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Influence of Economic and Political Variables on the Mortality Rate per Covid-19

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Abstract:

Purpose: *The global pandemic caused by Covid-19 has caused millions of infected and dead people around the world, generating an unprecedented crisis, and affecting the economy of all countries. The aim of this work is to analyze whether some of the most influential and determining variables of the economic level and welfare of a country, such as GDP, HDI or public debt, have a significant influence on the coronavirus mortality rate in the countries most affected by the pandemic. It is also examined whether the level of policies adopted as measured by the Government Response Stringency Index influences this rate.*
Design/Methodology/Approach: *The countries with the highest number of Covid-19 cases at the beginning of the year 2021 were taken into account and the variables to be analyzed for these countries were obtained from different databases. A multiple regression was performed to determine whether the variables mentioned above have an influence on the mortality rate due to Covid-19.*
Findings: *The results obtained show that GDP per capita has a positive influence and that lower public debt (expressed as a percentage of GDP) can contribute to reducing the number of deaths. In addition, the level of policies adopted by countries has a significant influence. The more restrictive these policies are, the lower the number of deaths per 100,000 inhabitants. This demonstrates the effectiveness of certain measures such as school closures or border closures.*
Practical Implications: *the article provides recommendations on politics and Covid-19. It will be necessary to continue in this line of measures and propose a series of policies, such as mobility restrictions, perimeter confinements or mandatory teleworking or online teaching, to reduce the total number of deaths due to coronavirus and start economic reconstruction.*
Originality/Value: *Significant findings on economic and political variables affecting Covid-19 mortality have been found.*

Keywords: *Covid-19, mortality, GDP, debt, government.*

JEL Classification: *A1, I18, E00.*

Paper type: *Research paper.*

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1. Introduction

The emergence and rapid expansion of Covid-19 worldwide has led to a major health, economic and social crisis. The measures adopted to reduce the pandemic and prevent contagion and the number of deaths from falling have led to a reduction or paralysis of many important sectors of activity, such as the hotel and catering industry and tourism, which has caused a deep and sudden fall in GDP in many countries (König and Winkler, 2020; Makridis and Hartley, 2020).

Many workers have lost their jobs as a result of the pandemic (Blustein *et al.*, 2020; Gallant *et al.*, 2020; Blustein and Guarino, 2020; Grima *et al.*, 2020; Khan *et al.*, 2020) or have been involved in some form of temporary employment regulation. The disruption of business and productive activity, together with the loss of jobs, has led to a major contraction in domestic demand. To this disruption must be added the fall in demand for goods and services from the rest of the world and the interruption of global value chains (McKibbin and Fernando, 2020; Cifuentes-Faura, 2020; Fernandes, 2020; Maital and Barzani, 2020).

A large part of countries' economic budgets have been allocated to increasing health system resources to reduce the effects of the pandemic on public health. In the area of fiscal policy, the closure or cessation of many of the measures has meant that a greater number of bank loans are granted and a deferment of tax obligations is allowed for companies, so that they can meet their payments and have liquidity (Gubareva, 2020). Support packages have also been offered to the most vulnerable households to reduce the impact of income loss (Brewer and Gardiner, 2020).

In the field of monetary policy, in the case of Europe, the Eurosystem has approved large-scale purchases of financial assets to facilitate lower financing costs and to favour the provision of bank credit (Cifuentes-Faura, 2021). In the short term, the aim is to ensure a flow of income for those agents whose sources of income have been most directly affected by the epidemic. The measures taken by different countries have also been different to contain the pandemic, some being more restrictive than others, as demonstrated by the Government Response Stringency Index (Hale *et al.*, 2020; Elgin *et al.*, 2020).

2. Data and Methodology

This paper takes into account the 10 countries with the highest number of cases per Covid-19, as at 5 January 2021 (Table 1), in order to analyse whether some of the most important variables at the economic level, such as gross domestic product per capita (GDPpc), the human development index (HDI) or debt as a percentage of GDP (Debt), obtained from World Bank Data, have significant effects on the total number of deaths per Covid-19 per million inhabitants. The GDP is the most widely used measure of a country's economic growth, while the HDI is an indicator created by the UNDP to find out the degree of progress made by each country taking into account economic, health and educational factors. It also analyses whether the restrictive

policies imposed by these countries influence the total number of deaths per million inhabitants (Mortality). Restrictive policies have been measured through the Government Response Stringency Index (Policies). This is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescued to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region. This index shows the level of exigency or harshness of the policies implemented by the different countries.

Table 1. *Top 10 countries with highest number of confirmed cases by Covid-19 as of 5 January 2021*

Country	Total, cases of Covid-19
United States	21.353.051
India	10.357.569
Brasil	7.754.560
Russia	3.284.384
United Kingdom	2.713.563
France	2.659.750
Turkey	2.255.607
Italy	2.166.244
Spain	1.958.844
Germany	1.796.216

To check the relationship between these variables, the following multiple linear regression model has been proposed.

$$\widehat{Mortality}_i = \beta_0 + \beta_1\, GDPpc_i + \beta_2\, HDI_i + \beta_3\, Debtpc_i + \beta_4\, Policies_i$$

3. Results

Mortality rates vary considerably between the countries analyzed, as shown in Table 2. The highest incidence is in Italy (1,256.21 per million inhabitants), the United Kingdom (1,079.83 per million inhabitants) and the United States (1,079.83 per million inhabitants) and the lowest in India (110.79 per million inhabitants). GDPpc is highest in the US and lowest in India. As for the HDI, the highest is that of Germany, and India repeats as the lowest. The highest public debt expressed as a percentage of GDP is that of Italy and the lowest is that of Russia. Finally, Italy has the highest value in the Government Response Stringency Index (Policies), while Russia has the lowest value in terms of restrictive policies.

Table 2. *Main descriptive measures*

Variables	Minimum	Maximum	Mean	Standard deviation
Mortality	110.79	1,256.21	765.04	417,98
GDPpc	1741	58485	25,769.40	18,366.33
HDI	0.645	0.947	0.855	0.094
Debt (%GDP)	14.61	134.7	77.82	35.76
Policies	47.69	87.96	67.45	12.23

Source: *Own study.*

Regarding the results of the multiple regression analyses, the resulting final model to explain the mortality rate (Table 3) shows that it has a high explanatory power (see adjusted R2, which indicates what percentage of the variation in the dependent variable is explained jointly by all the independent variables and varies between 0 and 1, the closer to 1 the greater the fit of the model to the variable to be explained). All variables, except the HDI, have a significant influence on the mortality rate, GDP per capita at 5% and, public debt and the level of constraint on the policies adopted by governments at 10%. If we look at the value of the standardized coefficients, GDPpc is the most influential variable followed by the level of policies carried out.

Table 3. *Multiple regression model*

Variables	**Unstandardized Coefficients**	**Standardized Coefficients**	**p-value**
(Constant)	115,486** (36,350.25)		0.02
GDPpc	0.694** (0.25)	0.990	0.04
HDI	-66,207.65 (64,108.55)	-0.484	0.35
Debt	174.23* (74.44)	0.484	0.06
Policies	-1,338.41* (643.88)	-0.664	0.09
R^2 Adjusted	0.869		

Note: *Standard error in parentheses, ** Significant at the level of 5%, * Significant at the level of 10%.*
Source: *Own study.*

GDPpc has a positive influence, i.e., those countries with higher GDP per capita have a higher number of deaths. This is probably due to the high incidence of coronaviruses in more developed countries because of their greater global connectivity. Countries with higher debt have higher death rates, which can be explained in part by their lower economic availability for the purchase of healthcare equipment or for the treatment of infected patients, and their healthcare is more deficient. Finally, restrictive policies have a negative influence. Those countries that are more restrictive have had fewer deaths.

4. Conclusions

The Covid-19 pandemic has caused millions of infections and deaths worldwide. This health crisis is linked to an economic crisis. Restrictions, loss of productivity or business closures have led to rising unemployment and a rather worrying economic situation. To alleviate the effects of this crisis, the governments of the different countries have taken measures both at the health level to contain the spread of the virus, and at the economic level, with measures that seek to inject liquidity and offer aid to companies and workers that have been seriously affected.

This paper has analyzed whether variables representative of a country's economic level and well-being, such as GDP, HDI or public debt, have a significant influence on the rate of deaths from Covid-19 in the countries most affected by the pandemic. It has been shown that GDP has a significant influence and that the higher the GDP per capita, the higher the number of deaths. In addition, lower public debt (as a

percentage of GDP) can help reduce the number of deaths. A balanced budget and lower debt will allow more money to be spent on health care equipment, respirators and more health care staff to be employed, while more and better services can be provided to those infected.

The influence of the level of policies adopted in response to the pandemic has also been examined. The more restrictive they are, the lower the number of deaths per million inhabitants. This demonstrates the effectiveness of measures such as school or border closures. Further restrictive measures will be needed to help contain the pandemic. In this way, the perimeter confinements established by various countries in some areas, teleworking or online teaching, are proving to be useful in reducing the rate of deaths from coronavirus. Imposing tougher and more severe measures such as closing the hotel industry or limiting mobility in some areas helps significantly to reduce the number of deaths. This will need to be continued, with restrictions and strict policies imposed where necessary.

This paper shows preliminary results for the countries with the most Covid-19 cases in the world. This work will be extended to a more extensive and in-depth analysis of the influence of economic and political variables on the Covid-19 health situation worldwide.

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