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Political Institutions and Policy Responses During a Crisis*

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Abstract

Do countries with differing political institutions respond differently to a national crisis? The coronavirus pandemic, where almost all countries were hit by the *same* crisis in a short span of time, provides a rare opportunity to answer this question. For a sample of 125 countries, we use high frequency data on two measures of policy response- (i) containment policies, relating to closure of public spaces and restrictions on movement of people, and (ii) health policies, relating to public information campaigns, testing and contact tracing, to examine their policy response to the crisis. We show that: first, non-democracies have more stringent containment and health policies prior to their first COVID-19 case. However, after registering their first case, democracies either close this gap (in containment policies), or surpass non-democracies (in health policies) within a week. Second, policy responses do not differ by governance systems (presidential or parliamentary) in democracies. However, elected leaders who performed better in the last election or face their next election farther in the future are more aggressive in their policy response. Third, democracies with greater media freedom respond more slowly in containment policies, but are more aggressive in health policies. Lastly, more conducive political norms (such as trust in the elected government) systematically predict a more aggressive response in both containment and health policies. Our analysis therefore suggests that political institutions and the incentives of the political leaders embedded therein, significantly shape the policy response of governments to a national crisis.

JEL Classification: H12, D78, I18
Keywords: Democracy, Autocracy, Electoral Systems, COVID-19.

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1 Introduction

Countries are often confronted with various natural, economic and social crises that require immediate and in many cases, a sustained policy response from its political leadership. Large-scale natural disasters (such as cyclones, tsunamis, droughts, etc.), health and humanitarian crises (such as epidemics, ethnic conflicts, etc.) are examples of some crises that societies around the world have historically faced. Moreover, with the advent of climate change, it is argued that the frequency and scale of such crises may increase in the future (IMF (2017)). Do countries with different political institutions respond differently to such adverse events? If so, how are these responses different? These questions are relevant not only in understanding ways to mitigate the impact of a crisis, but also relevant for international organizations (such as the United Nations, World Health Organization, International Monetary Fund, etc.), who often guide countries in their policy responses.

The answer to the above question is, however, not straightforward. First, crises (like the ones that we mention above) often hit a few selected set of countries at a time, making it hard to infer on the external validity of the policy response across countries. Second, the set of appropriate policy measures required to tackle a given crisis may differ across countries. For example, some governments may be willing to reduce dependency on nuclear power following a nuclear accident, while others may prefer not to change dependency but instead toughen the safety and regulatory environment around it.[1] Third, the kind of crisis that hits a country can be endogenous to its existing political institutions. For example, famines and ethnic conflicts are more likely to arise in countries with weak political institutions (Sen (1983); Burchi (2011); Easterly (2001); Saideman et al. (2002)). Fourth, even a crisis of the same magnitude (say an earthquake or a flood) across countries (or for the same country over time) can generate differential policy responses, not because of different political institutions, but because of other factors correlated with these institutions. For example, if societies that tend to learn better from past shocks are also more likely to have a robust political institution, then the observed correlations between political institutions and their policy response may be driven by factors that are not political.

The novel coronavirus pandemic (or COVID-19) provides us with a rare context to overcome the above challenges and thus, answer the question more precisely. First, an overwhelming majority of countries were exposed to the *same* pandemic in a relatively short period. Less than five countries had reported a confirmed COVID-19 case on January 15, 2020. Only two months later, the World Health Organization had declared the novel coronavirus as a global health pandemic, with over 100 countries reporting at least

[1] In the wake of the Fukushima nuclear accident in 2011, while the Democratic Party-led government of Japan took a policy of phasing out nuclear power, the next government formed by the Liberal Democratic party in 2012, reversed it and took a more "pro" nuclear policy (Suzuki (2019)).

one confirmed COVID-19 case.[2] This helps us overcome concerns about both the external validity across countries as well as the issue of endogenous sample selection. Second, epidemiologists and medical experts broadly agreed on the nature of policy responses required to contain the spread of the virus (Barbera et al. (2020)). We classify these recommendations into two broad categories, namely: *'containment'*-related and *'health'*-related. The former set of policy recommendations comprised primarily of closing down public places (such as those of religious worship, malls, schools, etc.) and restricting the gathering and movement of people (through lockdowns, curfews, closure of public transport systems, etc.).[3] Health-related policy recommendations, on the other hand, ranged from the importance of testing, contact tracing, and social distancing, to awareness and practice of regular hand-washing with soap and the use of personal protective equipment (such as face masks). Finally, even though the medical community was aware of the possibility of such an outbreak, it is very evident (from media reports) that the political leadership in no country was prepared to handle a pandemic of this nature.[4] It is therefore a singular "black swan" event that afflicted most of the world. Hence, the issue of learning from past shocks do not arise in this case.

The specific features of the pandemic discussed above allow us to examine whether political institutions played a role in determining how rapidly countries responded to the crisis as well as if these policy measures were more stringent and persistent over time. We use daily data on the measures of containment and health policies across 150 countries (collected by Hale et al. (2020)) to study high-frequency policy responses across countries. We first begin by robustly showing that democracies and non-democracies differed systematically in their responses.[5] Non-democracies had, on average, more aggressive containment and health policies as compared to democracies before registering their first COVID-19 case (i.e., in the "pre" period). However, within a week of documenting the first case (i.e., in the "post" period), democracies either matched up (in containment policy) or surpassed (in health policy) non-democracies in policy aggressiveness. More importantly, these rapid policy responses were also persistent over time (for up to six weeks) after the first COVID-19 case. Lastly, the results are robust to controlling for all observable and unobservable characteristics between countries as well as allowing for flexible time trends across them. This suggests that while non-democracies managed to act

[2]The extent of exposure varied considerably across countries. However, given the highly contagious nature of the virus, both its initial degree of exposure as well as its consequent spread in the population would crucially depend on rapid policy responses by the government to the crisis.

[3]There is some disagreement regarding the *degree* of containment policies that governments should adopt across countries. Alon et al. (2020) and Barnett-Howell and Mobarak (2020) for example, point out that complete lockdown may not be ideal for developing countries, as it may impose a significant economic cost on the population. Regardless, they all agree on the fact that some form of containment policy would be required.

[4]The previous pandemic of this nature was the Spanish Flu of 1918, about a century ago.

[5]We define a country to be democratic if its political leader was elected in a competitive multi-party election; the rest are categorized as non-democracies.

preemptively, democracies ramped up their response after registering their first COVID-19 case. This is not surprising given that policy-making is arguably more autonomous in non-democracies (Burgess et al. (2015)). It also supports the broad view that since stringent containment policies are economically costly and potentially electorally punitive for its leaders, they are more likely to be hesitant in announcing containment policies before receiving evidence on exposure such as confirmed cases of the novel coronavirus.

Given that we find differential policy responses across democracies and non-democracies to the coronavirus pandemic, we turn to examine whether differences in political institutions between the two sets of countries could explain this differential response. For example, while political leaders of democracies face regular and competitive elections, the leaders in non-democracies do not. Therefore, we begin by examining whether institutional details on elections in democracies are important. We focus on two aspects of elections - (i) the broad electoral system through which a leader gets elected i.e. a Presidential or a Parliamentary system and (ii) the electoral incentives or risks that he/she faces once elected. We measure electoral incentives of the leader in two ways namely —(i) electoral strength, i.e., performance in the last election, and (ii) electoral term remaining until the next election. We hypothesize that higher electoral strength and a more distant next election can incentivize the political leader to respond more rapidly and aggressively to the crisis, especially in health policies. Since such incentives are absent in non-democracies, it may, therefore, explain the differential response between democracies and non-democracies.

We find that within democracies, while policy responses are not different across governance systems, electoral incentives (electoral strength and term remaining) do shape responses in containment and health policies. We measure the electoral strength of the chief executive by her vote share in the last election in case of presidential democracies, and by the seat share of the largest party in the government in case of parliamentary democracies.[6] We denote the democracies with higher than median electoral strength as high electoral strength countries.[7] We then use data on how many years are left for the next election as a fraction of the term length of the executive as a measure of her term remaining. As before, we denote countries with higher than median term remaining as high term remaining countries. In a similar framework as before, we show that the aggressiveness in health policy is systematically higher for those with higher electoral strength and higher term electoral term remaining. There is, however, no such effect on containment policies. Therefore, more than the structure of governance, it appears to be the electoral incentives of its leaders that are more important in shaping policy responses

[6]In parliamentary democracies, since the number of seats in the legislature that is controlled by the government matters more than vote share, we consider the seat share as the more appropriate measure of the electoral strength of the Prime Minister.

[7]We compute the median and identify the high electoral strength countries for presidential and parliamentary democracies separately.

during this pandemic.

We then examine the role of the media and in particular, freedom of the press, in shaping the policy response. Even though democracies have a freer media than non-democracies (Stier (2015)), there is substantial variation in the degree of media freedom within democracies. A more robust media may affect both health and containment policies. First, with regard to health policies, it can reveal potential hot spots for infection, forcing the government to increase testing and contact tracing. Moreover, it can also facilitate better dissemination of public information campaigns, which may encourage governments to engage in greater communication with its citizens. Both these factors motivate us to hypothesize that within democracies, health policy measures would be more aggressive for countries with greater media freedom. With regard to containment policies, media freedom should not matter for announcements of such measures, as decrees banning the movement of people can be done effectively in state censored media as well. On the other hand, a free media can highlight the economic and humanitarian cost of a stringent containment policy, and thereby, can potentially reduce its stringency. Therefore, we expect containment policies to be more aggressive in democracies with greater media freedom. We use the data on press freedom index across countries in 2020 prepared by the Reporters without Borders to identify democracies with higher than median media freedom score. We use a difference-in-differences framework to robustly show that democracies with greater freedom of the media are more aggressive in their health policies. However, their containment policy response is *less* aggressive (compared to democracies with lower media freedom) in the first of being exposed to the virus and then it increases gradually over the subsequent weeks.

Finally, we examine whether variations in existing "political norms" can shape differential policy responses to the pandemic. Using the sixth round of the World Values Surveys (Inglehart et al. (2014)), we consider two norms, namely: (i) citizens' trust in the government and (ii) their preference for the independence of their leader in policymaking. We find that democracies where citizens trust their government more do respond more aggressively in both containment and health policies in the post period. However, this increase is gradual over time, stabilizing after about a month from the first case of the virus. Democracies that have a higher preference for leader's independence in policymaking respond more vigorously in containment policies but not in health policies.

Our paper contributes to the literature that documents how political institutions shape the response of governments to various shocks to the country. A lot of the existing evidence is within a democracy, primarily in India and the US, comparing the states over time. Besley and Burgess (2002), for example, showed that within India the state governments respond more to shocks to food production and flooding when the states have greater newspaper circulation and the incumbent state government faces greater electoral uncertainty. Their results are consistent with Cole et al. (2012) who find that voters in

Indian states reward incumbent government more following a negative weather shock when it responds more aggressively to the shock by providing relief measures. Garrett and Sobel (2003), on the other hand, show that disaster relief expenditures by the US government are primarily shaped by political considerations, such as the representation of states in the relevant relief committee and presence of electoral cycles. Cohen and Werker (2008) use a theoretical model and case studies to argue that countries with different political environments (such as weak institutions and high ethnic fractionalization) have different policy responses to natural disasters. We complement these studies by showing that similar patterns hold across democracies and non-democracies as well as within democracies across electoral institutions as well as the electoral strength of incumbents. Also, as we point out above, we address some of the issues with the comparison of similar but not the same crises across space and over a long time horizon. Kahn (2005) uses cross-country panel data to show that democracies experience fewer deaths from natural disasters. Our results, therefore, provide a mechanism for why that may happen.

Finally, we flag an important caveat in our analysis. We do not comment on the welfare implications (in terms of prevention of death and containment of cases) of having more aggressive containment and health policies. For that we would have to look at *effectiveness* of policy, about which we are agnostic in this analysis. Given that the non-democracies may have a greater capacity to manipulate the data on cases and deaths, it may be hard to comment on policy effectiveness using existing data.[8] The purpose of our exercise is to demonstrate whether policy responses to the same health crisis differ systematically across countries with different political institutions. The effectiveness of similar policies across different countries in flattening the curve or reducing the fatality rate is a separate, and considerably harder research question that would require additional data collection and further analysis. We keep this endeavor for future pursuits.

The rest of the paper is organized as follows: section 2 provides a short context of the novel coronavirus pandemic, section 3 describes the data used in the analysis, details on how we construct the variables as well as relevant summary statistics for these variables across countries. Section 4 then outlines the empirical specification for our analysis and section 5 discusses the results. Section 6 then offers a short conclusion.

2 Context: The Coronavirus Pandemic

The spread of the novel coronavirus pandemic (Zhu et al. (2020); Li et al. (2020)) has fundamentally disrupted the modern world. The spread of the coronavirus has been widespread and rapid over a short period. As shown in figure 1(a), while less than 5 countries reported a COVID-19 case in mid-January, around a 100 countries (covering 90 percent of the world's population) had reported at least one case of the coronavirus

[8] Kapoor et al. (2020) indeed show suggestive evidence that the daily death data is more likely to be manipulated by non-democracies.

by 11 March, when the World Health Organization declared coronavirus a global health pandemic.[9] By the first week of April, 150 countries across the world had reported at least one case of coronavirus. This unexpected and rapid spread of COVID-19 necessitated an immediate policy response as well. These responses ranged from social distancing and bans on travel and social gatherings, contact tracing, public health information campaigns to economic stimulus packages. While this remains a very unfortunate health pandemic, it also offers us a unique opportunity to examine how policy responses vary with political institutions, governance structures, and political norms across almost all countries in the world, when the *same* shock hits them in a very narrow period.

3 Data and descriptive statistics

We combine data from various sources and use them to construct variables for our analysis. In this section, we describe each source of data as well as describe how we construct variables relevant for our analysis. We also report the relevant descriptive statistics for these variables.

3.1 Data on COVID-19 cases

We use publicly available country-level data on daily *confirmed* COVID-19 cases from the European Centre for Disease Prevention and Control (ECDC).[10] The data is a daily panel of confirmed cases across 152 countries. We use data from Jan 1 to May 6, 2020, and primarily use the date of the first reported case in a country to examine how different countries respond relative to that date.

Summary statistics: Figure 1(a) shows the fraction of countries that report at least one COVID-19 case before a date t. As can be seen from the figure, 19 countries (12.5 percent of countries and 52.2 percent of the world's population) reported at least one case before the World Health Organization (WHO) declared it as a public health emergency on 30th January 2020 and 93 countries (61.2 percent of countries covering 87.36 percent of the world's population) had reported at least one case before WHO declared COVID-19 to be a global pandemic on March 11, 2020. Furthermore, to examine policy responses around the date of the first confirmed case, we restrict our attention from 4 weeks (28 days) prior, to 7 weeks (49 days) after the date of the first case in a country. This allows us to maintain a consistent panel of 125 countries. As reported in figure 1(b), the number of available countries drops sharply as we widen this time interval due to the lack of data.

[9] See the entire timeline of WHO declarations here.

[10] The data is available for download from https://www.ecdc.europa.eu/en/publications-data/download-todays-data-geographic-distribution-covid-19-cases-worldwide

3.2 Data on policy responses

Data on policy responses to COVID-19 comes from the Oxford COVID-19 Government Response Tracker (OxCGRT)[11], collected by Hale et al. (2020). The data measures policy announcements on publicly available sources such as news articles, government press releases, and briefings. We primarily use two sets of policy indicators relating to (a) Containment and Closure policies, which contain eight indicators relating to school and workplace closing, restrictions on public events and gathering, stay-at-home, etc.; (b) Health policies, which include three indicators on public information campaigning, testing policy, and contact tracing. Following Hale et al. (2020), we then aggregate these indicators to form an index for containment and health policies that ranges from 0-100 (0 being least aggressive and 100 being most aggressive).[12]

Summary statistics: As reported in panel A of table 1, the containment index is 4.17 and the medical index is 19.48 on average across all countries in our sample, one month before their first reported case. These do not differ substantially across democratic and non-democratic countries as well as parliamentary and presidential systems, both in terms of magnitude as well as statistical significance. As shown in figure 2, all countries (both democracies and non-democracies) respond rapidly in the stringency of their containment policies (figure 2(a)) and health policies (figure 2(b)). The index that measures these containment policies almost tripled from an average of 7.23 a week before a country's first COVID-19 case to 23.12 one week later. Similarly, the index that measures health policies almost doubles from 25.97 one week before 49.58 one week after a country's first confirmed COVID-19 case.

3.3 Data on political institutions and environments

We use the polity score from the Polity IV project to categorize countries into democracies and non-democracies. Data on governance systems (presidential vs parliamentary) and other details (such as the size of the legislature etc.) come from the Database of Political Institutions 2017 (Cruz et al. (2020)). For the set of democracies, we hand code data on the date of the last election when the chief executive was elected, tenure length of the chief executive, and the date of the next election. We further compile data on the electoral performance of the chief executive in the most recent general election. For the parliamentary democracies, we record the seat share of the largest party in the incumbent government, and for the presidential democracies, we collect data on the vote share of the president in the latest election where she or he won.

[11] www.bsg.ox.ac.uk/covidtracker

[12] See appendix B for a detailed discussion of each indicator and Hale et al. (2020) for aggregating these indicators into an index.

Defining democracy: We classify all countries that have positive polity scores in 2018 –the last year for which the score is currently available–as democracies; the rest are labeled non-democracies. The polity score is composed of two separate scores in the Polity IV dataset - the democracy and autocracy scores. The Polity IV project assigns the two scores to each country based on the various democratic and autocratic features of the selection procedure and power of the executive. The democracy and autocracy scores each range from 0 to 10, with higher values signifying a greater extent of the corresponding feature. The final polity score is the difference between the democracy and autocracy scores, and therefore, ranges from -10 to 10. Our classification process, therefore, is a transparent way to demarcate the countries. Apart from being transparent, our criterion also picks the relevant countries as democracies. We have data for 156 countries, out of which 116 are classified as democracies and 40 as non-democracies. In 115 of these democracies, the chief executive is chosen in competitive multi-party elections.[13] Of the non-democracies, 39 of them have the chief executives either decided by a coup or by other arbitrary and forced manner, or chosen by political elites of a single party or using "rigged" elections, or is hereditary in nature.[14] As discussed in appendix C.2, our results are robust to dropping all countries with polity scores between -5 and 5, i.e., only considering countries which are decisively democratic or not.

Defining governance systems: Within democracies, we examine two main governance systems, namely presidential and parliamentary systems. In presidential systems, the chief executive of the state is the President, who is usually directly elected by the voters (or via the electoral college, as in the case of US). In parliamentary systems, the chief executive is the Prime Minister, who is indirectly elected by members of the legislature from the winning party or coalition. Unlike the President, the Prime Minister is also a member of the legislature.

[13]The Polity IV dataset provides information on the process of selecting the chief executive in the countries. According to this information, 113 out of the 116 countries have their chief executives selected in competitive multi-party elections (the value of the variable `xrcomp` is 2 or 3). The three countries left out are Algeria, Ethiopia, and Fiji. All three countries have held regular multi-party elections, at least in recent history. Historically, the elections in Algeria have not been very competitive. However, it has experienced changes in power, both in the positions of president and prime minister, including in the latest presidential elections in 2019. Fiji has also had changes in power through elections. Moreover, in the recent general elections in 2018 the winning party, FijiFirst, won 27 out of the 51 seats, while the main opposition party won 21 seats. Therefore, these two countries have had competitive elections after the Polity IV dataset was created. The elections in Ethiopia are, however, generally not competitive. In the most recent general elections in 2015, the winning party won 512 out of the 547 seats in parliament, similar to its performance in the previous election. The same party is in power since the first multi-party elections in 1995. Consequently, it is has a polity score of one, the smallest score in our sample of democracies.

[14]Singapore is the only country that we classify as a non-democracy, despite having multi-party elections. Since its founding in 1965, all elections have been overwhelmingly won by the People's Action Party. Even in the last general election in 2015, it won 83 out of 89 seats in the parliament. Consequently, it has a polity score of -2.

Constructing electoral environment variables: For parliamentary democracies, we define the electoral strength of the chief executive as the seat share of the largest party of the incumbent government in the most recent election, and for presidential democracies, it is the vote share of the President in the most recent election. We then compute a variable called "electoral term remaining", which is the fraction of term/tenure of the chief executive remaining between the first reported COVID-19 case and the next election.

Summary statistics: As reported in table 1, 74 percent of countries in our sample are democracies. 38 percent of democratic countries have a Parliamentary governance system, while the rest are Presidential. On average the incumbent government in our sample of democratic countries has 50.6 percent of the votes or seats. We refer to this as the electoral strength of the chief executive. Further, as reported in columns (3)-(5), Presidential systems tend to have 15 percentage points more electoral strength than Parliaments, where the seat share of the largest party is on average 41.3 percent. As reported in column (6), this difference is statistically significant at conventional levels, with a p-value of 0.00. Similarly, on average the incumbent executive has 52.05 percent of its electoral tenure remaining. There is little difference in this variable across Presidential and Parliamentary systems, both in terms of magnitude as well as statistical significance.

3.4 Data on media and political norms

To capture the freedom of the media, we use data on World Press Freedom Index for the year 2020 prepared by Reporters Without Borders.[15] It generates a score of "media freedom" in a country from 0 (no freedom) to 100 (complete freedom). We complement this with the data from the Sixth Round of the World Values Survey (Inglehart et al. (2014)). These data are available across 60 countries in our sample. We use them to measure first, the average trust that citizens of a country have in the government. This score varies from 0 (no trust) to 100 (complete trust). Second, we measure the independence that citizens are willing to grant their elected leader in terms of deciding policy. This score varies from 1 (low trust) to 4 (high trust). Appendix B describes the construction of these variables in detail.

Summary statistics: From table 1, the index of media freedom is on average 65.5 across the countries. However, there is a stark difference across democracies and non-democracies as reported in columns (2) and (3). While non-democracies have a score of 49.36, democracies have a 21.96 percentage point higher score (45 percent higher) indicating that the press is freer in democracies. As we report in panel B of table 1, parliamentary democracies having almost a 10 percentage point more free media (p-value of 0.00) as compared to presidential democracies (score of 67.7). For political norms,

[15]The data is available for download at https://rsf.org/en/ranking_table.

citizens have 46.61 percent trust in their government on average in democratic countries. As compared to presidential democracies, parliamentary democracies have slightly lower trust (43 percent), but this difference is not statistically significant at conventional levels (p-value of 0.11). Second, citizens' preferences for an independent leader score is 2.33 on average for democracies, with parliamentary democracies with a 12 percent lower score than presidential democracies (p-value of 0.05).

4 Empirical Strategy

We now turn to describe the empirical strategy that guides our analysis. We first investigate whether democracies and non-democracies respond differently to the COVID-19 crisis. We then focus only on democracies to examine which (if any) features of the political systems in democracies play a role in explaining the difference in these policy responses. Specifically, we examine the role of governance systems (parliamentary vs presidential), electoral environments (electoral strength of the executive and electoral term remaining), media freedom, and political norms (trust in the government and preference for the independence of leader in policy-making). We measure policy responses along two dimensions: containment and health policies, as measured by their respective indices described previously. We examine three different aspects of the response: (a) changes in the policy index before and after registering the first COVID-19 case; (b) the speed of this policy response and (c) its persistence over time.

Changes in the policy response after first COVID-19 case: We analyze changes in policy response by aggregating the data at the weekly level and estimating the following difference-in-differences specification:

$$Y_{ct} = \alpha + \beta_1 Post_t + \beta_2 D_c + \gamma D_c \times Post_t + [\alpha_c + \alpha_w] + \varepsilon_{ct} \tag{1}$$

where Y_{ct} is the $\text{Log}(1+\text{Index}_{ct})$ for either containment policy or health policy in country c in week t. t is the week relative to the week of the reported first case and can thus take values from -4 to +7. $Post_t$ is an indicator that takes value 1 if the total number of cases in country c is positive in week t, and 0 otherwise. D_c is a dummy variable defined for a country c and its definition depends on the specific regression we want to estimate. Initially, it is an indicator of democracy and in subsequent analysis, is one of the six indicator variables we use for measuring political institutions and norms across democracies. The first is an indicator of the governance system and takes a value 1 for parliamentary systems (and zero for a presidential system). The next five indicators take the value 1 if a country has an above-median value of (i) electoral strength of the chief executive, (ii) executive's term remaining, (iii) media freedom index, (iv) trust in the government and (v) independence of elected leader in policy making. The construction

of these variables has been discussed in section 3.

In alternate specifications to (1) we add country fixed effects (α_c) to account for all time-invariant differences across countries and calendar-week fixed effects (α_w) to account for all the changes over time that are common across all countries. Lastly, ε_{ct} are the time-varying unobserved factors for a country that may affect the policy variable. We follow Cameron and Miller (2015), Abadie et al. (2017) and allow for heteroscedastic robust standard errors after using both country and calendar-week fixed effects. Our coefficient of interest (γ) is the difference-in-differences estimate of the change in policy response across these political institutions, environments, and norms.

Speed and persistence of the policy response: Having examined the differential change in the policy response before and after the first COVID-19 case, we now utilize the high-frequency nature of the data to understand the speed and persistence of the policy responses across countries. We therefore estimate the following regression:

$$P_{ct} = \alpha + \sum_{t=-4}^{7} \beta_t I_t + \sum_{t=-4}^{7} \gamma_t D_c \times I_t + \alpha_c + \alpha_w + \varepsilon_{ct} \tag{2}$$

where I_t is the indicator for week t relative to the first COVID-19 case. β_t is therefore the "relative week" fixed effect. As before, in alternative specifications we add country and calendar-week fixed effects.[16] As before, for the first set of analysis D_c is an indicator of democracy and then it is one of the six indicators, discussed above, defined for the set of democracies. γ_t are our coefficients of interest.

5 Results

We begin in section 5.1 by discussing the difference in containment and health policy responses between democratic and non-democratic countries. In section 5.2, we analyze the sample of democracies and discuss heterogeneity by governance systems and electoral environments within democracies. Lastly, in section 5.3, we discuss how policy responses within democracies differ by media freedom and norms related to politics.

5.1 Policy responses in democracies and non-democracies

We begin by discussing the heterogeneity in policy response across democratic and non-democratic countries. Using the polity score, we define a dummy variable D_c that takes the value 1 if a country has a positive polity score (democracy) and 0 otherwise (non-democracy). First, we examine whether policy responses in democratic countries is different from non-democratic countries after registering their first coronavirus case. Table

[16] In a given calendar-week different countries are located on a different "relative week." Therefore, with all the fixed effects added, we effectively exploit variations within a calendar-week.

2 reports the results for specification (1). Columns(1)-(3) report the results for the containment policy index, while columns (4)-(6) report the results for the index of health policy index. Columns (1) and (4) report the results without any fixed effects. As reported, democracies are on average 32.9 percent less stringent in their containment index than non-democracies before registering their first COVID-19 case. While all countries increase policy stringency after their first coronavirus case, democracies respond more aggressively on containment policies. As reported in the table, the initial difference in the containment index is reduced to a statistically insignificant 3 percent (p-value of 0.765) after exposure to coronavirus cases. Before registering COVID-19 cases, democracies have a 29.3 percent lower health policy index than non-democracies (though this is statistically insignificant at conventional levels). However, similar to the catch up in containment policies, democracies respond much more aggressively than non-democratic countries in the post period and have a 29 percent higher (p-value of 0.001) health policy index than non-democracies after the first reported coronavirus case. In columns (2), (5), and (3), (6), we add country and calendar-week fixed effects respectively and find that this pattern remains stable. Therefore, for containment policies, the democracies close the initial difference and catch-up with non-democracies in the post period. However, for the health policies, once exposed to the virus, democracies respond more aggressively than non-democracies.

Given that democracies respond aggressively in terms of containment and health policies after their first COVID-19 case, we now take advantage of the high-frequency data to examine the speed and persistence of the policy response. Figures 2(a) and 2(b) show a five day moving average of the containment and health policies in democratic and non-democratic countries, relative to the week of their first COVID-19 case. The raw plot indicates that democracies on average have less stringent containment and health policies before their first COVID-19 case and respond rapidly to catch up (in case of containment policies) or exceed (in case of health policies) relative to non-democracies. This is consistent with the discussion above. Figures 2(c) and 2(d) then report the coefficients from estimating specification (2). As reported, we see that as compared to non-democratic countries, democratic countries respond more aggressively within the first week after registering their first COVID-19 case. Moreover, this difference is persistent for up to seven weeks after the first case and in fact, increases over time for containment policies.

5.2 Governance systems, electoral incentives and policy responses

Having established that policy responses in democracies are different from non-democracies, we turn to examine how various institutional and cultural features across these democratic countries shaped their policy responses. We begin by examining the heterogeneity in policy response across three features of democracies, namely: (a) the governance system, i.e., parliamentary and presidential systems; (b) the electoral strength of the chief

executive; (c) the fraction of executive's term remaining before the next election.

Policy responses across governance systems: We estimate equation (1) where D_c is a dummy variable that takes value one if a country has a parliamentary system and 0 for a presidential system. We report the results in columns (1)-(3) of table 3. As reported in column (1) of panel A, parliamentary systems on average have a 21 percent lower containment index before being exposed to the coronavirus as compared to presidential systems. However, we find no differential responses in containment policies between these two electoral systems after registering their first COVID-19 case. As reported in panel A, the estimated coefficients are both small in magnitude as well as statistically insignificant at conventional levels. On the other hand, as reported in columns (1)-(3) of panel B, parliamentary systems respond more aggressively in health policies as compared to presidential systems after registering their first COVID-19 case. However, the differences become small and statistically insignificant at conventional levels after controlling for country and calendar-week fixed effects, indicating that these differences in the policy response are driven by underlying characteristics of countries and evolution of the average policy response of the world over time.

Despite finding little difference in the change in containment and health policies, there could be differences in the speed and persistence with which these two political systems respond. This is what we examine by estimating equation (2). We report the results in figures 3(a) and 3(b) respectively. We find that there is no differential response in either the speed or persistence with which parliamentary and presidential systems respond to the crisis as measured by the two indices.

Policy responses and electoral incentives: We now turn to examine the heterogeneity in policy responses by the electoral strength and electoral term remaining of the incumbent government. As reported in columns (4)-(9) of panel A in table 3, there is no differential response in containment policies depending on the electoral strength or the remaining term of the incumbent government. The estimated magnitudes in our preferred specification with the country and calendar-week fixed effects, reported in columns (3) and (6), are both small in magnitude as well as statistically insignificant at conventional levels. On the contrary, as reported in columns (4) and (7) of panel B, countries, where the elected government has an above-median electoral strength and term remaining, have on average 68.8 and 47.7 percent lower health policy index before registering their first COVID-19 case respectively. However, these countries catch up after being exposed to coronavirus cases. The countries with above-median electoral strength and remaining term, have 7 percent lower (p-value of 0.275) and 1 percent lower (p-value of 0.867) health indices, respectively, in the post period. This implies that above-median countries respond relatively more aggressively as opposed to below-median countries in their health

policy. As reported in columns (2)-(3) and (5)-(6), there is no significant change in the magnitude of the response after we add country and calendar-week fixed effects, indicating that these differential responses are not explained fully by country characteristics or changes (such as learning) over time across all countries.

Similar to the previous analysis, we now turn to examine how rapidly countries with above-median electoral strength and term remaining respond, relative to the below-median countries. We therefore report the results from equation (2) in figure 3. Consistent with the results above, we do not find a differential response in containment policies for countries with above and below electoral strength and term remaining, as reported in figures 3(c) and 3(e). On the other hand, as reported in figures 3(d) and 3(f), countries with above-median electoral strength and term remaining respond very quickly in their health policies, in the first week of reporting their first COVID-19 case. Moreover, this response is persistent for over a month after the first case.

Discussion of results: To summarize, we find that political factors, specifically, high electoral strength of the government as well as being early in its term (i.e., having the next election more distant in the future) help the executive implement more aggressive health policies after being exposed to the virus. Moreover, the health responses are quick, i.e., happen within a week of being exposed, and persistent. We do not find any such effect on containment policies. Moreover, different electoral systems such as presidential and parliamentary systems do not appear to generate differential policy responses across democracies. Therefore, the results seem to suggest that more than institutional structures of the government, it is the electoral incentives that drive the policy response of leaders. Specifically, with more electoral strength, a leader possibly feels confident in pursuing a more aggressive health policy. Further, if a leader is relatively early in her term (i.e., has a high value of term remaining), then she need not have to worry about electoral consequences of focusing solely on planning and organizing the medical sector and therefore can quickly ramp up the health response once exposed to the virus.

5.3 Media freedom, norms and policy responses

After discussing governance systems and electoral environments, we turn to examine whether the institution of media and political norms result in differential policy responses across democracies. We consider three indicators, namely: (a) freedom of the press; (b) trust in the government; (c) citizen's preference for the independence of the elected leader in deciding policy.

Media freedom and policy response: The media is a natural institution to examine to understand the response of democracies to a crisis. The media is particularly important in keeping a check on the elected government as well as effectively disseminate

information on the crisis, which could be particularly salient for a health pandemic like the novel coronavirus. We begin by classifying democracies by above and below median score in media freedom and examine if containment and health policy responses differ across these countries. As reported in columns (1)-(3) of panel A of table 4, countries with above-median media freedom do not respond differently in the aggressiveness of their containment policy in response to COVID-19 policies. On the other hand, as reported in columns (1)-(3) of panel B, countries with above-median media freedom do respond aggressively in their health policy with a 40-70 percent higher change in the health policy index as opposed to countries with below-median media freedom scores. Lastly, figures 4(a) and 4(b) examine the speed and persistence of these policies over time. We see that countries with above-median media freedom do respond with relatively higher containment policies, even though the effects are gradual over the first two/three weeks. On the other hand, countries with above-median media freedom have an immediate and large positive response in the health policies, which remains persistent for up to seven weeks after the first coronavirus case.

Norms and policy response: We now turn to discuss the heterogeneity in policy response across countries along with the two indicators of norms related to politics, namely citizens' trust in the government and citizens' preference for the independence of the elected leader in deciding policy. Similar to the previous analysis, we compare the differential policy response in above and below median countries. As reported in column (4) of table 4, countries with above-median trust in the government have 56.6 percent *lower* containment index as compared to below-median countries. However, after registering their first COVID-19 case, the countries with above-median trust in the government respond aggressively and have 28 percent *higher* containment index after the first COVID-19 case (p-value of 0.09). As reported in columns (5) and (6), this relatively aggressive response remains robust to controlling for country and calendar-week fixed effects. Turning to the citizens' preference for the independence of the elected leader, as reported in columns (7)-(9) of panel A, above-median countries respond with more aggressive containment policies in response to COVID-19 cases, with 38-50 percent higher containment index, depending on the specification. In panel B of table 4, we discuss the responses in health policies. As reported in columns (4)-(6), we find that countries with above-median trust in the government are less aggressive in their health policies by about 69 percent in the pre-period. However, they respond more aggressively in the post period and have a 60-67 percent higher change in the health index as compared to below-median countries. Therefore, they successfully catch up with the below-median countries in the post period. From columns (7)-(9), above-median countries where citizens prefer more independence for their elected leader are relatively slow to respond in health policies in the post-period with a 25-33 percent lower change in the health policy index. The coefficients, however,

are statistically insignificant at conventional levels.

We now turn to examine the relative difference in speed and persistence of policy response for above and below median countries. From figures 4(c) and 4(d), we see that countries with above-median trust in the government do respond with more aggressive containment and health policies, but the increase is gradual over time and the regression coefficients are statistically significant at conventional levels only two weeks after the first registered case in a country. From figures 4(e) and 4(f), we see that countries with an above-median preference for more independence of elected leaders see a rapid response in containment policies within the first week or two of the registered COVID-19 case. This differential response is persistent for up to a month, after which even though the estimated coefficients are positive, they are comparatively smaller in magnitude and are not statistically significant at conventional levels. On the contrary, there are no differential responses in health policies. Both the estimated magnitudes are small as well as the coefficients are not significant at conventional levels.

Discussion of results: To summarize the results, institutions like the media along with norms related to the trust in the government and independence of the leader in policymaking play an important role in shaping the policy responses of countries. Firstly, countries with freer media have a relatively more aggressive, rapid, and persistent health policy, but a slower and more gradual effect on containment policies. The results suggest that a robust press can highlight the human cost of a stringent containment policy, and thereby, can slow down its aggressiveness. On the other hand, it can also point out potential hot spot zones and shortfalls in the medical response and consequently force the government to respond quickly and persistently with more aggressive health policy. Second, countries where citizens have more trust in the government respond with more aggressive containment and health policies, and the increase in these indices is gradual and persistent for up to seven weeks after the first registered COVID-19 case. This suggests that a more trustworthy government is more measured in its response to a crisis and becomes aggressive in its response relatively later, possibly when the case and death loads become relatively higher to warrant a more bold response. Lastly, in countries where citizens prefer more independence for their elected leaders, the government responds more aggressively and rapidly in containment policies, but not in health policies. This is consistent with the interpretation that the leaders in these countries enjoy relatively greater freedom in announcing stricter containment policies and therefore act on that freedom. The fact that they do not seem to act on the freedom on the health policy front, suggests that it requires other institutions (such as the media) to provide the leaders with the appropriate information for them to become aggressive.

5.4 Robustness of the results

The high-frequency of our data along with country and week fixed-effects already allow us to control for all time-invariant country characteristics that could affect containment and health policies, as well as, the general evolution of policy responses across all countries over time. However, it is possible that aspects about a country (such as population, GDP, urbanization, health infrastructure, etc.), could also be correlated with the political institutions as well as affect a country's policy response over time. Therefore, we modify our preferred specification and allow for these flexible time-trends of country characteristics and discuss the robustness of our results in appendix C. All our results are robust to controlling for these time trends, giving us confidence that it is truly the underlying political institutions that shape the nature of policy responses to the coronavirus pandemic. In appendix C.1.1, we begin by showing the robustness of our results for democracies and non-democracies, followed by parliamentary and presidential democracies. In appendix C.1.2 and C.1.3, we then examine the robustness in heterogeneity across the electoral incentives of the elected leader and the political norms in a country respectively.

6 Conclusion

In this paper, we use the context of the novel coronavirus pandemic to examine whether policy responses during a national crisis differ across democracies and non-democracies and whether differences in political institutions are important in explaining these differences. We use high-frequency data on health and containment policy responses to the novel coronavirus to examine this question. The nature of the coronavirus pandemic is particularly useful to study this question as the crisis was similar across all countries and hit them over a very short period (two months). Using a difference-in-differences framework, we find robust patterns that while non-democracies are more aggressive on both containment and health responses than democracies before the pandemic hits, democracies catch up to non-democracies in the stringency of containment policy and surpass them in the aggressiveness of health policy within a week after registering their first COVID-19 case. Moreover, the effects remain persistent for more than a month after. We find that while the system of electing the chief executive (in terms of presidential vs parliamentary systems) does not affect policy response in democracies, the electoral incentives of the leader do matter significantly. Elected leaders who have performed well in the previous election or those who do not face the next election soon are significantly more aggressive in their policy responses. Since leaders in non-democracies do not face regular and competitive elections, this may explain why we observe democratic leaders responding more vigorously. Additionally, we find that democracies with greater freedom of the press respond more slowly and gradually in containment policies, while more aggressively and persistently in health policies. Finally, we find that democracies with

more conducive political norms, in terms of trust in government and preference for the independence of leader, also tend to respond more aggressively to the pandemic.

The results taken together suggest strongly that political institutions and the incentives and norms embedded therein, significantly shape the response of political leaders to a national crisis such as the coronavirus pandemic. Whether the institutions in democracies would help the leader to react strongly or weakly depends on the nature of the response, as well as the political circumstances. Therefore, any understanding of how a country would respond to a national crisis would require examination of the details of its political environment. The global agencies that often guide and advise countries during such times must be cognizant of these details and make their recommendations taking into account the political economy of the government's response.

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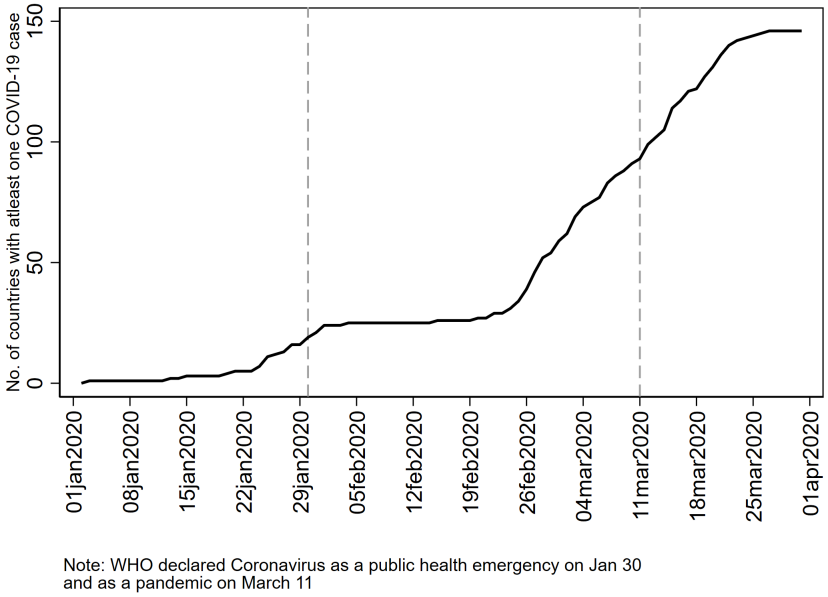
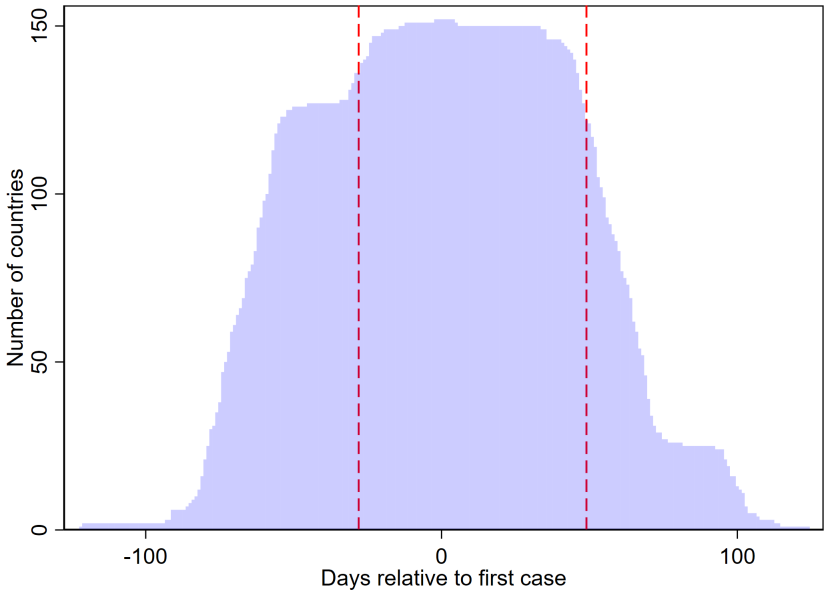
A Tables and Figures

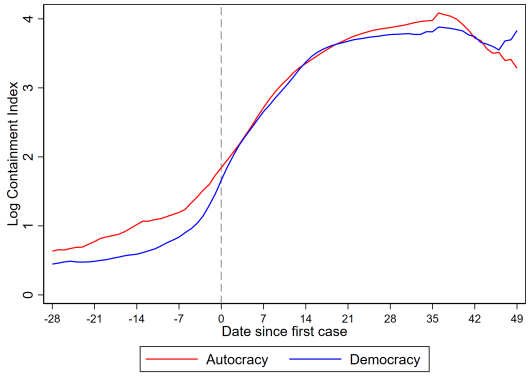


(a) Date of reporting of first case across countries

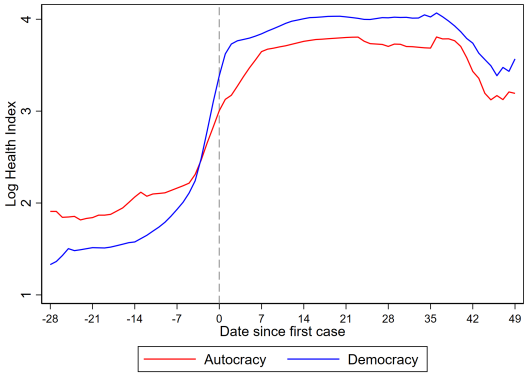


(b) Days relative to first case across countries

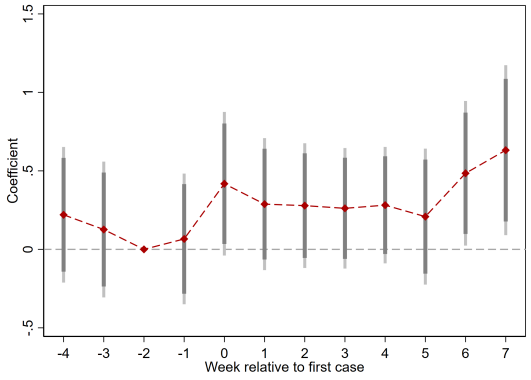
Figure 1. Distribution of first case across countries



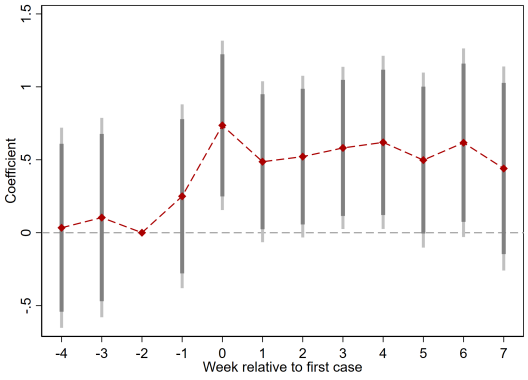
(a) Containment index (Five day moving average)



(b) Health index (Five day moving average)

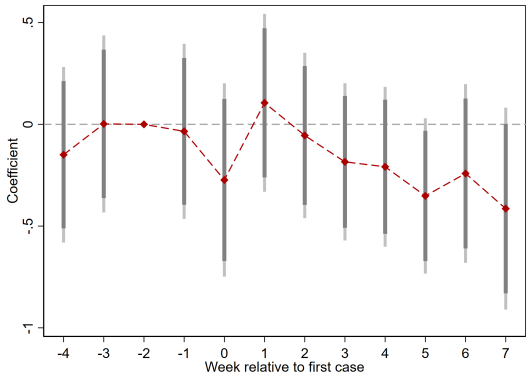


(c) Containment index (Reg. Coefficient)

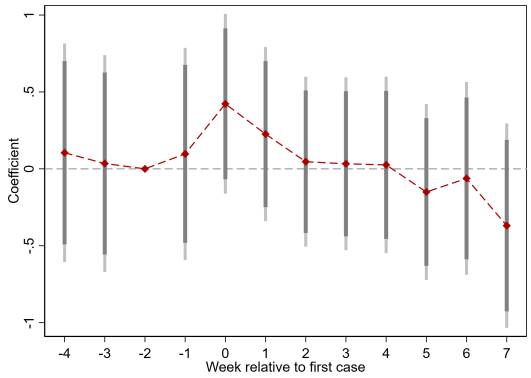


(d) Health index (Reg. Coefficient)

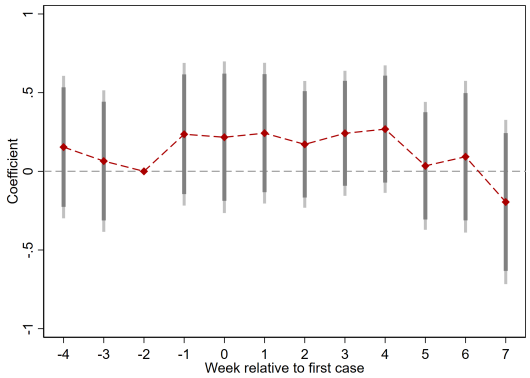
Figure 2. Evolution of policies over time in democracies relative to non-democracies



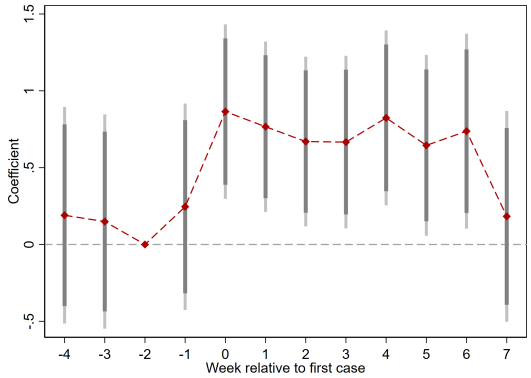
(a) Electoral system and containment policies



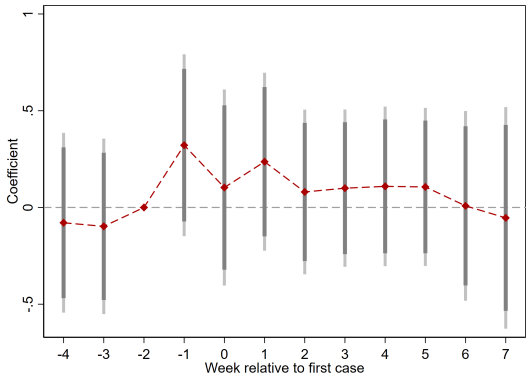
(b) Electoral system and health policies



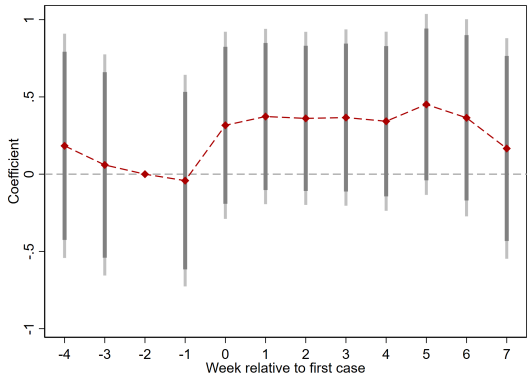
(c) Electoral strength and containment policies



(d) Electoral strength and health policies

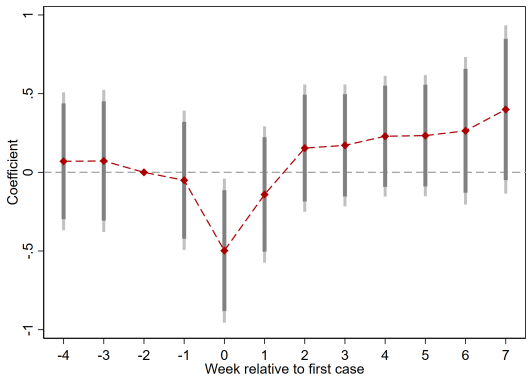


(e) Electoral term remaining and containment policies

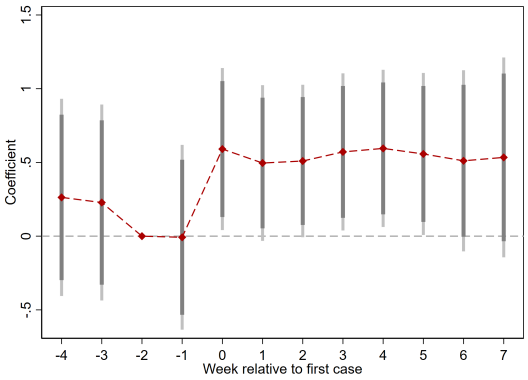


(f) Electoral term remaining and health policies

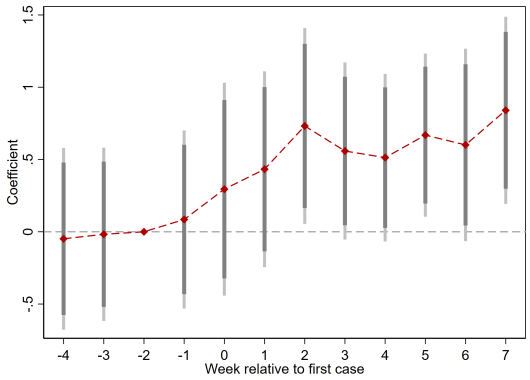
Figure 3. Heterogeneity in policy responses by electoral institutions across all democracies



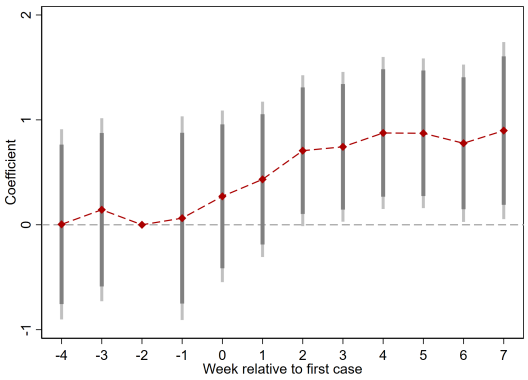
(a) Media freedom and containment policies



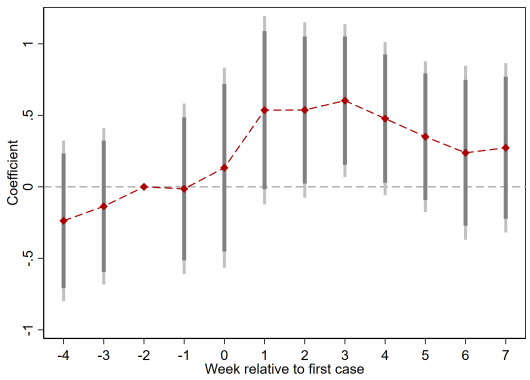
(b) Media freedom and health policies



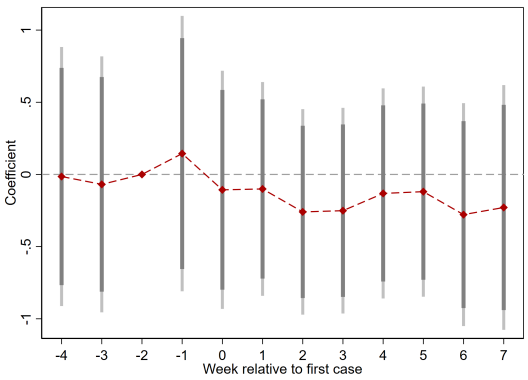
(c) Trust in the govt. and containment policies



(d) Trust in the govt. and health policies



(e) Independence of elected leader and containment policies



(f) Independence of elected leader and health policies

Figure 4. Heterogeneity in media and cultural norms across all democracies

Table 1—Summary Statistics

	N	Whole sample	Non-democracy	Democracy	Diff.	p-value
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: All countries						
Democracy	152	0.74	0.00	1.00	0.00	0.00
		(0.44)				
Polity score	152	4.3	-5.03	7.63	12.66	0.00
		(6.06)	(2.71)	(2.2)		
Media freedom	152	65.55	49.36	71.33	21.96	0.00
		(15.26)	13.12	11.32		
Containment Index	125	4.17	4.5	4.05	-0.45	0.76
		(7.09)	(5.02)	(7.69)		
Health Index	125	19.48	22.97	18.28	-4.69	0.25
		(19.85)	(22.55)	(18.82)		
Panel B: Democractic countries						
	N	Whole sample	Presidential system	Parliamentary system	Diff.	p-value
	(1)	(2)	(3)	(4)	(5)	(6)
Parliament	112	0.38	0.00	1.00	0.00	0.00
		(0.49)				
Polity score	112	7.63	6.97	8.74	1.77	0.00
		(2.2)	(2.03)	(2.04)		
Electoral strength	110	50.6	56.31	41.34	-14.98	0.00
		(16.8)	(14.21)	(16.67)		
Electoral tenure	98	52.05	53.51	50.11	-3.39	0.58
		(30.14)	(28.53)	(32.4)		
Media freedom	112	71.33	67.7	77.38	9.68	0.00
		(11.32)	(10.26)	(10.48)		
Trust in govt.	40	46.61	48.35	43	-5.35	0.11
		(9.83)	(9.1)	(10.67)		
Independence	40	2.33	2.42	2.14	-0.29	0.05
of elected leader		(0.44)	(0.41)	(0.45)		
Containment Index	93	4.05	4.87	2.81	-2.06	0.21
		(7.69)	(8.57)	(6.02)		
Health Index	93	18.28	17.66	19.23	1.57	0.7
		(18.82)	(16.64)	(21.93)		

Notes: Panel A reports the summary statistics for all countries, while Panel B reports only for democracies. Column (2) reports the mean for the relevant sample while columns (3) and (4) report separately for the types of countries within the sample. Column (5) reports the difference between (4)-(3) and column (6) reports the p-value of a test if that difference is statistically different from zero. Standard deviations reported in parentheses.

Table 2—Containment and Health policies across countries

	Log Containment Policy Index			Log Health Policy Index		
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	-0.329***			-0.293		
	(0.112)			(0.182)		
Post	2.314***	2.382***	0.494***	1.426***	1.452***	0.997***
	(0.134)	(0.117)	(0.110)	(0.181)	(0.132)	(0.135)
Democracy × Post	0.360**	0.312**	0.234**	0.592***	0.570***	0.452***
	(0.155)	(0.135)	(0.0946)	(0.204)	(0.153)	(0.135)
R^2	0.464	0.615	0.847	0.316	0.530	0.696
N	1463	1463	1463	1463	1463	1463
Country FE	No	Yes	Yes	No	Yes	Yes
Week FE	No	No	Yes	No	No	Yes

Notes: Democracy is a dummy that takes the value 1 if the country has a positive polity score and 0 otherwise. Post is a dummy that takes the value 1 after atleast 1 case is reported and 0 otherwise. Columns (1)-(3) has log of Containment Index and (4)-(6) has log of Health Policy Index as the dependent variable. Robust standard errors are reported in parentheses. * p< 0.1, ** p<0.05 and *** p< 0.01 level of significance.

Table 3—Heterogeneity in policy response by political system, electoral strength and tenure

	Electoral governance			Electoral strength			Electoral term remaining		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Containment policies									
Above median	-0.209*			-0.0264			-0.114		
	(0.110)			(0.115)			(0.118)		
Post	2.707***	2.726***	0.755***	2.751***	2.772***	0.717***	2.737***	2.757***	0.719***
	(0.0997)	(0.0878)	(0.110)	(0.0988)	(0.0852)	(0.113)	(0.111)	(0.0969)	(0.127)
Above med.	-0.0757	-0.0786	-0.120	-0.197	-0.196	0.0223	-0.0855	-0.0804	0.0390
× Post	(0.155)	(0.134)	(0.0934)	(0.159)	(0.137)	(0.0995)	(0.162)	(0.140)	(0.101)
R^2	0.489	0.630	0.854	0.486	0.630	0.854	0.489	0.635	0.855
Panel B: Health policies									
Above median	-0.156			-0.688***			-0.477**		
	(0.181)			(0.182)			(0.186)		
Post	1.851***	1.856***	1.465***	1.805***	1.812***	1.243***	1.743***	1.754***	1.265***
	(0.122)	(0.1000)	(0.115)	(0.116)	(0.0957)	(0.114)	(0.146)	(0.119)	(0.127)
Above med.	0.414**	0.414***	-0.0709	0.608***	0.601***	0.550***	0.465**	0.459***	0.302**
× Post	(0.193)	(0.159)	(0.137)	(0.196)	(0.163)	(0.141)	(0.199)	(0.164)	(0.137)
R^2	0.377	0.533	0.702	0.391	0.541	0.708	0.372	0.530	0.712
N	1091	1091	1091	1079	1079	1079	975	975	975
Country FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Week FE	No	No	Yes	No	No	Yes	No	Yes	Yes

Notes: Columns (1)-(3) report the heterogeneity in the electoral governance. The above median takes a value 1 if the country has a Parliamentary system and 0 for a Presidential system. Columns (4)-(6) report the heterogeneity for electoral strength. Columns (7)-(9) report heterogeneity for fraction of electoral tenure remaining. The sample is restricted democractic countries only. Above median is dummy that takes the value 1 if the relevant variable for that country is above the median value and 0 otherwise. Panel A examines the heterogeneity in containment policies with log containment index as the dependent variable. Panel B examines the heterogeneity in health policies with log health policy index as the dependent variable. Post is a dummy that takes the value 1 after atleast 1 case is reported and 0 otherwise. Country FE are country fixed effects while Week FE are fixed effects for each calendar week. Robust standard errors are reported in parentheses. * p< 0.1, ** p<0.05 and *** p< 0.01 level of significance.

Table 4—Heterogeneity in policy response by media and cultural norms

	Media freedom			Trust in govt.			Independence of elected leader		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Closure policies									
Above median	-0.453***			-0.566***			-0.103		
	(0.110)			(0.145)			(0.141)		
Post	2.636***	2.642***	0.677***	2.292***	2.325***	0.229	2.550***	2.578***	0.401**
	(0.110)	(0.0965)	(0.116)	(0.186)	(0.141)	(0.169)	(0.164)	(0.141)	(0.179)
Above med.	0.0835	0.103	0.0812	0.852***	0.834***	0.606***	0.490**	0.478**	0.381***
× Post	(0.151)	(0.133)	(0.0944)	(0.225)	(0.188)	(0.139)	(0.218)	(0.188)	(0.131)
R^2	0.496	0.630	0.854	0.518	0.669	0.885	0.514	0.661	0.881
Panel B: Health policies									
Above median	-0.569***			-0.687***			0.297		
	(0.174)			(0.261)			(0.262)		
Post	1.653***	1.651***	1.263***	2.064***	2.081***	1.087***	2.518***	2.537***	1.606***
	(0.133)	(0.112)	(0.122)	(0.215)	(0.178)	(0.186)	(0.190)	(0.148)	(0.184)
Above med.	0.710***	0.719***	0.382***	0.600**	0.588***	0.675***	-0.249	-0.264	-0.327*
× Post	(0.187)	(0.154)	(0.134)	(0.276)	(0.223)	(0.175)	(0.275)	(0.220)	(0.182)
R^2	0.385	0.541	0.706	0.537	0.667	0.793	0.524	0.661	0.786
N	1091	1091	1091	439	439	439	439	439	439
Country FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Week FE	No	No	Yes	No	No	Yes	No	Yes	Yes

Notes: Columns (1)-(3) report the heterogeneity if the country has a Parliamentary system as opposed to a Presidential system. Columns (4)-(6) report the heterogeneity for electoral strength. Columns (7)-(9) report heterogeneity for fraction of electoral tenure remaining. The sample is restricted democractic countries only. Above median is dummy that takes the value 1 if the relevant variable for that country is above the median value and 0 otherwise. Panel A examines the heterogeneity in containment policies with log containment index as the dependent variable. Panel B examines the heterogeneity in health policies with log health policy index as the dependent variable. Post is a dummy that takes the value 1 after atleast 1 case is reported and 0 otherwise. Country FE are country fixed effects while Week FE are fixed effects for each calendar week. Robust standard errors are reported in parentheses. * p< 0.1, ** p<0.05 and *** p< 0.01 level of significance.

A Data description

A.1 List of countries

Table A1—List of countries

Continent	Countries
Africa (46 countries)	Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Cote dIvoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Guinea, Guinea Bissau, Kenya, Liberia, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.
Americas (26 countries)	Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba,Dominican Republic,Ecuador, Guatemala, Guyana, Honduras, Haiti, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Suriname, Trinidad and Tobago, Uruguay, United States, Venezuela.
Asia (38 countries)	Afghanistan, Bahrain, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Laos, Lebanon, Malaysia, Mongolia, Myanmar, Nepal, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, South Korea, Sri Lanka, Syria, Tajikistan, Thailand, Timor Leste, Turkey, United Arab Emirates, Uzbekistan, Vietnam.
Europe (38 countries)	Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Moldova, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom.
Oceania (4 countries)	Australia, Fiji, New Zealand, Papua New Guinea.

B Data description

Here we describe the construction of variables used in the analysis of this paper.

Containment and Health policy indices: The raw data is collected by Hale et al. (2020). Containment and closure policies are measured across eight indicators (C1-C8) namely: school closing, workplace closing, canceling public events, restrictions on gatherhing size, closure of public transport, stay at home requirements, restrictions on internal movement and restrictions on international travel. Health policies are measured across three indicators (H1-H3), namely: public information campaign, testing policy and contact tracing. We follow Hale et al. (2020) exactly to create two measures of health and containment policies by taking the ordinal score for each measure along with weighting it if the policy is general or targeted and rescale the score to lie between 0-100.

World Values Surveys: We use the Sixth Round of the World Values Surveys (Inglehart et al. (2014)) to construct two variables with respect to the citizens' trust in the government and citizens' preferences on independence of elected leader in policy-making. We use the following questions (survey available here) to construct these two variables.
Trust in the government: The question is *"on a scale of 1-4 (1 a lot of confidence and 4 being no confidence at all), how much confidence do you have in the institution mentioned"* where these institutions are: the government (V115), political parties (V116), parliament (V117), civil service (V118). We then weight this by V98 *"how much responsibility should the government take to ensure that everyone is provided for"*, which takes a value from 1 (government should provide everything) to 10 (people responsible for themselves). The index of government trust is therefore calculated as:

$$\text{Govt. trust}_c = (11 - V98_c) \times \frac{1}{4} \sum_{x_c=V115}^{V118} (5 - x_c)$$

where x_c is the average score across respondents for question x in country c. Lastly, the score can take a value between 1 and 40. So, we normalize this by a factor 100/40 so that the score takes a value between 1-100.
Independence of elected leader: From V127, *Having a strong leader who does not have to bother with parliament and elections. On a scale of 1 (very good)–4 (very bad), what you think about this way of governing the country?"* The independence of elected leader variable is therfore 5-x_c where x_c is the average response to this question in a country c.

C Robustness

C.1 Time trends of country characteristics

Given the high frequency of the data, country fixed effects already allow us to control for country-specific confounders in our baseline model specification (given in equations (1) and (2)). However, there might be aspects about the country (such as population, GDP, urbanization, health infrastructure etc.) that would be correlated with being a democracy and affect the policy response over time. From the latest World Bank Open Database[17] we use log-GDP per-capita, fraction of population in rural areas, fractionalization, fraction of population with access to basic health and sanitation services, international trade as a fraction of GDP and the labor force participation for each country in our sample. We then modify our baseline specifications to include flexible time-trends of these country-level characteristics as follows:

$$P_{ct} = \alpha + \beta_1 Post_{ct} + \beta_2 X_c \times Post_t + \gamma D_c \times Post_t + \alpha_c + \alpha_w + \varepsilon_{ct} \tag{3}$$

$$P_{ct} = \alpha + \sum_{t=-4}^{7} \beta_t I_t + \sum_{t=-4}^{7} \gamma_t D_c \times I_t + \sum_{t=-4}^{7} \delta_t X_c \times I_t + \alpha_c + \alpha_w + \varepsilon_{ct} \tag{4}$$

where X_c is the vector of country-specific controls discussed above. In section C.1.1 we begin by showing the robustness of our results between democracies and non-democracies, followed by parliamentary and presidential democracies. In sections C.1.2 and C.1.3, we examine the robustness in heterogeneity across political and social institutions within democracies respectively.

C.1.1 Democratic, parliamentary systems and policy responses

In panel A of table C1, we provide the results of policy responses across democracies as estimated from equation (3). Columns (1)-(2) report the results for containment policies, while (3)-(4) for health policies. Columns (1) and (3) report the baseline specification as in table 2. Columns (2) and (4) report the results with country-specific controls. As we can see from the table, the results are similar in magnitude and statistical significance at conventional levels.

We now report the results from equation (4) in figure C1. Figures (a) and (b) report the result for containment and health policies across democracies and non-democracies, while in figures (c) and (d) report the estimates for parliamentary and non-parliamentary systems. The grey line reports the baseline specification from the main paper, while the orange line reports the results after adding the country-specific trends. As we can see,

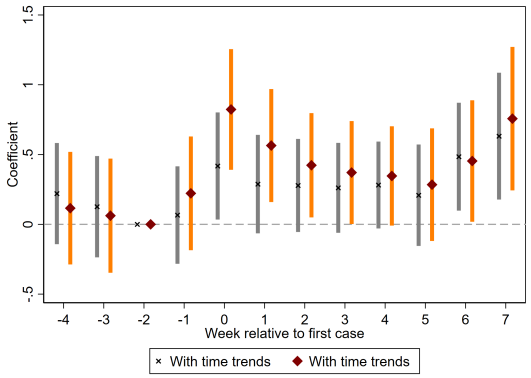
[17] Data can be downloaded from: https://data.worldbank.org/

Table C1—Containment and Health policies across countries

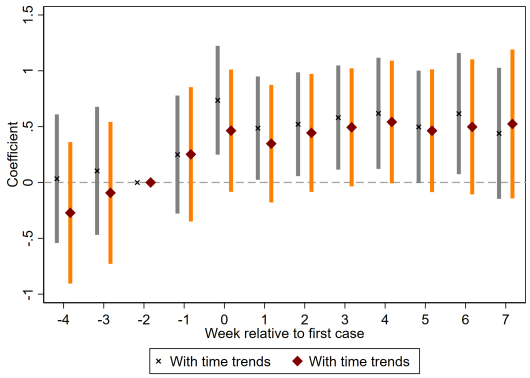
	Log Containment Policy Index		Log Health Policy Index	
	(1)	(2)	(3)	(4)
Panel A: Democracies and non-democracies				
Democracy × Post	0.234**	0.372***	0.452***	0.484***
	(0.0946)	(0.109)	(0.135)	(0.147)
N	1463	1406	1463	1406
R^2	0.847	0.851	0.696	0.711
Panel B: Presidential and Parliamentary systems				
Parl. × Post	-0.120	-0.0240	-0.0709	0.140
	(0.0934)	(0.120)	(0.137)	(0.177)
R^2	0.854	0.861	0.702	0.716
N	1091	1057	1091	1057
Sample	Baseline	Trends	Baseline	Trends

Notes: Democracy is a dummy that takes the value 1 if the country has a positive polity score and 0 otherwise. Post is a dummy that takes the value 1 after atleast 1 case is reported and 0 otherwise. Parliament is a dummy that takes the value 1 if the country has a Parliamentary system and 0 otherwise. The sample of countries in Panel B is restricted to democratic countries only. Columns (1) and (3) report the baseline results as in table 2, while columns (2) and (4) report the results with country-specific trends as discussed in equation (4). All specifications have country and calendar-week fixed effects. Robust standard errors are reported in parentheses. * p< 0.1, ** p<0.05 and *** p< 0.01 level of significance.

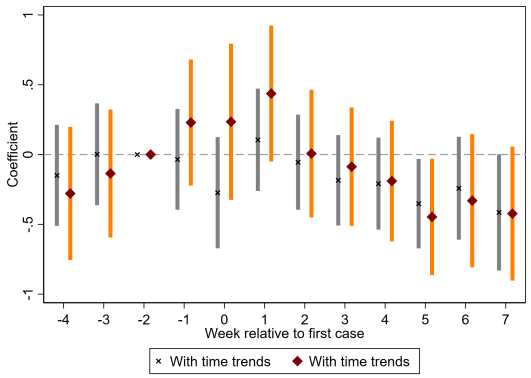
the coefficients are robust to including time trends of country-level characteristics and are similar to the baseline specification. The interpretation of the results does not change.



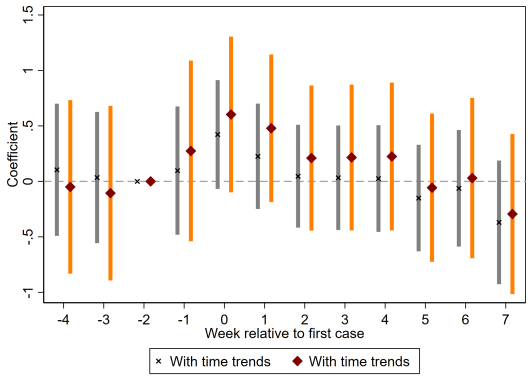
(a) Democracy and containment policies



(b) Democracy and health policies



(c) Parliamentary system and containment policies



(d) Parliamentary system and health policies

Figure C1. Evolution of policies over time in democracies and parliamentary systems

C.1.2 Electoral strength, tenure and policy responses

Table C2 examines the heterogeneity in containment and health policies within democracies across the two indicators political institutions, namely the electoral strength of the largest party and the fraction of electoral tenure left before the next election. Columns (1) and (3) report the baseline results as in table 3, while columns (2) and (4) report the results with country-specific trends as discussed in equation (4). As we can see, the results are robust to controlling for country-specific characteristics interacted with the Post dummy. The interpretation from our baseline specifications do not change. Figure

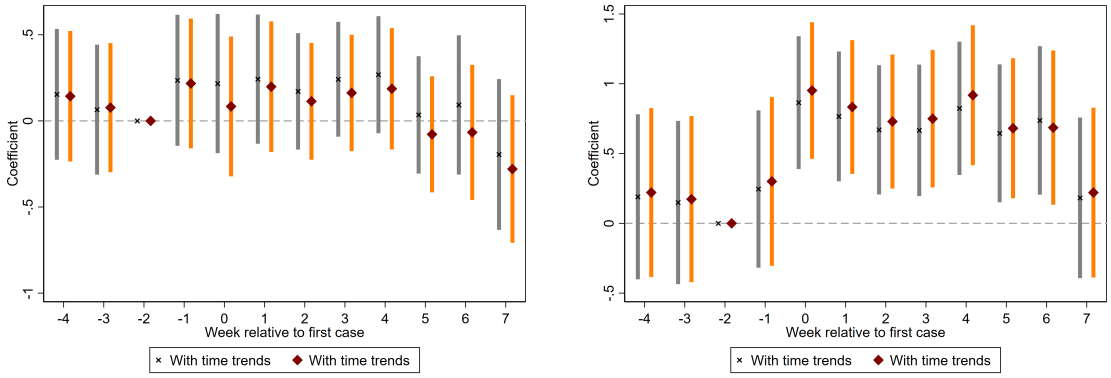
Table C2—Heterogeneity in policy responses and political institutions within democracies

	Electoral strength		Electoral term remaining	
	(1)	(2)	(3)	(4)
Panel A: Containment policies				
Above med.	0.0223	-0.0616	0.0390	0.0412
× Post	(0.0995)	(0.0978)	(0.101)	(0.102)
R^2	0.854	0.861	0.855	0.862
Panel B: Health policies				
Above med.	0.550***	0.571***	0.302**	0.370***
× Post	(0.141)	(0.144)	(0.137)	(0.136)
R^2	0.708	0.721	0.712	0.725
N	1079	1045	975	941
Spec.	Baseline	Trend	Baseline	Trend

Notes: Columns (1)-(2) report the heterogeneity for electoral strength and columns (3)-(4) report heterogeneity for fraction of electoral tenure remaining. The sample is restricted only to democractic countries. Above median is dummy that takes the value 1 if the relevant variable for that country is above the median value and 0 otherwise. Panel A examines the heterogeneity in containment policies with log containment index as the dependent variable. Panel B examines the heterogeneity in health policies with the log health index as the dependent index across countries. Post is a dummy that takes the value 1 after atleast 1 case is reported and 0 otherwise. Columns (1) and (3) report the baseline results as in table 3, while columns (2) and (4) report the results with country-specific trends as discussed in equation (3). All specifications have country and calendar-week fixed effects. Robust standard errors are reported in parentheses. * p< 0.1, ** p<0.05 and *** p< 0.01 level of significance.

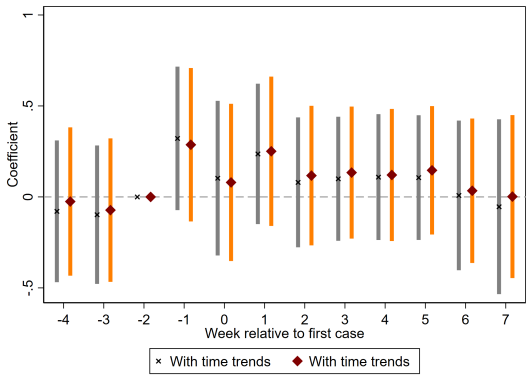
C2 then reports the heterogeneity in policy responses at a weekly level as specified in

equation (4) across the three indicators. As before, the grey line reports the baseline specification from the main paper while the red line reports the results after adding the country-specific trends. As we can see, the coefficients are similar to the baseline specification and the interpretation of the results does not change. If anything, it makes the interpretation stronger by improving the statistical significance of the coefficients.

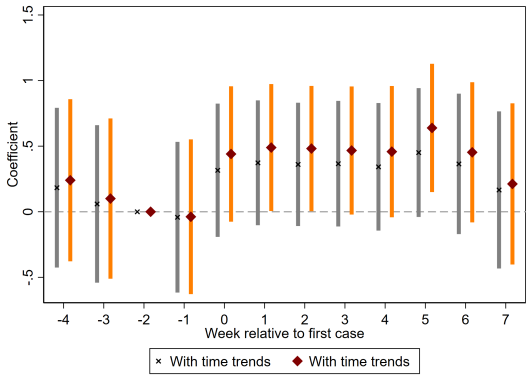


(a) Electoral strength and containment policies

(b) Electoral strength and health policies



(c) Electoral term remaining and containment policies



(d) Electoral term remaining and health policies

Figure C2. Evolution of policies over time in democracies

C.1.3 Media, norms and policy responses

Table C3 examines the heterogeneity in containment and health policies within democracies across the three indicators of trust in government, freedom and strength of the elected leader and freedom of the media. Columns (1), (3) and (5) report the baseline results as in table 4, while columns (2), (4) and (6) report the results with country-specific trends as discussed in equation (4). As we can see, the results are robust to controlling for country-specific time trends. The interpretation from our baseline specifications do not change. Figure C3 then reports the heterogeneity in policy responses at a weekly

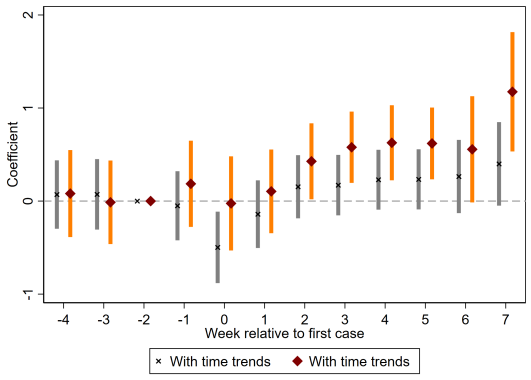
Table C3—Heterogeneity in policy responses and social institutions within democracies

	Trust in govt.		Freedom of leader		Media freedom	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Log containment index						
Above med.	0.606***	0.382***	0.381***	0.0537	0.0812	0.409***
× Post	(0.139)	(0.139)	(0.131)	(0.164)	(0.0944)	(0.123)
R^2	0.885	0.896	0.881	0.894	0.854	0.862
Panel B: Log health index						
Above med.	0.675***	0.360*	-0.327*	0.0510	0.382***	1.043***
× Post	(0.175)	(0.183)	(0.182)	(0.203)	(0.134)	(0.183)
R^2	0.793	0.830	0.786	0.827	0.706	0.728
N	439	427	439	427	1091	1057
Spec.	Baseline	Trend	Baseline	Trend	Baseline	Trend

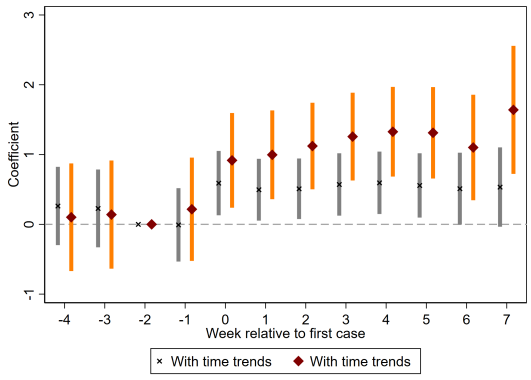
Notes: Columns (1)-(2) report the heterogeneity in trust for the government. Columns (3)-(4) report heterogeneity in the freedom and strength of elected leader. Columns (5)-(6) report heterogeneity in media leader. The sample is restricted to democractic countries only. Above median is dummy that takes the value 1 if the relevant variable for that country is above the median value and 0 otherwise. Panel A examines the heterogeneity in containment policies, while Panel B examines the heterogeneity in health measures across countries. Post is a dummy that takes the value 1 after atleast 1 case is reported and 0 otherwise. Columns (1), (3) and (5) report the baseline results as in table 4, while columns (2), (4) and (6) report the results with country-specific trends as discussed in equation (3). All specifications have country and calendar-week fixed effects. Robust standard errors are reported in parentheses. * p< 0.1, ** p<0.05 and *** p< 0.01 level of significance.

level as specified in equation (4) across the three indicators. As before, the grey line reports the baseline specification from the main paper while the red line reports the results after adding the country-specific trends. As we can see, the coefficients are similar to the baseline specification and the interpretation of the results does not change. If

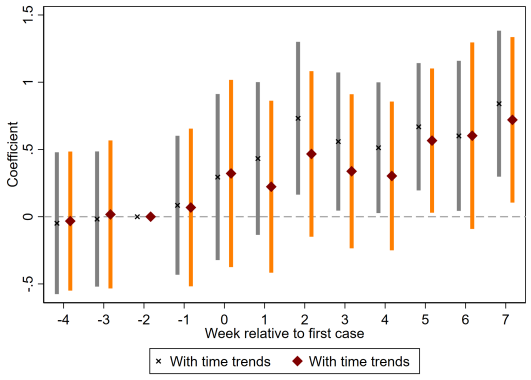
anything, it makes the interpretation stronger by improving the statistical significance of the coefficients.



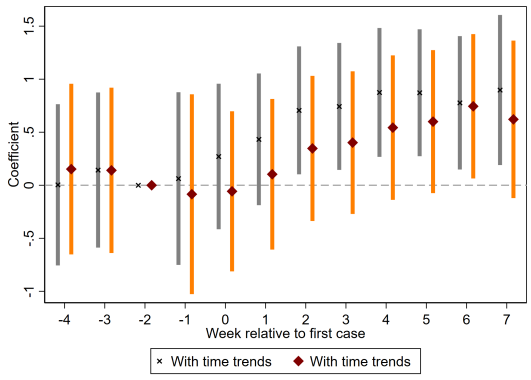
(a) Media freedom and containment policies



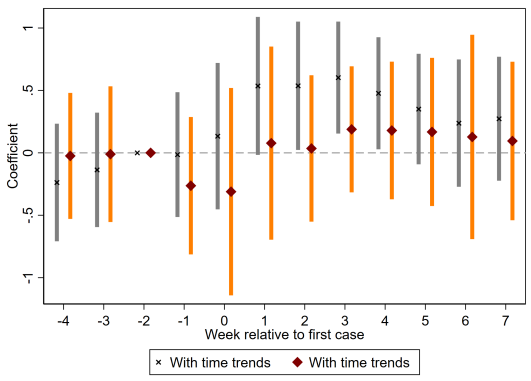
(b) Media freedom and health policies



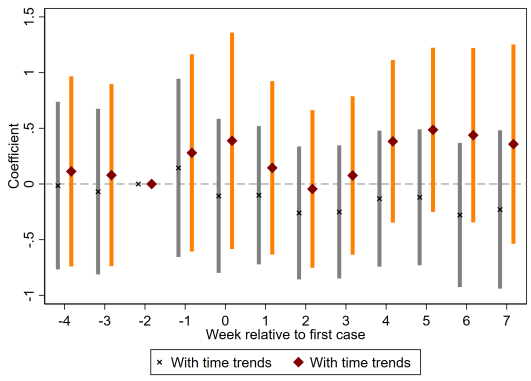
(c) Trust in govt. and containment policies



(d) Trust in govt. and health policies



(e) Independence of elected leader and containment policies



(f) Independence of elected leader and health policies

Figure C3. Media, cultural norms and policy responses over time

C.2 Strong democracies and non-democracies: |Polity score|>5

The polity score ranges from -10 to +10 with -10 being strong autocracies and +10 being strong democracies. We re-estimate our regressions by only keeping the strong democracies (polity score greater than +5) and strong autocracies (polity score less than -5). This ensures that our baseline results are not driven by countries who have weak political structures. This leaves us with a sample of 94 countries (79 democracies and 15 non-democracies). As reported in table C4, the results are robust and the coefficients are stable.

Table C4—Countries with |polity score|>5

	Log Containment Policy Index		Log Health Policy Index	
	(1)	(2)	(3)	(4)
Democracy × Post	0.234**	-0.0819	0.452***	0.519***
	(0.0946)	(0.127)	(0.135)	(0.170)
N	1463	1105	1463	1105
R^2	0.847	0.850	0.696	0.704
Sample	Baseline	|Polity|>5	Baseline	|Polity|>5

Notes: Democracy is a dummy that takes the value 1 if the country has a positive polity score and 0 otherwise. Post is a dummy that takes the value 1 after atleast 1 case is reported and 0 otherwise. The sample of countries in columns (2) and (4) are restricted to those with a absolute polity score greater than 5. Columns (1) and (3) report the baseline results as in table 2. All specifications have country and calendar-week fixed effects. Robust standard errors are reported in parentheses. * p< 0.1, ** p<0.05 and *** p< 0.01 level of significance.