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Keywords

COVID-19, Democracy, Fiscal Policy, Pandemic

JEL Classification

D72, H12, H30, H59

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Democracy and Fiscal-Policy Responses to COVID-19*

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In this paper, we investigate the relationship between the level of democracy and fiscal-policy response to the economic crisis induced by the COVID-19 pandemic. We use a novel cross-country dataset of fiscal-policy responses with time variation. Our results suggest that more democratic countries adopted substantially larger fiscal-policy packages (in % GDP) and the gap regarding the size of packages between more democratic and less democratic countries widened over time. Moreover, our regressions with different measures of democracy as well as instrumental variable estimations support a robust and causal relationship between a higher level of democracy and a larger fiscal-package size.

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1 Introduction

The coronavirus disease (COVID-19) outbreak emerged in Wuhan, China, in December 2019 and persisted globally. The outbreak was declared to be a pandemic by the World Health Organization (WHO) on March 11, 2020, and spread globally causing more than 182 million cases and about 4 million deaths as of the end of June 2021 (WHO, June 29, 2021).

The COVID-19 pandemic has direct adverse effects on the economy. Infected workers who are isolated or hospitalized cannot join the workforce. Furthermore, uncertainty about the progress of the outbreak leads citizens to withdraw from economic activity. In addition to these direct effects, the non-pharmaceutical measures adopted by governments (i.e., travel bans, city lockdowns) to slow down the spread of the virus have contributed to economic inactivity by limiting human mobility and business operations (Atkeson, 2020; Eichenbaum et al., 2020). Consequently, the COVID-19 pandemic and associated public health controls have disrupted supply chains, halted economic activity in many sectors, and led to mass unemployment. Governments have adopted economic stimulus packages to mitigate these negative consequences and sustain public welfare (Gourinchas, 2020). These packages usually consist of monetary, fiscal, and exchange rate policies and show wide variation across countries concerning their size and scope.

In this study, we investigate whether countries' level of democracy has any effect on the fiscal policies adopted by governments in response to COVID-19. Given the current state of the literature, this is an important question to ask and worth investigating. On the one hand, one would expect democratic states to be more generous in introducing economic-stimulus packages in the case of a pandemic. Previous studies have shown that democratic states with accountable institutions respond more aggressively to disasters and crises (Noy and Nualsri, 2011). Having democratic institutions strengthens incentives for governments to be responsive (Besley and Burgess, 2002), and consequently, these governments become more effective in reaching out to people in need (Acemoglu and Robinson, 2006). In addition, non-democratic or less democratic countries are usually run by a small group of political elites who provide wealth to themselves rather than the larger population; thus, these countries tend to provide less public goods (Olson, 1993). On the other hand, one might expect non-democratic governments to introduce larger economic packages in the case of a pandemic. Since adverse social events with catastrophic consequences for public welfare may lead to unrest and resistance, ruling elite in non-democratic states may engage in economic concessions to prevent social and political unrest (Acemoglu and Robinson, 2001). The COVID-19 pandemic and associated economic responses provide a setting where we can investigate whether countries' democracy level has any effect on the extent of their policy responses to an exogenous negative event. Although the

effect of countries' democracy level on public health measures against COVID-19 has been discussed elsewhere (Frey et al., 2020), no research has yet looked at democracy's effect on fiscal measures. Using a novel cross-country dataset consisting of countries' fiscal policies during the pandemic, we examine whether democratic countries introduced larger stimulus packages and how their response evolved.

Overall, our results suggest that more democratic countries adopted a substantially larger fiscal-policy package expressed in % GDP. Additionally, the gap between democratic and autocratic countries' fiscal response increased over time. Our regressions with different measures of democracy, including three different measures from the Polity5 Project and the democratic-accountability index of the International Country Risk Guide, as well as instrumental-variable estimations also show that this relationship is robust and causal.

Our paper also connects to the literature on the cyclical nature of fiscal policy, which includes, for example, Lane and Tornell (1998), Talvi and Vegh (2005), Alesina et al. (2008), Cicek and Elgin (2011), and Vegh and Vuletin (2014). The general finding in this literature is that whether fiscal policy is countercyclical (i.e. being contractionary in booms and expansionary in busts) or not as well as the degree of countercyclicality varies significantly across countries. Remarkably, the literature identified several factors, including some political ones, such as democracy and control for corruption as in Alesina et al. (2008) that prevent governments to follow countercyclical policy. Our paper also contributes to this literature as it identifies a political factor that affects the (in)ability of governments to design and apply an expansionary policy during the downturn brought by the pandemic.

Moreover, our paper is related to the literature that analyzes the effects of democracy on government spending. For example, Plumber and Martin (2003) argue that level of democracy has a U-shaped relation with the government share of GDP. On the other hand, using cross-country data, Mulligan et al. (2004) do not find any relationship between the level of democracy and overall government spending or tax revenue. Similarly, using panel data from developing countries, Profeta et al. (2013) show that democracy does not have a robust relationship with government spending and tax revenues. However, contrary to our paper, these papers do not focus on the periods of natural disasters, health crises, or economic downturns, *per se*.

The rest of the paper is organized as follows: The following section includes a description of our data sources and our estimation methodology. Section 3 presents regression results. Finally, Section 4 provides some concluding remarks.

2 Data and Methodology

2.1 Data Sources

Data on countries' fiscal policies are retrieved from the COVID-19 Economic Stimulus Index (CESI) constructed by Elgin et al. (2020). This panel dataset, which has both a cross-country and time-series dimension, includes total fiscal measures (coded as a percentage of GDP) adopted by 168 countries throughout the pandemic. The first version of the dataset was made public on March 25th, 2020. The dataset has been regularly updated, and the final version, Version-14, was released on November 20th, 2020.¹

To measure the degree of democratization in different countries, we use several different measures to improve the robustness of our findings. Our benchmark measure is the Polity indicator from the Polity5 Project which is also employed, for example, by Acemoglu et al. (2019). The main purpose behind this index is to place autocratic and democratic characteristics on a single dimension, seeing them as alternatives or opposites. This indicator is constructed on a 21 point scale, ranging from -10 (most autocratic and least democratic) to 10 (least autocratic and most democratic). Moreover, to establish robust results, we use three alternative measures of democracy. These are the democratic-accountability index from the International Country Risk Guide (ICRG), the institutionalized-democracy indicator of Polity5 and yet another one from the same source, the executive-constraints indicator. The democratic-accountability index is a measure of how responsive government is to its people and ranges from 1 (least democratic) to 6 (most democratic). Institutionalized democracy, employed by Mulligan et al. (2004), measures the democratic characteristics of a country seeing autocratic and democratic elements to be able to exist together in a regime, as opposed to the Polity index. It ranges from 0 (weakest democracy) to 10 (strongest democracy). The executive-constraints measure of Polity5, which is employed by Besley et al. (2016), focuses on a specific aspect of democracies—namely, the level of constraints on the chief executive's decision-making power. It ranges from 1 (unlimited authority) to 7 (executive parity or subordination). While under unlimited authority there is no constraints on the executive's actions, under executive parity accountability groups have an authority on most activities at least as much as the executive. As expected all four measures are highly correlated with each other ranging from 0.80 to 0.97. In our analysis, we use all democracy measures normalizing between 0 and 1.

Following Elgin et al. (2020) we control for several variables that might be associated with the size of the fiscal packages. Since richer countries generally adopted larger

¹Dates for the remaining versions are as follows: Version-2 April 9th, Version-3 April 16th, Version-4 April 23rd, Version-5 May 7th, Version-6 May 21st, Version-7 June 4th, Version-8 June 18th, Version-9 July 1st, Version-10 July 16th, Version -1 August 14th, Version-12 September 10th, and Version-13 October 8th.

packages, we control for real GDP per capita. Moreover, as for the public-health and pandemic-related variables, we control for the infection rate and death rate, defined by the ratio of total COVID-19 cases and deaths to population, respectively, as well as the median age and population density. We also control for total health expenditures (as % of GDP) since it can measure how good the country's health system or how healthy the people are. As for economic indicators, we control government expenditures, tax revenues, and public debt, all measured as % of GDP, as well as Fitch country credit ratings. We control for these measures because governments with high spending prior to the pandemic may have a tendency to allocate larger resources to support the economy, and countries with a high tax revenue may have larger resources. On the one hand, for the public debt, countries with higher debt levels may avoid borrowing more and so allocate a lower amount of fiscal resources for the economy. On the other hand, they may be borrowing more easily and reach a larger amount of resources. Similarly, countries with a high credit rating can borrow at a low cost and reach credits more easily. So, they can allocate larger resources for the economy. We also include dummies for six different country groups, namely OECD-EU, Latin American and Caribbean, MENA, Sub-Saharan Africa, post-socialist transition economies, and Australia and Asia, among our regressors. For governments' public-health policies, we use measures developed by Hale et al. (2020) or the Stringency Index built by the same authors using these measures.²

Because several independent variables, particularly democracy level and GDP per capita might be endogenous, in addition to the OLS estimations, we adopt an instrumental variable (IV) estimation strategy. To this end, inspired by Barro (1996), we use the five-year lagged democracy level and total primary-school achievement, taken from the World Bank, as instruments for the democracy level. We assume that the democracy level in a country is affected by its lagged value and the population's total primary-school achievement but these variables do not directly affect fiscal-policy response.³ As instruments for GDP per capita, we use standard variables in the literature, namely legal regime type (see Estrin and Mickiewicz, 2012).

Table 1 presents descriptive summary statistics of all variables used in the empirical analysis. For all variables, we use the most recent available data from corresponding sources.

In Figure 1, categorizing countries into four groups, we first look at the data to understand how the fiscal stimulus index has evolved for different democracy levels. As seen

²Specifically, the public-health policies that we use are school closing, workplace closing, canceling of public events, restrictions on gatherings, closing of public transport, stay at home requirements, restrictions on internal movement, international travel controls, public information campaigns, testing policy, contact tracing, emergency investment in healthcare, investment in vaccines, facial coverings, vaccination policy, and protection of elderly people.

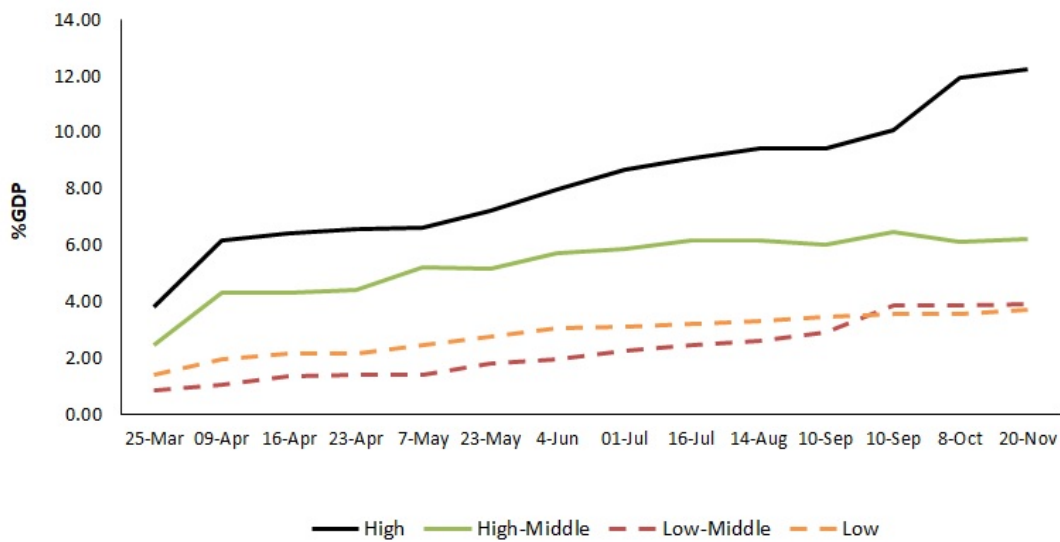
³A similar approach is also used by Rodrik (1999) when investigating the effect of democracy level on wages.

Table 1: Descriptive Summary Statistics

	Mean	Std. Dev.	Min.	Max.	Source	Obs.
Democracy Measures						
Polity	0.72	0.30	0.00	1.00	Polity5 Project	2156
Democratic Accountability	0.70	0.24	0.08	1.00	ICRG	1862
Constraint on the Executive	0.76	0.27	0.14	1.00	Polity5 Project	2156
Institutionalized Democracy	0.60	0.37	0.00	1.00	Polity5 Project	2156
Policy Measures						
Fiscal Stimulus (% GDP)	4.53	5.57	-12.8	42.2	Elgin et al. (2020)	2350
Control Variables						
Real GDP per capita (000 USD)	14.77	20.03	0.02	110.74	World Development Indicators	2296
Health Expenditures (% GDP)	6.50	2.49	2.27	17.06	World Development Indicators	2268
Stringency Index of Public Health Policies	66.85	20.53	8.33	100	Hale et. al. (2020)	2182
Government Expenditures (% GDP)	15.99	5.29	3.59	37.67	World Development Indicators	2212
Infection Rate (%) (in millions)	3317	22810	0.00	943113	Johns Hopkins University	2125
Death Rate (%) (in millions)	152.7	11248.1	0.00	26044.9	Johns Hopkins University	2125
Government Stringency	66.85	20.53	8.33	100	Oxford COVID-19 Tracker	2182
Tax Revenues (% GDP)	17.11	6.31	0.05	34.11	World Development Indicators	1652
Public Debt (% GDP)	57.39	34.81	0.05	232.5	International Monetary Fund	2338
Population Density (in thd)	243.46	843.15	1.98	7915.7	OWID	2310
Median Age	30.67	9.16	15.1	48.2	OWID	2296
Fitch Country Rating	56.09	25.48	20	100	Tradingeconomics	1540

Std. Dev. is the standard deviation, Min is the minimum value of the observations, Max is the maximum value of the observations, Obs. is the number of observations.

Figure 1: Polity and Fiscal Response Over Time



in the figure, in general, countries with a higher democracy level have been providing a larger fiscal package to support the economy in response to COVID-19. However, the index of countries with a low democracy level is above the one with a low-middle level of democracy at certain times, except at the end. When we look at the overtime evolution of indices, we see that the difference between the fiscal indices has increased among different democracy levels to the advantage of more democratic countries. This is also apparent at the end when the low-middle democracy group surpasses the low democracy group by September 20, 2020.

2.2 Methodology

In our benchmark regressions we estimate the following equation using heteroskedasticity-consistent ordinary least squares estimator:

$$Fiscal_{i,t} = \alpha_0 + \alpha_1 DEM_i + \alpha_j \sum_j X_{j_i} + \alpha_k \sum_k Z_{k_{i,t}} + \gamma_t + \epsilon_{i,t}$$

Here, for country i , $Fiscal_{i,t}$ denotes the fiscal-policy response at time t , DEM_i denotes the measure for democracy which does not change over time in our sample, X_{j_i} denotes a control variable that is constant over time, $Z_{k_{i,t}}$ denotes a control variable that changes over time, γ_t is the time-fixed effect, and $\epsilon_{i,t}$ is the error term.

On top of our benchmark regressions, we use an IV estimation strategy to control for the potential endogeneity of democracy and GDP per capita. In this regard, we use the two-stage least squares estimator. For all IV estimations, we also report the test results for over- and under-identifying restrictions.

3 Results

In this section, we discuss the relation of democracy with fiscal-policy response to COVID-19 using the data and empirical methodology introduced in the previous section. We first present our OLS results to investigate the association of democracy with fiscal policy and then our IV results to interrogate if democracy has any causal effect.

3.1 OLS Estimations

We present our benchmark OLS results in Table 2. Here, our main variable of interest is Polity, which measures the level of democracy. In all columns, the estimation equation includes time dummies. In consecutive columns, we control for GDP per capita, infection rate, death rate, and public-health policies. Additionally, we control for government final

consumption expenditures, current health expenditures, total tax revenues, public debt, and Fitch credit rating measured prior to the pandemic. Except the last three, all columns include region dummies. Lastly, while the first eight regressions covers all the countries in our sample, Column 9 includes only developing countries and Column 10 only the developed.

As seen in the table, Polity is highly significant and positively associated with fiscal response in all columns. Besides, Column 8 shows this result continues to hold when we exclude region dummies. Additionally, as seen in Columns 9 and 10, while the coefficient of Polity gets lower when we focus on developing countries, it gets higher when we concentrate on developed countries. To understand the strength of the association between democracy and fiscal response we focus on Column 2 where we control for GDP per capita. According to our estimates in this regression, at the median of all non-regional variables, a 0.1 unit increase in Polity is associated with an average of 7.29% increase in fiscal policy response across the regions. At the 0.25th percentile of GDP per capita the increase in fiscal response is 9% and at the 0.75th percentile of GDP per capita it is 4.78%. So, in poorer countries, an increase in the democracy level is associated with a larger increase in fiscal response.

The positive association we have between the democracy level and the fiscal-policy response is in line with the result of Besley and Burgess (2002), which find a similar relation between democratic institutions and food distribution by state governments in India after a natural disaster. Departing from their theory, we can explain our result with the fact that democracies develop political accountability. Specifically, if the incumbent politicians do not respond to citizens' needs, in strong democracies it is easier for the citizens to replace them with the new politicians. Thus, a higher democracy level gives a stronger incentive to governments for supporting the economy in response to the COVID-19 crisis. However, in autocracies the governments can keep their power despite of their poor performance in responding to people's needs. So, as autocracy gets deeper the incumbents' incentive to give an effort to support the economy in response to the COVID-19 crisis gets weaker.

Table 2: OLS Estimations of the Fiscal Stimulus

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Fiscal	Fiscal	Fiscal	Fiscal	Fiscal	Fiscal	Fiscal	Fiscal	Fiscal	Fiscal
Polity	3.42*** (0.41)	2.51*** (0.30)	2.42*** (0.30)	2.23*** (0.31)	1.81*** (0.28)	1.52*** (0.28)	2.80*** (0.42)	2.47*** (0.38)	1.87*** (0.42)	7.93*** (2.68)
Real GDP per capita		0.16*** (0.01)	0.17*** (0.01)	0.16*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	-0.03** (0.01)	-0.01 (0.01)	-0.01 (0.02)	-0.04 (0.03)
Infection Rate			2.73 (4.27)	2.92 (4.70)	0.48 (4.38)	-0.31 (4.76)	-11.84*** (2.67)	-10.94*** (2.66)	74.28 (69.58)	-15.52*** (3.07)
Death Rate			-119.23 (89.13)	-88.44 (87.88)	68.24 (89.03)	157.94* (92.68)	717.44*** (97.39)	632.15*** (90.45)	-714.03 (2,412.62)	807.23*** (146.96)
Population Density (in thd)					0.55*** (0.14)	0.61*** (0.14)	0.91*** (0.13)	0.64*** (0.09)	-3.98*** (1.06)	0.64** (0.25)
Median Age					0.17*** (0.02)	0.16*** (0.02)	0.07*** (0.02)	0.09*** (0.02)	0.10*** (0.02)	0.01 (0.07)
Health Expenditure (% GDP)						0.23*** (0.05)	0.07 (0.05)			
Fitch Country Rating							0.12*** (0.01)	0.10*** (0.01)	0.08*** (0.01)	0.16*** (0.02)
Tax Revenue (% GDP)							0.06*** (0.02)	0.09*** (0.02)	0.14*** (0.02)	0.04 (0.04)
Public Debt (% GDP)							0.03*** (0.00)	0.03*** (0.00)	0.02*** (0.01)	0.03*** (0.01)
Government Expenditure (% GDP)							-0.02 (0.02)			-
H1_Public information campaigns = 0,										
Constant	-2.94*** (0.41)	-2.64*** (0.35)	-2.54*** (0.37)	-1.30 (0.81)	-4.62*** (0.90)	-6.00*** (0.99)	-5.48*** (1.36)	-6.05*** (1.34)	-5.03*** (1.43)	-15.51*** (2.99)
Public Health Policies	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Observations	2,155	2,099	1,943	1,939	1,939	1,911	1,188	1,188	838	350
R-squared	0.34	0.50	0.54	0.56	0.58	0.59	0.70	0.67	0.53	0.62

Robust standard errors in parentheses

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

In our results, fiscal response is positively associated also with country credit rating and public debt, which shows that countries that can borrow easily and cheaply are able to provide a larger fiscal stimulus for the economy. These results are similar to Benmelech and Tzur-Ilan (2020). Additionally, fiscal response increases with tax revenues showing that governments with larger resources are able to give a stronger fiscal response to the pandemic. Lastly, both population density and median age have a significant and positive relation with fiscal response. This can be because in countries with a high population density and median age the pandemic can have more severe health effects leading to stronger economic slowdowns. Thus, these countries may need to give a stronger fiscal response to the economic crisis induced by COVID-19.

3.1.1 Robustness Checks

In Table 3, to check the robustness of our result regarding the relation of democracy with fiscal-policy response, we present our OLS estimation results using different democracy measures. In the first column, we measure democracy with Democratic Accountability of ICRG dataset; in the next column, with the Institutionalized Democracy indicator of Polity5 following Mulligan et al. (2004); and in the last column, with the Executive Constraints index of Polity5 dataset as in Besley et al. (2016). In all indices, a higher value corresponds to a stronger democracy.

As seen in the table, the democracy measure remains significant at 1% level with a positive coefficient in all specifications. So, all measures indicate that democracy has a positive relation with fiscal response to COVID-19.

3.1.2 Interaction Effects

Next, we ask how the association of democracy with fiscal-stimulus packages has evolved over time. To answer this question, instead of time fixed effects, we use time trends in our regressions.

We present these results in Table 4. As seen in the first column of the table, the fiscal response is significantly and positively associated with democracy and time. The positive coefficient of time shows that countries strengthened their fiscal responses since the beginning of the pandemic. In Column 2, to understand how time effect differs among democracies, we control for democracy and time using their interaction $Polity \times Time$. As seen in the table, the interaction term is positively associated with the fiscal response at the 1% significance level. The first implication of this result is that for any given democracy level, time has increased countries' fiscal response. The second implication of the result is that the time effect is stronger at higher democracy levels. Thus, the difference in fiscal response between democracies and autocracies has increased over time.

Table 3: OLS Estimations for Robustness Checks

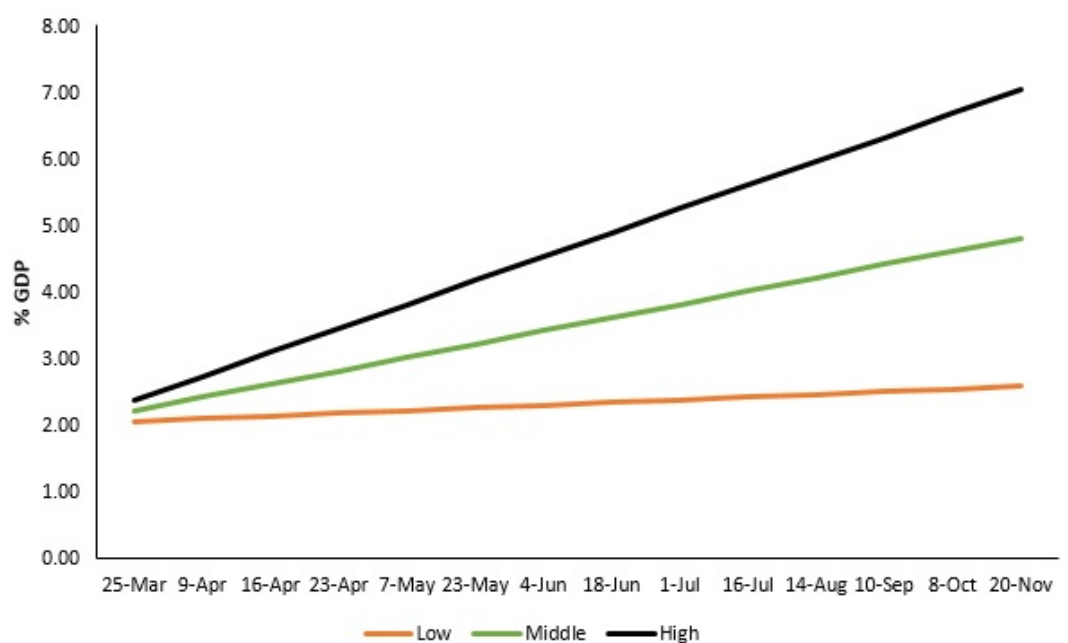
VARIABLES	(1) Fiscal	(2) Fiscal	(3) Fiscal
Democratic Accountability	1.94*** (0.55)		
Real GDP per capita	-0.02 (0.01)	-0.03* (0.01)	-0.03* (0.01)
Infection Rate	-11.28*** (2.65)	-11.55*** (2.69)	-11.25*** (2.65)
Death Rate	660.45*** (91.88)	700.58*** (92.53)	672.75*** (91.26)
Median Age	0.05*** (0.02)	0.06*** (0.02)	0.05** (0.02)
Population Density (in thd)	0.71*** (0.14)	0.85*** (0.13)	0.89*** (0.13)
Fitch Country Rating	0.13*** (0.01)	0.13*** (0.01)	0.13*** (0.01)
Tax Revenue (% GDP)	0.04** (0.02)	0.05*** (0.02)	0.05*** (0.02)
Public Debt (% GDP)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
Democracy		1.99*** (0.38)	
Executive Constraints			3.16*** (0.47)
Constant	-4.77*** (1.45)	-4.78*** (1.37)	-5.64*** (1.31)
Public Health Policies	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes
Observations	1,132	1,188	1,188
R-squared	0.69	0.69	0.70

Robust standard errors in parentheses

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

This result can be seen more clearly in Figure 2. In the figure, we give the predicted fiscal-response index calculated using the coefficients in Column 2 of Table 4 at the median of all non-dummy variables. As seen in the figure, the disparity in fiscal response among different democracy levels have been increasing over time. Thus, connecting our result with the theory of Besley and Burgess (2002), we can state that countries with a more powerful accountability mechanisms have been extending their fiscal packages more strongly as they recognize that the pandemic will continue for a long time.

Figure 2: Polity and Predicted Fiscal Response Over Time



3.2 IV Estimations

The main question is whether democracy increases fiscal-policy response, or the positive relation between them is due to some omitted variables that affect both of them positively. A similar concern also arises for the relation of GDP per capita with the fiscal response. To answer these questions, we use an IV approach. For this purpose, we need variables that are correlated with democracy and GDP per capita but uncorrelated with fiscal policy response—namely, instrumental variables. As an instrument for democracy, inspired by Barro (1996), we use total primary-school attainment and five-year lagged value of democracy.⁴ For GDP per capita following the literature, we use British legal origin as an instrument. We argue that our instruments for democracy are highly cor-

⁴A similar approach is also employed by Rodrik (1999).

Table 4: OLS Estimations with Interaction Effects

VARIABLES	(1) Fiscal	(2) Fiscal
Polity	2.80*** (0.41)	
Time	0.34*** (0.04)	
Real GDP per capita	-0.03* (0.01)	-0.03* (0.01)
Infection Rate	-12.24*** (2.56)	-12.24*** (2.56)
Death Rate	702.33*** (93.48)	689.96*** (93.93)
Median Age	0.06*** (0.02)	0.07*** (0.02)
Population Density (in thd)	0.88*** (0.13)	0.90*** (0.13)
Fitch Country Rating	0.13*** (0.01)	0.12*** (0.01)
Tax Revenue (% GDP)	0.05*** (0.02)	0.05*** (0.01)
Public Debt (% GDP)	0.03*** (0.00)	0.02*** (0.00)
Polity x Time		0.40*** (0.03)
Constant	-5.56*** (1.29)	-3.47*** (1.31)
Public Health Policies	Yes	Yes
Region Fixed Effects	Yes	Yes
Observations	1,188	1,188
R-squared	0.69	0.70

Robust standard errors in parentheses

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

related with a country's current level of democracy, but it does not directly affect the country's fiscal policy response to COVID-19. Similarly, we assume that a country's legal origin is associated with its GDP per capita but does not directly affect its fiscal-policy response to COVID-19.

We present our IV estimation and test results for the relevancy and exogeneity of our instruments in Table 5. Each column of the table uses a different measure of democracy. As indicated by the p-values associated with the J-test and the under-identification test we cannot reject the exogeneity of our instruments. The F-tests associated with the first stage regressions are also supportive for the relevancy of our instruments. Additionally, in all columns, democracy has a positive coefficient significant at 1% level. So, our IV estimations indicate that democracy increase governments' fiscal response to COVID-19.

Table 5: IV Estimations

VARIABLES	(1) Fiscal	(2) Fiscal	(3) Fiscal	(4) Fiscal
Polity	2.39*** (0.42)			
Real GDP per capita	0.16*** (0.03)	0.16*** (0.03)	0.14*** (0.03)	0.18*** (0.04)
Infection Rate	95.57** (40.26)	86.78** (41.75)	100.49** (41.96)	86.73** (43.50)
Death Rate	-2,932.06*** (1,128.40)	-2,871.32*** (1,087.56)	-2,941.86*** (1,131.83)	-2,821.26** (1,195.05)
Stringency Index of Public Health Policies	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)
Democratic Accountability		3.42*** (0.62)		
Democracy			2.10*** (0.44)	
Executive Constraints				2.74*** (0.47)
Constant	-1.90*** (0.64)	-2.19** (0.88)	-1.17* (0.63)	-2.35*** (0.67)
Time Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,245	1,133	1,245	1,231
R-squared	0.52	0.50	0.52	0.50
Hansen J statistic (p-value)	0.13	0.12	0.10	0.31
Underidentification test (p-value)	0.00	0.00	0.00	0.00
First stage F-test (p-value)	0.00	0.00	0.00	0.00

Robust standard errors in parentheses

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

4 Concluding Remarks

The COVID-19 pandemic has direct adverse effects on the economy in several different ways. For instance, infected workers who are isolated or hospitalized cannot join the workforce, which has both supply and demand-side implications. Furthermore, the psychological effect of the pandemic leads to withdrawal from economic activity by agents who prefer to adopt the “wait and see” approach. Elgin et al. (2020) conducted a comprehensive review of different economic policy measures adopted by 168 countries as a response to the COVID-19 pandemic and created an extensive database including fiscal measures.

In this paper, we investigated the relationship between the level of democracy and fiscal-policy responses to the economic crisis induced by the COVID-19 pandemic. Our results show that more democratic countries adopted a substantially larger fiscal-policy package (in % GDP). Moreover, our instrumental variable estimations and regressions with different measures of democracy also indicate support for a robust relationship between a higher level of democracy and a larger fiscal stimulus package size. This suggests that the level of democracy strongly influences the (in)ability of governments to conduct countercyclical fiscal policy.

Further research is needed to investigate the mechanisms that associate higher levels of democracy with larger fiscal-policy responses.

References

1. Acemoglu, D., Naidu, S., Restrepo, P., Robinson, P. (2019). Democracy does cause growth. *Journal of Political Economy*. 127(1), 47-100.
2. Acemoglu, D., P., Robinson, P. (2001). A Theory of Political Transitions. *American Economic Review*. 91 (4), 938-963.
3. Acemoglu, D., P., Robinson, P. (2006). *Economic Origins of Dictatorship and Democracy*. Cambridge and New York: Cambridge University Press.
4. Alesina, A., Campante, F. R., Tabellini G.R. (2008). Why is fiscal policy often procyclical? *Journal of the European Economic Association*. 6(5), 1006-103
5. Atkeson, A. (2020). What will be the economic impact of COVID-19 in the US? Rough Estimates of Disease Scenarios. No. w26867. NBER
6. Barro, R., Lee, J. (2013). A new data set of educational attainment in the world, 1950-2010. *Journal of Development Economics*, 104, 184-198.
7. Benmelech, E., Tzur-Ilan, N. (2020). The determinants of fiscal and monetary policies during the COVID-19 crisis. No. w27461. NBER.
8. Besley, T., Burgess, R. (2002). The political economy of government responsiveness: Theory and evidence from India. *Quarterly Journal of Economics* 117(4), 1415-1451.
9. Besley, T., Persson, T., Reynal-Querol, M. (2016). Resilient leaders and institutional reform: Theory and evidence. *Economica*, 83(332), 584-623.
10. Cicek, D., Elgin, C. (2011). Cyclicity of fiscal policy and the shadow economy. *Empirical Economics*. 41 (3), 725-737.
11. Eichenbaum, M. S., Rebelo, S., Trabandt, M. (2020). The Macroeconomics of Epidemics. No. w26882. NBER.
12. Elgin, C., Basbug, G., Yalaman, A. (2020). Economic policy responses to a pandemic: Developing the COVID-19 economic stimulus index. *Covid Economics: Vetted and Real Time Papers*, 3, 40-54.
13. Estrin, S., Mickiewicz, T. (2012). Shadow Economy and Entrepreneurial Entry. *Review of Development Economics*. 16 (4), 559-578.
14. Frey, C. B., Chen, C., & Presidente, G. (2020). Democracy, Culture, and Contagion: Political Regimes and Countries Responsiveness to Covid-19. *Covid Economics*, 18, 1-20.
15. Gourinchas, P-O. (2020). Flattening the pandemic and recession curves. *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever*. 31. CEPR Press, London, UK.

16. Hale, T., Petherick, A., Phillips, T., Webster, S. (2020). Variation in government responses to COVID-19. Blavatnik school of government working paper, 31, 2020-11.
17. Johns Hopkins University Coronavirus Resource Center (2020). Retrieved from <https://coronavirus.jhu.edu/map.html> on June 5, 2020.
18. Lane, P., Tornell, A. (1999) Voracity and Growth, *American Economic Review*. 89: 22-46
19. Mulligan, C. B., Gil, R., Sala-i-Martin, X. (2004). Do democracies have different public policies than nondemocracies?. *Journal of Economic Perspectives*, 18(1), 51-74.
20. Noy, I., Nualsri, A. (2011) Fiscal storms: public spending and revenues in the aftermath of natural disasters. *Environment and Development Economics* 16(1), 113-128.
21. Olson, M. (1993). Dictatorship, Democracy, and Development. *American Political Science Review*. 87 (3), 567-576.
22. Plummer, T., Martin, T. W. (2003). Democracy, government spending, and economic growth: A political-economic explanation of the Barro-effect. *Public Choice*. 117, 27-50.
23. Profeta, P., Puglisi, R., Scabrosetti, S. (2013). Does democracy affect taxation and government spending? Evidence from developing countries. *Journal of Comparative Economics*. 41(3), 684-718.
24. Rodrik, D. (1999). Democracies pay higher wages. *Quarterly Journal of Economics*, 114(3), 707-738.
25. Vegh, C. A., Vuletin, G. (2014). The road to redemption: Policy response to crises in Latin America. *IMF Economic Review*, 62(4), 526-568.
26. Talvi E., Vegh, C.A. (2005). Tax Base Variability and Procyclical Fiscal Policy. *Journal of Development Economics* 78:156-190
27. World Health Organization. Weekly epidemiological update on COVID-19, 8 June 2021.

A List of Countries

Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Democratic Republic of Congo, Republic of Congo, Costa Rica, Cote d'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Eswatini, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kosovo, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, North Macedonia, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Rwanda, San Marino, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovak Republic, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sudan, Suriname, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, United Arab Emirates, United Kingdom, Uganda, Ukraine, United States, Uruguay, Uzbekistan, Vietnam, Yemen, Zambia, Zimbabwe.