Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Democracy and COVID-19 outcomes

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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.

1. Introduction

Spread and impact of COVID-19 are quite diverse across countries affected by the performance of political and economic institutions causing people to question the ability of liberal democracies to protect their citizens. Autocratic governments may act faster, stronger and mobilize resources effectively without considering electoral consequences. Citizens may also follow political instructions in autocratic countries more closely. However, autocratic regimes may suffer from a lack of transparency and over-stringent responses. For example, censoring facts about the pandemic may lead people to become incautious. Therefore, control over media and disinformation can make countries more vulnerable. Furthermore, they can also cause serious response problems due to corruption, a lack of a developed civil society, and inequality in accessing resources.

Fears about democratic institutions causing problems for public health in the COVID-19 pandemic have been underexplored (Baccini et al., 2021; Cepaluni et al., 2020; Karabulut et al., 2021; Cukierman, 2021), but previous literature suggests 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). Rich countries have also higher health expenditures (Hall and Jones, 2007; Baltagi et al., 2017). Since democratic countries are more open to the world, they are expected to be more vulnerable to a pandemic. Zimmermann et al. (2020) find that globalization levels of countries are positively related to the spread of COVID-19, both in speed and scale.

2. Data and methodology

Our measures of democracy are: 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

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Table 1
Democracy and Infection Rate (columns I–V); Democracy and Case Fatality Rate (columns VI–X).

PANEL A: Baseline estimates										
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
FH Total	1.027*** (0.212)	–	–	–	–	−0.04 (0.108)	–	–	–	–
FH Political Rights	–	0.845*** (0.179)	–	–	–	–	−0.008 (0.094)	–	–	–
FH Civil Liberties	–	–	1.259*** (0.251)	–	–	–	–	−0.045 (0.129)	–	–
Polity Democracy Index	–	–	–	0.749*** (0.23)	–	–	–	–	0.055 (0.105)	–
Electoral Democracy Index	–	–	–	–	1.082*** (0.364)	–	–	–	–	0.089 (0.147)
R^2	0.155	0.161	0.155	0.101	0.118	0.001	0.001	0.001	0.003	0.005
PANEL B: Estimates with control variables										
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
FH Total	1.233*** (0.468)	–	–	–	–	−0.822*** (0.211)	–	–	–	–
FH Political Rights	–	1.286*** (0.382)	–	–	–	–	−0.486*** (0.184)	–	–	–
FH Civil Liberties	–	–	0.717 (0.432)	–	–	–	–	−0.904*** (0.226)	–	–
Polity Democracy Index	–	–	–	0.639** (0.284)	–	–	–	–	−0.428*** (0.159)	–
Electoral Democracy Index	–	–	–	–	1.175** (0.558)	–	–	–	–	−0.498** (0.204)
Gini Coefficient	−0.076 (0.492)	0.037 (0.471)	−0.169 (0.501)	−0.253 (0.518)	0.091 (0.557)	0.041 (0.292)	0.051 (0.303)	0.048 (0.284)	0.159 (0.285)	0.015 (0.304)
Tourism Revenue per capita	0.871 (3.42)	0.808 (3.292)	1.173 (3.511)	1.293 (3.518)	1.307 (3.328)	0.75 (2.475)	0.586 (2.473)	0.755 (2.461)	0.469 (2.425)	0.407 (2.48)
GDP per capita	0.015 (0.145)	0.01 (0.139)	0.039 (0.15)	0.14 (0.149)	0.104 (0.151)	−0.194* (0.107)	−0.214* (0.109)	−0.179* (0.106)	−0.277** (0.112)	−0.251** (0.111)
Temperature	−0.361** (0.165)	−0.357** (0.156)	−0.350** (0.168)	−0.344** (0.162)	−0.346** (0.164)	0.012 (0.071)	−0.001 (0.074)	0.022 (0.071)	0.002 (0.076)	−0.003 (0.073)
Government Censorship Effort	−0.739 (0.707)	−1.523** (0.68)	0.099 (0.853)	−0.228 (0.837)	−0.699 (0.797)	1.445*** (0.439)	1.277** (0.486)	1.345*** (0.453)	1.108** (0.494)	1.037** (0.458)
Population Share 65 and older	−1.241*** (0.462)	−1.327*** (0.397)	−1.062** (0.445)	−1.080** (0.434)	−1.308*** (0.496)	0.647** (0.246)	0.569** (0.232)	0.647** (0.246)	0.541** (0.25)	0.583** (0.249)
Doctors per 1000 population	1.048*** (0.207)	1.014*** (0.193)	1.052*** (0.211)	1.022*** (0.204)	1.049*** (0.205)	0.164 (0.125)	0.183 (0.13)	0.147 (0.123)	0.182 (0.123)	0.169 (0.129)
Beds per 1000 population	0.009 (0.203)	0.128 (0.185)	−0.035 (0.206)	−0.042 (0.216)	0.034 (0.197)	−0.301** (0.118)	−0.336** (0.128)	−0.266** (0.11)	−0.267** (0.112)	−0.303** (0.121)
Health Expenditures per capita	0.427 (0.378)	0.522 (0.341)	0.387 (0.396)	0.353 (0.374)	0.354 (0.361)	0.261 (0.255)	0.232 (0.263)	0.296 (0.247)	0.311 (0.249)	0.298 (0.255)
Testing Policy	0.713* (0.365)	0.825** (0.328)	0.598 (0.397)	0.706* (0.396)	0.687* (0.37)	−0.567** (0.241)	−0.544** (0.252)	−0.554** (0.241)	−0.563** (0.248)	−0.502** (0.252)
R^2	0.574	0.615	0.552	0.566	0.579	0.332	0.316	0.335	0.317	0.297

Notes: Robust standard errors in parentheses. Number of countries: 128 (Panel A); 99 (Panel B). 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 level 10% (*), 5% (**), and 1% (***). For all variables (numbers were all positive) natural logarithmic transformations are used in the regressions.

Score (*FH Total*), the Polity's Democracy Index (*Polity's Democracy Index*), and Electoral Democracy Index of the V-Dem Institute. 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, hospital beds per 1000 population, a Government Censorship Effort Index and a measure of

government testing policy. The Online Appendix contains detailed explanations of data, sources and descriptive analyses.

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*** (Kelly and Cowling, 2013) 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 an infection. Infections and mortality are reported with measurement errors, which are expected to vary across countries.

We use 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 and for all regressors. Since the data have a non-linear structure, we analyze the variables as ln CP and ln CFR as:

$$lny_i = \mu + \alpha lnR_i + \gamma lnX_i + \varepsilon_i \quad (1)$$

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.

3. Results

In the Table 1, Panel A reports the baseline regressions including only the democracy indicators for the full sample (N = 128), and Panel B presents the estimates with all control variables (N = 99).

The baseline equations show that democracy is positively related to infections at the 1% significance level. When control variables are added, coefficients of the democracy variables continue to be statistically significant at the 1% level except for column 3 where the Civil Liberties Index is used. In panel B, both 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) 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 are quite different. There is a negative relationship between all democracy measures and CFR. All coefficients are statistically significant at the 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.

Beds per 1000 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).

Results remain robust (see Online Appendix Table A5) for more detailed controls for the age distribution of the populations (estimates are not significant) and the inclusion of continent dummies with the exceptions of temperature (no longer affecting infection rates) and older age (somewhat weaker size and significance without changing conclusions).

4. Conclusion

Democratic countries may react slowly in the short term but place a higher value on human life and health.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Substantially revised and shortened version of CEPR Discussion Paper Karabulut et al. (2021). The Online Appendix contains a detailed description and documentation of data, their sources as well as descriptive and robustness analysis. We wish to thank the Editor, an anonymous referee and Staffan I. Lindberg for helpful comments and suggestions.

Appendix A. Supplementary material

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.econlet.2021.109840.

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