. As for preventive actions to respond to black swan events, an important role in this case belongs to the formation of reserves [3]. However, as N. Taleb pointed out, it is possible to be late in responding to new challenges even if you have an extensive resource potential at your disposal[12]. Successful development in the context of permanent risks involves, first of all, building an effective decision-making system. In fact, we are talking about institutional factors that increase the adaptability of socio-economic systems.

We use the example of COVID-19 to analyze whether it is justified to interpret adaptation to risk as a choice between the preservation of either the

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[9] World Health Organization. COVID-19 Weekly Epidemiological Update 25. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20210202_weekly_epi_update_25.pdf?sfvrsn=b38d435c_4

[10] International Monetary Fund. World Economic Outlook: Managing Divergent Recoveries. Washington, DC, April. Available at: https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021

[11] Mirkin Ya. Whose response to COVID-19 is better. Comparative economics of disasters. *Vedomosti,* 2020, October 19. Available at: https://www.vedomosti.ru/opinion/articles/2020/10/18/843660-otvet-covid-19

[12] https://www.newyorker.com/news/daily-comment/the-pandemic-isnt-a-black-swan-but-a-portent-of-a-more-fragile-global-system

population or production. We consider a sample covering a significant group of countries to assess the relationship between the dynamics of GDP and the structure of the economy (the share of services in GDP), and the death rate from coronavirus. But our main focus is on institutional circumstances.

Literature review

The impact of COVID-19 on various economic sectors, employment, and population mortality is considered in a large number of publications, a wide overview of which is presented in [4]. During the first wave of the COVID-19 pandemic, numerous studies were already analyzing the factors that determine the situation concerning the pandemic in different countries. These factors include demographic characteristics, citizens' trust, culture, public administration structure, the level of national economic development, etc. [5]. The factors that increase COVID-19 mortality include elderly age, concurrent diseases such as diabetes, considerable income disparities, and a high level of per capita GDP [6]. The latter circumstance is explained by the widespread use of testing in rich countries, the accessibility of overseas vacation, since cross-border travel contributes to the spread of the virus[13].

The pandemic situation in different countries is considered depending on strategic, psychological and institutional factors [7]. Strategic factors are associated with the possibility of using measures (such as hard lockdown, in particular) to contain the spread of coronavirus, for political gains. The impact of psychological factors manifests itself in various ways, for example, through the attitude toward vaccination. In the literature, attention is drawn to the role of panic among the ruling elite [8]. Such panic accounts for excessive restrictions on the activities of entire business areas or the movement of citizens.

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[13] World Health Organization. Coronavirus disease (COVID-2019) situation reports. Available at: https://www. who.int/emergencies/diseases/novelcoronavirus-2019/ situation-reports

As shown in [9], a differentiated ban on movement taking into account different risk groups (more severe restrictions for older groups compared to younger ones) can significantly reduce the number of lives lost and negative economic consequences compared to uniform restricting measures for all age groups. It is found that under a uniform lockdown lasting 434 days, the total number of deaths reaches 1.8% of the population, and the economic costs are about 24.3% of annual GDP, while under a differentiated lockdown lasting 230 days, the mortality rate decreases to 1%, and economic losses – to 10% of annual GDP.

Institutional factors include the level of government efficiency, the level of trust in society, the existence of separate health ministries and health ministers with medical education, the degree of de facto independence of regional authorities in relation to the central government, etc. [4].

All countries resorted to centralized measures during the pandemic, even when federal legisla-tion limited the possibilities for such actions [10]. At the same time, the level of trust in government and the level of interpersonal trust affected the promptness of response of the authorities to the pandemic. Thus, it was found that "more centralized countries with relatively low government efficiency, freedom and public trust, but with separate ministries of health and health ministers with medical education, acted faster and more decisively" [11, p. 3]. On the other hand, "societies with higher interpersonal trust, trust in government and general freedom scores reacted slower to the spread of the pandemic. It could be that where trust is high, the government does not need to intervene with restrictive measures but can rely on people following social distancing recommendations" [11, p. 24]. It is noted that countries with higher freedom might have been more reluctant to restrict it. However, these conclusions were obtained based on a regression analysis of the situation in the initial period of the COVID-19 pandemic prior to April 2020. The

authors themselves point out that their "results are best conceived as identifying promising hypotheses about the determinants of the national policy responses to the COVID-19 pandemic in Europe..." [11, p. 3].

The effect of trust in government is also noted in [12, p. 3]: "The decline in mobility around mid-March 2020 is significantly stronger in high-trust regions... The effect is especially strong for non-necessary activities (recreation, work and transport) compared to going to the grocery or to the drugstore". The connection with another aspect of trust is revealed after analyzing the situation in the United States. "Countries where individuals trust other people more do comply significantly more with social distancing orders" [13, p. 12]. The study [14] is also based on data from the United States, and it shows that the perception of the risks of the pandemic can be influenced by political preferences of citizens. The work [15] considers mobility across Italian provinces between January and May 2020 and finds robust evidence that after the virus outbreak mobility declined, but significantly more in areas with higher civic capital which is understood as the willingness of citizens to address emerging problems jointly.

As can be seen from the publications presented above, attention is usually focused on the relationship between institutional factors and social distancing in the context of the pandemic. At the same time, the dynamics of GDP often remains outside the scope of analysis.

In countries with a low level of institutional trust, citizens tend to display skeptical attitude toward government directives. This may affect not only the pandemic situation, but also the effectiveness of economic recovery measures. If the level of trust is low, households will limit their consumer spending, and businesses will not invest[14].

The available publications mainly deal with the mitigation of the consequences of the pandemic. Little or no attention is paid to preparations for new challenges and the necessary preventive measures. At the same time, it is noted that most countries that are successfully coping with the pandemic have taken effective preventive actions from the very beginning. This group includes Singapore and South Korea [5]. It is noted that "Many Asian countries had learnt from their experiences during the SARS outbreak a few years back, so they are more prepared on taking the right preventive measures. While most of the Western/European countries see this as a game until the death toll starts to rise" [5, p. 9].

Early detection of those infected with COVID-19 has been an important success factor in the fight against the pandemic. However, a number of countries are facing the problem of imported testing kits that prove ineffective [5]. The unreliability of testing has to be compensated by the severity of restrictive measures, which does not add confidence to these measures, nor does it raise trust in the government.

Many circumstances recede into the background when the analysis of cross-country differences focuses on the setting of government priorities in the context of the COVID-19 pandemic. We mean a choice between protecting the workers and maintaining the level of production. It covers different levels of economic management. A common view is that saving human lives has to be paid for by falling GDP [3; 16]. There is a tendency to view the choice of a strategy for action in the context of the pandemic as a search for a compromise between health and economic costs. The McKinsey Global Institute report argues for prioritizing people's health[15]. On the other hand,

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[14] Portes J. Don't believe the myth that we must sacrifice lives to save the economy. Available at: https://www.theguardian.com/commentisfree/2020/mar/25/there-is-no-trade-off-between-the-economy-and-health

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there are concerns that saving lives at the cost of reducing production will eventually result in even greater sacrifices, so keeping workers in jobs and firms in business needs to be the priority[16].

The results of the analysis of statistics of deaths per million from COVID-19 and a change in GDP in 45 countries during the second quarter of 2020 proved dissonant in relation to the above discussions [17]. Contrary to expectations that suppressing the virus, thereby leading to fewer deaths per million, results in worse national economic downturns, M. Smithson reveals the inverse nature of the relationship between these processes [17].

Therefore, it is necessary to make sure that the situation in the second quarter of 2020 is not exceptional. It is advisable to consider the relationship between the mortality rate from COVID-19 and the dynamics of GDP by the end of 2020. The combination of an increase in mortality and a fall in GDP indicates that other factors significantly affect the cross-country differences in GDP dynamics in the context of the COVID-19 pandemic. A number of publications have already drawn attention to the role of institutional circumstances in such cross-country differences. Our paper is intended to bring some clarity to the issue of how these circumstances affected the economic performance of countries in 2020.

Data and methodology

The sources of information for a comparative analysis of the adaptive qualities of different countries in the context of the pandemic include, on the one hand, data on changes in national GDP indicators, on the other hand, data on COVID-19 mortality.

In a number of studies [18; 19], mortality rates are compared by case fatality ratio (CFR), which estimates this proportion of deaths among identified confirmed cases. However, the dependence of the indicator on testing capacity for COVID-19 leads to the fact that the mortality rates are underestimated for those countries where, as a result of mass testing, many people with mild forms of the disease and without any symptoms are included in the number of confirmed COVID-19 cases. Since CFR may overestimate the actual mortality from coronavirus if testing capacity is low, it is better to use the indicator of the number of deaths from COVID-19 per 100 thousand for comparative analysis. The relevant data are available on the website of the Johns Hopkins Coronavirus Resource Center[17], in the COVID-19 Weekly Epidemiological Update of the World Health Organization, which records the COVID-19 epidemiological situation. The present paper used data from the COVID-19 Weekly Epidemiological Update 25[18].

Data on the change in GDP of different countries in 2020 are presented on the websites of the OECD, the International Monetary Fund. The present paper used data from the World Economic Outlook 2021[19].

One of the sources of information about the institutional features of countries is the Edelman Trust Barometer survey, which has been conducted since 2000. It reveals the level of trust in the institutions of government and business, and the media. The present paper uses data from the Edelman Trust Barometer 2020[20].

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[16] Portes J. Don't believe the myth that we must sacrifice lives to save the economy. Available at: https://www.theguardian.com/commentisfree/2020/mar/25/there-is-no-trade-off-between-the-economy-and-health

[17] https://coronavirus.jhu.edu/map.html

[18] World Health Organization. COVID-19 Weekly Epidemiological Update 25. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20210202_weekly_epi_update_25.pdf?sfvrsn=b38d435c_4

[19] International Monetary Fund. World Economic Outlook: Managing Divergent Recoveries. Washington, DC, April. Available at: https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021

[20] Edelman Trust Barometer 2020. Available at: https://www.edelman.com/sites/g/files/aatuss191/files/2020-01/2020%20Edelman%20Trust%20Barometer%20Global%20Report_LIVE.pdf

Table 1. The countries included in the sample

Argentina	Iran	Philippines
Australia	Italy	Poland
Brazil	Japan	Russia
Canada	Kazakhstan	Saudi Arabia
China	Korea	South Africa
Egypt	Malaysia	Spain
France	Mexico	Thailand
Germany	Holland	Turkey
India	Nigeria	UK
Indonesia	Pakistan	USA

Also, the source of institutional information is the Fraser Institute, which is considered the best think tank in Canada and is among the top 15 such centers according to the global Go To Think Tank Index. The present paper takes into consideration the Human Freedom Index 2020 study published by the Institute in December 2020 [20].

A wide range of country-specific information is available on the website TheGlobalEconomy.com, which we used, in particular, to get the data on value added in the service sector as a percentage of GDP.

Most of the results presented in the paper are based on the analysis of the development of a group of countries amidst COVID-19 *(Tab. 1)*.

We selected these countries due to the available statistics and the desire to cover all major states and different continents. After the pandemic is overcome, we find it useful to conduct a comparative analysis to see the development dynamics of big and small economies, developed and developing economies.

When considering the relationship between GDP dynamics and trust in government, Egypt, Iran, Kazakhstan, Nigeria, Pakistan, the Philippines, and Poland remained outside the scope of the analysis due to the lack of trust data for 2020.

Factors in cross-country differences in GDP dynamics by the end of 2020

Analysis of data for 30 countries for the entire year 2020 confirms M. Smithson's conclusion [17]. The data do not allow us to interpret the increase in mortality from COVID-19 as a condition for maintaining GDP growth rates *(Fig. 1)*. Judging by the situation presented in the figure, a decrease in GDP growth rates is often not an alternative to saving human lives.

Consequently, the desire to preserve human lives is a weak explanation for the decline in GDP of many countries in the context of the pandemic. Under these conditions, the share of the service sector in the structure of the economy has a significant impact on GDP dynamics *(Fig. 2)*.

It is more reasonable to link the deterioration of the economic situation to the quality of social institutions, especially the low level of trust in government *(Fig. 3)*. The Edelman Trust Barometer estimates this level by the proportion of people who believe that the government is acting in the right way.

The relationship between the dynamics of GDP and the level of trust in non-governmental organizations, business, and the media for a sample of 23 countries has proven much weaker than for trust in government ($R^2 < 0.1$ for the media, $R^2 < 0.04$ in the other two cases). However, there is some connection between the fall in GDP and the freedom of the media *(Fig. 4)*.

The Human Freedom Index 2020 estimates the level of information freedom by a number of parameters, including the security of journalistic activities, access to foreign media, and state control of the Internet [20]. In many cases, the media is

Figure 1. COVID-19 mortality rates per 100,000 people and GDP growth rates for 30 countries
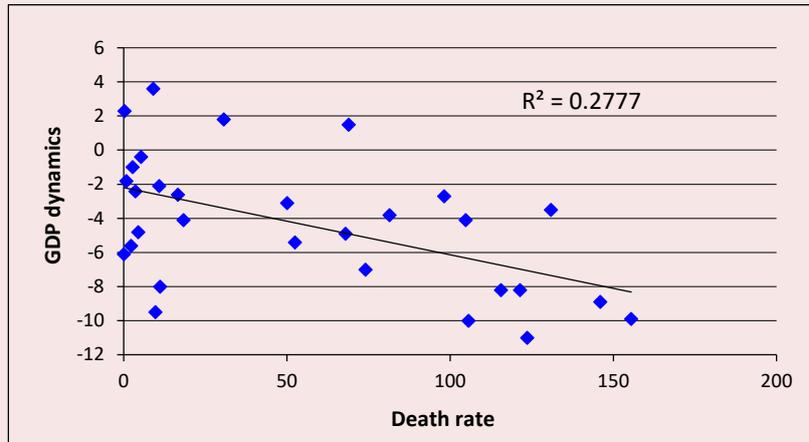
Sources: World Economic Outlook 2021 (April) and COVID-19 Weekly Epidemiological Update 25

Figure 2. GDP growth in 2020 and value added in the service sector, % of GDP in 2019 for 30 countries
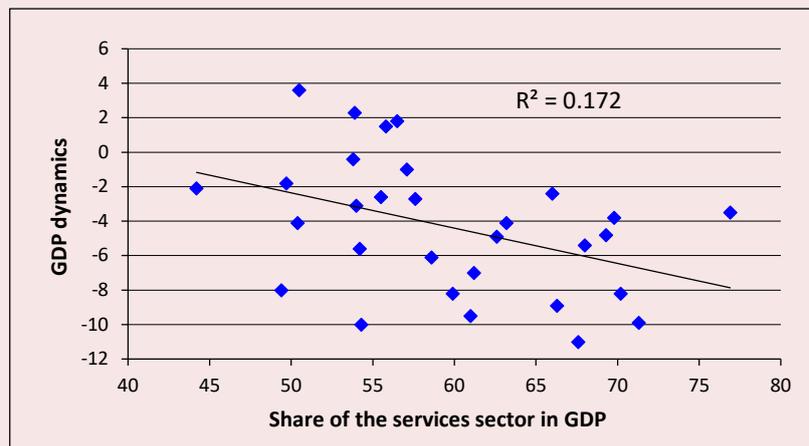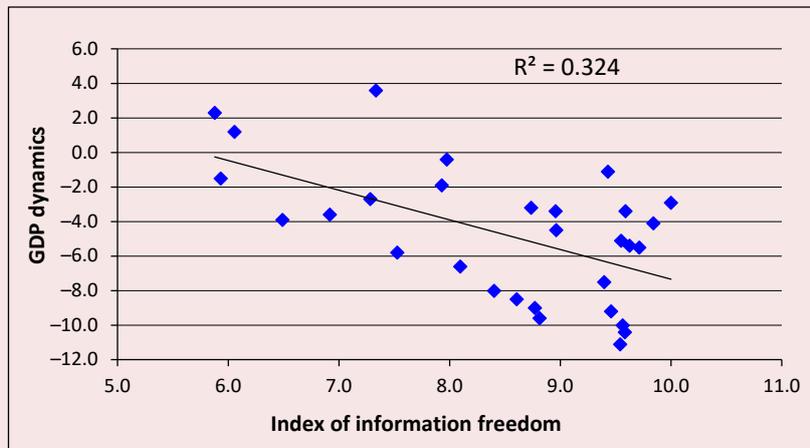

Source: TheGlobalEconomy.com

Figure 3. Relationship between the level of trust in government and the change in GDP in 2020 for 23 countries
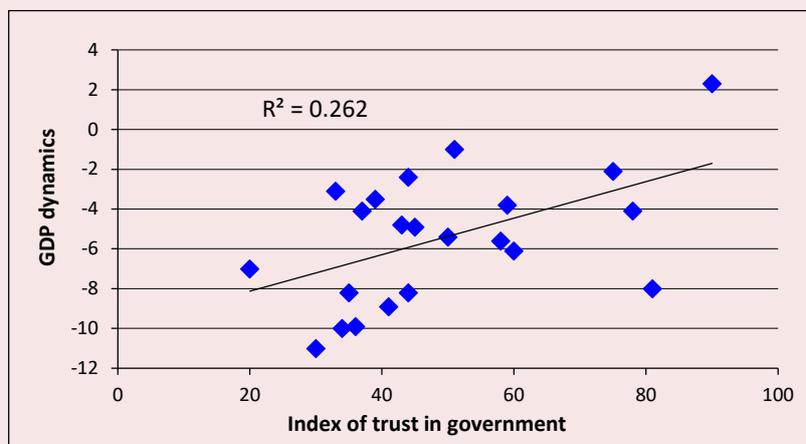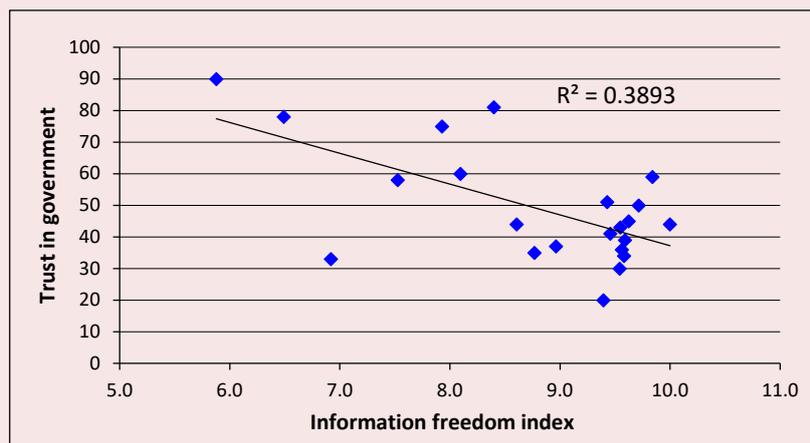

Source: Edelman Trust Barometer 2020

Figure 4. Relationship between the change in GDP and the level
of information freedom in 2020 for 30 countries [20]

Source: Vásquez I., McMahon F. *Human Freedom Index 2020. Cato Institute and Fraser Institute.* Available at: https://www.fraserinstitute.org/sites/default/files/human-freedom-index-2020.pdf

Figure 5. Relationship between trust in government and the level of information freedom in 23 countries

Sources: Vásquez I., McMahon F. *Human Freedom Index 2020. Cato Institute and Fraser Institute.* Available at: https://www.fraserinstitute.org/sites/default/files/human-freedom-index-2020.pdf; 2020 Edelman Trust Barometer

an opponent of the government. However, in the context of the pandemic, such opposition can reduce the effectiveness of government measures to support the economy and contain the spread of COVID-19, which, in turn, affects the dynamics of GDP. Current data for 23 countries show the negative impact of information freedom on trust in government *(Fig. 5)*.

The level of information freedom is used in the formation of a broader index of personal freedom.

This index also takes into account the freedoms of movement, religion, assembly, political organizations, and gender freedoms. In the context of the pandemic, there is a negative relationship between the dynamics of GDP and the level of the multicomponent index of personal freedom *(Fig. 6)*.

However, there is a positive relationship between the levels of personal freedom and per capita GDP *(Fig. 7)*.

Figure 6. Relationship between the change in GDP and the level
of personal freedom in 2020 for 30 countries [20]
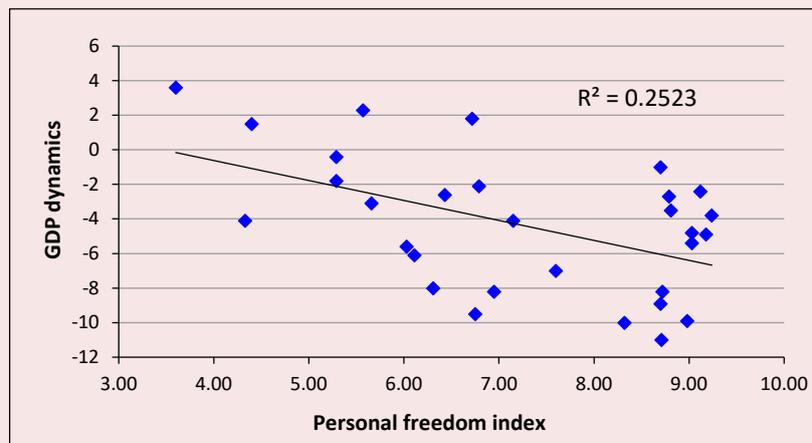
Источник: Vásquez I., McMahon F. *Human Freedom Index 2020. Cato Institute and Fraser Institute.* Available at: https://www.fraserinstitute.org/sites/default/files/human-freedom-index-2020.pdf

Figure 7. Relationship between the level of GDP per capita (purchasing power parity) in 2019
and the level of personal freedom in 30 countries
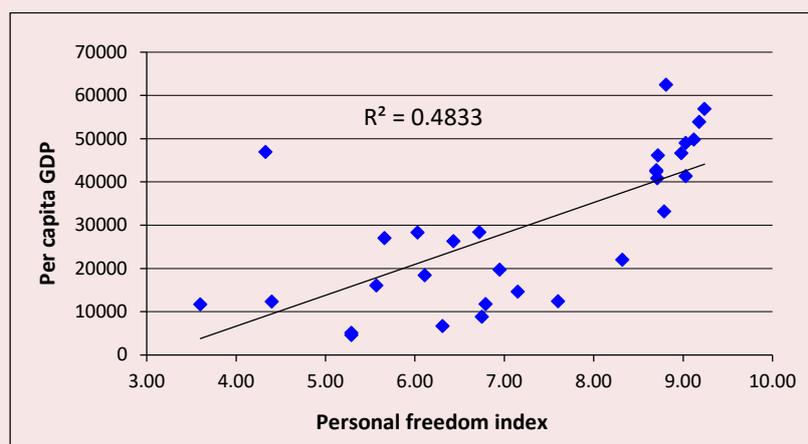
Sources: Vásquez I., McMahon F. *Human Freedom Index 2020. Cato Institute and Fraser Institute.* Available at: https://www.fraserinstitute.org/sites/default/files/human-freedom-index-2020.pdf; TheGlobalEconomy.com

We should note that the data presented in Figure 7 do not reflect causal relationships between the parameters under consideration. In addition, along with differences in the levels of GDP per capita, the content of individual freedom also differs, there is an opportunity to emigrate or an opportunity to travel around the world. It is clear, however, that the temporary restriction of personal freedoms imposed in the context of the pandemic is more disruptive to the usual way of life in rich countries than in less developed countries.

Regression analysis *(Tab. 2)* confirms that almost half of the differences between countries in GDP dynamics under COVID-19 are due to two factors: coronavirus mortality and information freedom. Both result in a weakening of trust in government, which affects the effectiveness of efforts to combat the pandemic.

Table 2. Regression analysis of GDP decline factors in 2020

Variable	Coefficients
Constant	8.687089** (3.962028)
Information freedom	-1.37653*** (0.490736)
COVID-19 mortality	-0.02288** (0.010714)
R^2	0.44
Note. The dependent variable is the change in GDP in 2020. Standard errors are indicated in parentheses. Characters «***», «**» highlight the estimates that are significant at the level of 1 and 5%, respectively. Source: own calculations for 30 countries.	

Conclusion

The real effectiveness of socio-economic systems is tested in the context of black swan events that disrupt the usual course of socio-economic development. The COVID-19 pandemic has proven that not all the world's leading economies have the necessary adaptive qualities. The low level of trust in government plays a role here. Surveys show that even in such highly developed countries as the United States, the Republic of Korea, and Canada, almost half of respondents perceive capitalism in its current form as doing more harm than good. There are much more supporters of this viewpoint in India, Indonesia, China; it also prevails in France, Italy, and Spain [20, p. 66].

In particular, we should note the nature of the relationship between changes in GDP and the death rate from COVID-19. There is no sufficient reason to interpret the decline in GDP growth as a downside to improving the epidemiological situation. The fall in GDP and the high mortality rate from COVID-19 are the result of the countries' unpreparedness to face the increasing scale of challenges. It should be borne in mind that the industrial revolution is also such a challenge.

The experience gained during the COVID-19 pandemic shows that in unforeseen circumstances, the decisive role can be played not so much by the resource potential of the economy, but by its institutional qualities. In order for the socio-economic system to adapt well to an emergency situation, it should make prompt adjustments to the level of centralization of decisions made. For some situations, a rapid response at the local management level is necessary and sufficient. Other emergencies require centralized solutions to mobilize resources across the country. Thus, the Chinese government sent doctors from different provinces in the epicenter of the coronavirus epidemic, the city of Wuhan in Hubei Province[21]. However, it is important that the government enjoys the trust of the population, otherwise it is difficult to count on the effectiveness of government measures, and social activity can become destructive.

Since the pandemic is not yet over, the conclusions presented on cross-country differences in GDP dynamics under the influence of COVID-19 are preliminary, based on data for 2020 alone. In the future, it would be useful to compare the adaptive capacity of countries in terms of the rate of recovery of their economies after the pandemic.

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