ВОПРОСЫ РЕГИОНАЛЬНОЙ ЭКОНОМИКИ

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QUALITY OF THE INSTITUTIONAL SYSTEM AND THE COVID-19 PANDEMIC: EMPIRICAL ANALYSIS[1]

Government responses to the COVID-19 pandemic have failed to stop the spread and reduce the risk of the disease, even in countries with developed healthcare systems. The pandemic is causing a serious crisis with significant social and economic consequences.
The research was carried out under conditions of incompleteness and possible unreliability of the initial information. However, the obtained results make it possible to draw the attention of the scientific community to the aspects of combating the COVID-19 pandemic and to expand the ability to confront the challenges posed by current and other possible pandemics.
The strength of the relationship was established between the mortality rate due to COVID-19 per 100 thousand population, including the healthy population, (DEATHS / 100K POP.) and Worldwide Governance Indicators ("Voice and Accountability" and "Regulatory Quality"); between the mortality rate due to COVID-19 per 100 thousand population, including the healthy population, ((DEATHS / 100K POP.) and the indicator Life expectancy at birth, total years (2018); between the indicator "Voice and Accountability" and the indicator Life expectancy at birth, total years; between the indicator "Regulatory Quality" and the indicator Life expectancy at birth.
It is concluded that the mortality rate from the COVID-19 pandemic depends on the age structure of the population, which in turn depends on the level of quality of the institutional system.

***Keywords**: COVID-19, COVID-19 mortality, pandemic, Worldwide Governance Indicators, trust, Voice and Accountability, Regulatory Quality, Life expectancy at birth, GDP per capita.*

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КАЧЕСТВО ИНСТИТУЦИОНАЛЬНОЙ СИСТЕМЫ И ПАНДЕМИЯ COVID-19: ЭМПИРИЧЕСКИЙ АНАЛИЗ

Меры противодействия пандемии COVID-19, предпринимаемые правительствами, не позволили остановить распространение и снизить опасность заболеваний даже в странах с развитой системой здравоохранения. Пандемия вызывает серьезный кризис с существенными социальными и экономическими последствиями.

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Исследование выполнено в условиях неполноты и возможной недостоверности исходной информации. Однако полученные результаты позволяют привлечь внимание научного сообщества к аспектам борьбы с пандемией COVID-19 и расширить возможности противодействия вызовам, обусловленным этой и другими возможными пандемиями.
Установлена форма и сила взаимосвязи между показателем смертности по причине COVID-19 на 100 тысяч населения, включая здоровое население, (человек) (DEATHS/100K POP.) и такими индикаторами Worldwide Governance Indicators, как «Право голоса и подотчетность» («Voice and Accountability») и «Качество Регулирования» («Regulatory Quality»); между показателем смертности по причине COVID-19 на 100 тысяч населения, включая здоровое население, (человек) (DEATHS/100K POP.) и показателем «Продолжительность жизни в годах при рождении» (2018 год) (Life expectancy at birth, total years); между показателем «Право голоса и подотчетность» («Voice and Accountability») и показателем «Продолжительность жизни в годах при рождении» (2018 год) (Life expectancy at birth, total years); между показателями «Качество Регулирования» («Regulatory Quality») и «Продолжительность жизни в годах при рождении» (2018 год) (Life expectancy at birth, total years).
Сделан вывод о том, что уровень смертности от пандемии COVID-19 обусловлен возрастной структурой населения, которая, в свою очередь, обусловлена уровнем качества институциональной системы.

Ключевые слова: *COVID-19, смертность по причине COVID-19, пандемия, Worldwide Governance Indicators, доверие, «Право голоса и подотчетность» («Voice and Accountability»), «Качество Регулирования» («Regulatory Quality»), «Продолжительность жизни в годах при рождении» (Life expectancy at birth, total years), ВВП на душу населения.*

Introduction. The course of the COVID-19 pandemic is determined by many different factors, not all of which have been identified. There is sufficient evidence to date to conclude that early detection, testing, isolation of infected people and mobilizing a public health response to the virus are critical [14, 19]. However, these measures did not stop the growing spread and reduce the severity of diseases even in the most advanced countries in terms of healthcare infrastructure. The pandemic is causing a severe health crisis along with significant social and economic impacts in Asia, Europe and North America [14, 5].

The dynamics of infections and deaths caused by the COVID-19 pandemic depend on educational level and awareness of the population, preventive measures, supervision of the infected and interventions [14, 18].

To a large extent, the effectiveness of the measures depends on effectiveness of the actions of government bodies, both in responding to the medical aspects of the pandemic and to indirect economic consequences. As studies show, such government performance largely depends on the institutional system that has developed in a particular country [16, 23].

Therefore, the purpose of this article is to test a number of hypotheses characterizing the relationship between the parameters of the COVID-19 pandemic and the quality of the institutional systems.

Recognizing the incompleteness and possible unreliability of the information used, we consider the undertaken attempt to analyze it justified, since it allows to draw the attention of the scientific community to the aspects of combinating the COVID-19 pandemic, which are still overshadowed by the prompt response. However, at least in the long term, this might enhance the ability to respond to the threats and challenges posed by current and other pandemics. Our estimates should not be viewed as conclusive, but rather as a contribution to a diverse body of evidence, along with other studies.

Research methods and objects. The research results are based on generally accepted formal-logical methods of cognition (abstraction, analysis and synthesis, induction and deduction, comparison and analogy), techniques and methods of empirical analysis (description, measurement), principles of theoretical and economic research (economic rationalism, "other things being equal").

To test the reliability of hypotheses, a statistical method was used.

Databases of the World Bank, World Values Survey, John's Hopkins University were used as the initial data.

The object of the research is the interdependence of indicators of the quality of the institutional system and indicators characterizing the COVID-19 pandemic.

Results and discussion. It is already possible to assess the effectiveness of individual measures and tools used by governments to counter the COVID-19 pandemic, based on the accumulated data on the transmission of the virus. The closures of schools and universities have had a very effective impact on reducing transmission of the virus at the time of the outbreak of the pandemic. Banning gatherings was effective, with a large effect size for limiting gatherings to 10 people or fewer, moderate to high effect for 100 people or fewer, and small to moderate effect for 1000 people or fewer. The targeted closure of high-risk businesses, such as restaurants, bars and nightclubs, has had little to moderate impact. The closure of most non-priority personal service businesses was only marginally more effective (moderate impact). When these measures were already in place, restrictions on households had little additional effect [3].

A wide range of non-pharmaceutical interventions have been implemented by governments around the world to mitigate the spread of COVID-19. Given the impact of interventions on transmission during the first wave, and based on the number of deaths from the pandemic and the associated social cost constraints, governments are empowered to make more informed decisions to respond to the pandemic [3].

In the fight against the COVID-19 pandemic, governments have had to find trade-offs between the need to contain the spread of the virus and the likelihood of catastrophic economic and food security crises. While no major food shortages have yet been observed, agricultural and food markets are facing disruptions due to labor shortages caused by movement restrictions and changes in food demand resulting from restaurant and school closures and loss of income. Export restrictions imposed by some countries have disrupted trade flows of staple foods such as wheat and rice; consumer demand is shifting towards cheaper and less nutritious foods; there is a volatility in food prices. Researchers state the likelihood of the global health crisis turning into a global food crisis. Economic impacts at the initial epicenters of the pandemic (China, Europe and the US) are also hurting low- and middle-income countries due to declining prices for traditional exports, oil and other raw materials, and restrictions on international travel and freight. This exacerbates the situation for poor countries, as it increases the difficulties in the economy in addition to the economic costs of its own constraints [11].

The epidemic creates difficulties in food availability, mainly due to the loss of income, which limits the effective demand for food. The poorest households spend about 70% of their income on food and have limited access to financial markets, making them particularly vulnerable [11, 12].

Due to the lack of updated household surveys in the most countries, it is impossible to make accurate estimates of the pandemic impact on global poverty and food insecurity. However, estimates based on modeling suggest that 90 to 150 million people may be (or have already fallen into) extreme poverty [11, 12, 8].

Even if the recession is short-lived, the effects of undernutrition can be long-term, especially for young children, whose growth and cognitive development are usually affected by malnutrition. Research points to savings reduction as the dominant coping strategy: only 20% of households have enough savings to meet their food needs for a month or more [1, 11].

The epidemic has affected food service systems. For example, school closures due to isolation in India have led to the suspension of school feeding programs, one of the country's most important social safety nets. Farmers and other suppliers are struggling to find markets due to restaurant and school closures, resulting in significant losses of milk and other nutrient-rich foods [9, 11].

During the food crises in 2008 and 2010, many major agricultural countries imposed restrictions on the export of staple foods, especially rice and wheat, resulting in higher prices in the global market [2, 11]. Governments often respond to the likelihood of a shortage or price spike for a staple food product by restricting exports to protect domestic consumers. While such restrictions

may serve the national interest in the short term, they reduce supply to world markets, putting pressure on world prices. As of July 6, 2020, 21 countries have announced or have imposed export restrictions affecting almost 4% of food (calculated in terms of energy value) sold in the global market [4, 11].

Governments in connection with the epidemic actively adjusted social policy. By June 2020, at least 195 countries have planned or introduced additional social protection measures to mitigate the negative impacts caused by the spread of the virus [7, 11].

Experts point out that governments should work with market participants to ensure that markets for agricultural resources (seeds and fertilizers, labor and loans) function sustainably, especially with regard to critical seeding and harvesting periods. According to experts, governments should avoid the continued use of policies based on export restrictions on food and act in accordance with multilateral rules and regulations agreed through the World Trade Organization. In addition, it is advisable to simplify trading operations, including through the electronic issuance of permits and certificates, and to ensure that the requirements for inspection with social distancing are met by the spread of the virus [11].

This is only a fraction of the changes in economic policy due to pandemic. Many measures and instruments depend to a large extent on the characteristics of the institutional systems of the countries. It is not possible to assess their effectiveness due to the time factor, since the consequences produced by the institutional systems have not yet been fully manifested. However, it can already be argued that they are contradictory and do not guarantee the achievement of the planned result. This is due to a high level of uncertainty, which in turn will complicate political processes. However, it can be assumed that the advantages will be gained by countries with effective institutional system.

Methodological approaches to assessing the quality of the institutional system have been developed in a number of studies, which makes it possible to use them to identify the relationship between the parameters of the COVID-19 pandemic and the quality of the institutional systems [16, 25, 23, 15, 21, 25, 6, 24].

By now, the statistical information has already been accumulated, which makes it possible to statistically check the relationship of individual parameters of the pandemic with indicators of the quality of the institutional system.

In this study, mortality rates due to COVID-19 as a percentage from confirmed cases and mortality due to COVID-19 per 100 thousand population, including the healthy population are used as parameters characterizing the COVID-19 pandemic [13]. In our opinion, in relation to the purpose of the research, they adequately characterize the consequences of the pandemic and the effectiveness of countermeasures on the part of governments.

The correlation of these indicators with the level of GDP per capita has been examined [20]. This indicator is used not only because it characterizes the level of economic development of various countries, but it is also closely related to the quality of the institutional system [16, 22].

The correlation coefficient of the level of GDP per capita in current prices (US dollars) for 2019 and mortality due to COVID-19 as a percentage from confirmed cases (Case Fatality) was -0.22.

The correlation coefficient of the level of GDP per capita in current prices (US dollars) for 2019 and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was 0.31.

The sample consisted of 110 countries.

It is not possible to make conclusions based on the analysis performed. As an assumption, the reliability of the statistics on the progress of the pandemic provided by individual countries can be questioned.

The relationship between the level of current healthcare expenditure per capita in current prices and indicators characterizing the pandemic has been studied [20].

Correlation coefficient of the level of current health expenditure per capita (current US $) and mortality due to COVID-19 (Case Fatality) was -0.1.

Correlation coefficient of the level of current health expenditure per capita (current US $) and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was 0.4.

The sample consisted of 153 countries. It is not possible to draw conclusions based on the analysis performed.

According to the studies, the level of trust largely characterizes not only the quality of the institutional system, but also determines the possibility of realizing the system's potential [24].

The indicator "Most people can be trusted" from the World Values Survey project for 2017-2020 was used as measurement of the level of trust [10].

The relationship between the level of trust (indicator "Most people can be trusted") with indicators characterizing the pandemic was studied.

The correlation coefficient of the level of trust (indicator "Most people can be trusted") and mortality due to COVID-19 (Case Fatality) was -0.3.

The correlation coefficient of the level of trust (indicator "Most people can be trusted") and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was -0.3.

The sample consisted of 36 countries. It is not possible to draw conclusions on the basis of the analysis, however, the negative nature of the relationship which seems logical draws attention.

The relationship between the indicators of the quality of the institutional system (Worldwide Governance Indicators) and the indicators characterizing the pandemic was studied. The sample was 108 countries [17].

For convenience of calculations, the Worldwide Governance Indicators for 2019 were transferred from a scale from -2.5 to +2.5 to a scale from 0 to 5, where 0 is the worst level of an institutional indicator, 5 is the best.

The correlation coefficient of the indicator "Voice and Accountability" to mortality due to COVID-19 (Case Fatality) was -0.03.

The correlation coefficient of the indicator "Political Stability and Absence of Violence" to deaths due to COVID-19 (Case Fatality) was -0.27.

The correlation coefficient of the indicator "Government Effectiveness" to mortality due to COVID-19 (Case Fatality) was -0.28.

The correlation coefficient of the "Regulatory Quality" indicator to mortality due to COVID-19 (Case Fatality) was -0.22.

The correlation coefficient of the "Rule of Law" indicator to mortality due to COVID-19 (Case Fatality) was -0.27.

The correlation coefficient of the "Control of Corruption" indicator to mortality due to COVID-19 (Case Fatality) was -0.26.

The correlation coefficient of the indicator "Voice and Accountability" and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was 0.51.

The correlation coefficient of the indicator "Political Stability and Absence of Violence" and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was 0.33.

The correlation coefficient of the indicator "Government Effectiveness" and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was -0.28.

The correlation coefficient of the indicator "Regulatory Quality" and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was 0.51.

The correlation coefficient of the "Rule of Law" indicator and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was 0.40.

The correlation coefficient of the indicator "Control of Corruption" and mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) was 0.33.

The difference in the characteristics of the relationship between the indicators of the quality of the institutional system and the two used indicators characterizing the mortality of the population can be explained by the low correlation coefficient between the two indicators of mortality (Case Fatality and DEATHS / 100K POP.), which was 0.31. This fact gives additional grounds to doubt the correctness of the statistical data on pandemic provided by the governments of individual countries.

Significant relationships were found between the mortality rate due to COVID-19 per 100 thousand population, including the healthy population, (DEATHS / 100K POP.) and indicators such as "Voice and Accountability"

and “Regulatory Quality”. Linear relationships between them are presented in the form of formulas (1) and (2).

$$Y = 37.1*X - 38.4, \quad (1)$$

where Y – mortality rate due to COVID-19 per 100 thousand population, including the healthy population, (DEATHS / 100K POP.);

X – “Voice and Accountability”.

A graph showing this dependence is shown in Figure 1.

$$Y = 36.5*X - 40.5 \quad (2)$$

where Y – mortality rate due to COVID-19 per 100 thousand population, including the healthy population, (DEATHS / 100K POP.);

X – “Regulatory Quality”.

A graph showing this dependence is shown in Figure 2.

The positive nature of the relationship between the mortality rate due to COVID-19 per 100 thousand population, including the healthy population, (DEATHS / 100K POP.) and indicators of the quality of the institutional system "Voice and Accountability" and "Regulatory Quality" can be explained by the presence of a relationship between the indicator of life expectancy and these indicators.

Correlation coefficient between mortality rate due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) and Life expectancy at birth, total years was 0.51.

The linear relationship between the indicators is reflected by the formula (3).

$$Y = 4.4*X-263.2, \quad (3)$$

where Y - mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS/100K POP.);

X - Life expectancy at birth, total years (2018).

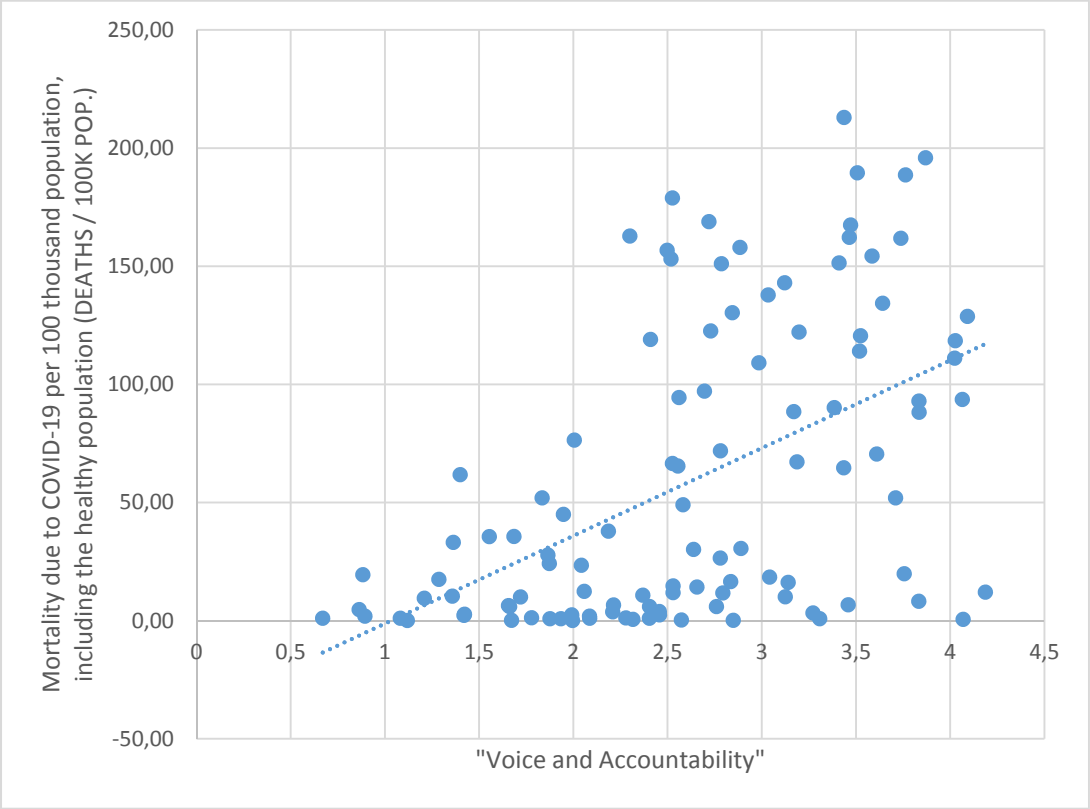

Figure 1. – Correlation of mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) and the indicator "Voice and Accountability"

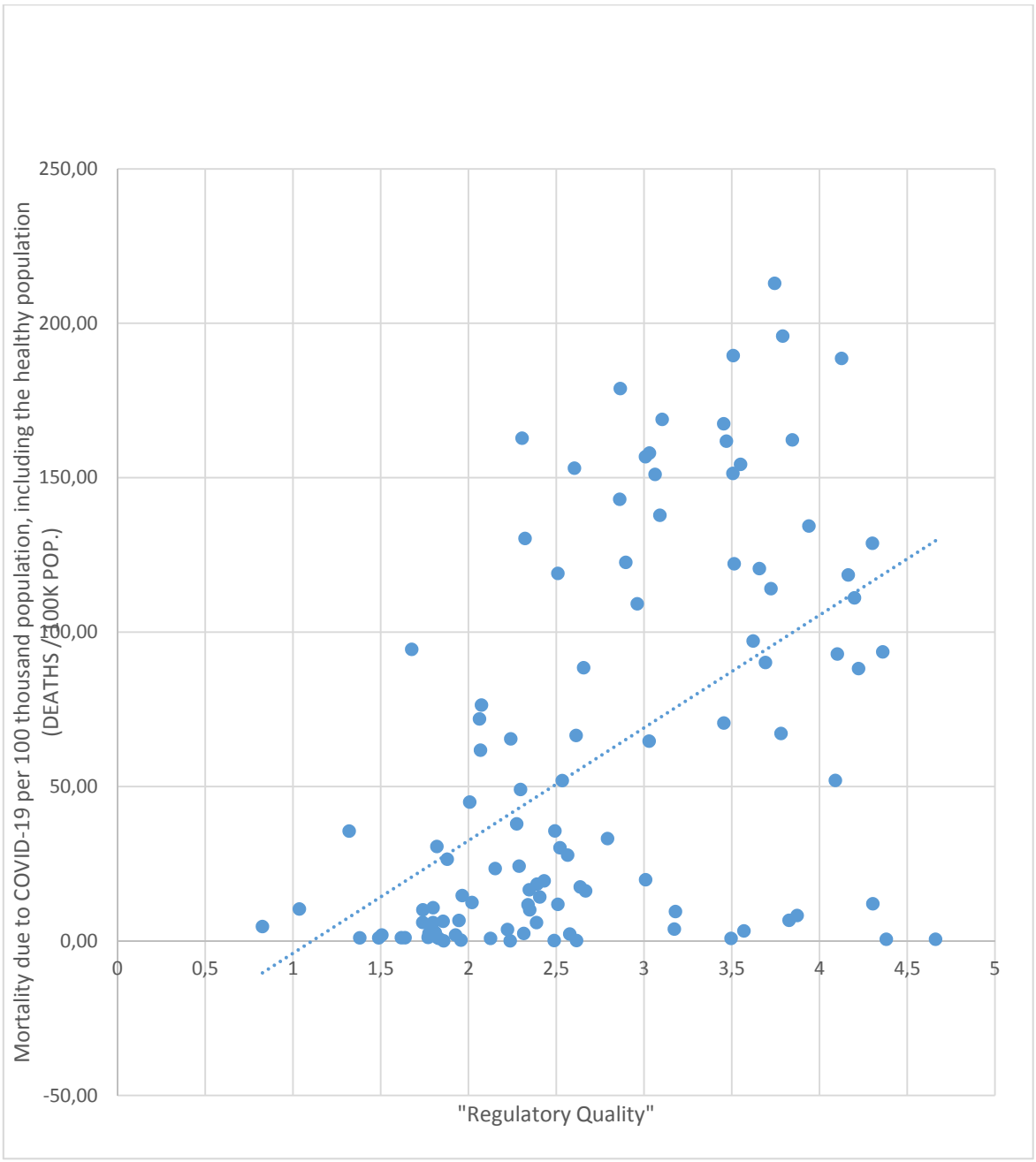

Figure 2. – Correlation of mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) and the indicator "Regulatory Quality"

The relationship between the indicators of life expectancy and indicators of the quality of the institutional system is revealed.

The correlation coefficient between the Voice and Accountability indicator and the Life expectancy at birth, total years indicator was 0.55.

The linear relationship between the indicators is reflected by the formula (4).

$$Y = 4.7*X + 61.6 \quad (4)$$

where Y - Life expectancy at birth, total years (2018);

X – "Voice and Accountability".

A graph showing this dependence is shown in Figure 4.

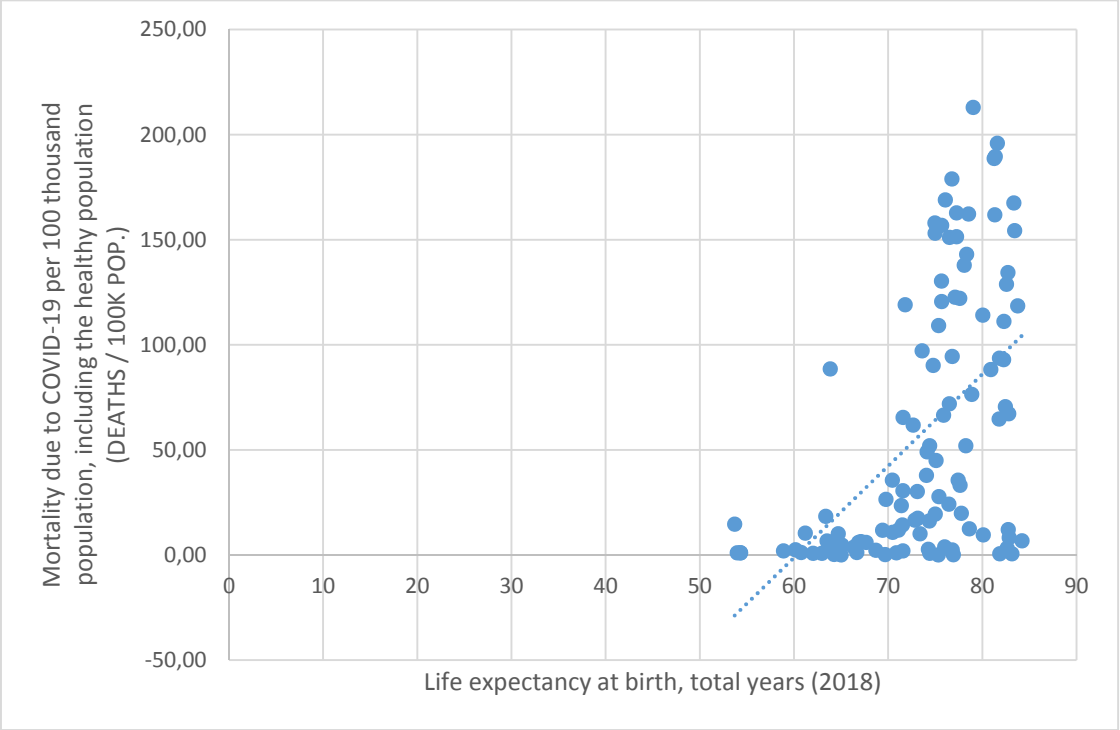

Figure 3. – Correlation of mortality due to COVID-19 per 100 thousand population, including the healthy population (DEATHS / 100K POP.) and Life expectancy at birth, total years (2018)

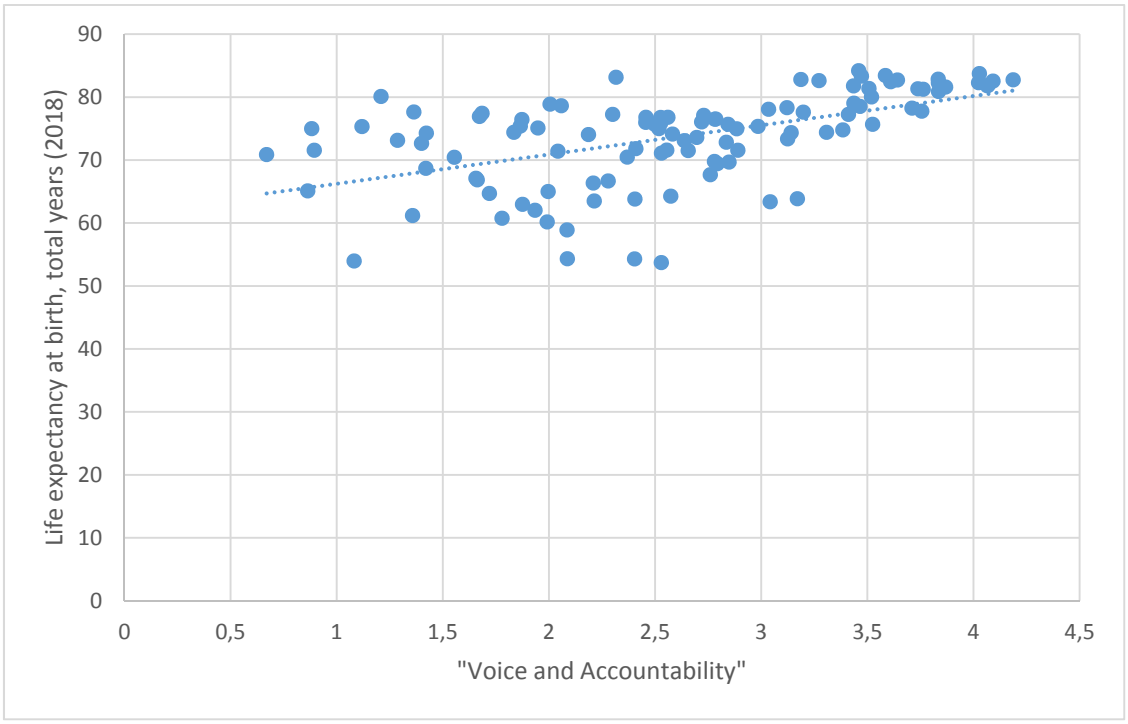

Figure 4. – Relationship between the indicators "Voice and Accountability" and Life expectancy at birth, total years (2018)

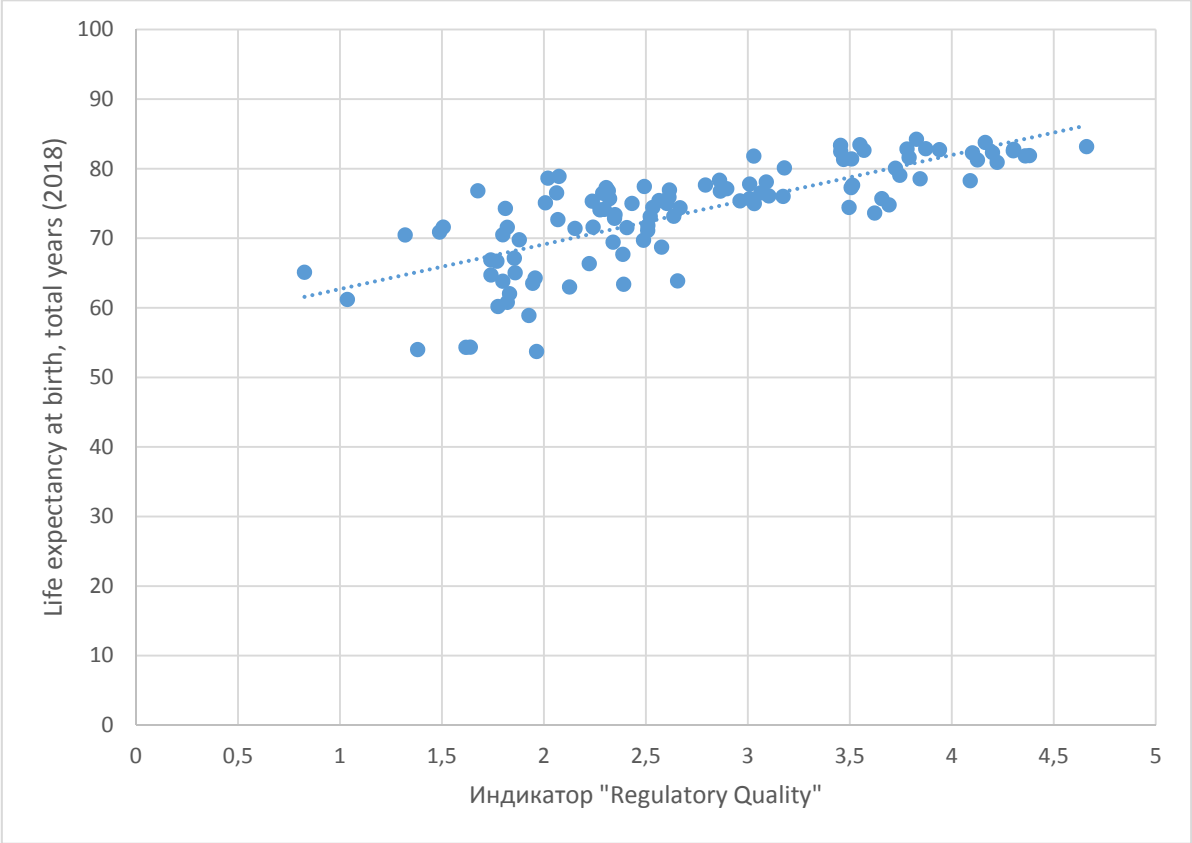

Figure 5. – Relationship between the indicators "Regulatory Quality" and Life expectancy at birth, total years (2018)

The correlation coefficient between the indicator “Regulatory Quality” and Life expectancy at birth, total years was 0.76.

The linear relationship between the indicators is reflected by the formula (5).

$$Y = 6.4*X + 56.3 \quad (5)$$

where Y – Life expectancy at birth, total years (2018);

X – “Regulatory Quality”.

A graph showing this dependence is shown in Figure 5.

Thus, there is reason to conclude that the mortality rate from the COVID-19 pandemic depends the age structure of the population, which in turn depends on the level of quality of the institutional system.

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