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DP15722

Democracy and COVID-19 Outcomes

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Draft: January 23, 2021

Abstract

More democratic countries are often expected to fail at providing a fast, strong, and effective response when facing a crisis such as COVID-19. This could result in higher infections and more negative health effects, but hard evidence to prove this claim is missing for the new disease. Studying the association with five different democracy measures, this study shows that while the infection rates of the disease do indeed appear to be higher for more democratic countries so far, their observed case fatality rates are lower. There is also a negative association between case fatality rates and government attempts to censor media. However, such censorship relates positively to the infection rate.

Keywords: Democracy, COVID-19, Coronavirus, Pandemic, Lockdown, Media Censoring
JEL Codes: D72, C30, P16, I19

1. Introduction

The remarkable differences in the spread and health impact of COVID-19 across different countries and continents caused intense debates about the determinants of this heterogeneity. There is also a surprisingly large variety of suspects including biological warfare conspiracies, health system failures, and 5G towers[1]. Political regimes are also blamed, and there is a particular mistrust in democratic institutions. These concerns regarding democratic countries focus on the insufficient agility and stringency of responses and the lack of strong leadership. The analysis provided in this paper one year after the first case detected in Wuhan shows that the relationship between democracy and COVID-19 related outcome variables (like the infection rate and the case fatality rates across affected countries) is more complicated than previously thought.

When COVID-19 hit Italy so severely, China was almost at the end of its fight against it. However, this striking juxtaposition of Italy-China, as a democratic country against an autocratic one, shadows the progress of the disease in many other countries. It even shadows Iran's situation during the pandemic, which was just as bad as Italy at that time. However, Italy is long known to be a democracy without efficient administrative structures. After the first shock, the country nevertheless reacted with a strong government response. These anecdotal observations triggered a discussion about the role of democracies during the pandemic. Democratic institutions were blamed for being slow and inefficient.

Since democratic countries are more open to the world, they should be more vulnerable through many channels of human interactions such as trade, migration and tourism, but may also be more competitive dealing with some of the consequences of the infection. This paper discusses the complex relationship between democracy and the COVID-19 pandemic including reverse causation and presents a variety of democracy measures for a comparative econometric analysis. Our empirical findings suggest that various democracy measures suggested in the literature are positively related to infection rates even when estimates include proper control variables. However, the relationship between the case fatality rate and democracy variables is negative, suggesting a higher value of life in democratic countries. Media censorship has a possible moderating effect on infections and seems to contain mortality.

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[1] For instance: Nearly hundred 5G towers were damaged by arson attacks starting in early April in Britain, the Netherlands, and Belgium. Attacks were triggered by a conspiracy theory linking the COVID-19 spread and 5G towers (Nakashima, 2020).

The paper is organized as follows. Section 2 reviews and discusses the relationship between democracy and pandemics; section 3 presents methodology and data, and section 4 provides the empirical findings. Section 5 concludes.

2. Democracy and the pandemic: A review of insights

The spread and impact of COVID-19 are quite diverse across countries, caused by differences in geographic conditions, health systems, the stringency of the responses, and the physical and economic distance to China. The performance of political and economic institutions may also contribute to this, which causes people to question the ability of liberal democracies to protect their citizens (Kundnani, 2020). An autocratic government may act faster and stronger than a democratic one. They may also mobilize resources more quickly without considering the effect of this reallocation on election results or country's further situation. People may also follow political instructions in autocratic countries more closely than those in liberal states. However, autocratic regimes may suffer from a lack of transparency and over-stringent responses (Hanel, 2020). For example, censoring facts about the pandemic may lead people to become incautious. Therefore, control over media and disinformation can make these countries more vulnerable to a pandemic. Furthermore, they can also cause serious problems in their battle against the pandemic due to corruption, lack of a developed civil society, and inequality in accessing resources.

Moreover, Acemoglu (2020) suggests that the COVID-19 pandemic may accelerate the erosion of democratic institutions even in the United States.[2] Similarly, Agamben (2020) argues that pandemic offers an ideal pretext for implementing disproportionate responses that are anti-democratic in spirit. There are already some countries that have been using the disease to extend authoritarian power. For example, some authoritarian countries increased their grip on minorities, repressed political opponents, postponed elections, and restricted freedom of speech, while others have been applying lockdowns that were over-stringent and arrested thousands of people who violated curfew requirements (Runde et al., 2020). Amid these discussions, it is now clear that COVID-19 is a stress test for democracies all over the world. To deal with this threat, the European Union recently announced new action plans (European

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[2] However, Trump has lost the 2020 presidential election, and the US institutions remained stable. On the contrary, the study by Baccini et al. (2021) reveals that the poor response of the Trump administration to the COVID-19 challenge has been the crucial factor in the election defeat.

Democracy Action Plan to address the problems in European Union and Action Plan on Human Rights and Democracy 2020-2024 for the World; European Union, 2020).

Despite fears about democratic institutions causing problems for public health in the early stages of the COVID-19 pandemic, the existing literature on this issue provides evidence for the facts that democratic nations have healthier populations (Besley and Kudamatsu, 2006; Cutler et al., 2006; Hall and Jones, 2007), a longer life expectancy (Baum and Lake, 2003; Mackenbach et al., 2013), and they invest more in health care (Liang and Mirelman, 2014).

This is even more transparent when one investigates the relationship between democracy and the HIV pandemic, which is well studied. The HIV pandemic had its peak between 2005-2012, and approximately 770.000 people died from HIV related illnesses in 2018. Currently, 37.9 million people are affected by HIV (WHO, 2020). Justesen (2012) discusses two conflicting aspects of the relationship between democracy and the HIV pandemic. First is the positive effect democracy has on the fight against HIV by enabling easier access to treatment. The second is, Justesen's conclusion (2012) that the relatively small size of voters affected by HIV constitutes only a small weight in elections and limits the government's motivation to fight against the pandemic.

There are important epidemiological differences between HIV and COVID-19, however: The life expectancy of HIV-positive individuals is currently approaching that of the general population. In contrast, COVID-19 can kill patients very fast[3] (Zhou et al., 2020). The reproduction number[4] R_0 of COVID-19 is higher[5] compared to many other viruses including HIV (Petersen et al., 2020), but varies a lot across countries and by the evolution of the epidemic within a country. These features of the COVID-19 disease make the agility and the stringency of the responses more important compared to the HIV pandemic. Acting with strength and speed may change the impact of the disease and the progress of the pandemic significantly. Therefore, political regime differences may be important in the COVID-19 pandemic.

Analyzing the relationship between democracy and COVID-19 requires meticulous attention to the appropriate control variables. Since democratic countries are more open to the world, they are expected to be more vulnerable to a pandemic through many channels such as trade, immigration, and tourism. Zimmermann et al. (2020) find that

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[3] The median time of discharge is 22 days, and the median time of death is 18.5 days.
[4] These are the additional cases that one infection case is expected to generate (Li et.al., 2020).
[5] Higher than SARS, MERS, and the 1918 influenza (Peckham, 2020).

globalization levels of countries are positively related to the spread of COVID-19, both in speed and scale. This study also finds that globalized countries are better equipped to keep fatality rates low. Several studies show that democracy and income are positively related (Acemoglu et al., 2008; Rodrik and Wacziarg, 2005). Consequently, health expenditures should be among the control variables, since rich countries have higher health expenditures (Hall and Jones, 2007; Baltagi et al., 2017). Controlling for income inequality would also be useful because the equality level of access to resources may create differences among countries (Justesen, 2012).

The relationship between pandemic and democracy may be bi-directional. Chilton et al. (2020) show that there has been widespread political support for policies restricting civil liberties during the COVID-19 pandemic by running a survey in Japan, the United States, and Israel. Similarly, Amat et al. (2020) implemented a survey experiment and panel surveys (right before and after the outbreak) in Spain to find that respondents are ready to give away their freedoms when faced with a security versus freedom dilemma as created by the COVID-19 pandemic. However, the issue may not be structural but just temporary, and hence part of a flexible reaction system to a general threat that is reversed after the crisis is over. Only if the democracy reduction is permanent and hence structural, it becomes a challenge. This issue is also important but requires a more long-term empirical study which is beyond the purpose of this paper.

3. Data and methodology

We use five different indices as measures of democracy: The Freedom House's Political Rights Index (*FH Political Rights*), the Freedom House's Civil Rights Index (*FH Civil Liberties*), the Freedom House Total Democracy Score (*FH Total*), the Polity's Democracy Index (*Polity's Democracy Index*), and Electoral Democracy Index of the V-Dem Institute. The Freedom House Political Rights Index is calculated by awarding a country a score from 0 to 4 in 10 political rights indicators under 3 categories, which are electoral processes, political pluralism, and the functioning of government. Freedom House Civil Rights Index scores are calculated by using questions under 4 categories: freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights. Freedom House Total Democracy Index scores are calculated by simply adding Political Rights and Civil Liberties indices.

FH total generally changes due to significant developments in political rights and civil liberties. FH political rights index concentrates on political corruption, interests of minority groups, and rights of the opposition groups. FH Civil Liberties focus on media independence, the presence of a fair legal system, education, freedom of assembly, expression and religion, and trade union activities (Freedom House, 2020). Polity's Democracy Index is calculated by considering many factors such as institutional constraints of power, the competitiveness of political participation, and electoral processes (Marshall and Gurr, 2020). Electoral Democracy Index has two categories, 0 and 1. It measures the responsiveness of the rulers to citizens, achieved through electoral competition for the electorate's approval. For this measure, the elements of representative democracy are essential such as being liberal, participatory, deliberative, and egalitarian (Coppedge et al., 2020).

The COVID-19 pandemic-related dependent variables (henceforth *pandemic variables*) are: (i) CP is the ***infection rate*** which is the number of confirmed COVID-19 cases (C) divided by population size (P). (ii) CFR is the ***case fatality rate[6]*** defined as the number of individuals that died due to COVID-19 (D) divided by the number of confirmed infection cases (C). While the death rate (the number of individuals that died due to a COVID-19 infection divided by population size) is often used in public debates due to the more easily available denominator, the case fatality rate is the more appropriate measure: It answers the relevant question of what the likelihood of death is given that there is infection already.

We use the COVID-19 data from the Johns Hopkins University Coronavirus Resource Center collected on the 15th of December of 2020. All available countries had values larger than 0 for the pandemic variables. Since the data have a non-linear structure[7], we analyze the variables as ln CP and ln CFR. The typical equation for the estimation is:

$$lny_i = \mu + \alpha lnR_i + \gamma ln\,X_i + \varepsilon_i \qquad\qquad (1)$$

y_i denotes pandemic variables, R_i is the democracy index score for country i, X_i denotes the vector of controls and ε_i is the error term of country i. The estimation method is OLS with robust standard errors. The logarithmic transformation of the democracy indices requires values

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[6] Also called the case fatality ratio. The case fatality rate has been defined in the epidemiology literature (Kelly and Cowling, 2013).
[7] For robustness, we checked the relationships between the non-logarithmic variables. Joint test results and significance of the coefficients of the quadratic versions of the four democracy indices show that there are non-linear relationships in most equations. We, therefore, decided to use the logarithmic specification.

larger than 0; index values of 0 did not appear in our data set except for Polity's Democracy Index where we added 1 to all observations.

Control variables are the Gini coefficient, tourism revenue per capita, Gross Domestic Product (GDP) per capita, the population of people aged 65 and above as a percentage of the total population, the share of health expenditures per capita, number of medical doctors per 1000 population, and hospital beds per 1000 population. We also use a Government Censorship Effort Index, which was developed by the V-Dem Institute, and a measure for the country's "testing policy" (Hale et al., 2020) to check for misreporting (under-reporting of confirmed cases and the number of deaths). The Government Censorship Effort variable measures the degree of government censorship of media and press with positive numbers in a continuous way where a rising value indicates lower censorship. Testing policy is a sub-index of the Government Response Stringency Index[8] developed by the Oxford COVID-19 government response tracker (Hale et al., 2020). The Testing Policy variable takes values between 0-3 where 0 means no response and 3 means maximum stringent response of daily data collected over the COVID-19 period averaged to obtain a non-zero continuous measure rising with stronger testing activity.

Table 1 shows descriptive statistics for the variables such as means, standard deviations, and the number of observations alongside the minimum and maximum values. The dataset collected contains 128 countries; they are listed in Table A1. Due to missing data among the control variables, the sample size for the statistical analysis with those variables is reduced to 99. The countries missing are marked in Table A1. Details and sources of the variables used are shown in Appendix Table A2. All calculations in Table 1 are provided after a logarithmic (ln) transformation for both the full sample and the reduced sample to confirm that the differences are small.

4. Empirical results

Based on the raw data, Figure 1 reveals a positive relationship between the Freedom House Total Democracy Score and the infection rate CP. Most of the democratic countries cluster in the upper right of the figure with high infection rates. Tables 2 and 3 provide the regression results. In all tables, Panel A reports the baseline regressions including only the democracy

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[8] GRSI is a measure based on nineteen response indicators such as school and workplace closures and travel bans.

indicators for the full sample (N=128), and Panel B presents the estimates with all control variables (N=99). [9] Each table contains five equations for the five different democracy measures.

Table 2 presents the regression results, modeling the ln infection rate (CP) as the dependent variable. Confirming Figure 1, the baseline equations show that democracy is positively related to CP at the 1% significance level. When the control variables are added to the regressions, coefficients of the democracy variables continue to be statistically significant at the 1% level except for column 3 where the Civil Liberties Index is the democracy variable. In panel B, the temperature and population share of 65 and older variables' coefficients are negative and significant for all five equations (Li et al., 2020, reach similar results for the temperature variable and Zimmermann et al., 2020, for the older population group variable). Haischer et al. (2020) argue that people who are 65 and older are more likely to wear a mask, and thus the government's stringency policies are mainly targeted towards this group. Using data from an earlier stage of the pandemic, Zimmermann et al. (2020) who obtained similar results noted that the older age group has standard activities that make it less exposed to the virus. Both lines of argument would explain why the possibility of infection is lower for the older group compared to the younger population. Testing policy and doctor per 1000 variables are positively related to CP (except column 3 for testing policy), which is intuitive and confirm expectations. Finally, the Government Censorship Effort variable is negatively related to CP in general and significant in column 2 (panel B). This indicates a weak tendency where more media control leads to higher infection rates since public attention to the disease is possibly smaller.

The results of the regressions for the Case Fatality Rate reported in Table 3 are quite different from those in Table 2. There is a negative relationship between all democracy measures and CFR. All coefficients are statistically significant at 1% level except for column 5 where it is 10%. We observe COVID-19 to have a smaller effect on mortality for more democratic countries. Government Censorship has the largest coefficient at the 1% significance level and the sign of the coefficient is positive. This implies that a lower degree of censorship is associated with a larger case fatality rate.

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[9] The variance inflation factor (VIF) was estimated to detect collinearity. Results confirm that there is no collinearity between the independent variables. The VIF results are presented in Appendix Table A3.

Beds per 1,000 population and testing policy both have a negative relationship with the Case Fatality Rate. Therefore, more hospital beds and more tests may help to decrease CFR. GDP is also negatively related to CFR. This result is consistent with the results of previous studies (Liu et al., 2020; Zimmermann et al., 2020). On the other hand, the share of the population over the age of 65 is positively related to CFR at 1%; this means that once elderly people get the disease, they are more likely to die (Zimmermann et al., 2020).

5. Conclusions

Democratic countries have higher COVID-19 infection rates but lower case fatality rates. They are less able to monitor and moderate the interactions between people and to contain the spread of the disease. However, they place a higher value on human life and health. Controlled for the measured size of democracy, media censorship moderates mortality but may cause a higher rate of infection. In the short term, democratic institutions may react slowly but are less likely to change under the pressure of the pandemic. It is nevertheless obvious that more autocratic political leaders can use the fight against the pandemic to increase their popularity, but the example of Donald Trump also makes it clear that ignoring the disease does not help weaken democratic institutions. The long-term consequences of COVID-19 for democracy require further analyses.

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Table 1. Descriptive statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Infection Rate	-5.01	1.836	-11.614	-2.75
	(-5.38)	(2.052)	(-11.614)	(-2.75)
Case Fatality Rate	-4.128	0.836	-7.606	-2.379
	(-4.055)	(0.824)	(-7.606)	(-1.233)
FH Total	4.022	0.638	0	4.615
	(3.883)	(0.786)	(0)	(4.615)
FH Political Rights	3.067	0.844	0	3.713
	(2.9)	(0.974)	(0)	(3.713)
FH Civil Liberties	3.512	0.573	1.791	4.094
	(3.405)	(0.642)	(1.098)	(4.094)
Polity Democracy Index	1.819	0.83	0	2.397
	(1.713)	(0.87)	(0)	(2.397)
Electoral Democracy Index	-0.689	0.657	-3.772	-0.105
	(-0.771)	(0.651)	(-3.772)	(-0.105)
Gini Coefficient	3.608	0.191	3.218	4.079
	(3.62)	(0.187)	(3.218)	(4.079)
Tourism Revenue per capita	0.838	0.051	0.656	0.936
	(0.833)	(0.053)	(0.656)	(0.936)
GDP per capita	9.076	1.468	5.604	11.666
	(8.82)	(1.503)	(5.604)	(11.666)
Temperature	2.524	0.945	-2.302	3.471
	(2.649)	(0.882)	(-2.302)	(3.471)
Government Censorship Effort	0.32	0.321	-0.774	0.586
	(0.255)	(0.399)	(-1.102)	(0.586)
Population Share 65 and older	2.12	0.786	0.145	3.332
	(1.992)	(0.778)	(0.145)	(3.332)
Doctors per 1,000 population	2.581	1.313	-1.966	4.003
	(2.362)	(1.435)	(-1.966)	(4.265)
Beds per 1,000 population	0.792	0.94	-2.302	2.595
	(0.739)	(0.917)	(-2.302)	(2.595)
Health Expenditure per capita	1.853	0.382	1.029	2.839
	(1.853)	(0.389)	(0.875)	(2.839)
Testing Policy	0.388	0.379	-1.446	0.956
	(0.326)	(0.436)	(-1.922)	(0.956)

Note: All variables after logarithmic transformation. Numbers are from the reduced sample due to missing variables (N=99); the numbers in parentheses are the respective numbers for the full sample of 128.

Table 2. Infection Rate and Democracy

PANEL A: Baseline estimates

	(I)	(II)	(III)	(IV)	(V)
FH Total	1.027***	-	-	-	-
	(0.212)				
FH Political Rights	-	0.845***	-	-	-
		(0.179)			
FH Civil Liberties	-	-	1.259***	-	-
			(0.251)		
Polity Democracy Index	-	-	-	0.749***	-
				(0.23)	
Electoral Democracy Index	-	-	-	-	1.082***
					(0.364)
R^2	0.155	0.161	0.155	0.101	0.118
N	128	128	128	128	128

PANEL B: Estimates with control variables

	(I)	(II)	(III)	(IV)	(V)
FH Total	1.233***	-	-	-	-
	(0.468)				
FH Political Rights	-	1.286***	-	-	-
		(0.382)			
FH Civil Liberties	-	-	0.717	-	-
			(0.432)		
Polity Democracy Index	-	-	-	0.639**	-
				(0.284)	
Electoral Democracy Index	-	-	-	-	1.175**
					(0.558)
Gini Coefficient	-0.076	0.037	-0.169	-0.253	0.091
	(0.492)	(0.471)	(0.501)	(0.518)	(0.557)
Tourism Revenue per capita	0.871	0.808	1.173	1.293	1.307
	(3.42)	(3.292)	(3.511)	(3.518)	(3.328)
GDP per capita	0.015	0.01	0.039	0.14	0.104
	(0.145)	(0.139)	(0.15)	(0.149)	(0.151)
Temperature	-0.361**	-0.357**	-0.350**	-0.344**	-0.346**
	(0.165)	(0.156)	(0.168)	(0.162)	(0.164)
Government Censorship Effort	-0.739	-1.523**	0.099	-0.228	-0.699
	(0.707)	(0.68)	(0.853)	(0.837)	(0.797)
Population Share 65 and older	-1.241***	-1.327***	-1.062**	-1.080**	-1.308***
	(0.462)	(0.397)	(0.445)	(0.434)	(0.496)
Doctors per 1,000 population	1.048***	1.014***	1.052***	1.022***	1.049***
	(0.207)	(0.193)	(0.211)	(0.204)	(0.205)
Beds per 1,000 population	0.009	0.128	-0.035	-0.042	0.034
	(0.203)	(0.185)	(0.206)	(0.216)	(0.197)
Health Expenditures per capita	0.427	0.522	0.387	0.353	0.354
	(0.378)	(0.341)	(0.396)	(0.374)	(0.361)
Testing Policy	0.713*	0.825**	0.598	0.706*	0.687*
	(0.365)	(0.328)	(0.397)	(0.396)	(0.37)
R^2	0.574	0.615	0.552	0.566	0.579
N	99	99	99	99	99

Notes: Robust standard errors in parentheses. Gini Coefficient: Measure of the deviation of the distribution of income among individuals or households within a country. The coefficient ranges from 0 to 100, with 0 representing perfect equality and 100 representing perfect inequality. Government Censorship Effort: The Government Censorship Effort variable measures in a continuous way the degree of government censorship of media and press with positive numbers whereas a rising value indicates lower censorship. Testing Policy: The Testing Policy variable takes values between 0-3 where 0 means no response and 3 means maximum stringent response of daily data collected over the COVID-19 period averaged to obtain a non-zero continuous measure rising with stronger testing activity. * Statistical significance at 10% level. ** Statistical significance at 5% level. *** Statistical significance at 1% level. For all variables natural logarithmic transformations are used in the regressions.

Table 3. Case Fatality Rate and Democracy

PANEL A: Baseline estimates

	(I)	(II)	(III)	(IV)	(V)
FH Total	-0.04	-	-	-	-
	(0.108)				
FH Political Rights	-	-0.008	-	-	-
		(0.094)			
FH Civil Liberties	-	-	-0.045	-	-
			(0.129)		
Polity Democracy Index	-	-	-	0.055	-
				(0.105)	
Electoral Democracy Index	-	-	-	-	0.089
					(0.147)
R^2	0.001	0.001	0.001	0.003	0.005
N	128	128	128	128	128

PANEL B: Estimates with control variables

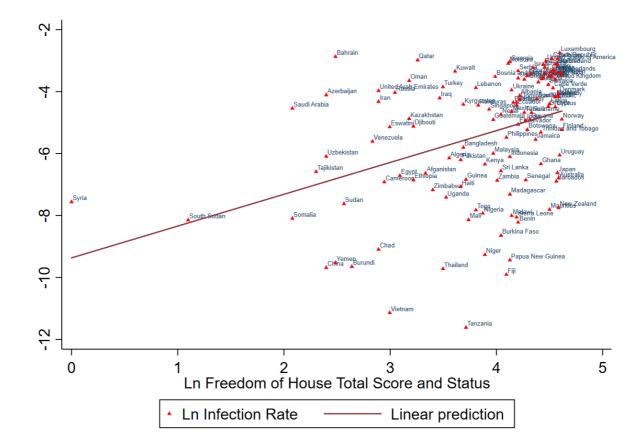|	(I)	(II)	(III)	(IV)	(V)
FH Total	-0.822***	-	-	-	-
	(0.211)				
FH Political Rights	-	-0.486***	-	-	-
		(0.184)			
FH Civil Liberties	-	-	-0.904***	-	-
			(0.226)		
Polity Democracy Index	-	-	-	-0.428***	-
				(0.159)	
Electoral Democracy Index	-	-	-	-	-0.498**
					(0.204)
Gini Coefficient	0.041	0.051	0.048	0.159	0.015
	(0.292)	(0.303)	(0.284)	(0.285)	(0.304)
Tourism Revenue per capita	0.75	0.586	0.755	0.469	0.407
	(2.475)	(2.473)	(2.461)	(2.425)	(2.48)
GDP per capita	-0.194*	-0.214*	-0.179*	-0.277**	-0.251**
	(0.107)	(0.109)	(0.106)	(0.112)	(0.111)
Temperature	0.012	-0.001	0.022	0.002	-0.003
	(0.071)	(0.074)	(0.071)	(0.076)	(0.073)
Government Censorship Effort	1.445***	1.277**	1.345***	1.108**	1.037**
	(0.439)	(0.486)	(0.453)	(0.494)	(0.458)
Population Share 65 and older	0.647**	0.569**	0.647**	0.541**	0.583**
	(0.246)	(0.232)	(0.246)	(0.25)	(0.249)
Doctors per 1,000 population	0.164	0.183	0.147	0.182	0.169
	(0.125)	(0.13)	(0.123)	(0.123)	(0.129)
Beds per 1,000 population	-0.301**	-0.336**	-0.266**	-0.267**	-0.303**
	(0.118)	(0.128)	(0.11)	(0.112)	(0.121)
Health Expenditures per capita	0.261	0.232	0.296	0.311	0.298
	(0.255)	(0.263)	(0.247)	(0.249)	(0.255)
Testing Policy	-0.567**	-0.544**	-0.554**	-0.563**	-0.502**
	(0.241)	(0.252)	(0.241)	(0.248)	(0.252)
R^2	0.332	0.316	0.335	0.317	0.297
N	99	99	99	99	99

Notes: Robust standard errors in parentheses. Gini Coefficient: Measure of the deviation of the distribution of income among individuals or households within a country. The coefficient ranges from 0 to 100, with 0 representing perfect equality and 100 representing perfect inequality. Government Censorship Effort: The Government Censorship Effort variable measures in a continuous way the degree of government censorship of media and press with positive numbers whereas a rising value indicates lower censorship. Testing Policy: The Testing Policy variable takes values between 0-3 where 0 means no response and 3 means maximum stringent response of daily data collected over the COVID-19 period averaged to obtain a non-zero continuous measure rising with stronger testing activity. * Statistical significance at 10% level. ** Statistical significance at 5% level. *** Statistical significance at 1% level. For all variables natural logarithmic transformations are used in the regressions.

Figure 1. Democracy and infection rate (ln FH total and ln CP)

Figure 1. Democracy and infection rate (ln FH total and ln CP)

APPENDIX

Table A1. Countries and Codes

Countries	Codes	Countries	Codes	Countries	Codes
Afghanistan	AFG	Greece	GRC	Philippines	PHL
Albania	ALB	Guatemala	GTM	Poland	POL
Algeria	DZA	Guinea	GIN	Portugal	PRT
Argentina	ARG	Guyana*	GUY	Qatar	QAT
Australia	AUS	Haiti*	HTI	Romania	ROU
Austria	AUT	Honduras*	HND	Russia*	RUS
Azerbaijan	AZE	Hungary	HUN	Saudi Arabia	SAU
Bahrain	BHR	Iceland	ISL	Senegal	SEN
Bangladesh*	BGD	India	IND	Serbia	SRB
Barbados	BRB	Indonesia	IDN	Sierra Leone*	SLE
Belgium	BEL	Iran	IRN	Singapore	SGP
Benin	BEN	Iraq	IRQ	Slovakia	SVK
Bolivia	BOL	Ireland	IRL	Slovenia	SVN
Bosnia and Herzegovina	BIH	Israel	ISR	Somalia*	SOM
Botswana	BWA	Italy	ITA	South Africa*	ZAF
Brazil	BRA	Jamaica	JAM	South Sudan*	SSD
Bulgaria	BGR	Japan	JPN	Spain	ESP
Burkina Faso	BFA	Kazakhstan	KAZ	Sri Lanka	LKA
Burundi	BDI	Kenya	KEN	Sudan	SDN
Cameroon	CMR	Kuwait	KWT	Suriname	SUR
Cape Verde	CPV	Kyrgyzstan	KGZ	Sweden	SWE
Chad*	TCD	Latvia	LVA	Switzerland	CHE
Chile*	CHL	Lebanon*	LBN	Syria*	SYR
China	CHN	Luxembourg	LUX	Tajikistan	TJK
Colombia*	COL	Madagascar	MDG	Tanzania	TZA
Costa Rica*	CRI	Malawi	MWI	Thailand	THA
Croatia	HRV	Malaysia	MYS	Togo*	TGO
Cyprus	CYP	Mali	MLI	Trinidad and Tobago	TTO
Czech Republic	CZE	Mauritius	MUS	Tunisia	TUN
Denmark	DNK	Mexico	MEX	Turkey	TUR
Djibouti	DJI	Moldova	MDA	Uganda*	UGA
Dominican Republic	DOM	Nepal	NPL	Ukraine	UKR
Ecuador	ECU	Netherlands	NLD	United Arab Emirates	ARE
Egypt	EGY	New Zealand	NZL	United Kingdom	GBR
El Salvador	SLV	Niger*	NER	United States of America	USA
Eswatini*	SWZ	Nigeria*	NGA	Uruguay	URY
Ethiopia	ETH	Norway	NOR	Uzbekistan*	UZB
Fiji*	FJI	Oman	OMN	Venezuela*	VEN
Finland	FIN	Pakistan	PAK	Vietnam*	VNM
France	FRA	Panama	PAN	Yemen*	YEM
Georgia*	GEO	Papua New Guinea*	PNG	Zambia*	ZMB
Germany	DEU	Paraguay	PRY	Zimbabwe*	ZWE
Ghana	GHA	Peru	PER		

Note: Full sample of 128 countries is used in Panel A of Tables 2 and 3. Due to missing variables, the sample used in the statistical analysis of Panel B of Tables 2 and 3 reduces to 99 countries excluding those marked here with a "*".

Table A2. Data and Sources

Variables	Description	Sources
Infection Rate	Total number of Corona cases/Population	Johns Hopkins University Center for Systems Science and Engineering (2020)
Case Fatality Rate	Total number of Deaths/Total number of Corona cases	Johns Hopkins University Center for Systems Science and Engineering (2020)
FH Total	The total Political Rights and Civil Liberties scores are equally weighted with calculation.	Freedom House (2020). 'Freedom in the World 2020'
FH Political Rights	A country or territory's Freedom in the World status depends on its aggregate Political Rights score, on a scale of 0–40.	Freedom House (2020). 'Freedom in the World 2020'
FH Civil Liberties	A country or territory's Freedom in the World status depends on its aggregate Civil Liberties score, on a scale of 0–60.	Freedom House (2020). 'Freedom in the World 2020'
Polity Democracy Index	The Democracy index is an additive eleven-point scale (0-10). The operational indicator of democracy is derived from codings of the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive.	Polity V project: Political regime characteristics and transitions, 1800–2018. Marshall et al. (2020)
Electoral democracy index	V-Dem's electoral democracy index includes several indicators capturing equal access to power, political resources, liberties, and political inclusion, plus the degree of electoral democracy, or polyarchy, indicated by free and fair elections without coercion or violence in a competitive process. The index is coded on a 0–1 scale where a higher value denotes higher electoral democratic processes.	Coppedge et al. (2020); V-Dem
Gini Coefficient	Measure of the deviation of the distribution of income among individuals or households within a country from a perfectly equal distribution. A value of 0 represents absolute equality, a value of 100 absolute inequality.	Human Development Index, UNDP, (2019)
Tourism Revenue per capita	Tourism Revenue per capita (share in %GDP)	World Bank, WDI (2018)
GDP per capita	Gross domestic product per capita	World Bank, WDI (2018)
Temperature	Average (January-November) temperature for each country	World Bank, API (2020)
Government Censorship Effort	This variable has been linearly translated the measurement model point estimates back to the original ordinal scale of each variable (0-4) as an interval measure. Therefore, Government Censorship Effort variable measures in a continuous way the degree of government censorship of media and press with positive numbers whereas a rising value indicates lower censorship.	Coppedge et al. (2020); V-Dem
Population Share 65 and older	Population ages 65 and above as a percentage of the total population	World Bank, WDI (2018)
Doctors per 1,000 population	The population share of the number of medical doctors (per 1000)	World Health Organization, World Health Statistics (2020)
Beds per 1,000 population	The population share of the number of hospital beds (per 1000)	World Health Organization, World Health Statistics (2020)
Health Expenditures per capita	Current health expenditure (HDI) (Share in %GDP)	Human Development Index, UNDP, (2019)
Testing Policy	Testing policy is a sub-index of the Government Response Stringency Index developed by the Oxford COVID-19 government response tracker (Hale et al., 2020). The Testing Policy variable takes values between 0-3 where 0 means no response and 3 means maximum stringent response of daily data collected over the COVID-19 period averaged to obtain a non-zero continuous measure rising with stronger testing activity. Policies about testing for having an infection (PCR tests) not for policies about testing for immunity (antibody tests).	Hale, T. et al. 2020

Table A3. VIF Results

VIF Results for lnCP and lnCFR	(I)	(II)	(III)	(IV)	(V)
FH Total	5.91	-	-	-	-
FH Political Rights	-	4.82	-	-	-
FH Civil Liberties	-	-	5.54	-	-
Polity Democracy Index	-	-	-	3.51	-
Electoral Democracy Index	-	-	-	-	4.9
Gini coefficient	1.13	1.13	1.13	1.12	1.16
Tourism Revenue per capita	2	1.99	2	1.99	1.99
GDP per capita	3.88	3.81	3.95	3.81	3.75
Temperature	1.49	1.48	1.5	1.48	1.48
Government censorship effort	4.08	3.94	3.54	3.08	3.61
Population Share 65 and older	5.24	4.93	5.21	4.76	5.4
Doctors per 1,000 population	4.32	4.31	4.35	4.31	4.32
Beds per 1,000 population	2.96	3.04	2.95	2.95	2.98
Health Expenditures per capita	1.63	1.63	1.63	1.63	1.63
Testing Policy	1.42	1.41	1.4	1.43	1.39
Mean	3.1	2.95	3.02	2.73	2.97