The Truth and Myth of the Advantages of Authoritarian Countries to COVID-19[*]

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Abstract

The COVID-19 pandemic—the worst pandemic since the Spanish flu—has dramatically changed the world, with a significant number of people still suffering and dying from the disease. Some scholars argue that the pandemic has severely damaged democratic countries, mainly because they cannot intervene in their citizens' lives, as opposed to their authoritarian counterparts. This paper reports using cross-national data for 163 countries that authoritarian countries tend to have lower COVID-19 deaths than their democratic counterparts, but stringent intervention is not necessarily a key determinant. A higher number of tests is a more critical determinant of authoritarian countries' advantage. Testing seems to be a vital tool to reduce deaths. This study uses statistical evidence to demonstrate that authoritarian countries are likely to conduct more tests leading to lower death rates. The result implies that authoritarian states can strengthen citizens' support for their government through the COVID-19 pandemic.

Introduction

The number of COVID-19 deaths is reported to exceed one million across the world. Some argue that people, especially in democratic countries, face a tradeoff between freedom and health (Alsan et al., 2020; Norheim et al., 2020; Thomson and Ip, 2020). Recently published papers also reveal that democratic countries suffer from more COVID-19 deaths than authoritarian states (Cepaluni et al., 2020; Cheibub et al., 2020; Frey et al., 2020). Figure 1 supports these arguments to some extent. It shows the total number of COVID-19 deaths per 1 million (as of December 12, 2020) on the vertical axis, as reported by Worldometer COVID-19 Data, and the level of Polity2 on the horizontal axis from the Polity V Project (Marshall et al., 2020). This variable codes democracy levels from -10 (most autocratic) to 10 (most democratic). The correlation coefficient between the two variables is 0.3758, and it is statistically significant at the 1% level. In the case of an alternative measure of political regime, the relationship is more apparent. Figure 2 shows the relationship between the Multiplicative Polyarchy Index (MPI) from the Variety of Democracy (V-Dem) Project (Coppedge et al., 2020). This variable is created by multiplying the five core components of electoral democracy: freedom of association (v2x_frassoc), clean elections (v2x_frefair), freedom of expression (v2x_freexp), elected officials (v2x_elecoff), and suffrage (v2x_suffr) and codes democracy levels from low to high (0-1) (Coppedge et al., 2020). The correlation coefficient between these two

variables is 0.4816. These moderate, positive relationships suggest that the arguments

should be correct. However, are these relationships accurate? This article attempts to an-
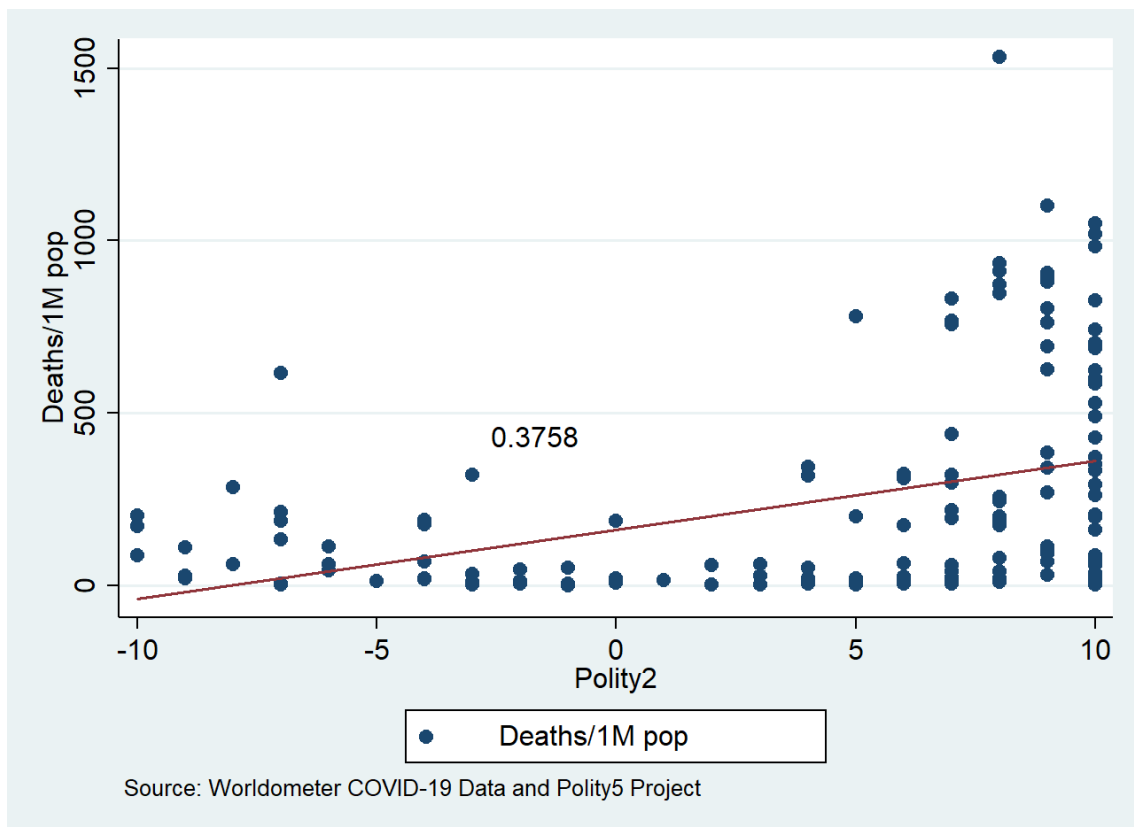
swer this question.

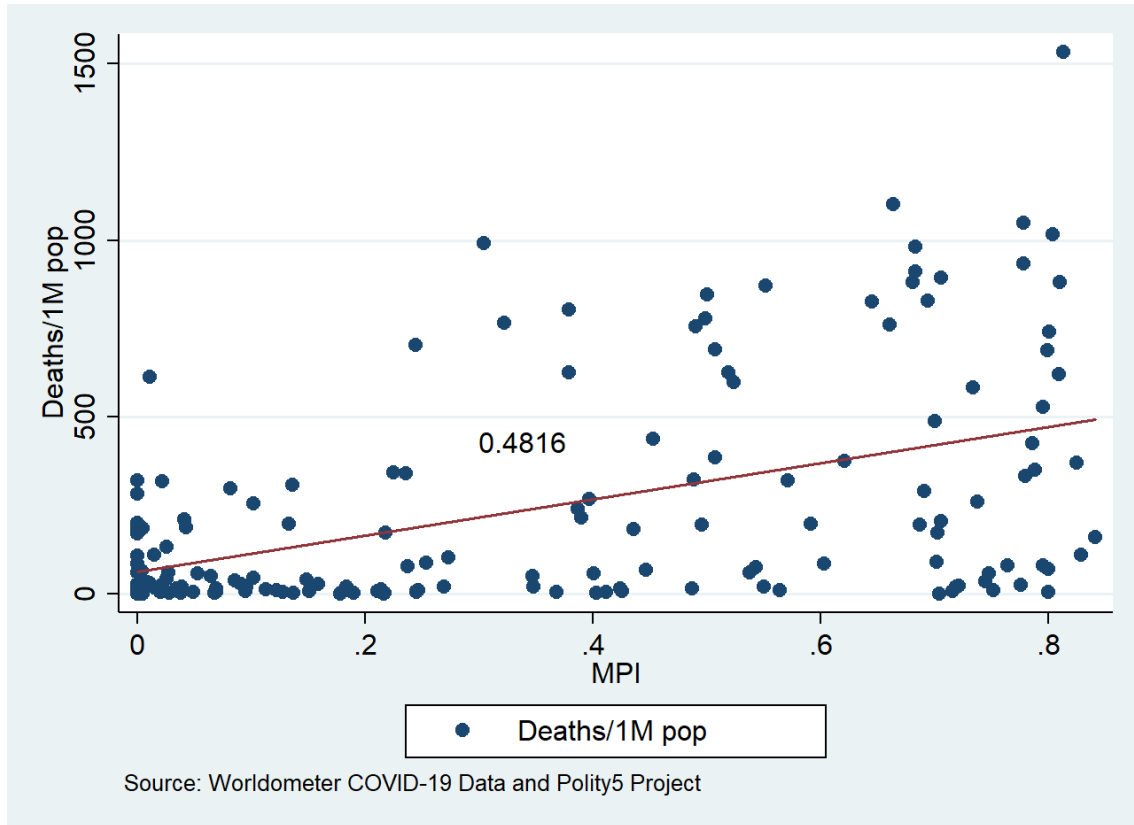Figure 1: Relationship between Polity2 and the Number of COVID-19 Deaths

Figure 2: Relationship between MPI and the Number of COVID-19 Deaths

Why can these arguments be questioned? For example, it has been reported that the Belarusian President, Alexander Lukashenko, underestimated the risk of COVID-19 spreading in the country (the country's Polity2 is -7). Thus, the president did not take any appropriate measures to prevent the pandemic's spread. As this case implies, authoritarian governments do not necessarily take decisive measures immediately. However, the country has one of the lowest death rates in Europe (Karáth, 2020). If authoritarian governments do not take strong measures to combat COVID-19, the argument that government intervention can reduce COVID-19 deaths by reducing confirmed cases is not persuasive.

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It is difficult to imagine that authoritarian states' medical systems can work better than those of democratic countries. Scholars have highlighted that people in democratic countries are likely to have better health than their authoritarian counterparts (Wang et al., 2019; Gerring et al., 2020; Kavanagh and Singh, 2020). Another possibility is that authoritarian countries manipulate death data. Kapoor et al. (2020) analyzed the moving average of the reported number of deaths, revealing that the data are unnaturally produced. Adiguzel et al. (2020) also pointed out a similar result to that of digit-based tests. This paper proposes another possible determinant that affects the advantages of authoritarian countries in combating COVID-19. It demonstrates that authoritarian countries tend to perform more tests to detect COVID-19 carriers, leading to lower death rates than their democratic counterparts.

1.   Determinants of COVID-19 Deaths

First, this paper analyzes the relationship between political regimes and COVID-19 deaths, as the graphs above suggest. The total number of deaths was obtained from Worldometer COVID-19 data. Daily data are available from another source. However, almost all other covariates necessary to be included in the analysis are yearly data, such as GDP per capita. This study constructs cross-sectional data on over 100 countries for

all statistical analyses below. Political regime variables are obtained from the Polity Project and Variety of Democracy (V-Dem) Project. Control variables such as GDP per capita, trade ratio to GDP, population density, and population ratio age 65 and above are taken from the World Bank. The latitude and days since the first confirmed case were also included in the analysis. The latest available yearly data were used. Negative binomial regression was applied to consider the dependent variable's skewed distribution. The independent variables (except for latitude and days since the first confirmed case) are logged to consider skewed distributions. The descriptive statistics are presented in Appendix 1. Table 1 shows the regression results for the determinants of the death cases that report the incidence rate ratio (IRR) instead of coefficients.

Model 1 analyzes the relationship between Polity2 from the Polity Project and death cases. Model 2 explores the relationship between MPI from the V-Dem Project and death cases. These results confirm the association in Figures 1 and 2 above, even after controlling for various factors; authoritarian countries tend to have lower COVID-19 deaths.

Table 1: Determinants of Death Cases

VARIABLES	(1) NB Death Cases per 1M	(2) NB Death Cases per 1M
Polity2	1.031**	
	(0.0126)	
MPI		1.753**
		(0.4500)
GDP per capita (log)	0.843**	0.773***
	(0.0596)	(0.0545)
Trade (log)	0.730**	0.8190
	(0.0996)	(0.1030)
Population Density (log)	0.895***	0.922**
	(0.0385)	(0.0374)
Age 65 and above (log)	1.239*	1.365***
	(0.1610)	(0.1570)
Latitude	1.0020	0.9990
	(0.0030)	(0.0027)
Days since the first confirmed case	1.0020	1.0040
	(0.0042)	(0.0040)
Confirmed cases per 1M (log)	2.689***	2.692***
	(0.1190)	(0.1140)
Constant	0.195	0.108*
	(0.2530)	(0.1300)
Observations	134	138

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Cepaluni et al. (2020) also reported a statistical analysis in which the political regime is positively correlated with COVID-19 deaths. Their research included confirmed cases as a control variable, which were also positively associated with COVID-19 deaths, as expected. As it is puzzling that the political regime variable is statistically significant, even after controlling for confirmed cases, this leads to questioning of a common explanation for the advantages of authoritarian countries. If authoritarian governments can reduce death cases by stringent intervention, the total confirmed cases must be reduced first;

however, the statistical analysis shows a significant effect of political regime on deaths, even after controlling for confirmed cases. It is true that the coefficients are smaller when including confirmed cases as control; however, MPI in model 4 is more significant than in model 3. This indicates that political regime affects COVID-19 death through another factor than confirmed cases.

2. Determinants of Non-Pharmaceutical Interventions

Next, this study considers the determinants of non-pharmaceutical interventions (NPIs) —such as lockdowns—by utilizing data from the University of Oxford (Hale et al., 2020), to test the different levels of intervention by political regimes. If authoritarian governments can reduce COVID-19 deaths by reducing the number of confirmed cases, it must be through stringent interventions in peoples' lives. However, this inference is doubtful based on the above analyses. Whether authoritarian governments more forcefully intervene in peoples' lives than their democratic counterparts, as is often said, was tested.

The dependent variable was NPIs, operationalized by the Stringent Index (Hale et al. 2020). This variable records the daily change of a government's response to the pandemic. The Stringent Index is averaged by each country since the first case was confirmed until December 11, 2020. Ordinary least squares (OLS) was applied for this analysis.

Table 2 shows the regression results for the determinants of NPIs. Model 3 is the result of the relationship between Polity2 and the Stringent Index. The result shows that Polity2 is not statistically significant. Model 4 includes the interaction term between Polity2 and confirmed cases to capture the effects of confirmed cases on government response, conditioned by regime type. The interaction term indicates that democratic governments are likely to respond to COVID-19 more stringently than their authoritarian counterparts when confirmed cases increase. Figure 3, calculated from model 4, reveals the average marginal effects of the confirmed cases conditioned by the political regime. This figure clearly shows that democratic countries tend to take stronger measures to combat COVID-19. This result is in contrast to Cepaluni et al. (2020), Cheibub et al. (2020), and Frey et al. (2020).

Model 5 analyzes the relationship between the MPI and the Stringent Index. This model shows almost the same results as model 3. Model 6 introduces the interaction term between the MPI and confirmed cases. However, in this model, the interaction term is not statistically significant.

Table 2: Determinants of the Stringent Index

VARIABLES	(3) OLS Average SI	(4) OLS Average SI	(5) OLS Average SI	(6) OLS Average SI
Polity2	-0.2880	-2.341**		
	(0.3290)	(1.1220)		
Polity2×Cases		0.252*		
		(0.1400)		
MPI			-9.24	-18.97
			(6.02)	(25.60)
MPI×Cases				1.086
				(2.763)
Confirmed cases per 1M (log)	4.385***	3.759***	4.113***	3.825***
	(0.9090)	(1.0180)	(0.8440)	(1.3240)
GDP per capita (log)	-1.4140	-0.5350	-0.5030	-0.4060
	(1.2690)	(1.4140)	(1.1050)	(1.1520)
Trade (log)	-2.4810	-4.0530	-2.7000	-3.0060
	(3.2410)	(3.4430)	(2.9500)	(3.3110)
Population (log)	1.5270	1.0460	1.3790	1.2610
	(1.0700)	(1.1130)	(0.9210)	(1.0090)
Population Density (log)	-0.4600	-0.3260	-0.1080	-0.0915
	(0.8750)	(0.9430)	(0.8060)	(0.8380)
Age 65 and above (log)	-2.9630	-5.8500	-2.3700	-2.4970
	(3.1160)	(3.5700)	(2.5040)	(2.5020)
Latitude	-0.112**	-0.104**	-0.122***	-0.124***
	(0.0446)	(0.0440)	(0.0425)	(0.0427)
Days since the first confirmed case	-0.0518	-0.0672	-0.0535	-0.0542
	(0.0668)	(0.0692)	(0.0666)	(0.0673)
Constant	48.38	68.89*	46.16	51.41
	(33.59)	(37.05)	(29.83)	(37.29)
Observations	137	137	142	142
R-squared	0.2870	0.3210	0.2990	0.300

Robust standard errors in parentheses
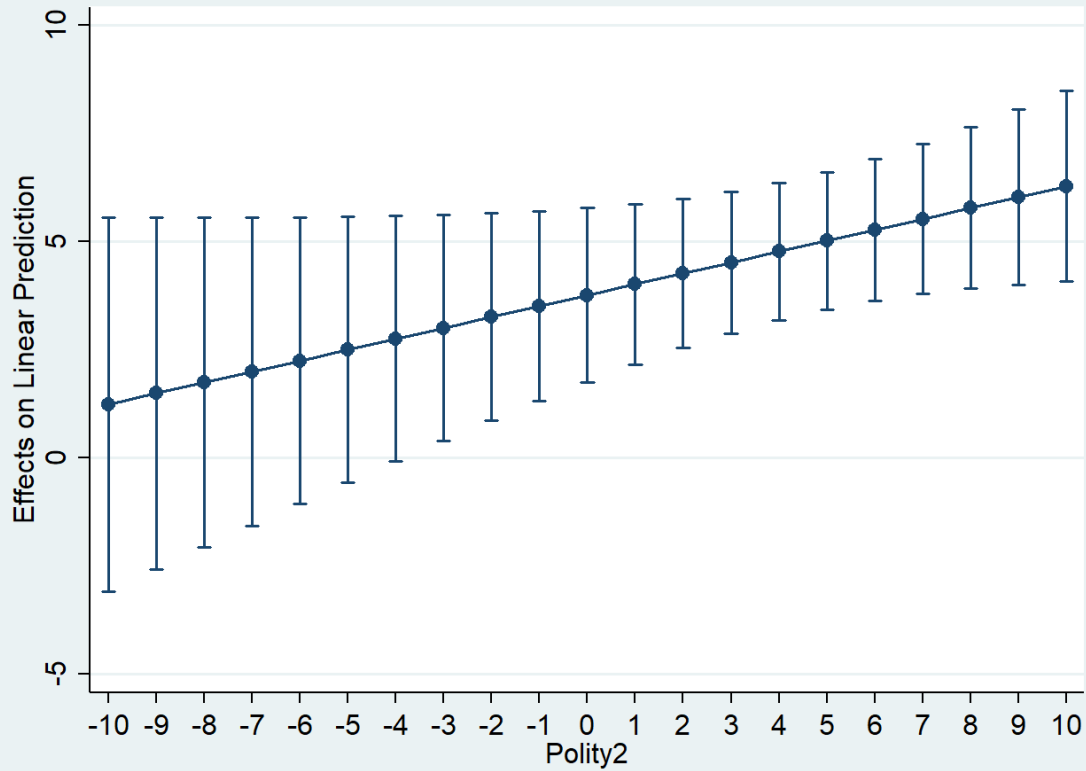*** p<0.01, ** p<0.05, * p<0.1

Figure 3: Average Marginal Effects of Confirmed Cases per 1M on SI with 95% CIs

These results suggest that the number of confirmed cases in each country affects government response to COVID-19 as expected, regardless of the political regime. These models imply that authoritarian governments do not necessarily intervene in civil society more than democratic states. Only when considering the interaction between Polity2 and confirmed cases does the political regime affect government response. However, model 4 and Figure 3 suggest that the tendency is counter to that of previous literature, although this analysis does not consider how swiftly the government responds, which may make a difference (Cepaluni et al., 2020; Cheibub et al., 2020; Frey et al., 2020). In short, strong government measures should not be regarded as an essential factor for authoritarian countries' advantage. What then is the reason behind the advantage of these countries? Next, this article explores the reasons for this.

3. Number of tests

Liang et al. (2020) reported that COVID-19 mortality is negatively correlated with the number of tests in 101 countries. On the other hand, Cepaluni et al. (2020) also included testing as a control variable and reported that it is positively associated with COVID-19 deaths, not negatively. However, their analysis only included 49 countries. The samples in their study are at least 50 countries fewer than those in Liang et al.'s (2020) and this

article. The number of tests obtained from Worldometer COVID-19 data is included in the next regression models, considering these contradictory reports. Table 3 shows the results. Models 7 for Polity 2 and 8 for MPI show that two political regime variables are no longer statistically significant after controlling for test numbers at the conventional level. These models are different from models 1 and 2 in Table 1 only in the inclusion of testing as a control. The number of tests in both models is statistically significant, and their signs are negative. These results support Liang et al. (2020). GDP per capita is also no longer significant. These results are not affected by the difference in the sample size.

These results suggest that much of the advantages of authoritarian countries can be explained by the number of tests. Authoritarian governments do not necessarily take stringent measures to combat COVID-19 than their democratic counterparts, as the results in Table 2 suggest, but may do more testing, which leads to a reduction in mortality rate. Rich countries are likely to have fewer death cases in models 1 and 2 in Table1. However, this advantage is also lost by the inclusion of the number of tests. Next, the determinants of testing are analyzed.

Table 3: Determinants of deaths with test numbers controlled

VARIABLES	(7) NB Death Cases per 1M	(8) NB Death Cases per 1M
Polity2	1.0160	
	(0.0114)	
MPI		1.2860
		(0.3100)
GDP per capita (log)	1.0750	1.0270
	(0.0797)	(0.0819)
Trade (log)	0.796*	0.8840
	(0.0999)	(0.1030)
Population Density (log)	0.920**	0.9530
	(0.0349)	(0.0343)
Age 65 and above (log)	1.365***	1.496***
	(0.1560)	(0.1530)
Latitude	1.0000	0.9980
	(0.0026)	(0.0024)
Days since the first confirmed case	1.0030	1.0050
	(0.0037)	(0.0035)
Confirmed cases per 1M (log)	3.161***	3.098***
	(0.1530)	(0.1390)
Tests per 1M (log)	0.661***	0.665***
	(0.0471)	(0.0475)
Constant	0.207	0.109**
	(0.2330)	(0.1150)
Observations	127	131

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Determinants of the number of tests

VARIABLES	(9) NB Tests per 1M	(10) NB Tests per 1M
Polity2	0.977*	
	(0.0125)	
MPI		0.620*
		(0.1770)
GDP per capita (log)	1.880***	2.015***
	(0.1330)	(0.1380)
Trade (log)	1.374**	1.318**
	(0.2000)	(0.1790)
Population Density (log)	0.9800	0.9870
	(0.0416)	(0.0387)
Age 65 and above (log)	1.0910	1.0620
	(0.1370)	(0.1250)
Latitude	1.0030	1.0040
	(0.0030)	(0.0028)
Days since the first confirmed case	1.0040	1.0030
	(0.0040)	(0.0039)
Confirmed cases per 1M (log)	1.218***	1.200***
	(0.0491)	(0.0458)
Constant	6.881	7.130*
	(8.4700)	(8.2140)
Observations	130	135

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 analyzes the determinants of the number of tests. Model 9 for polity2 and Model 10 for MPI reveal a negative association between political regime and testing at 10 % level. These results suggest that democratic countries tend to perform fewer tests to detect COVID-19 carriers, although Petersen (2020) reported that most authoritarian countries conduct fewer tests. This difference between political regimes may result in an advantage for authoritarian countries. However, this factor implies a different image of the advantages of authoritarian countries. It is often supposed that

authoritarian governments intervene in citizens' lives and reduce confirmed cases by

limiting their liberty, thus contributing to lower death rates. This study demonstrates an-

other scenario where authoritarian countries cope with COVID-19. Rich countries also

tend to conduct more tests than poor countries, contributing to fewer deaths.

4.   Data Manipulation

This study considers the effects of data manipulation on the advantages of au-

thoritarian countries also. It may be possible that some authoritarian governments ma-

nipulate death data to overstate their successes, which may affect the results. Some stud-

ies suggest this possibility using statistical methods (Adiguzel et al., 2020; Kapoor et

al., 2020). This article utilizes the HRV Transparency Index (Hollyer et al. 2014) as an

additional control to capture data credibility. The HRV Transparency Project creates this

index based on the WDI data. The project regards the missing values in the WDI data as

the government's unwillingness to disclose its country's internal affairs. This index can

be a proxy for data transparency.

Table 5 shows the results considering the index as an additional control. Mod-

els 11 and 14 are the results including the index in models 1 and 2 in Table 1. The index

in these models is statistically significant. Polity2 is no longer significant in model 11.

This result seems to suggest that the HRV index is more important to COVID-19 deaths than Poliy2. This may imply data manipulation in authoritarian states. However, when including test numbers, the index is no longer significant (models 12 and 15). It is also probable that the sample size of the variables may affect the results. Models 13 and 16, in which the data missing countries on the HRV index and test numbers are dropped from models 11 and 14, confirm this possibility. These results imply that data manipulation may affect authoritarian countries' advantages, but testing should be more crucial.

Table 5: Analyzing Manipulation

VARIABLES	(11) NB Death Cases per 1M	(12) NB Death Cases per 1M	(13) NB Death Cases per 1M	(14) NB Death Cases per 1M	(15) NB Death Cases per 1M	(16) NB Death Cases per 1M
Polity2	1.0120	1.0060	1.0180			
	(0.0147)	(0.0140)	(0.0150)			
MPI				1.990**	1.679*	2.113**
				(0.5920)	(0.4870)	(0.6500)
Transparency Index	1.133**	1.0800		1.130**	1.081*	
	(0.0581)	(0.0510)		(0.0558)	(0.0498)	
GDP per capita (log)	0.793***	1.0080	0.785***	0.754***	0.9560	0.737***
	(0.0633)	(0.0905)	(0.0651)	(0.0586)	(0.0875)	(0.0599)
Trade (log)	0.7970	0.8400	0.8130	0.7960	0.8280	0.8200
	(0.1190)	(0.1200)	(0.1240)	(0.1140)	(0.1140)	(0.1200)
Population Density (log)	0.845***	0.882***	0.865***	0.837***	0.874***	0.856***
	(0.0401)	(0.0394)	(0.0425)	(0.0387)	(0.0384)	(0.0412)
Age 65 and above (log)	1.2030	1.343**	1.402**	1.0930	1.2200	1.302*
	(0.1940)	(0.1980)	(0.2140)	(0.1650)	(0.1730)	(0.1810)
Latitude	1.0020	1.0000	1.0040	1.0040	1.0020	1.0050
	(0.0031)	(0.0029)	(0.0032)	(0.0030)	(0.0028)	(0.0031)
Days since the first confirmed case	0.9990	1.0020	1.0000	1.0000	1.0020	1.0000
	(0.0043)	(0.0039)	(0.0045)	(0.0042)	(0.0038)	(0.0044)
Confirmed cases per 1M (log)	2.688***	3.089***	2.806***	2.706***	3.089***	2.830***
	(0.1330)	(0.1720)	(0.1330)	(0.1310)	(0.1700)	(0.1310)
Tests per 1M (log)		0.695***			0.712***	
		(0.0562)			(0.0572)	
Constant	0.624	0.376	0.271	0.827	0.496	0.378
	(0.878)	(0.482)	(0.384)	(1.123)	(0.623)	(0.518)
Observations	111	104	111	111	104	111

Standard errors in parentheses

*** p < 0.01, ** p < 0.05, * p < 0.1

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Conclusion

A very significant number of people have suffered and died of COVID-19. Some scholars argue that the pandemic has severely damaged democratic countries, mainly because democratic countries cannot intervene in citizens' lives in the same way authoritarian ones can. Simple regression models demonstrate that authoritarian countries tend to have fewer COVID-19 deaths. However, this study suggests that authoritarian governments do not necessarily take more stringent measures to combat COVID-19 than their democratic counterparts. Rather, this paper points out that the critical determinant of the advantage of authoritarian countries is the number of tests. This result implies that the tradeoff between freedom and health is superficial and misleading. We may not have to give up freedom for health. Nevertheless, authoritarian states can strengthen citizens' support for their governments through the COVID-19 pandemic by conducting large numbers of tests and lowering casualties.

This study has some limitations. For example, Cepaluni et al. (2020) and Cheibub et al. (2020) utilize daily data, making a more nuanced analysis possible to capture daily fluctuations in the prevalence of COVID-19, as well as government interventions. However, almost all other variables included in the analysis are yearly data,

and it is not easy to determine which variables are more appropriate for analyzing the

phenomenon.

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Appendix 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Confirmed Deaths per 1M pop	163	245.3796	318.6209	0	1532
Confirmed Cases 1M pop	171	12908.7	15482	3	64640
Number of Tests 1M pop	157	214592.8	327074	578	2371264
Confirmed Cases (log)	171	10.4941	2.6323	0	16.6065
Number of Tests (log)	157	13.5908	2.1057	8	19
Polity2	166	4.0964	6.1911	-10	10
MPI	178	0.3386	0.2918	0	1
Stringent Index	164	60.3673	14.3417	13.8180	91.5
Transparency Index	125	0.9440	1.9886	-6.6758	5.6357
GDP per capita (log)	164	8.6412	1.4651	5.3509	11.6146
Trade Ratio to GDP (log)	154	4.3665	0.5342	3.1177	5.9587
Population (log)	171	16.1529	1.6777	11.4800	21.0545
Population Density (log)	168	4.2969	1.4306	0.7132	8.9813
Age 65 and above Ratio (log)	170	1.8980	0.7682	0.0816	3.3170