Health vs. Economy: Politically Optimal Pandemic Policy

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Abstract

Pandemics have heterogeneous effects on the health and economic outcomes of members of the population. To stay in power, politician-policymakers have to consider the health vulnerability-economic vulnerability (HV–EV) profiles of their coalition. We show that the politically optimal pandemic policy (POPP) reveals the HV–EV profile of the smallest, rather than the largest, group in the coalition. The logic of political survival dictates that the preferences of the least loyal, most pivotal, members of the coalition determine policy.

1 Introduction

Research on Covid-19 has focused on the macroeconomic impacts of the pandemic and on deriving optimal policies (i.e. Acemoglu, Chernozhukov, Werning, and Whinston 2020; Favero, Ichino, and Rustichini 2020). There has been comparatively little research from a political economy perspective.[1] We highlight the simple trade-off at the heart of policymaking during a pandemic: the trade-off between health and the economy. We propose a novel political economy explanation for the different policies taken by different governments in response to the pandemic.

Policies such as early, prolonged, or severe lockdowns may limit disease contagion but impose economic costs. To the extent that politician-policymakers are accountable to citizens, equilibrium pandemic policy depends on citizens' preferences, which are likely to be heterogeneous. We demonstrate that the politically optimal pandemic policy will be most responsive to the preferences of the least loyal, or most pivotal, members of the ruling coalition.

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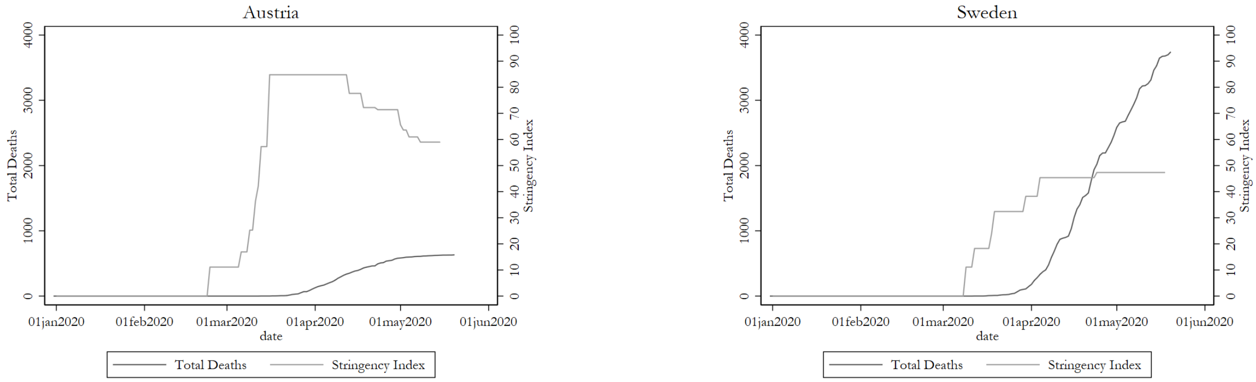
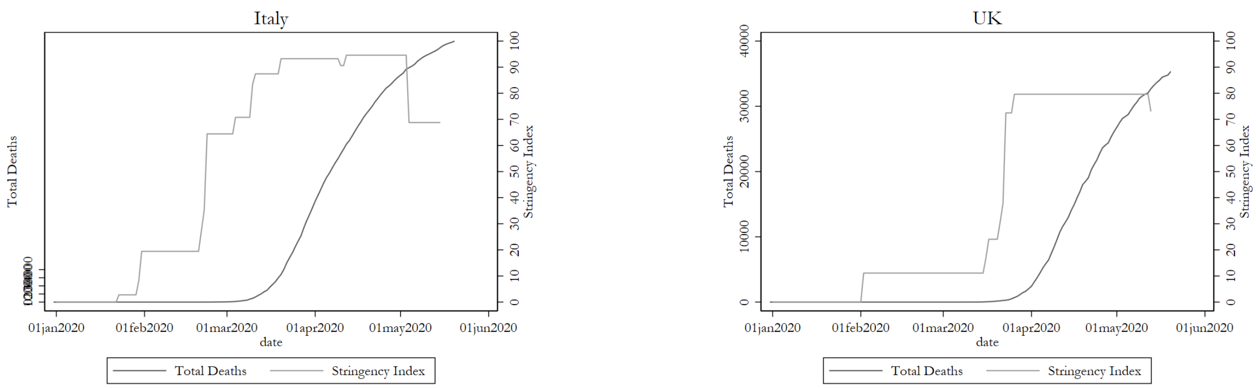
[1] One exception is Pulejo and Querubın (2020) who find that reelection concerns are associated with a less stringent response to Covid-19.

Figure 1: Contrasting Pandemic Policies



Contrasting pandemic policies in Austria and Sweden. Both scaled to 4000 total Covid-19 deaths. Data: (Max Roser and Hasell 2020).



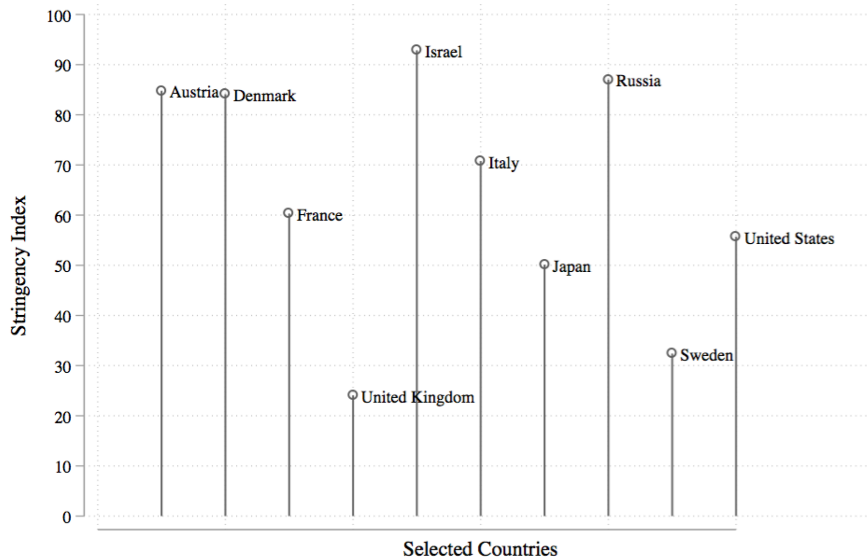
Contrasting pandemic policies in Italy and UK Both scaled to 40000 total Covid-19 deaths. Data: (Max Roser and Hasell 2020).

There were striking differences across countries in their initial policy responses to Covid-19. Some countries imposed severe lockdowns relatively early on. Others waited until confirmed deaths from Covid-19 were in the hundreds or higher. To illustrate, Figure 1 plots the stringency index calculated by OxCGRT against total Covid-19 deaths for Austria compared to Sweden and Italy compared to UK. Both Austria and Italy were more aggressive in implementing lockdowns, closing schools and non-essential businesses. Similar patterns are evident for other countries.

Figure 2 highlights this heterogeneity in lockdown policy still more starkly. It plots the stringency index for nine countries at the point at which they reached 100 total Covid-19 deaths.[2] There is considerable variation between the aggressive pandemic response of Denmark and Israel compared to the United States and Japan. What explains these sharp differences in policy responses?

[2] In the online appendix we report the stringency index for other countries and for different death thresholds.

Figure 2: A snapshot of the stringency index at the point when 100 deaths were reached. Data: (Max Roser and Hasell 2020).



We apply the selectorate theory of Bueno de Mesquita, Morrow, Siverson, and Smith (2003) to provide a rigorous yet simple explanation of this variation. In this framework, the political survival of the incumbent politician-policymaker depends on the loyalty of a coalition of supporters drawn from the 'selectorate'. We then specify how selectorate members generate income and, in particular, posit that pandemic policy affects income in two ways – by suppressing potential productivity, but also increasing the probability that the productivity is realized by mitigating the severity of the pandemic. The net effect of the policy on selectorate members' income differs, as some are more sensitive to economic conditions while others are more susceptible to the disease. This heterogeneity then affects the profile of coalition members, which ultimately determines the incumbent's policy response.

To motivate our analysis we highlight the following stylized facts. First, the heterogeneity in risk exposure is stark. Individuals under the age of 30 without preexisting conditions, are extremely unlikely to develop a severe infection. However, the case fatality rate for individuals aged over 70 or with comorbidities is high. Thus we can distinguish between those with a high health vulnerability and those with a low health vulnerability to the pandemic.

Second, the economic risk engendered by Covid-19 is also highly dichotomous. Many small businesses have been forced to close and face the threat of collapse whereas many low-skilled workers, particularly in the service sector, have been made unemployed.[3] Dingel and Neiman (2020) find that approximately 37% of jobs can be done from home. However, these tend to be high skilled jobs in

[3]Similiarly the Daily Telegraph notes "The great class divide is now between those who can work remotely (Heath 2020).

corporate management, journalist, academia, law, and the technology sector. In contrast, workers in the service sector or in construction or manufacturing require the economy to remain open in order to keep their livelihoods. This provides a sharp distinction between individuals who have high economic exposure to the pandemic and those who have a comparatively low economic exposure to the pandemic.

For tractability, the framework we propose is static. Thus it abstracts away from modeling the dynamics of the disease—which is the focus of models that combine a macroeconomic model of the economy with a Susceptible Infectious Recovered (SIR) model of disease spread. Nevertheless, our model provides a framework for conducting simple comparative statics with respect to new information about disease severity or the cost of pandemic policies. Future research can also incorporate other variables such as cultural attitudes (individualism versus collectivism) that might affect compliance to pandemic policies.

2 The Model

Consider a population, the 'selectorate', of size $S = \sum_i S_i$, $i \in \{K\}$, that is composed of K groups, each of type i. The government needs to maintain the support of a coalition of selectorate members of size $W \subseteq S$. Let w_i denote the number of i-type members in the coalition, such that $\sum_i w_i = W$, and let i also index the size of these groups such that $w_1 > w_2 > ...w_K$.

To keep the loyalty of the coalition, the government provides a combination of transfers and public policy – in this context, pandemic policy. The policy affects all of the selectorate, while the transfers are given only to coalition members. The disposable income of a selectorate member of type i during a pandemic is

$$y_i = (1-\tau)[\rho_i Y_{\rho i} + (1-\rho_i)\bar{Y}] + \frac{t_i}{w_i}\mathbb{1}_W, \tag{1}$$

where τ is the tax rate, $Y_{\rho i}$ is type i's potential income, ρ_i the probability that she realizes the potential income, $\bar{Y}$ the minimum level of income received if she is unable to realize potential income, $Y_{\rho i} > \bar{Y}$, t_i is total transfers to coalition members of type i, which is distributed equally among w_i, and $\mathbb{1}_W$ an indicator variable that takes on one if the selectorate member is in the coalition.

Denote pandemic policy as $p > 0$, with larger values associated with more aggressive policy, e.g. earlier lockdowns. Pandemic policy has heterogeneous effects across selectorate types. In particular, ρ_i is a function $\rho_i \equiv \rho(p, \eta_i \frac{\sum_i (S_i \rho_i)}{S})$, $\eta_i \geq 0$, while Y_{ρ_i} is a function $Y_{\rho i} \equiv Y_\rho(p, \epsilon_i \sum_i (S_i y_i))$, $\epsilon_i \geq 0$. Letting partial derivatives with respect to p be $\frac{\partial \rho_i}{\partial p} > 0$ and $\frac{\partial Y_{\rho_i}}{\partial p} < 0$, then ρ_i can capture the health of i (enabling her to realize potential output Y_{ρ_i}), which is directly (positively) influenced by a more aggressive pandemic policy, and indirectly through some contagion effect, which we simply capture by average health $\frac{\sum_i (S_i \rho_i)}{S}$ of the selectorate, scaled by a 'health vulnerability' parameter η_i. Meanwhile, potential output Y_{ρ_i} is negatively impacted by more aggressive pandemic policy, directly and indirectly through total income $\sum_i(S_iy_i)$ of the selectorate, scaled by an 'economic vulnerability' parameter ϵ_i.

Optimal pandemic policy and transfer amounts are thus determined from the following game that is played at each time $t = 1, 2, ...\infty$.

1. The incumbent government I forms a coalition of size W composed of K groups, each of size w_i. The size of each type in the coalition is fixed at $w_1 > w_2 > ...w_K$. A political challenger C nominates her own coalition, also of size W, with $w_i \; \forall \; i \in \{K\}$ the same size as in I's coalition, and at least one member belonging to I's coalition. I and C propose pandemic policy p and transfers t_i to each type in the coalition.

2. Each selectorate member chooses between I and C. I is deposed if at least one member of her coalition chooses C.

3. The pandemic policy of the chosen leader is implemented, her transfers allocated, and incomes taxed at rate τ.

We characterize a stationary equilibrium in which the incumbent stays in power.

First, note that each selectorate member would prefer a pandemic policy and level of transfer that would maximize her disposable income y_i. Thus, the best that any challenger C can offer to her nominated coalition is to choose p and t_i as though she herself were simultaneously maximizing each member's disposable income, subject to the government budget constraint, which we specify as $\tau\Big[\sum_i(S_i[(\rho_i Y_{\rho i}) + (1-\rho_i)\bar{Y}]\Big] + R = \kappa p + \sum_i(w_i t_i)$, where $\tau\Big[\sum_i(S_i[(\rho_i Y_{\rho i}) + (1-\rho_i)\bar{Y}]\Big]$ is total tax revenues, R is other revenues, κ is the cost of implementing pandemic policy p, and $\sum_i(w_i t_i)$ is total transfers.

C offers to each coalition member of type i, policy p and transfer $\frac{t_i}{w_i}$ that solve

$$Max_{p,\frac{t_i}{w_i}}(1-\tau)[\rho_i Y_{\rho i} + (1-\rho_i)\bar{Y}] + \frac{t_i}{w_i}\;;$$
$$s.t.\; \tau\Big[\sum_i(S_i[(\rho_i Y_{\rho i}) + (1-\rho_i)\bar{Y}]\Big] + R = \kappa p + \sum_i(w_i t_i)\;.$$

Re-writing the budget constraint as $t_i = \frac{\tau}{w_i}\Big[\sum_i(S_i[(\rho_i Y_{\rho i}) + (1-\rho_i)\bar{Y}]\Big] + \frac{1}{w_i}\Big[R - \kappa p - \sum_{-i}(w_{-i}t_{-i})\Big]$ and plugging into the maximand turns the problem into an unconstrained one:

$$Max_p(1-\tau)[\rho_i Y_{\rho i} + (1-\rho_i)\bar{Y}] + \frac{\tau}{w_i^2}\Big[\sum_i(S_i[(\rho_i Y_{\rho i}) + (1-\rho_i)\bar{Y}]\Big] + \frac{1}{w_i^2}\Big[R - \kappa p - \sum_{-i}(w_{-i}t_{-i})\Big] \quad (2)$$

Thus, focusing on interior solutions, in equilibrium, C proposes pandemic policy p_C and transfers t_{iC}

to w_i $\forall i \in \{K\}$ that simultaneously satisfy K FOCs, each of the form:

$$\begin{aligned} F_i \equiv \quad & \Big[\frac{d\rho_i}{dp}(Y_{\rho i}-\bar{Y})+\frac{dY_{\rho_i}}{dp}\rho_i\Big]\Big[(1-\tau)+\frac{\tau S_i}{w_i^2}\Big] \\ & +\frac{\tau}{w_i^2}\Big[\sum_{-i}(S_{-i}[\frac{d\rho_{-i}}{dp}(Y_{\rho-i}-\bar{Y})+\frac{dY_{\rho_{-i}}}{dp}\rho_{-i}])\Big] \\ & -\frac{\kappa}{w_i^2} \qquad\qquad = 0. \end{aligned} \tag{3}$$

These give p_C which, when plugged into the budget constraint, solves for t_C^i $\forall i \in \{K\}$. The value of C's offer for a member of type i is therefore:

$$V_C^i = y_i(p_C, \frac{t_{iC}}{w_i}) + \delta\Big[\frac{w_i}{S}V_I^i + (1-\frac{w_i}{S})V_o^i\Big], \tag{4}$$

where δ is the discount rate, $\frac{w_i}{S}$ is the probability that a selectorate member of type i is included in the coalition of whoever is the incumbent, in which case she obtains the value $V_I^i = \frac{y_i(p_I, \frac{t_{iI}}{w_i})}{1-\delta}$, with p_I the pandemic policy of the incumbent, and $V_o^i = \frac{y_i(p_I,0)}{1-\delta}$ is the value of being outside the incumbent's coalition, in which case i is subject to the incumbent's pandemic policy, but no transfers are received.[4] Since the same pandemic policy is implemented for all selectorate members, whether or not they are in the coalition, then in equilibrium, $p_C = p_I = p$.

For the incumbent to stay in power, she has to match the value V_C^i from the challenger, i.e. $V_I^i = V_C^i$, which means $V_I^i = y_i(p_C, \frac{t_{iC}}{w_i}) + \delta\Big[\frac{w_i}{S}V_I^i + (1-\frac{w_i}{S})V_o^i\Big]$. Imposing $p_C = p_I = p$, substituting the above expressions for V_I^i and V_o^i, and re-arranging obtain:

$$\frac{y_i(p, \frac{t_I^i}{w_i})}{1-\delta} - \Big(\frac{1}{1-\frac{\delta w_i}{S}}\Big)\Big[y_i(p, \frac{t_C^i}{w_i}) + (1-\frac{w_i}{S})(\frac{y_i(p, \frac{t_I^i}{w_i})}{1-\delta})\Big] = 0. \tag{5}$$

It is straightforward to show that the incumbent gives transfers that are less than what the challenger would give. That is, re-writing the above as $\frac{y_i(p, \frac{t_I^i}{w_i})}{1-\delta}\Big[1-\Big(\frac{1}{1-\frac{\delta w_i}{S}}\Big)\Big(1-\frac{w_i}{S}\Big)\Big] = \Big(\frac{1}{1-\frac{\delta w_i}{S}}\Big)y_i(p, \frac{t_C^i}{w_i})$, it is obvious that $y_i(p, \frac{t_I^i}{w_i}) \leq y_i(p, \frac{t_C^i}{w_i})$ since:

$$\Big(\frac{1}{1-\frac{\delta w_i}{S}}\Big)\Big[\frac{1-\delta}{\Big[1-\Big(\frac{1}{1-\frac{\delta w_i}{S}}\Big)\Big(1-\frac{w_i}{S}\Big)\Big]}\Big] > 1$$

or, simplifying, $S > w_i$.

[4] In the canonical selectorate framework in which members are homogeneous, the probability that any one member is included in the coalition is $\frac{W}{S}$. Here, with W composed of heterogeneous groups, $\frac{\sum_i w_i}{S} = \frac{W}{S}$, with $\frac{W}{S}$ still capturing the type of regime, with values close to one-half approximating more democratic regimes.

More relevant for our analysis is the level of pandemic policy that the incumbent implements. Since the incumbent, to stay in power, would have to provide pandemic policy that is the same as what a challenger would provide, the optimal policy is given by the conditions $F_i = 0 \; \forall i \in \{K\}$. The following results can then be obtained.

Theorem 1 *The* ***politically optimal pandemic policy*** *(POPP) chosen by the incumbent government considers the effect of the policy on each group in its coalition, weighing them according to group size.*

Specifically, in equilibrium, for any pair (i, j) of groups in the coalition, where $P_i \equiv \frac{d\rho_i}{dp}(Y_{\rho i} - \bar{Y}) + \frac{dY_{\rho i}}{dp}\rho_i$ and $P_j \equiv \frac{d\rho_j}{dp}(Y_{\rho j} - \bar{Y}) + \frac{dY_{\rho j}}{dp}\rho_j$ denote the total marginal effect of the policy on i and j, respectively, $w_i^2 P_i = w_j^2 P_j$.

All proofs are in the appendix.

Theorem 2 *The effect of the POPP on each group in the incumbent's coalition is decreasing in group size – w_K is most, while w_1 is least, affected.*

Let the pair of parameters (η_i, ϵ_i) denote the Health Vulnerability-Economic Vulnerability (HV–EV) profile of a selectorate member of type i.

Theorem 3 *The POPP most closely reveals the HV–EV profile of the least loyal group in the incumbent's coalition.*

The model predicts that the least loyal members of the ruling coalition – those with the smallest probability of remaining in the coalition, determine pandemic policy. For this group, the total marginal effect P of the policy is largest. From the proofs of Theorems 1 and 3, one can write $P \equiv \left(\frac{\partial \rho}{\partial p} + \eta \frac{\partial(\frac{\sum_i S_i \rho_i}{S})}{\partial p}\right)(Y_\rho - \bar{Y}) + \left(\frac{\partial Y \rho}{\partial p} + \epsilon \frac{\partial(\sum_i S_i y_i)}{\partial p}\right)\rho$. Thus, when the health vulnerability of the least loyal group is high, while its economic vulnerability is low, then pandemic policy would be aggressive, as this would induce larger total health effect $\frac{\partial(\frac{\sum_i S_i \rho_i}{S})}{\partial p}$ which, when weighted by high η, would generate large P. Conversely, if the group's health vulnerability is low, while its economic vulnerability is high, a less aggressive pandemic policy would induce larger aggregate economic effect $\frac{\partial(\sum_i S_i y_i)}{\partial p}$ which, when weighted by high ϵ, would induce large P. Table 1 summarizes the predicted relationship between the health-economic vulnerability (HV-EV) profile of the least loyal members of the coalition and the politically optimal pandemic policy (POPP).

3 Applications

We now employ our model to explore cross-country variation in pandemic policy. The model predicts that pandemic policy is responsive to the preferences of the least loyal members of the coalition. As the

		Economic Vulnerability	
		Low	High
Health Vulnerability	Low	Moderate pandemic policy	Least stringent pandemic policy
	High	Most stringent pandemic policy	Moderate pandemic policy

Table 1

taxonomy in Table 1 illustrates, if such members are have high health vulnerability but low economic vulnerability, the incumbent will choose more stringent policies. If such members are relatively more concerned about economic outcomes, that is they have low health vulnerability and high economic vulnerability, the incumbent will choose less stringent policies.

As there is no unified database that would permit us to conduct an econometric investigation, we rely on detailed case studies to operationalize the concept of least loyal or pivotal coalition members. Specifically, we first compare otherwise similar countries such as Brazil and Argentina, and Denmark and Sweden, who choose very different pandemic policies, before applying our model to the UK and the United States which have comparable policies.[5] Several caveats are in order before proceeding. First, in no cases do we attempt to explain the entirety of the variation in pandemic policies; other factors both cultural and idiosyncratic are also clearly relevant. Second, identifying the most pivotal members of the incumbent coalition is not always obvious and relies on a degree of country-specific knowledge. Thus in all cases, we regard our analysis here as a starting point for further work.

Argentina and Brazil Argentina under Alberto Fernández adopted an aggressive pandemic policy. A full lockdown was imposed on March 19, at which point Argentina had only 128 official Covid-19 cases. This was kept in place until July 17th. The result has been that (thus far) the outbreak has been contained—-87,030 cases and 1,694 confirmed deaths as of July 9. In contrast, Brazil was slow to impose major restrictives and the federal government sought to limit local lockdown measures. President Bolsanaro fired two health ministers and opposed local attempts to impose lockdowns, for instance, by the mayor of San Paulo (see Appendix Figure 4). .

Existing explanations of this policy divergence point to the personality of Javier Bolsanaro and also to his lack of a party base. For instance, the Guardian notes that "Bolsonaro split with the party that brought him to power, whereas Fernández is a product of one of Latin America's most enduring and powerful national movements" (Goñi 2020).Another relevant factor was that Bolsanaro's policy response was shaped by the desire of opposing the lockdown policies of two prominent governors: of

[5]Note we focus on the *initial* response to Covid-19. We do not consider the speed at which countries reopened as these policies are likely endogenous to the number of cases.

the State of Sao Paulo (Joao Doria), and of the State of Rio de Janeiro (Wilson José Witzel). But to better understand this divergence it is more informative to look at the respective coalitions that elected Bolsanaro and Fernández.

Bolsanaro was elected following a sharp recession. He was able to win power from the Workers' Party by bidding away the support of working class voters. The voters who swung the electors to Bolsanaro were non-ideological working class voters who voted on grounds of the economy and law and order (see Hunter and Power 2019).[6] These voters would be highly vulnerable to the economic consequences of a stringent pandemic policy (i.e. high EV). Our model suggests that Brazil's sluggish response to Covid-19 is a response to the concerns of the group that were pivotal in his election.

In contrast, Fernández was elected by a leftwing coalition. The working class poor—those with the highest EV—were already likely to vote for Everyone's Front–which comprised various social democratic, Peronist, and Communist parities. Our model predicts that the Fernández government simply does not have to respond to their demands. Rather policies will more responsive to more marginal members of the coalition who were more vulnerable to the pandemic itself. In the case of Everyone's Front, these may have been voters with Peronist learnings, who tend to be older than the other members of the Everyone's Front coalition.

Denmark and Sweden Both Denmark and Sweden are governed by left-wing coalitions that won power in 2019. Both are Scandinavian social democracies with high trust in government and high levels of social capital. While there are social and cultural differences between these two countries, these do not seem strong enough to explain the very different responses to Covid-19.

Denmark shutdown on March 11 2020—the second country in Europe to do so. This was only twelve days after the first confirmed case was announced on February 27. On March 13 Denmark closed its borders. In contrast, Sweden refrained from imposing an official lockdown, instead issuing guidance on social distances and risk avoidance. Schools, cafes, and restaurants remained open (see Appendix Figure 5).

Our model provides an explanation of this divergence. In Sweden, the smallest group in the governing coalition is the Green Party. The voters of the latter skew young. Hence they have a low HV but they are likely to have a relatively high EV. Other explanations of Swedish policy rest on the discretion given to the Public Health Agency of Sweden (Folkhälsomyndigheten) and Anders Tegnell.[7] Nonetheless, this explanation does not explain why there was little pressure on the Public Health Agency from the government and why criticism for not adopting a more aggressive pandemic

[6]Specifically, while affluent voters in Brazil have long been concerned with crime in the 2018 election "Poorer segments, who not only lack access to such options (e,g. gated communities) but also typically reside in areas of greater crime, sought credible promises of protection as well" (Hunter and Power 2019, 74).

[7]Importantly, this discretionary authority is protected in the constitution and as such may seem to be outside the considerations of our model (Jonung 2020).

policy has come from parties on political right.[8] Future developments will allow us to further falsify or validate our model.

The UK and USA The UK stands out from Figure 2 as having been slow to implement lockdown policies. The per capita fatality rates from Covid in the UK are also among the highest in the world. In the press, the reluctance to impose a strict lockdown early on has been attributed to the liberal political preferences of Prime Minister Boris Johnson. While these factors may have been relevant, our model points to the importance of the new electoral coalition that was responsible for providing the Johnson government with its large majority in December 2019.

Johnson's victory rested on voters in the north of England who traditionally voted Labour. In the words of the Economist: "The party of the rich buried Labour under the votes of working-class northerners and Midlanders." ("Victory for Boris Johnson's all-new Tories" 2019). From the perspective of our model, northern working class voters are the newest and most pivotal part of the current governing coalition. Indeed in his election results speech, Johnson acknowledged: "You may only have lent us your vote and you may not think of yourself as a natural Tory ... And if that is the case, I am humbled that you have put your trust in me, and that you have put your trust in us. And I, and we, will never take your support for granted. And I will make it my mission to work night and day, flat out, to prove you right in voting for me this time, and to earn your support in the future."[9] These voters are particularly sensitive to downturns in the economy. Any lockdown policy imposed by Johnson had to carry the support of this key constituency. As a result, even had he been more alert to the threat posed by the pandemic, it is unlikely he would have been able to impose an earlier, more severe, lockdown policy.

The case of the United States is similar (see Appendix Figure 6). President Donald Trump was relatively slow to acknowledge the case of the threat posed by COVID-19. While this has been attributed to his personality, it also reflects his focus on the economy for the 2020 election. Indeed our model suggests that this focus on the economy is driven by concern over the least loyal members of the Trump electoral coalition.

Our framework can account for otherwise puzzling observations. For instance, a much remarked upon finding in the United States is that Covid-19 is more likely to kill Republicans than Democrats, as the former are older on average and more likely to have significant comorbidities. The Washington Post carried the headline "Republicans are endangering their own supporters and destroying Trump's electoral map" [10] Indeed Johnson, Pollock, and Rauhaus (2020) hypothesized that predicted fatalities from Covid-19 could swing elections in favor of the Democrats.

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[8] See Lindeberg (2020).

[9] https://www.news24.com/news24/columnists/guestcolumn/transcript-boris-johnsons-election-victory-speech-in-full-20191213.

[10] see Rubin (2020) and Cadelago (2020).

However, our model explains why Trump's policies have tended to favor reopening the economy despite fears of a second-wave. The incumbent should be most responsive, not to the concerns of his or her base—elderly, conservative, Republican voters in Southern states are unlikely to defect to the Democrats—but to the concerns of the most pivotal members of the coalition. Viewed through this lens, it is entirely rational for Trump's policies to mirror the concerns of blue-collar workers in states such as Wisconsin, Ohio, and Pennsylvania who were critical to his 2016 election win.

Numerous other arguments have been proposed to explain variation in the pandemic response. For example, it has been claimed that populist leaders have been especially slow in their response. But while this claim fits the examples of Bolsanaro and Trump, it does not fit other populist leaders like Rodrigo Duterte in the Philippines who reacted aggressively (Billing 2020). Moreover, this explanation does not explain why populist leaders would be slow to react. Our model suggests that part of the answer may lay in their electoral base, particularly, in the relative HV-EV vulnerability of the most pivotal supporters.

The electoral concerns we have discussed here can also apply to the decision to open up following a lockdown, and the nature of the economic stimulus passed in response to the pandemic. We leave an analysis of these policies to subsequent research.

4 Concluding Comments

We have developed a model of the tradeoffs facing an incumbent leader facing a pandemic. Responding to the pandemic imposes heterogeneous costs on members of the incumbent's ruling coalition. Specifically, policies like lockdowns impose economic costs that are disproportionately bourn by some groups. The benefits of these policies disproportionately benefit those individuals most at risk to disease. We show that the incumbent's chosen is most responsible to the most pivotal members of the incumbent's ruling coalition. We discuss how this model sheds lights on variation in pandemic policies across otherwise similar countries.

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A Appendix (Not For Publication)

Proofs

Proof of Theorem 1

Proof Condition (3) can be expressed as $F_i \equiv P_i\Big[(1-\tau)+\frac{\tau S_i}{w_i^2}\Big]+\frac{\tau}{w_i^2}[\sum_{-i}(S_{-i}P_{-1})]-\frac{\kappa}{w_i^2}=0$, where $P_i \equiv \frac{d\rho_i}{dp}(Y_{\rho i}-\bar{Y})+\frac{dY_{\rho i}}{dp}\rho_i$ is the total marginal effect of the pandemic policy p on coalition member of type i. This implies that, for, say a pair of members with types 1 and 2, $P_1[w_1^2(1-\tau)+\tau S_1]+\tau[S_2P_2+S_3P_3+...S_KP_K]=P_2[w_2^2(1-\tau)+\tau S_2]+\tau[S_1P_1+S_3P_3+...S_KP_K]$. This reduces to $P_1[w_1^2(1-\tau)]=P_2[w_2^2(1-\tau)]$, or $w_1^2P_1=w_2^2P_2$. More generally, for any pair (i,j) of coalition members of type i and j, $w_i^2P_i=w_j^2P_j$.

Proof of Theorem 2

Proof The proof of Theorem 1 also implies that $w_1^2P_1=w_2^2P_2=...=w_K^2P_K$. Since $w_1>w_2>...w_K$, it must be that $P_1<P_2<...P_K$, with P_i denoting the total marginal effect of the pandemic policy on a member of group w_i.

Proof of Theorem 3

Proof By Theorem 2, P_K-P_1 is largest, and P_1/P_K closest to zero, than other pairs of total marginal effects. Set $P_1/P_K\approx 0$ and $\frac{1}{P_K}\approx 0$. Then $\frac{1}{\frac{d\rho_K}{dp}(Y_{\rho K}-\bar{Y})+\frac{dY_{\rho K}}{dp}\rho_K}\approx 0$, which is implicit in (η_K,ϵ_K), since $\frac{d\rho_K}{dp}=\frac{\partial\rho_K}{\partial p}+\eta_K\frac{\partial(\frac{\sum_i S_i\rho_i}{S})}{\partial p}$ and $\frac{dY\rho_K}{dp}=\frac{\partial Y\rho_K}{\partial p}+\epsilon_K\frac{\partial(\sum_i S_iy_i)}{\partial p}$ are functions of η_K and ϵ_K.

B Additional Figures

Figure 3: The stringency index for selected countries at 10, 100, 200, and 500 deaths respectively.

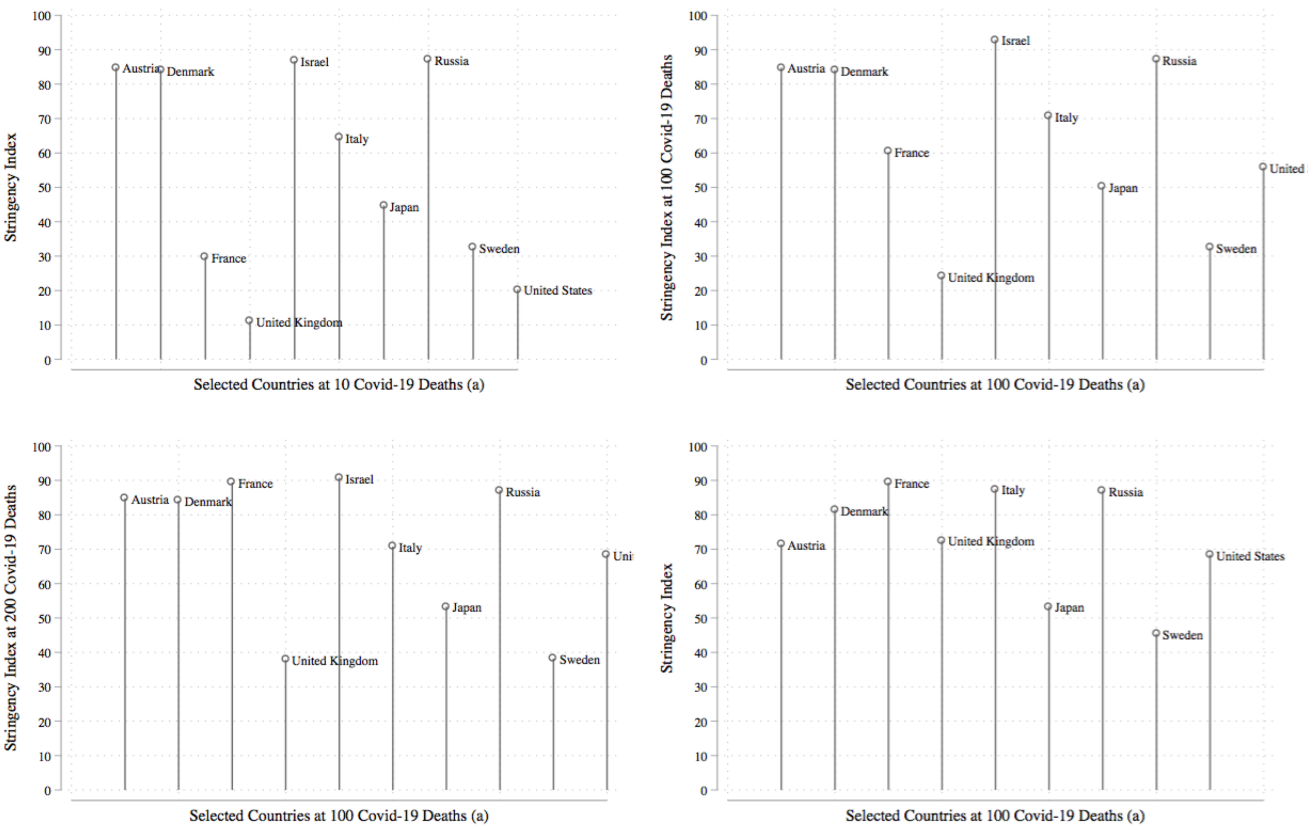

Figure 4: The contrasting pandemic policy of Argentina and Brazil.

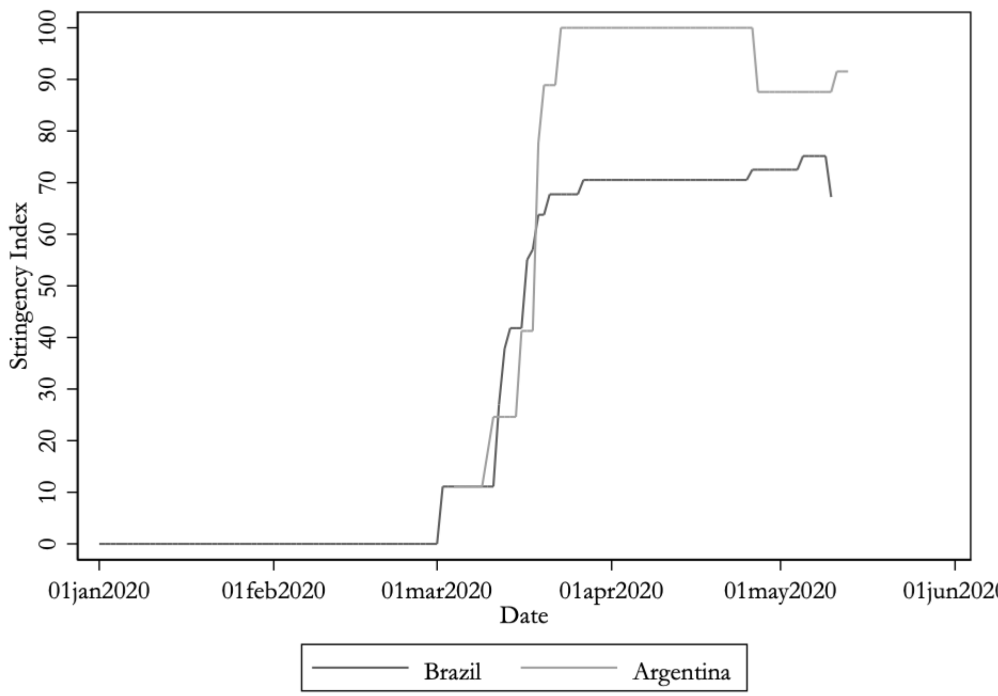

Figure 5: The contrasting pandemic policy of Denmark and Sweden.

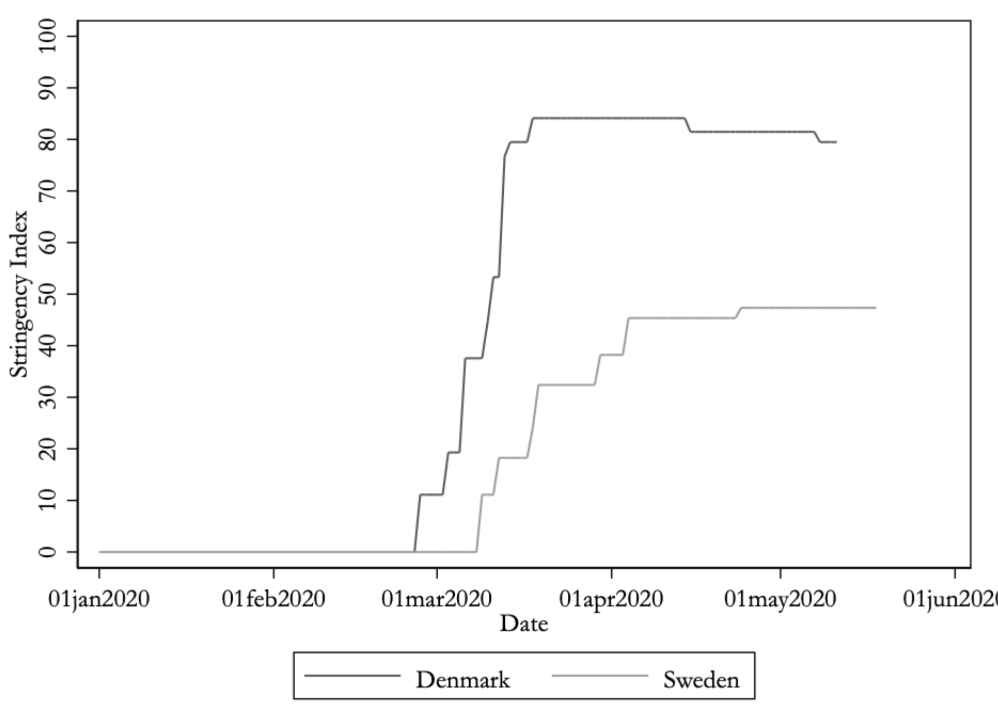

Figure 6: The similar pandemic policy of the UK and USA.