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The Role of Obedience and the Rule of Law during the Pandemic*

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Abstract

Despite the mounting costs of the pandemic at the global scale, the country-specific costs were rather heterogenous. National performances varied depending on the restrictive measures adopted, institutional strength, as well as adherence to stringency measures. We illustrate that obedience and rule of law strengthen the performance of the containment measures.

Keywords: COVID-19; Stringency; Obedience; Rule of Law
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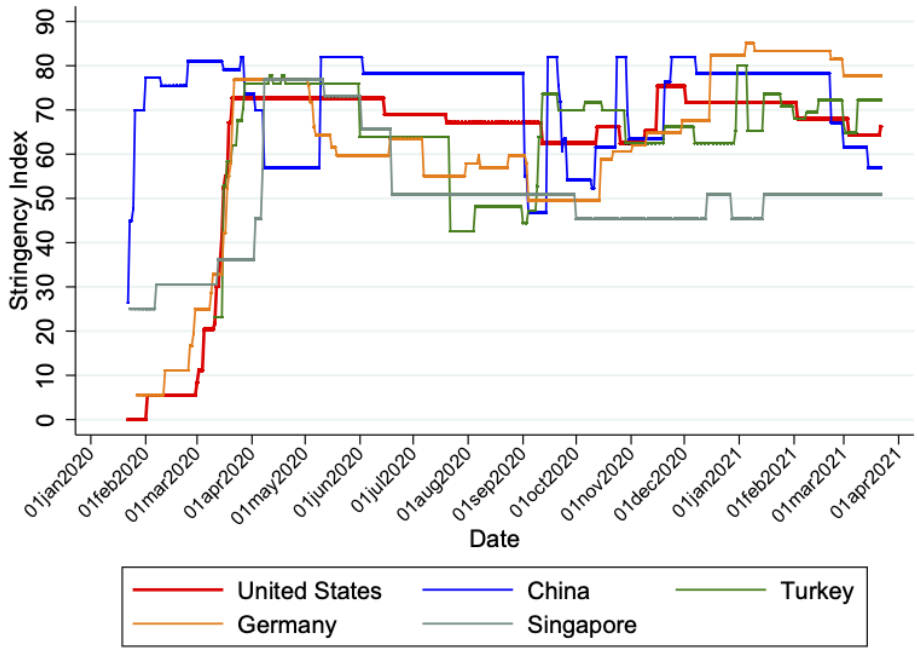
We cannot command Nature except by obeying her.
– Francis Bacon

1 Introduction

COVID-19 had a drastic toll on lives and livelihoods. Following the outbreak, countries put together various lockdown measures to contain the pandemic. They relaxed and reinforced these stringency measures based on the number of infections (Figure 1).

Figure 1: OXFORD COVID-19 GOVERNMENT RESPONSE TRACKER (OXCGRT) INDEX

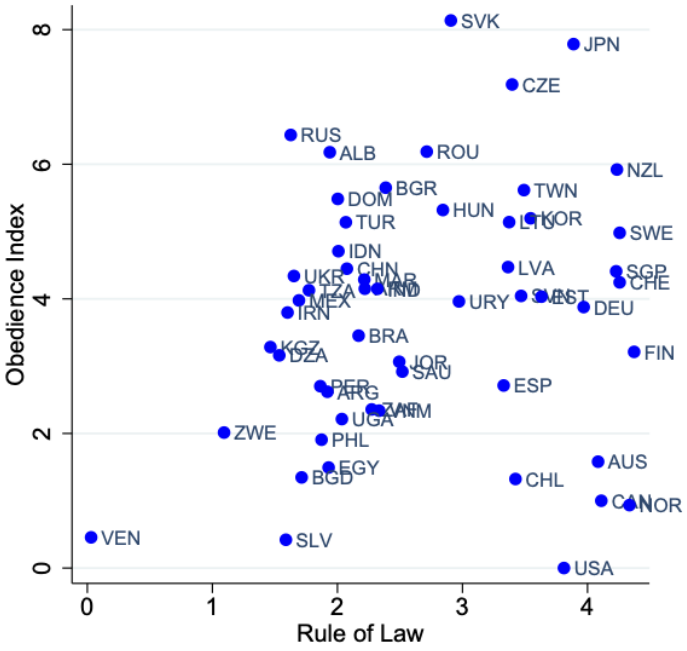


The total number of infections in each country varies depending on the extent and effectiveness of the lockdown measures. Çakmaklı et al. (2020) develop a framework to quantify the economic costs of COVID-19 for a small open economy and calibrate it to Turkey. They determine the performance of alternative stringency measures, taking the levels of effectiveness as given. Compared to its peers that adopted similar measures, the number of cases in Turkey declined more rapidly during the first wave, consistent with "strong" efficacy. It was speculated that adherence to the rules

announced by a strong leader might have played a role.[1]

In this paper, we investigate the determinants of policy efficacy during COVID-19. Exploiting the experience of 47 countries, we identify the role of obedience and the rule of law (henceforth RoL) in complementing lockdown measures. We observe that obedience significantly increases the effectiveness of stringency measures, even after we control for RoL in enforcing the lockdown measures.

Figure 2: OBEDIENCE VERSUS RULE OF LAW



The obedience measure follows the work by Campante and Chor (2017). Figure 2 exhibits the cross-sectional variation between obedience and RoL. RoL enhances compliance with government decrees by imposing penalties for disobedience. Factors such as the state of the health sector, demographic and sociological factors are captured by the country fixed effects. Countries that were exposed to SARS-CoV-1 infections might be more likely to comply with the stringency measures because of their past experience. Even when we exclude the countries that experienced SARS-CoV-1 infections, our results remain robust.

[1] https://blogs.lse.ac.uk/covid19/2020/06/04/how-has-turkey-done-in-its-fight-against-covid-19-the-jury-is-still-out/.

2 Material and methods

2.1 Data

We construct a panel dataset from 1/22/2020 to 3/22/2021. The variables associated with the daily progression of the pandemic are obtained from "Our World in Data COVID-19 Dataset"[2]. We use OxCGRT index as our stringency measure (Hale et al., 2021). The metric for obedience is constructed from the World Value Survey, based on the respondents' propensity to follow instructions in the workplace (Campante and Chor, 2017). To capture institutional quality, we use RoL and government effectiveness indicators from The Worldwide Governance Indicators (WGI)[3].

2.2 Estimation

Equation 1 illustrates our empirical framework:

$$\begin{aligned} \text{LogNewCases}_{c,t} &= \beta_1 \text{Obedience}_c \times \text{Stringency}_{c,t-14} \\ &+ \beta_2 \text{RoL}_c \times \text{Stringency}_{c,t-14} + \beta_3 \text{GovEff}_c \times \text{Stringency}_{c,t-14} \\ &+ \beta_4 \text{Stringency}_{c,t-1} + \beta_5 \text{Stringency}_{c,t-14} \\ &+ \beta_6 \text{LogNewCases}_{c,t-1} + \beta_7 \text{LogNewCases}_{c,t-14} \\ &+ \beta_8 \text{LogNewTests}_{c,t} + \mu_c + \epsilon_{c,t}. \end{aligned} \tag{1}$$

While the increase in stringency measures lower the number of new cases,[4] an increase in the daily new cases prompts governments to impose more stringent measures, leading to a bidirectional causality. In Equation 1, we address this concern via the lag structure of stringency. While the reverse causality is strongest for the short-term dynamics, the effect of stringency on the pandemic can be better isolated with longer lags. The outcome of lockdown measures are observed with a sufficient lag. We include the first lag of stringency as a control variable to capture any reverse causality. To capture the effect of stringency, we include the fourteenth lag of this index, which optimally isolates

[2] https://ourworldindata.org/coronavirus.

[3] http://info.worldbank.org/governance/wgi/.

[4] To circumvent systematic changes in reporting we exclude the days where a jump of five-fold increase in the reported cases occurs.

this effect based on our experimentation.

The country fixed effects (i.e., μ_c) capture potential unobserved heterogeneity. Hence, the levels are absorbed and we only use the interactions of our variables of interest with the fourteenth lag of stringency. This enables us to isolate the effect of obedience and RoL in containing the pandemic, conditional on stringency measures.

Additionally, we use several control variables. First, we consider the intertemporal dynamics of the daily new cases (in logarithmic form). This variable is highly autocorrelated and nonstationary at times when the pandemic cannot be contained. We include the first and fourteenth lags of this variable. The former controls for intertemporal dependence, the latter captures any remaining correlation such as a potential long memory in the high frequency. Therefore, we allow for potential autocorrelation for up to two weeks. We also include the daily new tests (7-day-smoothed in logarithmic form) to control for new case identification due to testing capacities.

3 Results

Table 1 shows our results. Column 1 suggests that the stringency measures are more effective when they are associated with more obedience. Typical major changes in stringency is about $\sim$10 units. Such an increase lowers the number of new cases by 6% on average (row 8), when obedience is at its minimum of 0. Strikingly, a one-unit increase in obedience leads to a *further* 0.5% reduction in number of daily cases (row 1). Put differently, in those countries with the maximum level of obedience of 8 units, a 10-unit increase in stringency leads to an additional 4% reduction in the daily cases. This implies that the efficacy of stringency measures almost doubles in countries with high obedience.

In column 2, we interact stringency with RoL. We observe a similar amplification mechanism where a well-established judiciary increases the effectiveness of the lockdown measures (row 2). For those countries where the level of RoL is highest (i.e., 5), a 10-unit increase in stringency leads to a 14% percent reduction, on average.

In column 3, we include obedience and RoL together. In row 1, we observe that obedience is

still significant, even after we control for RoL. The magnitude of the coefficient is close to its value from column 1. This suggests that obedience has an autonomous impact in enhancing the efficacy of the stringency measures, which cannot be explained by RoL. In those countries with maximum obedience, a 10-unit increase in stringency leads to an additional 3.2% deduction in the number of cases, on top of the decline thanks to better enforcement of legislation. Column 4 shows the additional interaction of government effectiveness with stringency. Government efficiency does not provide a distinct source of contribution in reducing the number of daily cases (row 3).

Obedience, RoL, and government efficiency are soft variables constructed from surveys or auxiliary regressions. Measurement errors in these variables might plague econometric inference. To mitigate these problems, we construct dummy variables to group the countries into bins of high and low, depending on whether the corresponding soft-variable is above or below the median. We estimate Equation 1 using these dummy variables in columns 5–7. Column 5 suggests that stringency measures are more effective among high-obedience countries (row 4). A 10-unit increase in stringency lowers the number of new cases in highly obedient countries by 2.8% compared to less obedient countries. In column 6, when we add the high-RoL dummy (row 5), the magnitude of β_1 is smaller than the one presented in Column 5. A 10-unit increase in stringency lowers the number of new cases in high-obedience countries 2% more, compared to low-obedience countries. The decline in β_1 suggests that the role of obedience on the efficacy of stringency measures is less pronounced when those countries have well established legal systems.

Column 7 shows that when all three interaction terms are included, they are all negative and significant. For example, in countries such as Taiwan, South Korea, and New Zealand, citizens are highly obedient, rules are strongly enforced, and governments are efficient. In this environment, a 10-point increase in stringency lowers the number of new cases 6.7% more, compared to countries where citizens are less obedient, rules are weakly enforced, and governments are inefficient as in Brazil, Mexico and Egypt. This finding further suggests that in highly obedient countries where rules are strongly enforced and governments are high efficient, stringency rules are effective in containing the pandemic, but to a lesser extent. It is similar to the finding displayed in column 6 given that the magnitudes of β_1 are almost the same in these columns.

For robustness, we exclude the countries that experienced SARS-CoV-1 related deaths in col-

Table 1: TESTING THE EFFICACY OF STRINGENCY MEASURES

	Dep. Var: LogNewCases	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Obedience×Stringency$_{14}$	-0.0005***		-0.0004**	-0.0004**				-0.0004**	-0.0012***
		(0.000)		(0.000)	(0.000)				(0.000)	(0.000)
(2)	RoL×Stringency$_{14}$		-0.0028***	-0.0027***	-0.0023**					
			(0.000)	(0.000)	(0.001)					
(3)	GovEff×Stringency$_{14}$				-0.0005					
					(0.001)					
(4)	HighObedient×Stringency$_{14}$					-0.0028***	-0.0020***	-0.0019**		
						(0.001)	(0.001)	(0.001)		
(5)	HighRoL×Stringency$_{14}$						-0.0040***	-0.0032***		
							(0.001)	(0.001)		
(6)	HighGovEff×Stringency$_{14}$							-0.0016**		
								(0.001)		
(7)	Stringency$_1$	0.0067***	0.0066***	0.0068***	0.0068***	0.0067***	0.0068***	0.0069***	0.0069***	0.0064***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
(8)	Stringency$_{14}$	-0.0061***	-0.0005	0.0011	0.0014	-0.0066***	-0.0044***	-0.0039***	-0.0068***	-0.0034***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(9)	LogNewCases$_1$	0.7439***	0.7389***	0.7381***	0.7381***	0.7426***	0.7393***	0.7392***	0.7388***	0.7235***
		(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
(10)	LogNewCases$_{14}$	0.1992***	0.2112***	0.2106***	0.2107***	0.1999***	0.2060***	0.2066***	0.1999***	0.2256***
		(0.005)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)
(11)	LogNewTests	0.0382***	0.0293***	0.0322***	0.0319***	0.0378***	0.0358***	0.0348***	0.0468***	0.0425***
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)
	Country FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Obs.	13852	13852	13852	13852	13852	13852	13852	12635	8918
	R^2	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.96

NOTES: In columns (1)–(7), we estimate Equation (1). In columns (8) and (9), we exclude the countries that suffered from deaths and infections from SARS-CoV-1 pandemic, respectively. Standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$.

umn 8 and SARS-CoV-1 infections in column 9.[5] β_1 does not change in column 8, but becomes even stronger in column 9 (row 1). Hence, among those countries without any experience in dealing with severe respiratory infections, the efficiency of stringency measures is more sensitive to obedience.

4 Conclusions

We show that the stringency of the lockdown measures are associated with less cases. Obedience and RoL enhance this negative relationship. Our findings have important policy implications: *Ceteris paribus*, adherence to rules reduces the overall costs of the pandemic by reducing the need for more radical measures such as full lockdowns. Stronger RoL improves the performance of the stringency measures by ensuring adherence to the stringency measures.

[5] https://www.who.int/publications/m/item/summary-of-probable-sars-cases-with-onset-of-illness-from-1-november-2002-to-31-july-2003.

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