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TRUST AND STATE EFFECTIVENESS: THE POLITICAL ECONOMY OF COMPLIANCE*

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This paper explores the link between trust in government, policymaking and compliance. It focuses on a specific channel whereby citizens who are convinced of the merits of a policy are more motivated to comply with it. This, in turn, reduces the government's cost of implementing this policy and may also increase the set of feasible interventions. As a result, state effectiveness is greater when citizens trust their government. The paper discusses alternative approaches to modelling the origins of trust, especially the link to the design of political institutions. We then provide empirical evidence consistent with the model's findings that compliance is increasing in government trust using the Integrated Values Survey and voluntary compliance during COVID-19 in the United Kingdom.

It is now well understood that countries differ in their ability to implement effective policies. In particular, there has been an increased focus on the importance of state capacity—the ability of states to collect public revenue and turn these resources into public goods—and how it is associated with long-term growth, development, and well-being (Besley and Persson, 2014). Alongside this, a large and growing literature has explored the political and institutional origins of effective states (North *et al.*, 2008; Besley and Persson, 2011; Acemoglu and Robinson, 2012). However, one of the central challenges remains to understand why some countries have made progress in developing welfare states with modern tax, legal and regulatory systems able to support a functioning market economy, while others have failed to do so.

The COVID-19 pandemic revealed some of the challenges in predicting state effectiveness. Many of the countries that were expected to be most prepared for outbreaks and early response to a pandemic struggled to implement social distancing policies, and suffered a higher death toll than countries deemed to be less prepared.[1] In part, voluntary compliance by citizens appeared

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[1] For example, the United Kingdom was reported as being the most prepared country for 'rapid response to and mitigation of the spread of an epidemic' in 2019, while Vietnam ranked 73rd out of 195. By 31 December 2020 the UK reported a cumulative number of 93,317 COVID-19 deaths, compared to 35 for Vietnam (GHS index 2019, WHO COVID-19 Dashboard consulted from Our World in Data on 24 May 24 2023).

to have played a large role in the effectiveness of non-pharmaceutical interventions throughout this episode.

There are two broad historical traditions that seek to understand the origins of state effectiveness. The first is associated with thinkers such as Hobbes (1651) and Weber (1919/1970), and emphasises the projection of state power and the importance of building coercive authority where the state has a monopoly on the legitimate use of force. Achieving this goal requires a range of investments in coercive compliance to underpin state effectiveness with constraints on power ensuring that the government uses its coercive authority to serve the public interest. Besley and Persson (2009; 2011) model how the incentive to invest in state capacity is enhanced by having an institutional environment conducive to policy cohesion. The second tradition is rooted in the works of thinkers such as Locke (1690) and Rousseau (1762) who see the state as a form of social contract in which citizens and states have mutual obligations. Building trust is the key to state effectiveness as a means of encouraging voluntary compliance with taxes, laws, rules and regulations for the 'common good'. This fits with work in political science where the role of trust is given a central role in understanding state effectiveness with landmark contributions by Levi (1989; 1997) and Putnam *et al.* (1993).

In this paper, we will explore how these two approaches fit together, stressing that institutional factors can increase trust and improve state effectiveness through increasing policy compliance. The model has two key elements. First, as in agency models of politics, we assume that governments have better information about what policies are needed compared to citizens. However, its actions may be distorted by gaining private benefits from policymaking. This generates a principal-agent problem that has to be solved and we characterise political trust in terms of the likelihood that the government pursues the common good rather than private interests. The second element is the need for supportive action by citizens to increase policy effectiveness. Rather than this being achieved solely through coercion, we suggest a novel approach where citizens are motivated to comply as long as they perceive their actions to be serving the common good. If a government cannot be trusted to pursue welfare-maximising policies, there is less compliance.

The paper studies the interplay between policy and public action in generating effective state intervention. Such issues became apparent in the COVID-19 pandemic where many measures recommended by the state were only effective if citizens chose to comply. For example, purely coercive compliance with lockdowns was not a viable option for many governments, putting voluntary compliance at a premium. Requests to wear masks, exercise social distancing and get vaccinated also had large elements of voluntary compliance. Here we argue that compliance with policy measures of this kind is facilitated by having greater confidence that the policies were justified.[2] Similar issues arise in other contexts including in trying to encourage costly lifestyle changes in response to the threat of climate change. Unless citizens trust that the actions that they are being asked to undertake are in the public interest, it may limit the effectiveness of policy interventions that require compliance.

The remainder of the paper is organised as follows. In Section 1 we relate the ideas in this paper to the literature on political trust, determinants of pro-social behaviour and building state capacities. Section 2 develops the core model, presents the key theoretical results linking trust with policy and compliance and discusses the relationship between trust and state effectiveness. Section 3 links the model to the origins of trust in government. Section 4 then

[2] See Trent *et al.* (2022) for evidence on vaccine hesitancy.

discusses the empirical implications of the ideas while Section 5 contains some concluding comments.

1. Background

This paper is related to three literatures in political economy: the study of political trust, determinants of pro-social behaviour and building state capacity.

There is a voluminous literature on *political trust* surveyed in Levi and Stoker (2000). This is informed by a large amount of survey evidence, and González and Smith (2017) look at a range of sources for OECD countries. Long-run survey data for the United States, in particular, has generated a fierce debate about the causes and consequences of the decline in trust (see, for example, Nye *et al.*, 1997; Dalton, 2005; Hetherington, 2005).

There is also an extensive literature on trust in general and its importance in economic settings where it can be thought of as part of a wider cultural context (see, for example, Dasgupta, 2000; Guiso *et al.*, 2006). This is particularly relevant for solving collective action problems (Olson, 1971). Although patterns of interpersonal trust and trust in government have some common features, they are distinct both in terms of empirical regularities and their theoretical predictions.[3] In economic models, trust can be thought about in two broad and distinct ways. First, trust can refer to a 'type', with some individuals being trustworthy and others not as an innate type. And one can apply a similar logic to the political class so that political selection is important. Second, trust can refer to equilibrium behaviour, i.e., even in a world of opportunists, some individuals may have an incentive to behave in a trustworthy way. Then political institutions can affect how this plays out by rewarding or punishing some kinds of behaviour.

There are two core questions that are much debated in the literature. The first concerns what drives trust in government and the second concerns why it matters. However, as Hetherington (1998), among others, has cautioned, this framing does an injustice to what is likely to be a complex dynamic process of two-way causality. It is also fair to say that no canonical theoretical framework has emerged for exploring either question.

Trust can be understood in three main ways. First, it could simply reflect an exogenously given probability that a government's incentives are aligned with those of citizens. Second, it can reflect an *equilibrium* probability that governments will implement policies that citizens want; this requires studying the government's incentives. Third, trust can affect which equilibrium is played in a world of multiple equilibria. This paper is based on a model of endogenous government behaviour, but adds a key element in studying the interplay between enforcement and trust when governments have limited coercive power.

Schoon and Cheng (2011) discuss two views about the origins of trust. The first is a focus on the role of institutions in driving trust. On this view, trust emerges from citizens' perceptions that political elites are acting in their interest due to the way that institutions incentivise such behaviour. Hardin (2006), for example, espouses such an institutionalist view of trust. This creates a natural link between trust in government and political agency models of the kind surveyed in Besley (2006). Here, the equilibrium behaviour of politicians depends on the way in which they are held to account by voters, which depends on such things as media scrutiny. These issues are explored in an online experiment by Martinez-Bravo and Sanz (2022).

[3] For example, Besley (2020) shows that confidence in government is positively correlated with views about tax compliance whereas these are not correlated with interpersonal trust.

The second approach regards trust as akin to embedded values whereby there is propensity of political elites to eschew their private interests in favour of the common good. Values in general have been explored extensively in Inglehart (1997) who uses data from the World Values Survey, which we will also be using below. The persistence of values is often down to intergenerational transmission. And a variant of this is the idea that such values are acquired due to experiences during impressionable years and remained throughout an individual's lifetime. So, for example, Schoon and Cheng (2011) examine how trust in government responds to experiences such as living under a communist dictatorship while Mishler and Rose (2001) explore the interplay of cultural and institutional factors in explaining lows levels of political trust in the post-communist regimes of Eastern Europe.

When it comes to exploring the consequences of trust, there are arguments that it is linked to low levels of political turnout, such as Timpone (1998). There is also a literature, for example, Kampen *et al.* (2006), that relates trust and public service delivery. Levi (1997) stresses the importance of trust as a factor linked to willingness to volunteer for military service. Martinez-Bravo and Stegman (2022) link trust to vaccinations for children in Pakistan by studying an episode in which the CIA used a vaccination campaign as cover to capture Osama Bin Laden, leading to the Taliban launching an anti-vaccine propaganda campaign to discredit vaccines and vaccination workers. They find that vaccination rates declined suggesting that discrediting vaccination campaigns can negatively affect trust in health services and the demand for immunisation. Bargain and Aminjonov (2020) use data on human mobility and political trust in Europe and show that compliance with policies depends on the level of trust in policymakers prior to the crisis. Psychological accounts of willingness to obey the law are frequently linked to trust as argued by Tyler (2006). This ties to wider debates about how trust and state legitimacy are linked as discussed, for example, in Levi *et al.* (2012).

The approach taken here links trust in government to political agency models whose key element is asymmetric information about the need for government policy action. In this vein, Acharya *et al.* (2021) study the government's problem of building a reputation for being trustworthy when it has to periodically force a sacrifice upon citizens (e.g., Covid lockdowns, Wall street bailouts, the Iraq war) and citizens are uninformed about whether the policy is warranted. They show that maintaining a reputation is near impossible in the long run if such crises (pandemics, financial crises, wars) hit frequently.

1.1. *Compliance and Pro-Social Behaviour*

Government policies frequently rest on compliance. In many economic models, this is assumed to be achieved through coercion. But it is also well known that coercion is costly and imperfect (see, for example, Cowell, 1990, for the case of taxation). Since the benefits of tax compliance are collective, paying taxes without coercion is like the private provision of a public good. But since agents do not have an impact on the aggregate level of compliance through their own actions, this means considering pro-social motivation and the different ways that have emerged for modelling and studying this.

Internal motivations to comply require invoking some kind of private benefits from pro-social actions. Andreoni (1990) coined the term 'warm-glow altruism' to describe this. One way to think about this is to follow Akerlof and Kranton (2005; 2010) who suppose that people adopt social identities which are associated with particular patterns of behaviour. Then one identity would be behaving like a 'law abiding citizen'. It could also be given a reputational foundation

as in Benabou and Tirole (2003; 2006) where pro-social actions are a form of signal to oneself or to others. One could also ground pro-sociality in mission-driven preferences as in Besley and Ghatak (2005). All of these approaches amount to supposing that compliance is enhanced by having intrinsic motivation. And consistent with this idea, Dwenger *et al.* (2016) find evidence from a field experiment in Germany that such motivation can be an important driver of tax compliance.

Compliance could also be aided by social enforcement in peer groups that enforce social norms. So norm-driven behaviour could be linked to informal rewards and punishments that support such behaviours, with individuals preferring to comply with a law or policy when they believe that others will also do so. This can depend on information about how norms are established and spread. Besley *et al.* (2023) study this for the case of the poll tax experiment in the UK which resulted in a dramatic breakdown in compliance. Del Carpio (2013) runs a field experiment on property taxes in Peru where residents in two municipalities in the Lima province were informed about the average rate of compliance and/or municipal enforcement. The analysis suggests that norm intervention acts by changing beliefs about both compliance and enforcement. Del Carpio *et al.* (2022) study how enforcement limited capacity results in multiple equilibria in tax compliance and conduct a field experiment to investigate different enforcement strategies. Bursztyn and Jensen (2017) review a range of field experiments where social pressure is used to increase compliance in different settings.

1.2. *State Capacity*

State capacities are supportive investments that increase the feasible set of policies available to governments as well as permitting existing policies to be delivered at lower costs/more effectively. There are many concrete examples where the organisation of the state matters: a viable system of tax collection requires recruiting and training a cadre of honest and competent bureaucrats; building a legal system requires laws to be written, judges to be appointed, courts to be resourced and regulatory structures to be put in place; effective public spending benefits from structures that support a proper process for assessing eligibility criteria for public programmes. Many of these investments are intangible, taking the form of designing and implementing organisational structures where accountable expertise is deployed. Hence, structures for recruiting, monitoring and evaluating professional service staff play a key role in building state capacities.

Besley and Persson (2014) suggest three core dimensions corresponding to different functions of government.[4] *Fiscal capacity* refers to how well the state can raise revenues. *Legal capacity* refers to the ability to enforce laws and to regulate citizens and the economy. *Collective capacity* refers to the ability of the state to spend money in ways that generate value to citizens in the form of public services and infrastructure. Such capacities have evolved through history and vary enormously across countries.

Interest in these issues among economists is relatively recent, but there is a large literature in economic history, political science and historical sociology. Two of the historical classics are Hintze (1906/1975) and Schumpeter (1918). The former is well known for invoking the importance of warfare as a driver of fiscal capacity, a theme later taken up in classic work by Tilly (1990). Historians such as O'Brien (1988) and Brewer (1989) have stressed the role of

[4] Other terms that are sometimes used for dimensions of state capacity are 'bureaucratic capacity' and 'administrative capacity' which tend to cut across these three functional dimensions. For a useful discussion of different ways of delineating state capacities see Williams (2021).

empire-building and establishing naval power as a driver of British fiscal development starting in the early modern period. Levi (1989) emphasises the importance of political factors in accounting for revenue growth and Dincecco (2015) considers the importance of fiscal capacity in European history.

The conventional view of how state capacity is built is developed in Besley and Persson (2009; 2011). Investments can be thought of as a form of intangible capital rather than 'bricks and mortar' infrastructure. Thus, changes in the way that the state is organised are important determinants of the professionalisation process that has taken place to allow the state a wider remit. This ties into wider themes in the work of sociologists such as Weber (1919/1970). State capacity investment can be thought of as an investment problem where a key issue is how such capacities are deployed in the future. Strong institutions constrain private interests and encourage the state to be used as a tool for pursuing common interests. This creates an environment that is conducive to building state capacities, and a range of correlational evidence is supportive of this idea.

Shifting civic culture can also be a way of building state capacity as citizens develop a sense of obligation. This mirrors the idea that successful states build a social contract between the state and the citizen. This idea is key to Levi (1989) who argued that quasi-voluntary compliance has played a key role in the increase in the power to tax throughout history. This dovetails with a wider theme in political science about the role of civic culture in establishing functioning polities, with Almond and Verba (1963) being a classic reference on the importance of building civic cultures in making polities functional. Putnam *et al.* (1993) study the importance of civic engagement in explaining heterogeneity in government performance while Besley (2020) formalises how the evolution of reciprocity can play a key role in the pattern of state evolution.

2. Theoretical Framework

This section develops a model that links trust and compliance. The model comprises a government and a group of citizens. Governments, who are better informed about the value of a policy than are citizens, make a policy choice. Citizens make decisions about whether to comply with policy.

2.1. *Elements*

2.1.1. *Basics*

A government makes a policy choice, $\lambda \in \{0, 1\}$ where $\lambda = 1$ denotes going ahead with the policy at a per capita cost of C that is borne equally by all citizens. The pay-off from the policy depends on the realisation of a state of the world $\theta \in \{0, 1\}$ and the fraction of citizens who choose to comply with it, denoted by $\rho \in [0, 1]$. Formally, if $\lambda = 1$ the per capita policy pay-off is $\rho\hat{\Delta}(\theta) - C$ where $\hat{\Delta}(\theta) = \theta\Delta - (1 - \theta)\delta$, with δ and Δ being positive constants.

2.1.2. *Government*

The state, θ, is only observed by the government. As in many standard political agency models (see Besley, 2006), there are two types of government differentiated by how congruent their preferences are with aggregate citizens' pay-offs. Denote the type of the government by $\tau \in \{t, u\}$ where t stands for 'trustworthy' and u for 'untrustworthy'. The *ex ante* probability that a government is trustworthy is $\gamma \in [0, 1]$ which we assume is exogenous and common knowledge.

We will interpret changes in γ as having more or less trustworthy government; the interpretation of this is discussed in more detail in Section 3.

Trustworthy governments are utilitarian, i.e., maximise the aggregate pay-offs of citizens net of compliance costs that are spelled out below, i.e.,

$$\lambda\left[\rho\hat{\Delta}(\theta) - C - \text{compliance costs}\right].$$

Governments will implement the policy only if it is beneficial for citizens.

Untrustworthy governments may fail to act in the citizens' interest because they care about a rent that they can earn by setting $\lambda = 1$. Let $r \in [-R, R]$ be the rent and $\Omega \in [0, R)$ be the pay-off from setting $\lambda = \theta$. Below, we discuss how Ω might reflect the quality of institutions. The overall pay-off of an untrustworthy government is therefore:

$$\lambda r + \Omega\left[1 - |\lambda - \theta|\right].$$

Since $\Omega < R$, there are realisations of r for which the government prefers to set $\lambda \neq \theta$. The value of the rent is private information to the government and is drawn from a symmetric mean-zero distribution with cumulative distribution function denoted by $G(\cdot)$.

2.1.3. *Citizens*

There is a continuum of citizens indexed by $i \in [0, 1]$ with a uniform distribution of material costs of complying with the policy if it is introduced, i.e., when $\lambda = 1$. The material cost of complying for citizen i is iE. In addition, they face a material sanction for not complying, denoted by ϕ.

A non-standard feature of the model is that citizens also get a private pay-off from complying with the policy. This is analogous to the warm-glow utility in charitable giving (Andreoni, 1990) that has been used to explain private supply of public goods in large economies. This pro-social private utility from compliance could be derived from citizens caring about their reputation or self-image as in Benabou and Tirole (2006), or by receiving mission-oriented utility, as in Besley and Ghatak (2005), if they perceive the government to be acting in the public interest. Specifically, we posit a private pay-off equal to $\xi\hat{\Delta}(\Pi)$ if they comply, where Π is the common belief among citizens that $\theta = 1$ and ξ indexes the strength of this motive. The fact that Π enters this pay-off implies that this motive can either help or hinder compliance depending on whether $\hat{\Delta}(\Pi)$ is positive or negative. We assume throughout that $E > \xi\hat{\Delta}(\Pi) + \phi$, so there is always less than full compliance.

Citizens do not observe θ or r, but have a common prior, π that $\theta = 1$, that they update after they see the policy choice λ. We assume that they do so using Bayes's rule. Since they observe the policy choice before making their compliance decision, it will be their posterior belief as a function of λ, denoted by Π^{λ}, that drives their compliance decision.

2.1.4. *Timing*

The timing of the model is as follows:

(*a*) Nature determines $\theta \in \{0, 1\}$, $r \in [-R, R]$ and $\tau \in \{t, u\}$.
(*b*) The government observes θ and r, then chooses λ.
(*c*) Citizens observe λ and update their belief that $\theta = 1$ to Π^{λ} using Bayes's rule and then choose whether to comply with the policy.
(*d*) Pay-offs are realised.

We solve the model backwards looking for a perfect Bayesian equilibrium.

2.1.5. *Compliance*

We now study stage 3 of the model. If $\lambda = 0$, there is no compliance decision for the citizens to make. If $\lambda = 1$, a citizen complies with the policy if the expected utility from complying exceeds the utility from not complying, $\xi\hat{\Delta}(\Pi^1) - iE \geq -\phi$ which rearranges to:

$$\frac{\xi\hat{\Delta}\left(\Pi^1\right) + \phi}{E} \geq i,$$

and the fraction of citizens who comply is therefore

$$\hat{\rho}\left(\Pi^1, \phi\right) = \max\left\{0, \frac{\xi\hat{\Delta}\left(\Pi^1\right) + \phi}{E}\right\}. \tag{1}$$

This is (weakly) increasing in the sanction from not complying, ϕ, and the belief that the state is $\theta = 1$, i.e., Π^1. Equation (1) allows for the possibility of a zero compliance corner solution when ϕ and Π^1 are low.

The model emphasises that compliance does not necessarily depend on coercion. If $\hat{\Delta}(\Pi^1) > 0$, then there are some individuals for whom $\phi < iE$, but who nonetheless comply with the policy. But equally there are some individuals who comply only if $\phi > 0$, i.e., $\xi\hat{\Delta}(\Pi^1) < iE$. So the model can articulate a precise interpretation for what Levi (1989) calls 'quasi-voluntary' compliance.

Using (1), aggregate compliance costs are:

$$\begin{aligned}\hat{E}\left(\Pi^1, \phi\right) &= \int_0^{\hat{\rho}\left(\Pi^1,\phi\right)} \left[iE + \xi\hat{\Delta}\left(\Pi^1\right)\right] di + \int_{\hat{\rho}\left(\Pi^1,\phi\right)}^1 \phi\, di \\ &= \frac{E}{2}\hat{\rho}\left(\Pi^1, \phi\right)^2 + \phi\left(1 - \hat{\rho}\left(\Pi^1, \phi\right)\right) + \hat{\rho}\left(\Pi^1, \phi\right)\xi\hat{\Delta}\left(\Pi^1\right). \end{aligned} \tag{2}$$

The final term reflects the fact that there is an increase or reduction in compliance costs depending on whether $\hat{\Delta}(\Pi^1) \gtrless 0$. This will be reflected in a welfare-maximising government's policy decision. Using (1) and (2), let

$$W\left(\phi, \hat{\rho}(\Pi^1, \phi) : \theta\right) = \hat{\rho}\left(\Pi^1, \phi\right)\hat{\Delta}\left(\theta\right) - \hat{E}\left(\Pi^1, \phi\right) - C,$$

be welfare in state θ if $\lambda = 1$.

2.1.6. *Policy choice by a trustworthy government*

Let $\hat{\lambda}^t(\theta, \Pi^1) \in \{0, 1\}$ denote a trustworthy government's optimal policy choice. Trustworthy governments choose λ to maximise $\lambda W(\phi, \hat{\rho}(\Pi^1, \phi) : \theta)$ which yields:

$$\hat{\lambda}^t\left(\theta, \Pi^1\right) = \begin{cases} 1 & \text{if } W\left(\phi, \hat{\rho}(\Pi^1, \phi) : 1\right) \geq 0 \\ 0 & \text{otherwise.} \end{cases}$$

This depends on Π^1 since this affects the extent of compliance. If $\hat{\Delta}(\Pi^1) < 0$ and ϕ is low then low compliance will mean that it is not worthwhile for the policy to be implemented.

2.1.7. *Policy choice by an untrustworthy government*

Let $\hat{\lambda}^u(\theta, r) \in \{0, 1\}$ be an untrustworthy government's optimal policy choice. It is based on the realisation of r in addition to θ and is chosen to maximise (3). Then

$$\hat{\lambda}^u(\theta, r) = \begin{cases} 1 & \text{if } r \geq -\Omega \text{ and } \theta = 1 \text{ or } r \geq \Omega \text{ and } \theta = 0 \\ 0 & \text{otherwise.} \end{cases} \tag{3}$$

So there can be type I and type II policymaking errors; depending on the realisation of r, untrustworthy governments may implement $\lambda = 1$, when $\theta = 0$, and $\lambda = 0$ when $\theta = 1$. Now let $\beta = G(\Omega) \in [1/2, 1)$ denote the probability that $\lambda = 1$ if $\theta = 1$ and let $1 - \beta$ be the probability of getting $\lambda = 1$ if $\theta = 0$.

2.1.8. *Interpreting trust*

The model suggests two ways of interpreting higher political trust. The first way is in terms of γ, i.e., the probability that the selection process will lead to a trustworthy government. The second interpretation of trust is in terms of β, which indexes the *extent* of non-congruence in policy choices when $\tau = u$, i.e., the government is untrustworthy. So, for example, as $\beta \to 1$, then $\lambda = \theta$, i.e., an untrustworthy government is expected to set $\lambda = \theta$ almost all the time. These two measures of trust can interact with one another.

To explore this further, note that the equilibrium belief that $\theta = 1$ conditional on $\lambda = 1$ is given by:

$$\hat{\Pi}^1(\gamma, \beta) = \frac{\left[\gamma \hat{\lambda}^t\left(1, \hat{\Pi}^1(\gamma, \beta)\right) + (1 - \gamma)\beta\right]\pi}{\gamma \hat{\lambda}^t\left(1, \hat{\Pi}^1(\gamma, \beta)\right)\pi + (1 - \gamma)[\pi\beta + (1 - \pi)(1 - \beta)]}. \tag{4}$$

This is a fixed point since $\hat{\lambda}^t(1, \hat{\Pi}^1(\gamma, \beta))$ depends on citizens' beliefs about the state.

It is straightforward to check that $\hat{\Pi}^1(\gamma, \beta)$ is increasing in β and also increasing in γ whenever $\hat{\lambda}^t(1, \hat{\Pi}^1(\gamma, \beta)) = 1$. So with higher trust in government, citizens will believe it to be more likely that $\theta = 1$ when they observe the government choose $\lambda = 1$.

2.2. *Trust and Compliance in Political Equilibrium*

We now use the model to explore how varying γ and β affect equilibrium compliance and policymaking. We work throughout with the case where

$$\hat{\rho}(1, \phi)[\Delta(1 + \xi)] - \frac{E}{2}(\hat{\rho}(1, \phi))^2 - \phi(1 - \hat{\rho}(1, \phi)) > C, \tag{5}$$

for all $\phi \geq 0$, i.e., the policy is always worthwhile when $\theta = 1$ if the citizens know the true state. This will hold when Δ / C is large enough and is also facilitated by having higher ξ, i.e., a stronger willingness to comply voluntarily.

2.2.1. *Policy choices*

We have already seen that untrustworthy government picks policy based, in part, on r rather than θ. An interesting issue to study is how the trustworthy government behaves. It is important to note that even a welfare-maximising (trustworthy) government cares about the citizens' perceptions of trustworthiness, as represented in the model by γ and β, since this affects compliance. We can think of this as akin to the government having a concern for its reputation since the government's actions affect citizens' beliefs about the government's type. An untrustworthy

government creates a reputational externality for the trustworthy government since setting $\lambda = 1$ is insufficient to convince citizens that $\theta = 1$. Moreover, with limited enforcement capacity, a trustworthy government may choose to set $\lambda = 0$ even when $\theta = 1$.

The following result, whose proof is in Appendix A, characterises the behaviour of a trustworthy government in political equilibrium.

PROPOSITION 1. *There is a perfect Bayesian equilibrium where the choice of policy by a trustworthy government depends on γ, θ and ϕ as follows:*

(1) If $W(\phi, \hat{\rho}(\hat{\Pi}^1(0, \beta), \phi) : 1) \geq 0$, then $\hat{\lambda}^t(\theta, \gamma) = \theta$ for all $\gamma \in [0, 1]$.
(2) If $W(\phi, \hat{\rho}(\hat{\Pi}^1(0, \beta), \phi) : 1) < 0$, then there is a critical value $\hat{\gamma} \in (0, 1]$ such that:

$$\hat{\lambda}^t\left(\theta, \hat{\Pi}^1(\gamma, \beta)\right) = \begin{cases} \theta & \text{for } \gamma \geq \hat{\gamma} \\ 0 & \text{otherwise.} \end{cases}$$

The first case corresponds to the case where, even if citizens believe that the government is not trustworthy, then it is still worthwhile to comply. This would be true, for example, if π were very high. Even if $\beta \approx 1/2$, this could be sufficient to elicit strong compliance. This would also be the relevant case when ϕ is close to one so that the government has a great deal of coercive enforcement power, since then it does not matter if citizens are not convinced that the policy is worthwhile. Indeed, as $\hat{\rho}(\hat{\Pi}^1(0, \beta), \phi) \to 1$, then as long as $\Delta(1 + \xi) - E/2 > C$, the policy will go ahead when $\theta = 1$. Case 1 is also facilitated by having β close to one. So having untrustworthy government that behaves in a close to welfare optimal way improves the incentives of trustworthy government to set $\lambda = \theta$.

The second case is where γ matters for the equilibrium strategy of trustworthy governments. This is a case where if $\gamma = 0$, then it is not optimal for a trustworthy government to set $\hat{\lambda}^t(1, \hat{\Pi}^1(0, \beta)) = 1$. But as γ increases, the policy goes ahead when $\theta = 1$ due to increased compliance. This case is most relevant when the government has relatively little formal enforcement power. However, higher levels of trust can substitute for this.

2.2.2. *Compliance*

To study compliance, we plug the optimal policy into (4) and observe, using (1), that:

PROPOSITION 2. *In the political equilibrium described in Proposition 1, compliance is increasing in trust in government whether represented by higher γ or β.*

This result follows directly from (1) after observing that compliance is increasing in Π^1 and that $\hat{\Pi}^1(\gamma, \beta)$ is everywhere increasing in β.[5] The expression for equilibrium beliefs, $\hat{\Pi}^1(\gamma, \beta)$, is also increasing in γ when $\hat{\lambda}^t(1, \hat{\Pi}^1(\gamma, \beta)) = 1$, and this also increases compliance.

Proposition 2 is a key implication of the model and makes clear which elements of the relationship between trust and compliance hinge on the underlying policy equilibrium as articulated in Proposition 1. More generally, we cannot characterise citizens' beliefs about θ conditional on observing λ without first solving for equilibrium policy. The model also reminds us that policy choices and compliance are jointly determined. When trust is low, compliance can be low because citizens are less inclined to believe that policies are determined in this interest. But this feeds into policy incentives as well.

[5] Note that even if $\hat{\lambda}^t(\theta, \hat{\Pi}^1(\gamma, \beta)) = 0$ for $\theta \in \{0, 1\}$, an increase in β raises compliance.

Proposition 2 expresses some of the ideas developed in the work of Levi (1989; 1997). She argues that trust can enhance quasi-voluntary compliance with policies. In our framework, the mechanism for this is laid bare; when there is greater trust then it is more likely that policy choices are more closely aligned with welfare. Moreover, if citizens care about 'doing the right thing' by complying, this will increase policy compliance.

2.3. *Trust and State Effectiveness*

We now draw out the model's insights for how trust is linked to state effectiveness. We will first show how having a pro-social motive through $\xi > 0$ is key since it leads to reduced compliance costs. This implies that some policies become feasible in high-trust environments that would not be feasible when trust is low, and there is limited enforcement power.

2.3.1. *The role of pro-social compliance*

To see how trust matters in our framework, consider what would happen if $\xi = 0$, i.e., there is no pro-social motive to comply. Then all compliance would be based on coercion with $\rho = \phi/E$. The beliefs of citizens about the state of the world would now be irrelevant to compliance and the policy would be implemented when $\theta = 1$ if

$$\frac{\phi}{E}\left[\Delta + \frac{\phi}{2} - E\right] \geq C.$$

This will only happen if ϕ is large enough, i.e., the state has sufficient coercive power. And increasing the capacity of the state would follow the logic of Besley and Persson (2009; 2011), based on investments that increase ϕ.

Now consider what happens when $\xi > 0$. The effect on welfare of a small increase in ξ is given by:

$$\frac{\partial\left[\hat{\rho}\left(\hat{\Pi}^1(\gamma,\beta),\phi\right)\hat{\Delta}(1) - \hat{E}\left(\hat{\Pi}^1(\gamma,\beta),\phi\right)\right]}{\partial\xi} = \hat{\Delta}\left(\hat{\Pi}^1(\gamma,\beta)\right)\left[\frac{\Delta}{E} + E\hat{\rho}\left(\hat{\Pi}^1(\gamma,\beta),\phi\right)\right],$$

which is positive only if $\hat{\Delta}(\hat{\Pi}^1(\gamma,\beta)) > 0$, i.e., citizens believe that the policy is sufficiently likely to be welfare enhancing when it is implemented. This requires high trust, i.e., that γ and β are large enough. Thus, higher pro-social motivation increases the set of feasible projects when trust is high, i.e., when $\hat{\Delta}(\hat{\Pi}^1(\gamma,\beta)) > 0$.

The flip side of this result is that just having $\xi > 0$ does not increase compliance because, in low trust environments, citizens are less likely to comply with a policy that they believe is not welfare enhancing, which actually reduces compliance. So pro-sociality is a double-edged sword and can actually reduce compliance in low trust environments.

Although the model illustrates this idea in a very specific way, the logic that links trust, compliance and pro-social motives seems widely applicable. Many policies, whether in the form of taxation or regulation, work only if citizens are willing to comply with them. Of particular relevance going forward is how pro-social compliance can be harnessed in reducing carbon emissions. The logic of the model says that citizens are more likely to comply if they believe that the measures being enacted by government are genuinely welfare improving. In a world where they believe that governments are mainly untrustworthy (low γ) and that untrustworthy governments are heavily influenced by rent-seeking (low β) then voluntary compliance is likely

to be weaker. This can affect the willingness of even trustworthy governments to act and, as we will now argue, reduces state capacity.

2.3.2. *Trust, compliance and state capacity*

Suppose now that $\xi > 0$. As γ and β increase, compliance costs fall and hence welfare from implementing the project when $\theta = 1$ is higher. This logic underpins the observation, made in Proposition 2, that a policy may only be welfare maximising if trust is high enough. In particular, if ϕ is low and $\hat{\Delta}(\hat{\Pi}^1(0, \beta)) < 0$, then $\hat{\rho}(\hat{\Pi}^1(0, \beta), \phi) = 0$. This can be interpreted as saying that state capacity can be greater in high trust environments because it increases the range of feasible government policies.

There are good reasons to believe that this insight also applies to a range of policy settings. That some forms of regulation may only be feasible when trust is high enough, became apparent during the COVID-19 pandemic where governments were looking at a range of non-pharmaceutical interventions such as lockdowns, mask wearing policies and regulations around social distancing where, arguably, coercive compliance was unlikely to be feasible.

3. The Origins of Trust

We now explore the origins of trust in government through the mechanisms suggested in the model. This provides a useful segue to the empirical analysis. We begin by linking it to political institutions and then to some of the literature on cultural determinants of political trust and the role of social learning.

3.1. *Institutions*

We have stressed two parameters to represent increasing trust: higher γ, i.e., the likelihood that a policymaker is welfare maximising, and better incentives for opportunistic politicians, represented by β. Arguably, these parameters capture the two main aspects of political trust stressed by James Madison in the federalist papers when he says that:

> (t)he aim of every political Constitution, is or ought to be, first to obtain for rulers men who possess most wisdom to discern, and most virtue to pursue, the common good of society; and in the next place, to take the most effectual precautions for keeping them virtuous whilst they continue to hold their public trust.
> (James Madison, *The Federalist Papers*, LVII)[6]

This quote frames the challenge of building political trust in terms of constitution design. And we now explore how formal rules may affect γ and β.

3.1.1. *Selection*

The model assumes that there are two different types of policymakers with γ representing the probability that a policymaker will pursue a welfare-maximising policy choice. But in a fully specified model, γ is an *equilibrium outcome* rather than an exogenously given parameter. Enhanced trust comes from improving political selection by changing the likelihood that whoever is chosen to serve in public office is trustworthy.[7]

[6] Madison (1961).

[7] See Besley (2005) and Dal Bó and Finan (2018) for reviews of the economics literature, and Gulzar (2021) for reviews of the political science literature on political selection.

The 'raw material' on which selection depends is the characteristics of the citizens of a polity. In ancient Greece, selection to public office was by lot and hence there was more or less an immediate link between the trustworthiness of citizens and government. But as societies have experimented through history, so they have found ways of refining selection processes. However, as this has happened, there has been less dependence on a 'jury service' style model and instead on models where studying selection requires looking at the incentive to seek public office, either as bureaucrats or politicians. The talent and motivations of those who put themselves forward for public office is thus key. The exact determinants of the quality of the political class depend on many things including the rewards to holding office and the extent to which there is public service motivation in the population. That said, how far the quality of candidates can be discerned during political selection processes is far from clear. In the case of politicians, it reflects the conduct of political campaigns and the extent to which media scrutiny affects what is learned about candidates in the political process. To the extent that information is imperfect, politics is subject to a potential adverse selection problem, especially when the spoils to holding public office are high, whether this is in the form of rewards while in office or those available after leaving office.

Even if the set of potential policymakers contains a pool with a known fraction of trustworthy and untrustworthy individuals, there is still an issue of trying to ensure that only the trustworthy are chosen from among that pool. This requires overcoming coordination problems, especially in a world of ideological polarisation since voters may fear that voting for their preferred candidate on competence grounds could simply favour a candidate of another ideology to succeed. Similarly, untrustworthy policymakers may have a selection advantage if they are willing to offer bribes and inducements selectively to those who support them. In practice, there is also a role for party organisations with a potential for a trade-off between loyalty and competence when senior political leaders are deciding which potential candidates to support.

Thus, the structure of institutions and organisations that structure political selection could matter a lot to whether the government is trusted. Political trust viewed as a selection problem depends on how processes work and these could potentially be reformed to increase trust. So when we think of γ varying in the model, it is best to think in terms of institutional and organisational reform in selection. From time to time, there are explicit efforts to change the composition of the political class. A good example of this was India's policy of political reservations for women and scheduled castes/tribes, and there is persuasive evidence that this both shifted policymaking and the perception of those selected for public office.[8] More generally, how parties filter candidates can also have an impact on who becomes a politician.[9]

3.1.2. *Incentives*

Incentives are most relevant in thinking about how β is determined. They could come in many forms including formal contractual monetary incentives although these are rare in political settings.[10] The most obvious case to consider is the re-appointment of politicians or bureaucrats as a means of creating implicit incentives. In such cases, institutional frameworks matter as they determine the rules of the game for re-appointment. Specifically, they determine the timing of evaluation processes for those who have already served in office and specify who has the power to appoint or re-appoint them (a group that is often referred to as the political 'selectorate').

[8] See, for example, Beaman *et al.* (2009).

[9] See Dal Bó *et al.* (2017) for an in depth investigation of political selection in Sweden.

[10] Besley (2006) reviews the literature and looks at the role of institutions like the media in strengthening accountability and the alignment of policies with citizens' preferences.

In practice, this could be a system of mass accountability as with an election or a more closed system where 'experts' or policy 'insiders' assess the performance of those who make policy decisions before deciding whether they are to be replaced. This is the case, for example, with the re-appointment decisions of senior bureaucrats and judges. The design of institutions may be important in determining how likely it is that variables like θ will be revealed and, hence, whether policymakers took a welfare-maximising action. Following the recent pandemic, a number of countries have commissioned enquiries to try to determine what actions were needed from an *ex post* perspective. But for many aspects of the pandemic, we will likely never know whether the timing and severity of the lockdowns that were put in place were justified. It seems sensible therefore to adopt a modelling approach where *ex post* revelation of information is probabilistic.

To illustrate the power of incentives in affecting the level of trust, assume now that $\gamma = 0$, i.e., there are no politicians who are motivated to maximise the welfare of citizens. So if there is welfare-maximising policy, it is because politicians are willing to set aside their self-interest to do so. This is like the parameter Ω in our model being higher so that rents play less of a role in determining policy. And, as we have observed, this has a direct bearing on β which is increasing in Ω. A simple way to parameterise this is to posit a re-appointment process following the choice of policy with the reward from choosing $\lambda = \theta$ being $\Omega = \varphi V$, where φ is the probability of re-appointment conditional on choosing $\lambda = \theta$ and V is the value of holding office. The latter could be affected by material rewards through wage payments and/or psychological pay-offs from office-holding such as 'ego rents'. Increasing φ or V is like creating an 'efficiency utility' to holding public office which improves behaviour. We can now write $\beta = G(\varphi V)$.

This suggests two ways of sharpening political incentives: making re-appointment more attractive or increasing the 'detection' probability associated with setting $\lambda \neq \theta$. Both would increase φ or V and hence β. Then there would be a higher probability that $\lambda = \theta$ for both $\theta = 1$ and $\theta = 0$.

If $\gamma = 0$, the conditional probability that $\theta = 1$ if $\lambda = 1$, following (4) is

$$\hat{\Pi}^1(0, G(\varphi V)) = \frac{\pi G(\varphi V)}{\pi G(\varphi V) + (1-\pi)(1 - G(\varphi V))}.$$

Now, the level of compliance by citizens would depend on institution design via the dependence of $\hat{\Pi}^1(0, G(\varphi V))$ on φ and V. Increasing φ or V would lead to greater compliance if $\lambda = 1$.

3.2. *Learning*

Whether trust is rooted in selection or incentives, citizens will have their perceptions of trust shaped by their experiences of government. This could mean that there is heterogeneity on the parameters γ and β used by different individuals which could be due to them having different information sets on the basis of which to form their views. For example, past policy responses to events could shape how individuals perceive the trustworthiness of government. There could also be heterogeneity in π due to learning from social encounters with peers and/or parental influence. This could vary systematically by birth cohort, with some generations being exposed to significant national events such as wars and pandemics which can be revealing about government effectiveness and leave a lasting impression. Alongside this, idiosyncratic experiences due to encounters with the state in different dimensions could be important. All of this could form the basis of different degrees of trust in the population. Broadly speaking, we can think of this as a

learning process, and different experiences could also explain why average trust levels vary even in stable institutional environments as has been stressed by sociologists such as Dalton (2005) among others.

To capture such ideas in our model, we could imagine that trust would evolve depending on the extent to which information about λ and θ is revealed over time. Thus, if $\lambda = 1$, citizens might subsequently observe a signal of the value of θ which they could use to assess whether the government was trustworthy or not. This would lead to citizens updating their estimates of γ and/or β over time. And this could lead to a gradual evolution of γ and β depending on each individual's information set, resulting in heterogeneity in γ and β across individuals. This could help to explain the heterogeneity in trust attitudes that are observed in survey data. Some policymaking events, such as the COVID-19 pandemic, could be particularly revealing, but are likely to remain controversial. In coming years, there will be much discussion on whether the timing and severity of lockdowns was justified.

Whether learning is based on continuous lifetime learning is a subject of debate. The so-called impressionable years hypothesis suggests that some underlying attitudes are cemented during early adulthood, remaining largely unchanged thereafter (see, for example, Krosnick and Alwin, 1989). This could underpin the observation that those who are brought up in communist regimes are less trusting of government compared to those who were brought up after the fall of communism (Mishler and Rose, 2001). A learning model also motivates why there is a strong country-level component to trust as individuals share common influences and experiences. This view is also consistent, however, with the strong observed intergenerational persistence in attitudes within countries as people acquire their trust perceptions from their parents and teachers.

4. Empirical Evidence

We now look at empirical evidence on the link between trust and compliance. First, we explore cross-country patterns from the World Values Survey and the European Values Survey (merged into the Integrated Values Surveys or IVS[11]), and find a positive correlation between average reported compliance and trust in government institutions in more than 100 countries. Second, we move to within-country evidence by exploiting multiple waves of the IVS as well as a longitudinal COVID-19 study from a UK panel data set focusing on willingness to comply with an array of public health measures. We show that both an individual fixed effects regressions as well as an IV approach relying on the average cohort level of trust in government provides evidence of a positive link between trust in government and policy compliance.

Our findings are suggestive and are primarily intended to offer a sense of direction for what a future empirical agenda on trust and compliance might look like based on the theoretical framework that we have put forward. The evidence also helps to breathe life into the theoretical ideas by trying to think about measurement issues.

We make use of a range of survey data on trust in government. However, getting persuasive causal identification is challenging given the available data since there are likely to be many unmeasured factors, some of which are time-varying, that could be correlated with both trust and compliance. It is likely that the challenge will require a different sort of approach and authors such as Martinez-Bravo and Sanz (2022) have been showing a way forward by exploring the

[11] The data can be accessed via European Values Study (2022) and Haerpfer *et al.* (2022) or using our replication files.

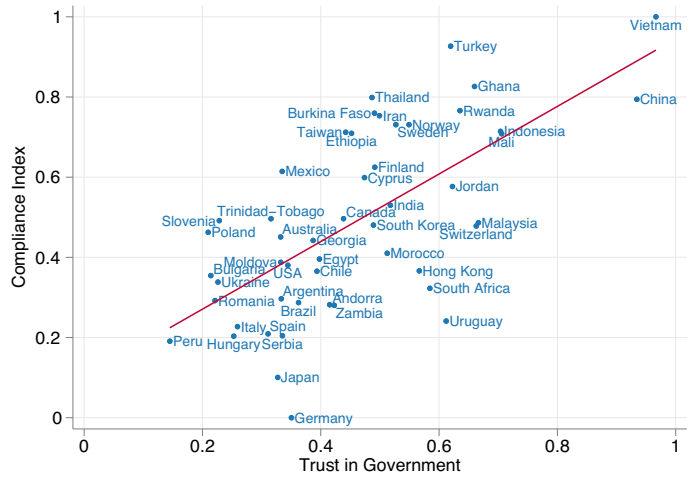

Fig. 1. *A Positive Cross-Country Relationship between Two Measures of Trust and Compliance.*
Notes: Authors' calculation based on Waves 5–7 of the Integrated Values Survey (IVS) collected between 2005 and 2020. The line represents fitted values from a linear regression. Trust in Government is the average country share of respondents reporting 'a great deal' or 'quite a lot' of confidence in their government. The compliance index is the weighted average (first principal component of a principal component analysis) of three measures of voluntary compliance: willingness to pay higher taxes to protect the environment, willingness to fight for one's country, and whether the respondent finds it justifiable to cheat on taxes. The compliance index is the country average normalised between 0 and 1.

potential for field experiments. This is likely to be an important direction for future work on this topic.

4.1. *Cross-Country Patterns*

Proposition 2 gives the key theoretical underpinning for a link between trust and *aggregate* compliance when there is a willingness to comply with policies which citizens perceive to be justified, turning compliance into a pro-social action.

To investigate whether compliance is increasing in trust in government, we use the IVS which has questions on trust in government institutions and attitudes towards voluntary compliance. To explore this link, we first use the question in the data on whether respondents have 'a great deal' or 'quite a lot' of confidence in government averaged across the most recent survey waves to increase country coverage (Waves 5 to 7, or between 2005 and 2020). To create an overall index of attitudes towards voluntary compliance, we use three reported attitudes: willingness to pay higher taxes to protect the environment, willingness to fight for one's country and whether it is justifiable to cheat on taxes. Although we do not observe actual behaviour, we regard these attitudes as indicative of whether individuals have a more voluntaristic attitude towards compliance. The index is based on the first principal component of these three variables, averaged at the country level, then normalised to lie between zero and one.

Figure 1 shows that there is a strong positive correlation between the average reported trust in government and attitudes towards voluntary compliance in a country. For instance, Vietnam enjoys both elevated levels of support for its government and strong measures of willingness to

comply, while at the other extreme most countries of the former Eastern Bloc (e.g., Hungary, Bulgaria, Romania) tend to be more sceptical of their governments and report lower levels of willingness to comply with policies. While consistent with the core prediction of Proposition 2, this pattern should be viewed as purely illustrative rather than causal given the range of omitted country-level factors that are likely to be correlated with both trust and compliance.

4.2. *Evidence from Micro-Data*

To unpack the correlation presented in Figure 1, we now study individual views on compliance. We will add evidence from a cohort survey during the COVID-19 pandemic, as well as individual-level survey evidence from the IVS.

4.2.1. *Link to the model*

We know from the data that individuals have different degrees of trust in the government and denote an individual's trust in government by $\gamma_{ik} \in \{\gamma_L, \gamma_H\}$ where $\gamma_H > \gamma_L$. Let $\delta_{ikj} \in \{0, 1\}$ denote whether citizen i in country k complies with policy j. We can think of enforcement varying at the country level, denoted by ϕ_k. Additionally, we can allow Δ_{jk}, i.e., the policy pay-off, to be both policy- and country-specific.

The theoretical model emphasises the role of beliefs in driving compliance. We can capture this by supposing that $\hat{\Pi}^{\lambda}(\gamma_{ik}, \beta_{ijk})$ depends on the country-level political equilibrium as well as β_{ijk} and π_k, which can also be country-specific. Then

$$\delta_{ik} = 1 \text{ if and only if } \xi \hat{\Delta}^k \left(\hat{\Pi}^{\lambda}\left(\gamma_{ik}, \beta_{ijk}\right)\right) + \phi_k - \varepsilon_{ik} \geq 0.$$

Our model predicts that there is a positive association between $(\gamma_{ik}, \beta_{ik}, \phi_k)$ and compliance. Let t denote different time periods at which compliance decisions are made, then representing compliance using a linear probability model yields

$$\delta_{ikt} = \alpha_k + \alpha_t + \alpha_x x_{ik} + \eta_{ikt}, \tag{6}$$

where α_k are country dummies, α_t are time dummies and x_{ik} includes trust along with a vector of relevant background characteristics such as age, educational attainment and gender. The framework can explain why having greater trust in government increases compliance through the term $\hat{\Delta}^k(\hat{\Pi}^{\lambda}(\gamma_{ik}, \beta_{ijk}))$ which we have 'linearised' in (6). We are supposing that differences in enforcement regimes are absorbed in the country fixed effects as we assume that these mainly vary across countries.[12]

We use data from two sources: (*i*) the UK COVID-19 longitudinal survey based on five cohorts and two waves (May 2020 and March 2021); and (*ii*) the IVS from multiple survey waves (1981–2020) even though the coverage and availability of questions varies quite a bit.

4.2.2. *Identification issues*

The model presented above highlights why higher trust in government might cause citizens to increase their compliance with policies. Cross-country patterns are consistent with the model. However, there is still scope for omitted factors to bias the positive correlations that we find between trust in government and compliance. We present two different strategies to mitigate such concerns; they are illustrative rather than conclusive.

[12] Enforcement could also vary across individuals and would then be picked up with some of the individual controls.

First, we present fixed effects models in a specific setting—compliance with social distancing in the UK during 2020 and 2021—where we have (*i*) rich information on compliance, including specific reported measures of social distancing and compliance with government guidelines, (*ii*) longitudinal surveying of the same respondents early and later during the pandemic and (*iii*) large variation in trust and compliance over the survey period. The ability to add individual-level fixed effects in a cohort survey is key to capturing the bulk of possible omitted variable biases that would affect both trust and compliance, such as age, education or norms. Additionally, the context of COVID-19 is particularly relevant for this question as social distancing measures hinged on voluntary compliance, and how much the government should have been trusted was hotly debated within the UK, as elsewhere.

Second, for the international evidence, we instrument trust in government using a measure of country-level *cohort emancipative values*. This is an established measure from the political science literature that aims to capture an individual's sentiments towards authority based on underlying reported attitudes towards autonomy, equality, individual choices and freedom of expression in the World Value Survey (Inglehart and Welzel, 2005; Welzel, 2013).[13] Existing studies have argued that emancipative values can predict civic engagement including participation in non-violent protests (Welzel *et al.*, 2005; Welzel and Deutsch, 2012).

Our IV approach is intended to address concerns about reverse causality (as instrumented trust is determined based on aggregated measures independently of individual compliance) and omitted factors, as well as measurement error in trust. If emancipative values are correlated with attitudes towards individual freedom and defiance of public authority, which we expect to predict (dis)trust towards government. Indeed, this is what we find in the results below when we use *cohort-level* emancipative values to predict *individual* trust. Cohort values arguably reflect a social learning process where individuals form views based on early life experiences that are common to a cohort. These could, for example, include national events such as the fall of communism (Mishler and Rose, 2001). To the extent that *cohort-level* emancipative values are not correlated with the error term of *individual* levels of compliance with a particular policy, this instrument does not violate the exclusion restriction.

We now present evidence based on both approaches.

4.3. *Evidence from COVID-19 Compliance*

This section demonstrates evidence of a link between trust in government and self-reported compliance with COVID-19 measures using data from a large UK panel survey conducted in 2020 and 2021 based on four national longitudinal cohort studies (the Millennium Cohort Study for both cohort members and their parents, Next Steps Study, 1970 British Cohort Study and 1958 National Child Development Study). We use data from Wave 1 (conducted in May 2020) and Wave 3 (conducted between February and March 2021).[14] Here, the left-hand side variable, y_{irt}, includes different measures of compliance for respondent i in region r at date t.

[13] Emancipative values are derived from a range of standard variables suggested in Welzel (2013) based on the World Value Survey. The value questions being used to construct the emancipative value index are: (*i*) independence, imagination and (dis)obedience as being qualities admired in children; (*ii*) gender equality in jobs, politics and education, (*iii*) acceptance of homosexuality, abortion and divorce, (*iv*) individuals saying that giving people more say and protecting freedom of speech are the two most important features of government; and believing that the two most important goals for a country include seeing that people have more say at their workplace and their communities.

[14] We do not use Wave 2 of the survey as there is no question on compliance with social distancing, guidelines, vaccines or the use of the NHS app.

Our main measure of compliance comes from a question in which each survey respondent is asked to rate their compliance with both social distancing and with COVID-19 guidelines on a scale from 0 (not at all compliant) to 10 (fully compliant). From this, we create a dummy variable equal to one if they report full compliance.[15] Although we cannot verify behaviour and how far citizens were complying because they felt coerced, the situation at the time makes it likely that a large part of compliance was likely to have had a large voluntary component. We also use a variable where respondents are asked whether they would choose to be vaccinated if offered and whether they have downloaded the NHS Test and Trace app. These two are plausibly reflective of behaviour that was largely voluntary rather than coerced. Indeed, there were no sanctions for not complying with these two COVID-19 measures.

Our core empirical specification is

$$y_{irt} = a_r + a_t + b\text{TrustGov}_{irt} + cx_{irt} + \varepsilon_{irt}.$$

Trust in government (TrustGov_{irt}) comes from a self-assessment of how trusting of government respondents reported to be from 0 (Not at all) to 10 (Extremely). We categorise a survey respondent as having trust in government if he or she responded with a score of 5 or above. The controls, x_{irt}, include demographics (gender, immigrant status, year of birth, household size), ten employment status categories to proxy for economic standing and several measures of health status such as a general subjective mental and physical health self-assessment before the pandemic[16] and whether an individual was recommended to shield. We also control for COVID-19 status such as whether an individual had had COVID-19, whether they had been hospitalised and whether they had tested for COVID-19. We also include survey wave and region fixed effects, $\{a_r, a_t\}$. For compliance with social distancing, which was asked in two waves (Waves 1 and 3), we also have a specification which includes an individual fixed effect. Standard errors are clustered at the individual level given the panel structure of the surveys.

The results are presented in Table 1. Columns (1) and (2) focus on compliance with social distancing measures and find evidence of a strong positive relationship between social distancing and trust in government. This is true even in column (2) where an individual fixed effect is included. In column (3), we look at compliance with COVID-19 guidelines and find a similar positive relationship. Column (4) finds that willingness to be vaccinated is also positively correlated with trust and in column (5), trust is also positively related to downloading the NHS Test and Trace app, a more direct form of compliance. We also find a consistent magnitude for the coefficient on trust across specifications: between 2% and 7%.

Taken together, these results are suggestive of a strong association between trust in government and willingness to comply with COVID-19 guidance in a way that is consistent with the core mechanism of the model. The panel nature of the survey—surveying the same respondent multiple times—allows us to include individual fixed effects, thus controlling for many possible omitted variables (e.g., religiosity, pro-social behaviours), and we still find strong suggestive evidence of trust in government affecting compliance in the context of COVID-19 social distancing.

[15] The two questions' labels are: 'How much complying do you do with social distancing guidelines?' and 'How much have you complied with government guidelines to reduce the spread of COVID-19?'. Answers are on a scale of 0–10, where not complying is 0 and fully complying is 10.

[16] Mental health and general health self-assessments are measured on a scale with five categories: excellent, very good, good, fair, poor.

Table 1. *Trust and Compliance with COVID-19 Guidelines in the UK.*

	(1) Compliance with social distancing	(2) Compliance with social distancing	(3) Compliance with guidelines	(4) Take vaccine if offered	(5) Downloaded COVID-19 NHS app
Trust in government	0.0201***	0.0360***	0.0349***	0.0279**	0.0653***
	(0.00542)	(0.0102)	(0.00627)	(0.0112)	(0.00648)
Observations	38,637	24,594	24,578	5,691	23,299
Individuals	26,340	12,297	24,578	5,691	23,299
R^2	0.062	0.69	0.087	0.053	0.048
Average compliance	0.52	0.53	0.53	0.77	0.58
Average trust	0.57	0.60	0.51	0.54	0.50
Demographics FE	X		X	X	X
Economics FE	X		X	X	X
Health FE	X		X	X	X
COVID-19 health status	X		X	X	X
Individual FE		X			

Notes: Standard errors are clustered at the individual level. Significance levels: ** 5%, *** 1%. The data come from a UK panel survey conducted in 2020–1 from four national longitudinal cohort studies (the Millennium Cohort Study for both cohort members and their parents, Next Steps study, 1970 British Cohort Study and 1958 National Child Development Study). Observations are taken from Waves 1 and 3 (conducted in May 2020, and between February and March 2021, respectively). All regressions include wave and region fixed effects based on 12 regions of residence. Demographics FE are indicators for gender, immigrant status, year of birth and household size. Economics FE are dummies for 10 categories of employment. Health FE are answers to general health self-assessment pre-pandemic, mental health self-assessment, whether respondent received a shield letter (at-risk of COVID-19), and COVID-19 health status are dummies for having had COVID-19, having been hospitalised and never testing for COVID-19. Individual fixed effects are included in column (2) only as compliance with social distancing is the only question related to compliance asked in both Waves 1 and 3.

4.4. *Evidence from the Integrated Values Survey*

We now turn to evidence based on IVS data.[17] The outcome variables, y_{ict}, for individual i in country c in wave t are: (*i*) tax compliance, i.e., whether respondents report cheating on taxes as being justifiable, (*ii*) patriotism, i.e., respondents report being willing to fight for their country[18] and (*iii*) environmental tax compliance, i.e., respondents report being willing to pay more taxes if the extra money is used to prevent pollution.

The different measures of compliance aim to capture politically charged compliance (environmental tax, enrolling in defence) as well as more neutral forms of compliance (tax cheating). All are measured on a 4-point scale and we order them so that a higher score always corresponds to a greater willingness to comply. In all cases, the left-hand side variable is coded as a dummy variable that is equal to one if the compliance measure answer is equal to four.

In the raw data, about 71% of survey respondents say that they are willing to fight for their country, only around 9% say that it is justifiable to cheat on their taxes and 46% say that they would be willing to pay higher taxes to protect the environment. As a further outcome variable, y_{ict}, we will also use a composite compliance index which is equal to the first principal component of the three compliance variables.

[17] We use six waves (Waves 2–7) of the World Values Survey (WVS) and five waves of the European Values Survey (EVS).

[18] The question is framed in the following way: 'Of course, we all hope that there will not be another war, but if it were to come to that, would you be willing to fight for your country?' and respondents can answer 'Yes' or 'No'.

Table 2. *Trust and Compliance in the Integrated Values Survey.*

	(1) Cheating on taxes	(2) Fight for country	(3) Pay more taxes for environment	(4) Compliance index
Trust in government	−0.0225***	0.0659***	0.0704***	0.218***
	(0.00387)	(0.00587)	(0.00521)	(0.0119)
Observations	139,356	139,356	139,356	139,356
Countries	75	75	75	75
Sample period	1990–2009	1990–2009	1990–2009	1990–2009
R^2	0.067	0.14	0.081	0.14
Mean dep. var.	0.11	0.75	0.61	0.064
Average trust	0.47	0.47	0.47	0.47
Country × year FE	X	X	X	X
Respondent characteristics FE	X	X	X	X

Notes: Standard errors clustered at the country level. Significance levels: *** 1%. The data comes from the Integrated Values Survey, which is a harmonised version of the World Values Survey and the European Values Survey. Compliance index is the first principal component from a principal component analysis of the three variables in columns (1)–(3): justifiable to cheat on taxes, willingness to fight for country and willingness to pay more taxes to save the environment. All regressions include fixed effects for country, survey wave and survey type (WVS versus EVS). Individual characteristics refer to (*i*) economic FE (education, employment, job type and income bands dummies), (*ii*) demographic FE (age, gender, married status and religion dummies) and (*iii*) geographic FE (region of residence and town size dummy variables).

Our core empirical specification is:

$$y_{ict} = a_{c,t} + b\text{TrustGov}_{ict} + cx_{ict} + \varepsilon_{ict}, \tag{7}$$

where $a_{c,t}$ are country × year fixed effects, and x_{ict} are control variables (described below).

Trust in government (TrustGov_{ict}) is measured by an individual's reported confidence in government based on a question where the respondent is asked 'I am going to name a number of organisations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?'. We use the answers as applied to the government in the capital city and code the answer as equal to one if the answer is 'a great deal of confidence' or 'quite a lot of confidence', i.e., if there is high confidence.

The controls, x_{ict}, in (7) include demographic factors (age, gender, married, religion), economic variables (education, employment, dummy variables for 17 different job types and ten income bands), geographical variables (region and country income classification from the World Bank, as well as five dummy variables for size of town) and time factors (survey wave, type—EVS versus WVS). The regressions also include country × year fixed effects to control for time-varying country differences such as enforcement levels. All standard errors are clustered at the country level. To present comparable results, we only use observations where all compliance measures are non-missing.

The core results are in Table 2. As shown in column (1), when it comes to willingness to cheat on taxes, having trust in government yields over a 2% reduction in reported tax non-compliance. In column (2), we use willingness to fight for one's country and note that those with higher confidence are around 6.5% more likely to say that they would be willing to fight. In column (3), we look at the willingness to pay higher taxes to support the environment and find that being confident in government is associated with a 7% increase in willingness to comply. Finally, in column (4), we take the first principal component for these three compliance questions and find

Table 3. *Trust and Compliance in the Integrated Values Survey, IV Results.*

	(1) Trust in government	(2) Justifiable to cheat on taxes	(3) Willing to fight for country	(4) Pay more taxes for environment	(5) Compliance index
Cohort emancipative value	−0.345***				
	(0.117)				
Trust in government		−0.614**	0.845*	0.230	2.150*
		(0.283)	(0.494)	(0.292)	(1.105)
Observations	139,356	139,356	139,356	139,356	139,356
Countries	75	75	75	75	75
Sample period	1990–2009	1990–2009	1990–2009	1990–2009	1990–2009
Average trust	0.47	0.47	0.47	0.47	0.47
Country × year FE	X	X	X	X	X
Respondent characteristics FE	X	X	X	X	X
F-statistic first stage	8.75				
Cragg–Donald Wald *F*-statistic		38.1	38.1	38.1	38.1

Notes: Standard errors clustered at the country level. Significance levels: * 10%, ** 5%, *** 1%. The data comes from the Integrated Values Survey, which is a harmonised version of the World Values Survey and the European Values Survey. Compliance index is the first principal component from a principal component analysis of the three variables in columns (1)–(3): justifiable to cheat on taxes, willingness to fight for country and willingness to pay more taxes to save the environment. All regressions include fixed effects for country, survey wave and survey type (WVS versus EVS). Individual characteristics refer to (*i*) economic FE (education, employment, job type and income bands dummies), (*ii*) Demographic FE (age, gender, married status and religion dummies) and (*iii*) Geographic FE (region of residence and town size dummy variables).

that there is still a significant and positive coefficient on willingness to comply. As noted above, in all these regressions we control for various potential confounders, such as individual levels of education, income, employment, religiosity and the size of the city in which they live.

As we discussed above, there is the usual concern that there are factors that are correlated with confidence in government and willingness to comply that are not being measured. We therefore explore an instrumental variable (IV) approach as outlined above where our instrument is the average of the cohort measures of emancipative values. This variable is averaged by country × cohort and measured for seven birth cohorts.[19]

The first-stage regression of the IV approach is

$$\text{TrustGov}_{ict} = \alpha_{c,t} + \beta \text{EmVal}_{ict} + \gamma x_{ict} + \eta_{ict},$$

where for EmVal_{ict} we use the average value of emancipative values in the cohort into which an individual is born. We hypothesise that emancipative values at the country × cohort level are directly affecting trust in government (Welzel and Inglehart, 2010), but not compliance conditional on control variables.

The results are in Table 3. Column (1) reports the first-stage regression and shows the expected significant negative association between emancipative values and trust in government. The *F*-statistic for the first-stage regression is 8.75, indicating somewhat low predictive power, and we will therefore test for weak identification in the second stage. Note that a weakly relevant instrument for trust in government is to be expected as this is also the case for general trust predictors (Glaeser *et al.*, 2000). Columns (2)–(5) report the second-stage regressions, with

[19] Our cohorts rely on the common definition of the Silent Generation, Baby Boomers, Generation X, Millennial and Generation Z, respectively those born between 1928 and 1945, 1946 and 1964, 1965 and 1980, 1981 and 1996, and 1997 and 2012 (see, e.g., Dimock, 2019, on 'Defining Generations').

confidence in government instrumented by cohort-country emancipative values and with each column reporting a different measure of compliance (justifiability to evade taxes, willingness to fight for one's country, paying more taxes directed at environmental causes and a compliance index that is the first principal component from a principal component analysis of these three measures). We consistently find that higher confidence in government is correlated with greater levels of compliance, either in the form of less support for tax evasion (column 2), more willingness to fight for one's country (column 3) or more general compliance (column 5). We find a positive estimate for willingness to pay more taxes for the environment, but not significant at the 10% level. Most notably, the coefficient for the compliance index—which comprises all three measures of compliance from columns (2) to (4)—is positive and significant at the 10% level, suggesting that trust in government can increase individual compliance. We also find a Cragg–Donald F-statistic for these IV regressions of around 38, above the Stock–Yogo critical values (going from 5.53 to 16.38).

While these results are consistent with the model's predictions, the IV estimates appear larger than the ordinary least squares (OLS) estimates which could be due to measurement error in trust and values, leading to downward bias in OLS. However, omitted variables could go in the opposite direction, such as with under-reporting of actual trust in government by compliant respondents to maintain independence from public decisions. There could also be imprecision in the IV estimates due to a weak instrument. As we noted above, cohort-level emancipative values are a good instrument for trust in government provided that (*i*) it is strongly predictive of trust in government, as individuals from a cohort that favours individual agency tend to be suspicious of governments and (*ii*) the exclusion restriction is likely to hold, which is true if emancipative values at the cohort level are not directly linked to other determinants of compliance, such as economic standing or individual-level political views.

Taken together and subject to all of the caveats that we have mentioned, the OLS and IV results do give consistent evidence of a positive relationship between trust in government and measures of voluntary compliance. However, they should be interpreted with caution and are at best regarded as illustrative evidence for the ideas in the model.

5. Concluding Comments

This paper has suggested a canonical theoretical approach for studying the link between individual compliance and trust in government. We have argued that this provides a different way of thinking about state effectiveness, in line with the social contract tradition that stresses the importance of non-coercive relations between states and citizens. We have also linked the approach to the literature on trust building, based both on institutions and culture. The paper shows some evidence that is consistent with the view that trust and compliance are linked. Many have looked at correlates of political trust and there has been concern voiced about its decline, especially in established democracies. The framework suggested in this paper links political trust to tangible consequences in terms of state effectiveness, and articulates the link between trust and policymaking.

There is much to be done to move forward an agenda that links trust to policymaking more directly. In the model, the only source of information about the underlying state comes from observing policy, but there is interesting work to be done on how institutions of government play a role in building trust which fosters compliance. This could include having a role for independent advice. We have also gathered empirical evidence on the links between trust in government and compliance in various contexts, and sketched a framework to evaluate these questions, but there

is an avenue for future research to explore these questions both theoretically and empirically. And the latter would benefit from finding ways of overcoming the challenging identification issues that arise when looking at the empirical relationship between trust and compliance.

It would also be interesting to explore the role of leadership in trust building, for instance, whether charismatic leaders are more inclined to be trusted by their citizens, increasing their scope for effective policymaking because citizens are more likely to comply with their policy proposals.[20] Another important extension of the framework is the endogenous determination of coercive compliance. We would expect this to be a substitute for trust, with more coercion being needed in situations where the citizens are less trusting of their government. Having to pay more for coercive compliance would increase the cost of using some policies and, hence, will further reduce the set of feasible policy interventions.[21]

There is also scope to develop dynamic models where trust and policymaking co-evolve with past experience of policy affecting the extent of trust in government. This should make it possible to understand better the legacy effects of episodes where it becomes apparent to citizens that governments have made poor policy decisions. This will allow a richer analysis of how trust can be built especially in situations where governments are looking to the long-term consequences of their actions. So a government may be willing to take those policy actions that can have a maximum impact on perceptions of trust. Examining this will help to connect the framework developed here to debates about government legitimacy which is often thought to be closely related to trust.

The challenge posed by the issues studied here is not just academic. Governments constantly grapple with policy problems with limited power to coerce in a way that limits state effectiveness in some domains. The analysis presented here stresses that convincing citizens that the government is indeed acting in their best interests could be an asset that pays policy dividends.

Appendix A. Proof of Proposition 1

A trustworthy government will set $\lambda = \theta$ if and only if

$$W\left(\phi, \hat{\rho}\left(\hat{\Pi}^1(\gamma, \beta), \phi\right) : 1\right) \geq 0.$$

This is because a trustworthy government will never implement a policy when $\theta = 0$, since $W(\phi, \rho : 0) < 0$ for all $\rho \in [0, 1]$. Thus, $\hat{\lambda}^t(0, \hat{\Pi}^1(\gamma, \beta)) = 0$ for all (γ, β). Note also that

$$\frac{\partial W\left(\phi, \hat{\rho}\left(\Pi^1, \phi\right) : 1\right)}{\partial \Pi^1} = (\delta + \Delta)\xi\left[\frac{\Delta}{E} + \hat{\rho}\left(\Pi^1, \phi\right)\right] > 0. \tag{A1}$$

There are two cases to consider.

Case 1: Then if $W(\phi, \hat{\rho}(\hat{\Pi}^1(0, \beta), \phi) : 1) \geq 0$, a trustworthy government sets $\lambda = 1$ whenever $\theta = 1$. If $W(\phi, \hat{\rho}(\hat{\Pi}^1(\gamma, \beta), \phi) : 1)$ is increasing in γ, then (A1) implies that $\lambda = 1$ for all $\gamma \geq 0$. So $\hat{\lambda}^t(\theta, \hat{\Pi}^1(\gamma, \beta)) = \theta$.

Case 2: Suppose that $W(\phi, \hat{\rho}(\hat{\Pi}^1(0, \beta), \phi) : 1) < 0$. Condition (5) implies that $W(\phi, \hat{\rho}(1, \phi) : 1) > 0$. Hence, using the intermediate value theorem together with (A1), implies that for all

[20] This would be like having higher γ in the model.

[21] One more subtle issue in the present framework would be that the investment in coercive compliance could be used as a signalling tool by governments whose type is not observed.

$\beta \in (1/2, 1)$, there exists $\hat{\gamma}$ defined by

$$\hat{\rho}\left(\hat{\Pi}^1(\hat{\gamma}, \beta), \phi\right) \hat{\Delta}(1) - \hat{E}\left(\hat{\Pi}^1(\hat{\gamma}, \beta), \phi\right) = C.$$

Then $W(\phi, \hat{\rho}(\hat{\Pi}^1(\gamma, \beta), \phi) : 1) > 0$ for all $\gamma \geq \hat{\gamma}$. So $\hat{\lambda}^t(1, \hat{\Pi}^1(\gamma, \beta)) = 1$ only if $\gamma \geq \hat{\gamma}$.

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Additional Supporting Information may be found in the online version of this article:

Online Appendix
Replication Package

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