Democracy, Culture, and Contagion: Political Regimes and Countries Responsiveness to Covid-19*

Carl Benedikt Frey†, Chinchih Chen, and Giorgio Presidente

Oxford Martin School, Oxford University

May 13, 2020

Abstract

A widely held belief is that autocratic governments have been more effective in reducing the movement of people to curb the spread of Covid-19. Using the Oxford COVID-19 Government Response Tracker (OxCGRT), and a real-time dataset with daily information on travel and movement across 111 countries, we find that autocratic regimes imposed more stringent lockdowns and relied more on contact tracing. However, we find no evidence that autocratic governments were more effective in reducing travel, and evidence to the contrary: countries with democratically accountable governments introduced less stringent lockdowns but were approximately 20% more effective in reducing geographic mobility at the same level of policy stringency. In addition, building on a large literature on cross-cultural psychology, we show that for the same policy stringency, countries with more obedient and collectivist cultural traits experienced larger declines in geographic mobility relative to their more individualistic counterparts. We conclude that, in terms of reducing mobility, collectivist and democratic countries have implemented relatively effective responses to Covid-19.

Keywords: Covid-19, Democracy, State Capacity, Culture, Policy

JEL: H11; H12; P48; Z1

*Frey and Presidente gratefully acknowledge funding from Citi.

†Corresponding author: carl.frey@oxfordmartin.ox.ac.uk

1 Introduction

The Covid-19 pandemic is unfolding at a time when democracy is in decline. Data from Freedom House (2020) shows that democracy has been in recession for over a decade, and the rate at which countries have lost civil and political rights has accelerated since the 2000s (Diamond, 2019). A key concern is that Covid-19 will exacerbate the decline of democracy. As the New York Times puts it, "China and some of its acolytes are pointing to Beijing's success in coming to grips with the coronavirus pandemic as a strong case for authoritarian rule" (Schmemann, 2020). Even the World Health Organization (WHO) has called its forceful lockdown "perhaps the most ambitious, agile and aggressive disease containment in history" (Kuo, 2020). This raises serious questions: have autocratic regimes generally been able to take more stringent policy measures to restrain people from moving around spreading the virus, and have their policies been more effective?

Governments around the world have introduced unprecedented measures to curb travel in order to halt the spread of Covid-19. Figure 1 shows how travel fell in a number of selected countries as time passed and more stringent policy measures were introduced. However, even at similar levels of policy stringency, there is a wide variation in cross-country mobility. In this paper, we examine the institutional and cultural underpinnings of this variation, tracing governments responses to the Covid-19 pandemic at the national level. By exploiting a real-time dataset with daily information on mobility trends and policy restrictions in 111 countries since the beginning of the lockdown, we estimate the differential responses and their effectiveness in democratic and authoritarian nation states.

We split the analysis in two stages. In the first stage, we regress an index of restrictions on mobility on daily confirmed cases of Covid-19 and their interaction with a proxy for whether a country is democratic.[1] Exploiting time variation in policy and infections, we are able to include country fixed effects and purge our estimates from country-specific characteristics potentially affecting the spread of the virus and the policy response.[2] We find that for a given number of infections, our policy stringency index was 17 percent higher in autocratic regimes.[3]

Figure 1 here

The second stage of our analysis regresses changes in people's mobility on policy stringency and its interaction with proxies for democracy. Again, we include country fixed effects that allows us to estimate the impact of institutions on the effectiveness of time-varying restrictions, while minimising the bias from country-specific characteristics. We find that although

[1] Daily confirmed Covid-19 cases are assumed to be the main variable considered by policy makers when deciding on mobility restrictions.

[2] Given the daily frequency of our data and the relatively short time period under analysis, we deem it unlikely that unobserved time-varying characteristics would bias the estimated coefficients.

[3] The number refers to column 3 of Table 2 in Section 3.

autocratic regimes tend to impose more stringent lockdowns, there is no evidence that they were more effective in reducing travel. On the contrary, we find robust evidence that countries with democratically accountable governments introduced less stringent lockdowns but experienced approximately 20% larger declines in geographic mobility at the same level of policy stringency. The positive correlation between an index of political and civil rights and our estimated elasticities of mobility to policy restrictions is presented in Figure 2. In our regression analysis, we find this relationship to be robust across a variety of specifications: in our baseline specification we find that on average, a ten percent increase in policy stringency corresponds to a 5% reduction in geographic mobility, while in countries with autocratic government, the reduction is one percentage point lower.[4] In other words, governments policy measures appear to be less effective in autocratic countries.

Figure 2 here

It is of course possible that the capacity of the state to enforce the lockdown matters more than the political system in place. Indeed, a large literature emphasises the role the state's ability to implement a range of policies in order to effectively respond to a crisis as well as driving economic development (Besley and Persson, 2009; 2010; Fukuyama, 2011; 2015; Johnson and Koyama, 2017; Migdal, 1988).[5] To that end, we explore the role of state capacity, proxied by the percentage of armed forces in the total labour force, in shaping the effectiveness of governments responses to Covid-19. We find that at the same level of policy stringency, countries with greater state capacity saw steeper reductions in geographic mobility. However, the negative correlation between autocracy and declining mobility remains statistically significant, also when accounting for state capacity.

Another complementary theory is that some cultures are more obedient than others, prompting people to better follow more stringent lockdown measures. For example, several studies have documented that Western Europeans and their cultural descendants in North America and Australia stand out as being particularly individualistic and independent, while revealing less conformity, obedience, in-group loyalty (see Heine, 2007; Henrich et al., 2010; Henrich, 2017; Schultz et al., 2019). Individualistic countries appear to have a dynamic advantage leading to higher economic growth by giving social status rewards to non-conformism and innovation (Gorodnichenko and Roland, 2011), and take out more patents for inventions (Gorodnichenko and Roland, 2017).[6] The flipside of an individualistic culture is that it can make collective action more difficult (Gorodnichenko and Roland, 2015), such as mounting a coordinated response to a pandemic. This hypothesis is supported by the positive correlation between the

[4]The numbers refer to column 2 of Table 5 in Section 4.

[5]For instance, several scholars, including Amsden (1989); Wade (1990); and Evans (1995), have attributed the economic success of South Korea and Taiwan to state capacity.

[6]The observation that the United States is especially individualistic is not new and dates at least as far back as de Toqueville (1835).

widely used Hofstede's (2001) scale, which we employ to measure the variation in individualism across countries, and the reduction in geographic mobility (Figure 3). Regression results show that at the same level of policy stringency, less individualistic countries experienced sharper declines in mobility, and that the relationship remains robust also when adding a full set of controls. We note that our findings are in line with research showing that individualistic cultural traits are associated with negative attitudes towards government interventions (Pitlik and Rode, 2017).

The remainder of this paper is structured as follows. Section 2 outlines the construction of our dataset. In section 3, we discuss our empirical strategy and the determinants of policy stringency. Section 4 describes our methodology and explores the elasticity of geographic mobility to policy stringency. In section 4.2, we investigate the role of democratic institutions and state capacity in shaping the effectiveness of governments policy responses. Section 4.3 explores the role of cultural traits in understanding patterns of geographic mobility. Finally, in section 5, we outline our conclusions.

Figure 3 here

2 Data

We build a dataset allowing us to trace the daily spread of Covid-19 cases, government's response to the pandemic, and the movement of people across 111 countries over the entire lockdown period to date. Data on movement and travel were collected from Google's Community Mobility Reports, and matched with information on policy restrictions, testing, and tracing from the Oxford Covid-19 Government Response Tracker (OxCGRT) (Hale et al., 2020). Table 1 provides some summary statistics for the variables of interest in our analysis.

The Google Community Mobility Reports provide daily data on Google Maps users who have opted-in to the "location history" in their Google accounts settings across 132 countries. The reports calculate changes in movement compared to a baseline, which is the median value for the corresponding day of the week during the period between the 3rd of January and the 6th of February 2020. The purpose of travel has been assigned to one of the following categories: retail and recreation, groceries and pharmacies, parks, transit stations, workplaces, and residential.

OxCGRT is a novel dataset which is published by the Blavatnik School of Government at the University of Oxford. It contains various lockdown measures, such as school and workplace closings, travel restrictions, bans on public gatherings, and stay-at-home requirements, etc. These measures are complied into a stringency index, which is constantly updated to reflect daily changes in policy. This allows us to analyse policy changes as well as geographic mobility patterns on a daily basis. Data on testing policy and contact tracing is also taken from

OxCGRT.[7]

To measure democratic institutions, we collect data from two sources. Following BenYishay and Betancourt (2014), who argue that democracy constitutes both civil and political rights, we use the civil and political rights country score from Freedom in the World 2020, compiled by Freedom House. The second variable is a dummy variable equal to 1 if a country classified as authoritarian, taken from Dictatorship Countries Population 2020, compiled by the World Population Review.[8]

To examine the role of culture, we employ the widely used individualism-collectivism measure from Hofstede's (2001), which integrates questions about goals, achievement-orientation, and family ties.[9] One advantage with this measure is that it has been validated in a number of studies.[10] For robustness, we also create a novel measure of attitudes towards obedience and conformity using data from the World Value Survey (WVS), which is based on face-to-face interviews and uniformly structured questionnaires (Inglehart et al., 2014).[11] Inspired by the obedience and conformity dimensions highlighted by Schultz et al. (2019), we run a Principal Component Analysis (PCA) to construct an "obedience index".[12] The drawback of compiling the WVS variables into an index is that we lose observation if at least one of the subcomponents is missing for a certain country. However, we believe that this measure better captures the dimensions of obedience and conformity described by Schultz et al. (2019).

Table 1 here

3 Political Regimes and Covid-19 Policy

To assess whether authoritarian governments tend to implement more stringent mobility restrictions, we estimate OLS regressions of the following form:

$$\Phi_{c,t} = \alpha_0 + \alpha_1 Covid_{c,t} + \alpha_2 \Big[Covid_{c,t} \times D_c \Big] + u_c + u_t + \eta_{c,t} \tag{1}$$

[7]See Hale et al. (2020) for more details on variable construction.

[8]The countries classified as authoritarian are: Afghanistan , Algeria, Angola, Azerbaijan, Bahrain, Brunei, Burundi, Cameroon, Chad, China, Cuba, Democratic Republic of Congo, Ethiopia, Gabon, Hong Kong, Iran, Iraq, Kazakhstan, Laos, Libya, Macao, Mauritania, Nicaragua, Oman, Qatar, Russia, Rwanda, Saudi Arabia, South Sudan,Sudan,Syria, Thailand,Turkey, Uganda, United Arab Emirates, Uzbekistan, Venezuela, Vietnam

[9]A higher value on the scale corresponds to higher individualism.

[10]For an overview, see Gorodnichenko and Roland (2017)

[11]The variables are based on the percentage of respondents placing weight on the following values: obedience (respondents say whether obedience is an important value to be taught to children); proper behaviour; family ties; religiousness.

[12]The PCA shows that the first component has an eigenvalue of 2.7 and explains 54% of the variation, and that the second component has an eigenvalue of 0.97 and explains 20% of the variation. The first component has an eigenvalue larger than 1 and it explains more than half of the common variation across the variables, justifying our choice of using it as an obedience index.

Specification (1) assumes that policy stringency $\Phi_{c,t}$ in country c and date t, depends on the contemporaneous impact of Covid-19, $Covid_{c,t}$. The variable $Covid_{c,t}$ is the log number of daily confirmed cases of infection. This specification allows policy to vary between democratic and authoritarian countries, which is proxied by D_c.[13] Because $\Phi_{c,t}$ varies by country and date, (1) allows for the inclusion of country fixed effect, u_c. Time fixed effects u_t, purge the estimates from the impact of confounders affecting all countries in the sample. Given the high frequency of the data, most country-specific confounders are absorbed by the country fixed effect. However, one possibility is that there are factors associated with economic development and/or geography, which might be correlated with being a democracy, that also affects policy stringency. This would lead to omitted variable bias in our regressions. To mitigate such concerns, unless differently stated, all specifications control for the interaction between the $Covid_{c,t}$ and the logarithm of real GDP per capita and a full set of geography dummies. Building on the intuition that countries that were exposed to SARS or MERS have managed Covid-19 more effectively, we also include a dummy for experience with these past epidemics.

In (1), the coefficient of interest is α_2, which measures the differential policy stringency in response to the pandemic, in democracies relative to authoritarian countries. Because D_c varies at the country level, we cluster standard errors accordingly.

3.1 Main Results

Our OLS estimates speak to the popular perception that authoritarian governments have mounted stricter lockdowns and rely more on contact tracing to curb the spread of the Coronavirus. Specifically, we find that when the number of confirmed Covid-19 infections doubles, policy stringency increases by 7% in democratic countries. In authoritarian countries, a doubling of cases is associated with an increase in stringency 17% higher than in democracies (column 3 of Table 2).[14]

Many commentators have noted that countries like Taiwan and South Korea might have benefited from greater experience with past epidemics. However, on average, we find no statistically significant differences in policy stringency in countries which have been more exposed to epidemics in the past.[15] Instead, countries that experienced SARS or MERS, were more likely to implement more comprehensive testing policies (columns 2-3 of Table 2). For instance, South Korea has implemented open public testing, such as "drive through" testing available to asymptomatic people. This might explain why South Korea did not experience a larger drop in mobility (Figure 1): strict restrictions on movement might have been unnecessary so far as it

[13] Our baseline proxy for democracy is a continuous variable taking values between 0 and 100, with higher values corresponding to stronger democratic institutions (see Section 2 for details). In some specifications, we use a dummy variable $D_c = 1$ if a country is a democracy and 0 otherwise. Other than constituting a useful robustness test, using such an alternative variable facilitates the interpretation of the coefficients.

[14] Due to limited data availability, in Table 2 we lose 21 countries in column 2, and 17 countries in column 3.

[15] We flag a country as having experience with past epidemics if they experienced more than fifty SARS or MERS cases.

managed to contain Covid-19 early on. Finally, we note that authoritarian countries were more likely to implement contact tracing (column 5 og Table 2). While we are unable to disentangle the precise factors driving these relationships, our findings speak to the general perception that democracies with a stronger sense of liberal values and privacy have been more reluctant engage in tracking the movement of people. Examples include the United States and France, which did not implement large-scale contact tracing early on during the pandemic.

Table 2 here

Table 3 here

4 The Determinants of Geographic Mobility

In this section, we explore the effectiveness of the lockdown measures taken in reducing geographic mobility across countries. We begin by elucidating the relationship between policy stringency and geographic mobility. We next proceed to examine whether autocratic regimes have been more effective in reducing movement and travel (section 4.2). Finally, in section 4.3, we explore how different cultural traits have shaped peoples compliance with the lockdown measures taken by their governments.

Our analysis is based on the following specification:

$$M_{c,t,m} = \beta_0 + \beta_1 \Phi_{c,t} + \beta_2 \Big[\Phi_{c,t} \times X_c \Big] + u_{c,m} + u_t + \varepsilon_{c,t,m} \tag{2}$$

where, $M_{c,t,m}$ is the mobility index in country c, date t and mobility category m. As discussed in Section 2, mobility indexes are provided for different mobility categories,

$$m = \{\text{workplace, grocery, transit, retail and entertainment, residential, park}\}$$

One concern might be that mobility in parks, for example, could be systematically higher in countries with a larger number of parks, or a temperate climate. Thus, in (2) we include country-mobility category fixed effects, $u_{c,m}$, which allow to purge the estimates from constant unobserved characteristics of each particular mobility category in a given country. In (2), the coefficient of interest is β_2, which measures the differential impact of policy stringency for countries characterised by each variable in X_c. Again, unless differently stated, all specifications control for the interaction between policy stringency and the logarithm of real GDP per capita, a dummy for experience with epidemics, and our geographic controls.

To construct Figure 2, we also estimate country-specific mobility elasticities to changes in policy using the following linear model:

$$M_{c,t,m} = \delta_0 + \delta_1 \Phi_{c,t} + \sum_{k=1}^{C} \delta_{2k} \Big[\Phi_{c,t} \times u_k \Big]$$
$$+ \delta_3 \Big[\Phi_{c,t} \times X_c \Big] + u_{c,m} + u_t + \varepsilon_{c,t,m} \tag{3}$$

where, C is the total number of countries and $u_k = 1$ when $k = c$. The elasticity of mobility to changes in policy stringency for country c' is given by:

$$\frac{dM_{c',t,m}}{d\Phi_{c',t}} = \delta_1 + \delta_{2c'} u_{c'}$$

4.1 Main Results

By how much did geographic mobility decline as lockdown measures were introduced? On average across all countries in our sample, a ten percent increase in policy stringency is associated with a 4.2% reduction in geographic mobility (column 1 of Table 4). To put these numbers in perspective, from February to the end of April, policy stringency increased by 34% on average, which corresponds to a reduction in mobility by roughly 14%.

To be sure, the average effects discussed above hide a great deal of heterogeneity, not least since people move around for different purposes. In the United Kingdom, for example, people are allowed to commute to work provided that the job cannot be done from home. The richness of the Google Mobility Reports, which categorises all travel according to its purpose, allows us to better distinguish between essential and non-essential activities. We deem mobility related to "grocery and pharma" as well as "workplaces" to be essential travel.[16] These categories can be distinguished from mobility related to "parks" and "retail and recreation", which captures trends for places like restaurants, cafes, shopping centres, theme parks, museums, libraries, and movie theatres. We label these activities as non-essential. Based on this distinction, we find that while both essential and non-essential declined markedly in response to increases in policy stringency, non-essential mobility was 15% more responsive (columns 2-3 of Table 4).[17]

Table 4 here

[16] While we recognise that not all workplace travel might in fact be essential, most workplaces that are still open will fall into the essential category.

[17] In making the distinction between non-essential and essential travel, we exclude mobility categories "transit" and "residential", as they might capture both essential and non-essential travel. For instance, mobility in residential places might simply capture people taking out their rubbish or collecting their mail.

4.2 Democracy and State Capacity

As noted, while authoritarian governments have introduced stricter lockdowns (Table 2), whether they have been effective in reducing movement and travel remains an open question. To that end, we turn to exploring the relationship between democracy and the ability of governments to implement policy to reduce geographic mobility. The relationship is a priori unclear. As Gorodnichenko and Roland (2015) point out, "one cannot claim that autocracy is more efficient than democracy – or vice-versa – in dealing with pathogen prevalence." For example, March and Olsen (1984) and Fukuyama (2011; 2015) have emphasized the possibility of political gridlock in democracy, while Olson (1982) has argued that interest groups can stifle democracies, especially as interest groups become powerful and organized over time. In the context of Covid-19, it is possible that political divisions and strong business interests make it harder to introduce stringent lockdowns in democracies. At the same time, Xue and Koyama (2019) find that political repression reduces social capital, and Acemoglu et al. (2019) show that democracy causes faster economic growth, through the provision of more public goods and lower levels of social unrest, which might make restriction on movement and travel more acceptable.

Our findings show that while autocracies have taken more radical measures to reduce the movement of people relative to democracies (Table 2), they have been less effective in implementing them (Table 5). Specifically, restrictions on movement are roughly 20% less effective in reducing geographic mobility in authoritarian countries on average (column 2 of Table 5). Of course, one concern is that the relative effectiveness of democracies simply reflects greater state capacity. Indeed, a large literature emphasises the role of state capacity in allowing governments to implement their policies (Besley and Persson, 2009; 2010; Fukuyama, 2011; Johnson and Koyama, 2017; Migdal, 1988). Consistent with this literature, we find that the state's ability to enforce the lockdown matters. The correlation between enforcement, proxied by the percentage of armed forces' officials in the total labor force, and mobility declines, is negative and strongly significantly (columns 1-4 of Table 5). At the same time, we find that a greater ability to enforce the restrictions does not seem to matter for mobility related to groceries, pharma and workplaces (columns 5-6 of 5). This speaks to the intuition that unlawful mobility to parks and social gatherings are more likely to be sanctioned by law enforcement officials.

However, we note that even when accounting for state capacity, both our democracy variables remain strongly economically and statistically significant: greater protection of political and civil rights is associated with larger reductions in geographic mobility, while our autocratic regime dummy is associated with smaller mobility declines. Across all specifications, the effects on non-essential travel are somewhat larger.

Table 5 here

4.3 Culture

In addition, different cultural traits may have shaped the effectiveness of governments lockdown measures. While societies differ on many cultural dimensions (see Boyd and Richerson, 1988; 2005; Henrich, 2010; 2017), cross-cultural psychologists view the individualism-collectivism distinction as the main divider (Heine, 2007; Schultz et al., 2019).[18] Specifically, we build on the intuition of Gorodnichenko and Roland (2015), who argue that collectivist countries are more capable of solving collective action problems, such as mounting a coordinated response to a pandemic.

Table 6 shows how cross-cultural differences are related to peoples compliance with their government's lockdown measures.[19] As expected, and as shown in column 1, people in more individualistic societies were less obedient to the lockdown, where movement fell by less at the same policy stringency. This is especially true of non-essential travel, where the individualist societies stand out. Reassuringly, when using our obedience index instead, we find that in more obedient societies, mobility declined more significantly at a given level of policy stringency.[20] Also in this case, the result holds in the full sample, but especially for non-essential travel.

Table 6 here

5 Conclusion

Democracies can get trapped in institutional arrangements that make problem-solving harder (Fukuyama, 2011; 2015). Political divisions, checks and balances, and special interest groups can cause gridlock (March and Olsen 1984; Olson, 1982), and limit democratic governments ability to effectively respond to a crisis, like Covid-19. Yet so far, as noted by the New York Times, "it is hard to draw up a conclusive balance sheet on the relative disease-fighting abilities of autocracies and democracies" (Schmemann, 2020).

This paper constitutes a first partial assessment. Exploring governments policy responses across 111 countries over the whole lockdown period up until the latest Google Mobility Reports data release, we find that even though autocracies have introduced more stringent lock-

[18] Cross-cultural differences have deep historical roots. For example, scholars have compared herders and farmers, showing that the independence and mobility of herding make herding cultures more individualistic, whereas farming cultures are more collectivistic (Nisbett et al., 2001). This is especially true of rice farming (Talhem et al., 2014). Because rice paddies need standing water, people in rice regions needed to build elaborate irrigation systems—a labour-intensive burden that fell on villages, not isolated individuals. And the legacies of rice farming are continuing to affect people in the modern world. Even within China, Talhem et al. (2014) find that people in rice regions have a more collectivist psychology today still, relative regions growing wheat.

[19] In many cases, cultural values tend to be similar in countries characterised by geographical proximity (Hofstede, 2001). Therefore, in order to prevent geographical controls from absorbing the variation in cultural values, which is our focus, we drop them in this part of the analysis.

[20] Due to the data limitations involved in the construction of the obedience index (see Section 2), the number of observations is lower in columns 2, 4 and 6. All results hold if we restrict the analysis to the same number of observations in all columns. The table is available upon request.

downs and use more contact tracing, democracies have seemingly been more effective in meeting the policy objective of reducing geographic mobility in their countries. We also show that state capacity to enforce the lockdown is associated with sharper declines in movement and travel. That said, the negative correlation between autocracy and declining mobility remains statistically significant, also when accounting for state capacity. This is in line with studies showing that political repression reduces social capital and perceptions that support cooperation (Xue and Koyama, 2019), while democracies provide more public goods and experience less social unrest (Acemoglu et al., 2019), making people more likely to follow and support government interventions in democratic societies. However, what drives this relationship is a line of enquiry that deserves further attention.

Finally, building on a growing literature showing that individualistic societies—where conformity, obedience, in-group loyalty are perceived to be less important—tend to be more dynamic and innovative, we provide evidence that for a given level of policy stringency, more conformist countries saw steeper declines in travel relative to their more individualistic counterparts. In other words, the flipside of the individualism that drives dynamism and inventiveness is that it makes collective action harder, such as a collective coordinated response to a pandemic. Indeed, countries with more individualistic cultural traits have more negative attitudes towards government interventions (Pitlik and Rode, 2017).

Our results lead us to conclude that collectivist and democratic countries have mounted relatively effective responses to Covid-19 in terms of reducing geographic mobility. However, cultural traits and the form of government in place are likely to be interrelated. For instance, Gorodnichenko and Roland (2015) have shown that collectivist countries are more likely to experience a transition towards autocracy while individualist countries are more likely to experience a transition towards democracy. Therefore, in light of our results, an interesting direction for future research is studying how compliance with mobility restrictions varies across the individualism-collectivism spectrum in countries with similar institutional arrangements.

References

[1] Acemoglu, D., Naidu, S., Restrepo, P., & Robinson, J. A. (2019). Democracy does cause growth. Journal of Political Economy, 127(1), 47-100.

[2] Amsden, A. H. (1989). Asia's next giant: South Korea and late industrialization. Oxford University Press.

[3] BenYishay, A., & Betancourt, R. (2014). Unbundling democracy: Political rights and civil liberties. Journal of Comparative Economics, 42(3), 552-568.

[4] Besley, T., & Persson, T. (2009). The origins of state capacity: Property rights, taxation, and politics. American economic review, 99(4), 1218-44.

[5] Besley, T., & Persson, T. (2010). State capacity, conflict, and development. Econometrica, 78(1), 1-34.

[6] Boyd, R., & Richerson, P. J. (1988). Culture and the evolutionary process. University of Chicago Press.

[7] Boyd, R., & Richerson, P. J. (2005). The origin and evolution of cultures. Oxford University Press.

[8] Chua, R. Y., Huang, K. G., & Jin, M. (2019). Mapping cultural tightness and its links to innovation, urbanization, and happiness across 31 provinces in China. Proceedings of the National Academy of Sciences, 116(14), 6720-6725.

[9] Diamond, L. (2020). Ill Winds: Saving Democracy from Russian Rage, Chinese Ambition, and American Complacency. Penguin Books.

[10] Evans, P. B. (1995). Embedded autonomy: States and industrial transformation. Princeton University Press.

[11] Fendos, J. (2020). Lessons From South Korea's COVID-19 Outbreak: The Good, Bad, and Ugly. The Diplomant, March 10.

[12] Freedom House (2020). Democracy Index. https://freedomhouse.org/countries/freedom-world/scores

[13] Fukuyama, F. (2011). The origins of political order: From prehuman times to the French Revolution. Farrar, Straus and Giroux.

[14] Fukuyama, F. (2015). Political order and political decay: From the industrial revolution to the globalization of democracy. Macmillan.

[15] Google LLC "Google COVID-19 Community Mobility Reports."

[16] Gorodnichenko, Y., & Roland, G. (2011). Which dimensions of culture matter for long-run growth?. American Economic Review, 101(3), 492-98.

[17] Gorodnichenko, Y., & Roland, G. (2015). Culture, institutions and democratization (No. w21117). National Bureau of Economic Research.

[18] Gorodnichenko, Y., & Roland, G. (2015). Are there cultural obstacles to democratisation?. VoxEU, May 14.

[19] Gorodnichenko, Y., & Roland, G. (2017). Culture, institutions, and the wealth of nations. Review of Economics and Statistics, 99(3), 402-416.

[20] Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips, and Beatriz Kira (2020). Oxford COVID-19 Government Response Tracker, Blavatnik School of Government. Data use policy: Creative Commons Attribution CC BY standard.

[21] Heine, S. (2007). Cultural Psychology. New York: Norton

[22] Henrich, J. (2017). The secret of our success: how culture is driving human evolution, domesticating our species, and making us smarter. Princeton University Press.

[23] Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world?. Behavioral and Brain Sciences, 33(2-3), 61-83.

[24] Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions and organizations across nations. Sage Publications.

[25] Inglehart, R., Haerpfer, C., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., ... & Puranen, B. (2014). World values survey: Round six-country-pooled datafile version. Madrid: JD Systems Institute, 12.

[26] Johnson, N. D., & Koyama, M. (2017). States and economic growth: Capacity and constraints. Explorations in Economic History, 64, 1-20.

[27] Kuo, L. (2020). How did China get to grips with its coronavirus outbreak?. The Guardian, March 9.

[28] March, J. and Olsen, J.P. (1984). The new institutionalism: organizational factors in political life. The American Political Science Review, 78(3), 734-749.

[29] Migdal, J. S. (1988). Strong societies and weak states: state-society relations and state capabilities in the Third World. Princeton University Press.

[30] Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: holistic versus analytic cognition. Psychological Review, 108(2), 291.

[31] Olsen, M. (1982). The rise and decline of nations: economic growth, stagflation, and social rigidities. Yale University Press.

[32] Pitlik, H., & Rode, M. (2017). Individualistic values, institutional trust, and interventionist attitudes. Journal of Institutional Economics, 13(3), 575-598.

[33] Wade, R. (1990). Governing the market: Economic theory and the role of government in East Asian industrialization. Princeton University Press.

[34] Schmemann, S. (2020) The Virus Comes for Democracy Strongmen think they know the cure for Covid-19. Are they right?, New York Times, April 2.

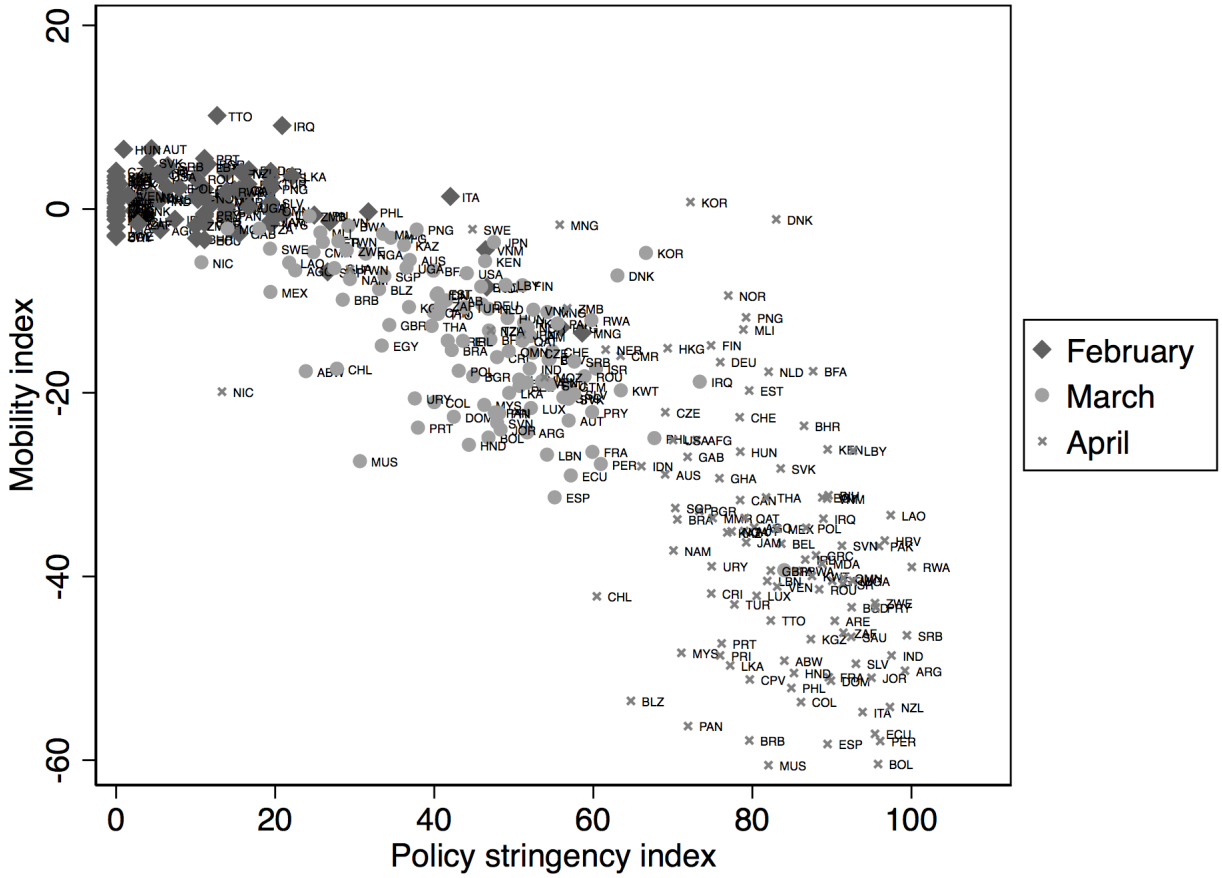
[35] Schulz, J. F., Bahrami-Rad, D., Beauchamp, J. P., & Henrich, J. (2019). The Church, intensive kinship, and global psychological variation. Science, 366(6466).

[36] Talhelm, T., Zhang, X., Oishi, S., Shimin, C., Duan, D., Lan, X., & Kitayama, S. (2014). Large-scale psychological differences within China explained by rice versus wheat agriculture. Science, 344(6184), 603-608.

[37] Tocqueville, A. D. (2000). Democracy in America. 1835. Trans. Harvey C. Mansfield and Delba Winthrop. Chicago: University of Chicago Press.

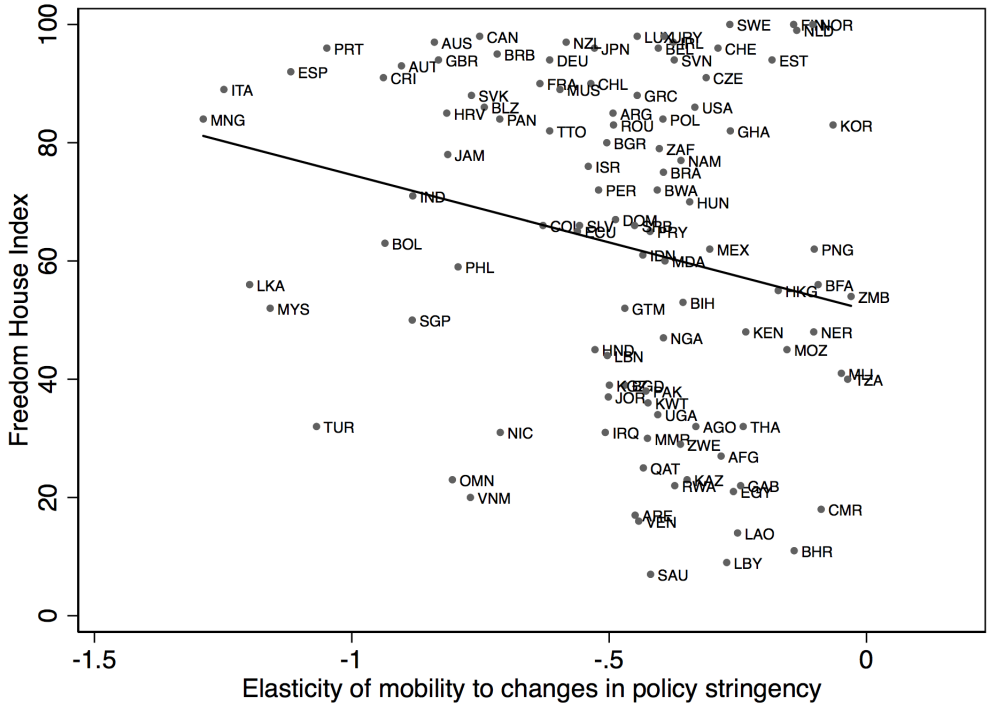
[38] Xue, M. M., & Koyama, M. (2019). Autocratic rule and social capital: evidence from imperial China. Working paper.

Figure 1: Lockdown measures and cross-country reduction in mobility



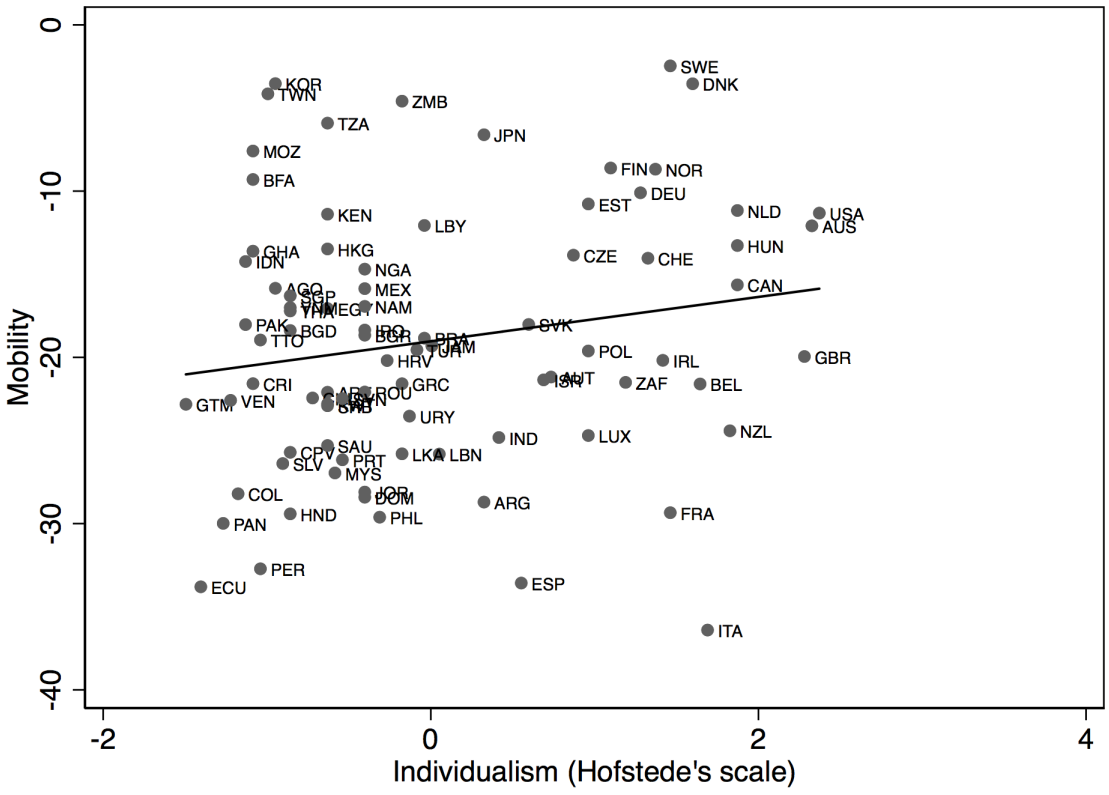
This figure shows, for each country, the monthly average mobility index (vertical axis) and the policy stringency index (horizontal axis). See Section 2 for details on the variables used.
Sources: OxCGRT; Google Community Mobility Reports

Figure 2: Cross-country elasticities of mobility to changes in policy stringency and democracy



The figure shows the Freedom House Index (vertical axis) and the estimate elasticity of mobility to policy restrictions. The elasticities are calculated by estimating model (3) in Section 4 with OLS. Sources: authors' calculations based on OxCGRT, Google Community Mobility Reports and Freedom House

Figure 3: Cultural values and cross-country reduction in mobility



The figure shows the average mobility index (vertical axis) and a country-level measure of individualism (Hofstede's scale) on the horizontal axis. Sources: authors' own calculations based on Hofstede (2001); OxCGRT; Google's COVID-19 Community Mobility Reports

Table 1: Summary statistics

Mobility rates	Country x Date	Mean	Std. Dev.	25%	50%	75%
Park	9375	-16.42	31.75	-38	-10	2
Retail and recreation	9459	-31.12	31.60	-61	-24	-1
Grocery & pharmacy	9424	-15.61	23.91	-30	-7	2
Workplaces	9477	-23.25	28.12	-48	-16	2
Transit	9426	-32.35	31.28	-60	-29	-2
Residential	9208	11.68	11.85	1	9	20
Policy	Country x Date	Mean	Std. Dev.	25%	50%	75%
Policy stringency index	18540	33.86	35.92	0	15.47	71.57
Contact tracing	16619	.83	0.83	0	0	2
Testing policy	16791	0.99	0.85	0	0	2
Confirmed cases	11680	6750.74	43014.02	1	61	950
Confirmed deaths	11680	437.87	2944.25	0	1	18
Democracy, state capacity, culture	N. of countries	Mean	Std. Dev.	25%	50%	75%
Civil and political rights (FH index)	210	56.70	30.64	29	61	86
Armed forces (%)	165	1.16	1.19	0.44	0.79	1.45
Individualism (std)	102	0	1	-0.86	-0.40	0.87
Obedience (PCA index)	54	0	1.61	-1.09	0.21	1.07

The notation "std" indicates that a variable has been standardised. Sources: Google Community Mobility Reports (coverage period 15/02/2020-26/04/2020); OxCGRT (coverage period 01/01/2020-03/05/2020); Freedom House; Hofstede (2001); World Bank.

Table 2: Determinants of policy stringency

	(1) Policy stringency	(2) Policy stringency	(3) Policy stringency
Log number of COVID-19 cases	0.0467***	0.0900***	0.0715***
	[0.00910]	[0.0137]	[0.0147]
Cases × civil and political rights		-0.000304***	
		[9.25e-05]	
Cases × autocratic country			0.0142**
			[0.00543]
Cases × experience with past epidemics		-0.00863	-0.0114
		[0.00810]	[0.00786]
Observations	11,576	10,285	10,458
R-squared	0.869	0.890	0.886
Number of countries	150	129	133
Policy x controls	no	yes	yes
Country FE	yes	yes	yes
Time FE	yes	yes	yes

The table presents OLS estimates from regressing the policy stringency index on the log number of COVID-19 infections (column 1). Column 2 includes an interaction between infections and the Freedom House index, and infections and a dummy equal to 1 if a country has experienced more than fifty SARS or MERS cases. Column 3 replaces the Freedom House index with a dummy equal to 1 if the World Population Review flags a country as a non-democracy. Columns 2 and 3 include as controls the interaction between infections and: i) log GDP per capita (2018); ii) continent dummies, and iii) countries' latitude. Errors are clustered at the country-level. The coefficients with *** are significant at the 1% level, with ** are significant at the 5% level, and with * are significant at the 10% level.

Table 3: Determinants of testing policy and contact tracing

	(1) Testing	(2) Testing	(3) Testing	(4) Contact tracing	(5) Contact tracing	(6) Contact tracing
Log number of COVID-19 cases	0.0325	0.0326	0.0426	0.0317	0.00150	-0.0542
	[0.0284]	[0.0871]	[0.0921]	[0.0257]	[0.0686]	[0.0723]
Cases × civil and political rights		0.000205			-0.000937**	
		[0.000465]			[0.000449]	
Cases × autocratic country			-0.000837			0.0407
			[0.0262]			[0.0363]
Cases × experience with past epidemics		0.0750***	0.0756***		0.00206	-0.00738
		[0.0248]	[0.0244]		[0.0261]	[0.0303]
Observations	10,046	9,089	9,206	9,819	8,956	9,080
R-squared	0.530	0.573	0.566	0.392	0.447	0.438
Number of countries	148	129	133	146	128	132
Policy x controls	no	yes	yes	no	yes	yes
Country FE	yes	yes	yes	yes	yes	yes
Time FE	yes	yes	yes	yes	yes	yes

The table presents OLS estimates from regressing indexes of testing policy (columns 1-3) and contact tracing (columns 4-5) on the log number of COVID-19 infections. Columns 2 and 5 include an interaction between infections and the Freedom House index, and infections and a dummy equal to 1 if a country has experienced more than fifty SARS or MERS cases. Columns 3 and 6 replace the Freedom House index with a dummy equal to 1 if the World Population Review flags a country as a non-democracy. Columns 2, 3, 5 and 6 include as controls the interaction between infections and: i) log GDP per capita (2018); ii) continent dummies, and iii) countries' latitude. Errors are clustered at the country-level. The coefficients with *** are significant at the 1% level, with ** are significant at the 5% level, and with * are significant at the 10% level.

Table 4: Elasticities of mobility to policy stringency

	(1) Mobility	(2) Non-essential	(3) Essential
Policy stringency	-41.67***	-56.49***	-48.93***
	[3.627]	[5.335]	[4.560]
Observations	47,466	15,838	15,836
R-squared	0.476	0.656	0.703
Number of country-mobility category cells	666	222	222
Country FE	yes	yes	yes
Time FE	yes	yes	yes

The table presents OLS estimates from regressing all mobility categories (column1), mobility to parks, retail and entertainment (column 2) and mobility in workplaces, grocery and pharmacies (column 3) on the policy stringency index. Errors are clustered at the country-level. The coefficients with *** are significant at the 1% level, with ** are significant at the 5% level, and with * are significant at the 10% level.

Table 5: Elasticities of mobility to policy stringency: the role of democracy and state capacity

	(1) Mobility	(2) Mobility	(3) Non-essential	(4) Non-essential	(5) Essential	(6) Essential
Policy stringency	-34.02***	-48.15***	-53.85***	-73.58***	-39.53***	-54.61***
	[11.37]	[10.29]	[18.68]	[17.05]	[14.08]	[11.93]
Policy stringency × civil and political rights	-0.265***		-0.370***		-0.289***	
	[0.0667]		[0.0943]		[0.0925]	
Policy stringency × autocratic country		9.158**		12.77**		12.20*
		[4.384]		[5.924]		[6.295]
Policy stringency × % armed forces	-4.081**	-3.633**	-8.047***	-7.421**	-2.704	-2.131
	[1.663]	[1.802]	[2.617]	[2.890]	[2.509]	[2.624]
Observations	43,804	43,804	14,610	14,610	14,608	14,608
R-squared	0.484	0.481	0.675	0.670	0.718	0.715
Number of country-mobility category cells	612	612	204	204	204	204
Policy x controls	yes	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes	yes
Time FE	yes	yes	yes	yes	yes	yes

The table presents OLS estimates from regressing all mobility categories (columns1-2), mobility to parks, retail and entertainment (column 3-4) and mobility in workplaces, grocery and pharmacies (column 5-6) on the policy stringency index. Columns 1, 3 and 5 include an interaction between policy stringency index and the Freedom House index. Columns 2, 4 and 6 replace the Freedom House index with a dummy equal to 1 if the World Population Review flags a country as a non-democracy. All columns include the interaction between policy stringency and: i) the percentage of armed forces officials as a percentage of the total labor force; ii) dummy for experience with epidemics; iv) continent dummies, and v) countries' latitude. Errors are clustered at the country-level. The coefficients with *** are significant at the 1% level, with ** are significant at the 5% level, and with * are significant at the 10% level.

Table 6: Elasticities of mobility to policy stringency: the role of cultural traits

	(1) Mobility	(2) Mobility	(3) Non-essential	(4) Non-essential	(5) Essential	(6) Essential
Policy stringency	-52.87***	-43.93***	-83.23***	-58.28**	-54.93***	-53.23***
	[11.18]	[13.08]	[17.61]	[21.77]	[13.47]	[14.72]
Policy stringency × individualism	3.149*		7.970**		2.656	
	[1.884]		[3.578]		[1.901]	
Policy stringency × obedience		-3.684*		-8.253**		-3.105
		[2.071]		[3.481]		[2.495]
Observations	34,856	18,538	11,620	6,180	11,618	6,178
R-squared	0.472	0.473	0.651	0.637	0.699	0.718
Number of country-mobility category cells	486	258	162	86	162	86
Policy x controls	no	yes	yes	yes	yes	yes
Country FE	yes	yes	yes	yes	yes	yes
Time FE	yes	yes	yes	yes	yes	yes

The table presents OLS estimates from regressing all mobility categories (columns1-2), mobility to parks, retail and entertainment (column 3-4) and mobility in workplaces, grocery and pharmacies (column 5-6) on the policy stringency index. Columns 1, 3 and 5 include an interaction between policy stringency index and Hofstede' scale. Columns 2, 4 and 6 replace Hofstede' scale with an index of obedience. The index of obedience is the first component of a Principal Component Analysis (PCA) based on World Value Survey (WVS) data (see Section 2 for details). All columns include as controls the interaction between policy stringency and i) log GDP per capita (2018), and ii) dummy for experience with epidemics. Errors are clustered at the country-level. The coefficients with *** are significant at the 1% level, with ** are significant at the 5% level, and with * are significant at the 10% level.