State Capacity, Reciprocity and the Social Contract

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Abstract

This paper explores the role of civic culture in expanding state capacity by developing a model based on reciprocal obligations; citizens pay their taxes and the state provides public goods. Civic culture evolves over time according to the relative fitness of civic-minded and materialist citizens. A strong civic culture manifests itself as high tax revenues sustained by high levels of voluntary tax compliance and provision of public goods. This captures the idea of government as a social contract between the state and its citizens. The paper highlights the role of institutions and common interests in the emergence of civic culture.

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1 Introduction

One of the most striking features of twentieth century economic history was the increase in the capacity of states to raise significant revenues as a share of national income. At the turn of the century, very few advanced countries raised in excess of 10% of GDP in the form of tax revenues. Yet, by the last quarter of the century a tax take of around 40% was not uncommon. This expansion in revenues has enabled governments around the world to expand the scope of their activities from a predominant concern with national defence and infrastructure to high levels of public funding for health care, education, pensions and income transfers.

But this change in the nature of government is of much greater significance than is suggested by data on public revenues and spending. Raising substantial tax revenues requires transformative economic, political and social changes. In this spirit, a foundational essay in the history of fiscal sociology Schumpeter (1918) noted that:

“the fiscal history of a people is above all an essential part of its general history. An enormous influence on the fate of nations emanates from the economic bleeding which the needs of the state necessitates, and from the use to which the results are put.”

In short, the power to tax is at the heart of creating an effective state.

Taking an historical perspective on the effectiveness of government contrasts with the usual starting point for studies of government policy in modern economics which typically begin from a point where a government is endowed with the sufficient power to tax, regulate and create laws. Economists have mainly focused on how policy measures are deployed in theory and practice.\(^1\) Only recently has there been a systematic investigation of how such powers are acquired in the first place. And this feeds off an increasing recognition that differences in state effectiveness across the world and over time are strikingly large.\(^2\) At one end of the spectrum are the highly functional states of Scandinavian countries many of which combine functioning market economies with social provision of a range of goods and services while at the other are the so-called fragile states, many located in

\(^1\)See, for example, the classic texts such as Atkinson and Stiglitz (1980) on taxation and public spending, or Lafont and Tirole (1993) on regulation.

\(^2\)See Besley and Persson (2011) for an outline of some of the main ideas.
Africa and the Middle-East, which struggle to maintain law and order and to deliver even the most basic services to their citizens.

This paper forms part of an agenda which aims to understand an important aspect of the path that states take as they grow in size and effectiveness. It builds a theoretical model of increasing fiscal capacity, i.e. the power to tax, with three core elements. First, the main conflict of interest is whether tax revenues are used for common-interest purposes or for the benefit of ruling elites. This depends on how institutions constrain the use of power and the extent of common interests. Second, compliance with taxation depends on non-pecuniary motivation modeled as a form of reciprocity in which citizens pay taxes in exchange for the government delivering public goods. States that deliver more public goods will then be able to raise more revenues. Third, reciprocity evolves endogenously over time. This may result in a civic culture which is conducive to high levels of state capacity with voluntary compliance or one where the government has to rely on coercive power.

The framework is able to isolate a range of factors which determine the level of state capacity. It highlights, in particular, the complementarity between the strength of institutions and a quasi-voluntary tax compliance. This emphasizes that institutional and cultural explanations of the emergence of a strong fiscal state are two sides of the same coin. More generally, the model generates a range of novel insights into the factors which shape how the civic culture develops in the long run.

The remainder of the paper is organized as follows. The next section discusses areas of related research and some suggestive evidence from the World Values Survey. Section three develops the core model. Section four studies optimal policy and cultural dynamics and section five develops implications of different ways of creating stronger common interests between citizens and elites. Section six explores some additional issues while section seven concludes. Proofs and some technical details are in the Appendix.

2 Background

State Effectiveness and Social Order The state is the central institution for maintaining social order in large and complex societies. This paper is related to long-standing debates about how to build an effective state. This links a wide range of literature in political philosophy and the social
There are two broad views of the origins of effective states.

The first view, associated with Hobbes (1651), is that the *sine qua non* of state effectiveness is the projection of coercive power. This sees the problem of state effectiveness as building organizational structures which allow the state to extend its reach and coerce citizens into complying with its dik-tats. This means creating a system of formal enforcement of legal rules and payment of taxes. Doing so requires purposeful investment by state actors of the kind modeled in Besley and Persson (2009, 2011) who consider the power to tax (fiscal capacity) and the power to enforce property rights and regulate a market economy (legal capacity). They propose a model in which policy-makers weigh up the costs and benefits of investing in state capacities. Incentives to do so depend on how far state power is used to pursue common interests which is facilitated by having more cohesive institutions. Their approach rhymes well with that taken in, for example, Acemoglu and Robinson (2012) and North and Weingast (1989) who both see constraints on state power as essential to establishing effective government.\(^3\)

The second view emphasizes the state as a social contract and has its origins in a range of influential thinkers. For example, Locke (1690) and Rousseau (1762) argue that civil and political rights constitute a form of exchange where a citizen accepts obligations in return for benevolent government. If a government fails to deliver such policies, then citizens can legitimately withdraw their cooperation and/or actively seek leadership change.\(^4\) The contractarian view gives a central role to reciprocal obligation in establishing an effective state and lies at the heart of Levi (1988)’s influential historical analysis of the power to tax. She argues that curtailing state predation has historically played a role in encouraging what she calls “quasi-voluntary” compliance.\(^5\)

A number of economists have explored a contractarian approach to gov-

\(^3\)They also see benefits from the extension of power beyond the initial elite, the king for North and Weingast (1989), the nobles and landed aristocrats for Acemoglu and Robinson (2012).

\(^4\)They did however draw somewhat different conclusions from their approaches with Locke believing in limited, representative government while Rousseau believed in direct government by the people. They also recognize coercion as essential although they don’t give it primacy of place the way that Hobbes did.

\(^5\)Perroni and Scharf (2004) have also studied how a tax system can emerge as an equilibrium of a repeated game which has a similar narrative.
ernment. For example, Buchanan (1975) argues that rules should be designed so as to constrain government intervention to those things which command universal assent following Wicksell (1896). This requires procedural and constitutional rules which are self-enforcing, an issue that is explored in Weingast (1997, 2005) in a repeated game setting. Kotlikoff et al. (1988) explore how a social contract can be sustained when there is a commitment problem between overlapping generations of citizens. Binmore (1994, 1998) explores a social contract in a world of repeated interactions sustaining cooperation and Acemoglu (2005) uses a similar approach to characterize when a “consensually strong state” will emerge. In many of these approaches, reciprocity between citizens and the state is a feature of equilibrium play.

This paper takes an approach based on what Sobel (2005) calls intrinsic reciprocity where the forces that shape reciprocal behavior are internalized in preferences. There is significant evidence, mainly from lab experiments which underpin this view – for example, Fehr and Fischbacher (2003), Fehr and Gaechter (2000) and Dohman et al (2009). They show that reciprocity comes in two main forms: positive and negative. Positive reciprocity is a case where one agent who takes an action to benefit another agent encourages a beneficial act in return. Negative reciprocity arises where one agent punishes another, even if that is costly, if that agent has imposed a cost on her. Most of these ideas have been worked out in situations where reciprocity is a feature of small-scale interactions. However, there is no reason to think that reciprocity could not be equally important in anonymous trade and in social relations in large scale societies.6

Reciprocity runs deep in human societies and has been studied by economists and anthropologists in many different settings. Trivers (1971) has argued that it could even have a biological basis shaped by the success of species in cooperating to resist predators and to raise their offspring. Bowles and Gintis (2004, 2011) also take a biological view of reciprocity, emphasizing the fitness advantages that reciprocity brings to groups. However, an alternative view is that reciprocity emerges via a process of cultural evolution following the agenda set by Boyd and Richerson (1985) and Feldman and Cavalli-Sforza (1981). These ideas have now been incorporated into a variety of economic settings as surveyed by Bisin and Verdier (2011). Here, 6

6Polanyi (1944) argued that the development of market societies based on anonymous trading could undermine traditional forms of reciprocity.

7See, for example, Popkin (1979) and Scott (1976).
we adopt an indirect evolutionary process applied to preferences following Guth and Yaari (1992). The core modelling idea is that norms, customs and values are internalized in preferences and hence affect behavior. This has been applied in a variety of papers including Alger and Weibull (2013) and Dekel, Ely and Yilankaya (2007). Sethi and Somanathan (2001) apply an indirect evolutionary approach to the evolution of reciprocity.

The ideas in this paper are also linked to a tradition in political science that sees the emergence of a strong civic culture as the bedrock of successful polities. This idea has a long heritage beginning with Montesquieu (1748). In a more contemporary incarnation, American political scientists such as Almond and Verba (1963) emphasized the importance of values underpinning the successful operation of government institutions. Such ideas also lie behind Putnam (1988)’s account of functional democracy supported by social capital. Besley and Persson (2018) develops a model where there is co-evolution between the values that support democracy and institutions. The paper is also linked to a range of contributions in economics which explain economic success and failure in terms of cultural factors (see, Collier, 2017, for a recent review).

**Fiscal Capacity and Tax Compliance** It is well-known that the tax take in GDP varies both cross-sectionally and over time. Figure 1, which is taken from Besley and Persson (2013), gives a clear sense of this. It looks in more detail at the historical picture over time during the last 100 years for the 18 countries in our sample using data from Mitchell (2007). It illustrates how taxation has increased over time averaging around a 10% share in national income rising to around 25%. The figure also illustrates the increasing importance of income taxation which only made up about 5% of revenues in 1900 but increased to around 50% by the end of the last century. These increases in income taxation are particularly striking during the two world wars.

**Figure 1 about here**

8The countries in the sample are Argentina, Australia, Brazil, Canada, Chile, Colombia, Denmark, Finland, Ireland, Japan, Mexico, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and the United States. The sample is selected, as we are reasonably confident that the data are comparable across countries and time in Mitchell (2007).
Three complementary explanations are frequently given for this increase in taxation as a share of GDP.

The first emphasizes economic factors. On the demand side, war has been the historical foundation of state spending and Tilly (1990) argues that European exceptionalism in the creation of a strong fiscal state was based on this. More generally, the demand for revenues created by public services have expanded and are arguably income elastic. Moreover, there has been little labor-saving technological change in provision of such goods which is often referred to as Baumol’s Law. Structural change in the economy has also meant that governments can more easily collect tax revenue. Thus, formal employment contracts allow cross-reporting on tax liabilities to the government (see Kleven et al (2016) and Jensen (2016)). A notable feature of the twentieth century has been increased use of VAT and income taxation both of which makes use of the firm as a nexus of compliance.

The second range of explanations emphasize politics. In the early modern period this was facilitated by a combination of state centralization and constraints on power (see Dincecco, 2011, 2015). Institutional arrangements have also been adopted to diminish abuse of state power with strengthening transparency and Parliamentary oversight of spending decisions are also emphasized in Besley and Persson (2009, 2011) and Besley et al (2013). The role of political change alongside economic change is also emphasized by Stasavage (2003, 2011). Increasing use of electoral processes to choose leaders has also allowed citizens to express their demand for a larger state and politicians have responded accordingly. For example, creating social insurance schemes with unfunded liabilities has been a feature of electoral politics. Universal publicly-funded health care has also emerged as a priority in almost every developed democracy necessitating increasing amounts of tax revenue to keep pace with new medical needs.

The third set of explanations emphasize social change. Schumpeter (1918) emphasized taxation is an expression of obligation and tied this to state legitimacy. A salutary historical example is the extractive tax system in place prior to the French Revolution which led the citizens to question whether the proposed levels of taxation were consistent with the legitimacy conveyed by hereditary rule. Levi et al (2009) posit that legitimacy it has roots in two key things: trustworthiness of government and procedural justice. The model developed here is more focused on the first of these. Levi et
al (2009) recognize that these two dimensions of legitimacy could be linked. The recent work of Weigel (2018) also stresses the virtuous circle between taxation and legitimacy looking at micro-data in the Democratic Republic of Congo. Having a population who complies with their taxes based on non-pecuniary motives as they do in the modeled developed here provides a way of thinking about how taxes and state legitimacy are linked.

Using data on the same 18 countries used to construct Figure 1, Besley et al (2013) show (using five year averages at the country level for the 20th century) that there is a robust correlation between participating in external wars and having strong constraints on the executive as measured in the PolityIV data. These correlations remain even when country fixed-effects are included in the regression and when income per capita is used as a control.

The standard approach to tax compliance focuses on the threat of sanctions as the primary driver of such decisions. However, it is widely accepted that much taxation is raised with a big role for raw coercion. In response to this, the idea of “tax morale” has emerged as a catch all term for understanding non-coercive compliance. Luttmer and Singhal (2014) define such morale as in terms of the non-pecuniary motivation to pay taxes due to norms, intrinsic motivation and/or feelings of guilt and shame. It could also be linked to the effective delivery of public services which has been explored, for example, in Fjeldstad and Semboja (2000), Westergaard and Alam (1995) and Levi and Sacks (2007).

**Evidence from the World Values Survey** There is no simple way of assessing the range of factors that create differences in tax compliance and the extent to which reflects voluntary compliance. But some clues can be found in attitudinal data. For example, the World Values Survey contains a questions which asks it respondents: "Is it justifiable to cheat on your taxes if you have a chance?" with the responses coded on a 10 point scale. It has been asked in all six survey waves across 94 countries with answers from around 250,000 individual respondents in repeated cross-sections. It is striking that, on average, around 63% of the population do not think that...
cheating is justifiable. For convenience of interpretation, we reverse this ten point scale so that a high value denotes believing that cheating on taxes is not justified.

To investigate correlates of the response to this question, let $a_{icw}$ be the (reversed) score on the answer to the justifiable cheating question for respondent $i$ in country $c$ in survey wave $w$. We then describe the data by running a regression of the following form:

$$a_{icw} = \alpha_c + \alpha_w + \beta x_{icw} + \varepsilon_{icw}$$

(1)

where $\{\alpha_c, \alpha_w\}$ are country and wave dummies, $x_{icw}$ are individual characteristics for which we include age (in three bands), gender (as dummy variable) education (in three bands) and income (in ten bands). These correlations therefore exploit only within-country variation in responses. The standard errors are clustered at the country level.

Table 1 about here

The results from (1) are in Table 1, column (1). They show that justifiable cheating is significantly related to individual characteristics. It is increasing in income, decreasing in education and age and more prevalent among men.

More directly related to the analysis that follows, attitudes towards justifiable cheating can correlated with an individual’s subjectively reported confidence in government based on the World Values Survey question where the respondent is asked “I am going to name a number of organizations. 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 we code the answer as equal to one if the answer is “not very much” or “none at all”. When this is included as a right-hand side variable along with the other regressors in column (2) of Table 1, there is a negative and significant correlation between confidence in government and saying that cheating on paying taxes is justified.

To check that it is lack of confidence in government that matters rather than trust in general, the answer on justifiable cheating can also be related to the standard trust question which is asked in the survey: “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” where the answer is coded as one
if the respondent says that “you cannot be too careful”.\textsuperscript{12} Table 1, column (3) shows that lack of trust in general is not significantly correlated with justifiable cheating on taxes emphasizing that it is specifically related to lack of confidence in government.

3 The Core Model

The model is built to give a role to intrinsic reciprocity in tax compliance. It partitions the citizens into an elite, with decision-making power over transfers and public goods, and citizens who pay taxes to fund these expenditures. Civic-minded citizens receive positive or negative utility from tax compliance depending on whether the state spends on public goods or transfers.

**Basics**  Time is infinite and indexed by \( s = 1, 2, \ldots \) and at each date a continuum of citizens of size one is alive. All have the same level of private income, \( w \), which is most naturally thought of as labor earnings.

There are three groups of citizens denoted by \( \omega \in \{ E, M, V \} \). A fraction \( e < 1 \) of the population is a part of group \( E \), a governing elite which chooses policy. The non-elite citizens are partitioned into two groups where \( M \) stands for “materialist”, and \( V \) for “civic-minded” or “virtuous”. At date \( s \), a fraction \( \mu_s \) of citizens is civic-minded.

Utility of a citizen of type \( \omega \) is linear in public and private goods and is given by:

\[
\alpha_s G_s + y_{\omega,s}
\]

where \( G_s \) is expenditure on a tax-finance public good and \( y_{\omega,s} \) is the private consumption of type \( \omega \) in period \( s \). The value of public goods is stochastic and given by \( \alpha_s \in [1, A] \); it is drawn afresh each period and is iid over time with cumulative distribution function \( H(\alpha) \). The fact that \( \alpha_s > 1 \) implies that, absent political distortions, the non-elite citizens prefer that tax revenue is spent on public goods rather than adding to private consumption.

Taxes are levied on the incomes of the non-elite.\textsuperscript{13} In each period \( s \), taxpayers must decide what proportion of their income to hide from the

\textsuperscript{12}Cook et al. (2005) emphasize the need to separate trust in general from confidence in government.

\textsuperscript{13}This is convenient since the compliance decisions of the elite can be ignored. However, this could be added to the model, albeit at the cost of increased complexity.
tax authorities which we denote by $n_s \in [0, 1]$ where $n$ stands for “non-compliance”.

**Policy and Institutions** We focus for now on a single period of policy-making dropping any reference to date $s$. Policy is determined by the elite and comprises four elements: a tax rate on income, $t$, spending on public goods, $G$, a level of transfers per capita to the non-elite, $b$, and a level of transfers per capita to the elite $B$. Elite preferences are therefore

$$\alpha G + B + w.$$

There is an institution in place which constrains the government to spend $\sigma \in [0, 1]$ on transfers for the non-elite for every unit of transfer spending on the elite. As in Besley and Persson (2011), this can be thought of as capturing executive constraints in a crude way. It will that if there is transfers spending then $b = \sigma B$. If $\sigma = 0$, then the elite can consume all of public revenues as transfers with impunity and whereas with $\sigma = 1$, the elite is compelled to share resources equally with the non-elite. As $\sigma$ increases, institutions are therefore more cohesive and the state is more inclusive in its resource allocation decisions.

The government budget constraint can be written as:

$$B = \theta(\sigma) [T - G]$$

where $T$ is taxation per capita and $\theta(\sigma) = [e + (1 - e) \sigma]^{-1} \in [1, \frac{1}{e}]$ is the effective “price” of public goods to the elite given that it must forego transfers to provide them. Note that $\sigma \theta(\sigma) \leq 1$, implying that there is a potential conflict of interest between elites and non-elites with only the former desiring to spend on transfers rather than public goods given that $\alpha > 1$. (Note also that $e \theta(\sigma) < 1$.)

Observe also that $\theta(\sigma)$ is decreasing in $\sigma$ so that it becomes cheaper for the elite to provide public goods as $\sigma$ increases. Moreover, $\theta(1) = 1$ for all $e \in [0, 1]$. This logic implies that more cohesive institutions encourage the elite to spend on public goods as in Besley and Persson (2011).

**Tax Compliance** Non-compliance with taxation may be costly if an individual is caught and fined for doing so. We capture this by positing
a non-compliance cost $\tau w C(n)$, measured in units of private consumption, where $C(\cdot)$ has the following quadratic form:\footnote{This can be generalized to any case where the maximized revenue function introduced below is convex in $[G - eB]$.}

$$C(n) = \begin{cases} \frac{n^2}{2} & \text{if } n > 0 \\ 0 & \text{otherwise.} \end{cases}$$

The parameter $\tau$ indexes detection effort by government and parallels the strategic investments in coercion of the kind studied in Besley and Persson (2009, 2011).

Policy preferences of the non-elite citizens are given by:

$$\alpha G + w [1 - (1 - n) [t - \lambda_w [G - eB]] - \tau C(n)] + b.$$ \hfill (3)

where $\lambda_M = 0$ for materialists and $\lambda_V = \Lambda > 0$ for civic-minded citizens.

The only non-standard feature of (3) is term $n\Lambda [G - eB]$ in the payoff of civic-minded citizens which links compliance decisions and the pattern of government spending since the sign of this term depends on $G - eB$. If $G > eB$, then it is “as if” non-compliance is based on a lower tax rate and vice versa if $eB > G$. This captures intrinsic reciprocity in preferences since tax compliance is higher when public goods are provided and lower when the elite makes transfers to itself. Thus, civic-minded citizens are like motivated agents in the sense of Besley and Ghatak (2005); they respond positively if their preferences are aligned with the government objectives and negatively otherwise.\footnote{What is key to the formulation is that compliance creates a private benefit or cost to an taking an action which affects the social good as in models of warm-glow altruism.}

The parameter, $\Lambda > 0$ indexes the strength of civic-mindedness. Throughout, we assume that

$$\tau < 2 \text{ and } \min \{2 - \tau, 1\} > \Lambda w.$$ \hfill (4)

This assumption is made for analytical convenience as it guarantees interior solutions for evasion and an optimal tax rate between zero and one.\footnote{See Appendix B.} The condition in (4) holds if the reciprocal motive is not too strong and coercive power is sufficiently limited.
For $\lambda \in \{0, \Lambda\}$, the optimal (non-)compliance decision is given by:

$$n^* = \arg \min_{n \in [0,1]} \{(1-n) [t - \lambda [G - eB]] + \tau C(n)\}$$

$$= \hat{f} \left( \frac{t - \lambda [G - eB]}{\tau} \right)$$

where

$$\hat{f} (m) = \min \{ \max \{m, 0\}, 1\} \quad (5)$$

is the level of evasion which is increasing in $t$ and decreasing in $\tau$ for all citizens. It is also decreasing in $G$ and increasing in $B$ for civic-minded citizens who behave reciprocally. Let

$$v(m) = \tau \left[ \left( 1 - \hat{f} (m) \right) m + C \left( \hat{f} (m) \right) \right] \quad (6)$$

be the disutility from tax compliance. Note that $v'(m) = \tau \left( 1 - \hat{f} (m) \right)$, after using the envelope theorem, which is strictly positive at an interior solution for (5), i.e. higher taxes and/or a strong motivation to evade taxes reduces compliance utility.

**Fiscal Capacity** Fiscal capacity is defined as the maximum tax revenue that a government can raise given the civic culture represented by $\mu$ and the coercive power of government given by $\tau$. Tax revenue per capita, given a tax rate of $t$ and an expenditure mix of $(G, B)$ is given by:

$$T(t, G - eB, \mu, \tau) = t (1 - c) w \left[ 1 - \mu \hat{f} \left( \frac{t - \Lambda [G - eB]}{\tau} \right) \right] - (1 - \mu) \hat{f} \left( \frac{t}{\tau} \right) \quad (7)$$

Assuming that $\hat{f} \left( \frac{t - \Lambda [G - eB]}{\tau} \right) \in (0,1)$, the revenue maximizing tax rate is given by:

$$\hat{t} (G - eB, \mu, \tau) = \arg \max_{t \geq 0} \{ T(t, G - eB, \mu, \tau) \} = \frac{1}{2} \left[ \tau + \mu \Lambda (G - eB) \right] \quad (8)$$

also assuming an interior solution. The tax rate in (8) depends on the mix of public spending and is higher when there is spending on public goods, reflecting the fact that there is less non-compliance in this case.\footnote{This is reminiscent of Atkinson and Stern (1974) which studied the interdependence of optimal taxes with public goods provision. However, the mechanism posited here is different.}
The revenue-maximizing tax rate is also increasing in the proportion of civic-minded citizens if $G > eB$ and decreasing otherwise. It is also higher when the government has more enforcement capacity, i.e. $\tau$ is higher.\footnote{Appendix B shows that the parameter restriction in (4) is sufficient for an interior solution for in the non-compliance decisions by both kinds of citizens, i.e. materialist and civic-minded and for the optimal tax rate.}

Plugging (8) into (7), fiscal capacity, given $(G, B)$, is:

\[
T (\hat{i} (G - eB, \mu, \tau), G - eB, \mu, \tau) = \frac{(1 - e) w}{4\tau} [\tau + \mu \Lambda (G - eB)]^2. \tag{9}
\]

This is increasing and convex in $G - eB$. Fiscal capacity is also increasing in $\tau$ but can be increasing or decreasing in $\mu$ depending on the sign of $G - eB$.

The model, particularly equation (9), has implications for the relationship between income per capita and taxation. All else equal, it predicts proportionality between the two, assuming that $\tau$ remains constant. If higher income drives higher $\tau$, then we would expect a higher share of taxation in income. However, there is an additional consideration suggested by the model due to the impact of civic culture on compliance. The maximum feasible income tax revenue is higher, all else equal, in a high income economy that spends more on public goods and the opposite is the case for a high income economy which spends more on elite transfers. We will return to this below, when we discuss how changing incomes affect civic culture below.

The model suggests a difference between *de jure* and *de facto* fiscal capacity. The former depends on enforcement capacity $\tau$ which is all that matters in a standard model of tax compliance where all citizens are materialists, i.e. $\mu = 0$. A higher value of $\tau$ enables the state to extract greater tax revenues by reducing non-compliance. However, *de facto* fiscal capacity can be enhanced or diminished relative to this level depending on the size of $\mu$ and the sign of $G - eB$. Thus tax revenues could be above or below what would be expected based purely on monitoring if $\mu > 0$.

## 4 Analysis

The model is studied in two steps. First, we study the elite’s optimal policy recognizing the dependence of tax revenues on civic culture given in (9). We then reintroduce the time dimension and study the dynamics of civic culture driven by the relative payoffs of the materialists and civic-minded citizens.
4.1 Optimal Policy

Given a realization of $\alpha$, the elite choose policies constrained by institutions, $\sigma$, civic culture, $\mu$, and enforcement capacity, $\tau$. Recognizing that $b = \sigma B$, the elite’s optimal policy, $\{G^* (\alpha, \sigma, \tau, \mu), B^* (\alpha, \sigma, \tau, \mu)\}$, maximizes:

$$\alpha G + B$$

subject to

$$T(t, G - B, \mu, \tau) - eG] \theta(\sigma) = B.$$  

For any given expenditure mix, the elite will choose the revenue maximizing tax rate (8). Moreover, we show in Proposition 1 below that the constraint set is convex so that the elite will choose a corner solution where either $G$ or $B$ is zero.

Two key magnitudes in what follows are the maximal and minimal tax revenues that can be raised from the citizens. They are given as follows:

Lemma 1: The maximum and minimum tax revenues, $\{T_H (\mu, \tau), T_L (\mu, \tau, \sigma)\}$ are characterized as follows:

(i) if all spending is on public goods, then

$$T_H (\mu, \tau) = \tau \xi_H (\mu)$$

where $\xi_H (\mu)$ is increasing and,

(ii) if all spending is on transfers, then

$$T_L (\mu, \tau, \sigma) = \tau \xi_L (\mu, \sigma)$$

where $\xi_L (\mu, \sigma)$ is a decreasing function of $\mu$ and an increasing function of $\sigma$. Moreover, $\theta (\sigma) \xi_L (\mu, \sigma)$ is decreasing in $\sigma$.

This says that taxation is proportional to $\tau$ which holds as a consequence of the quadratic specification of compliance costs. More substantively, the result says that when $\mu$ increases, then civic-minded citizens increase or reduce compliance depending on the mix of public spending. This implies a lower tax revenue when the state is spending on transfers and a higher tax revenue when it is spending on public goods. Since spending transfers to the elite are decreasing in $\sigma$, the level of taxation that can be raised with
transfer spending is increasing in $\sigma$. The final part of the result says that overall transfers to the elite are decreasing in $\sigma$.

The optimal tax rate given, the optimal spending mix, is:

$$t^* (\alpha, \sigma, \tau, \mu) = \frac{1}{2} [\tau + \mu \Lambda (G^* (\alpha, \sigma, \tau, \mu) - eB^* (\alpha, \sigma, \tau, \mu))].$$

The natural point of comparison is with $t = \tau/2$, the tax rate that would prevail if all citizens were materialists. Note that

$$t_H (\mu, \tau) = \frac{\tau}{2} [1 + \mu \Lambda \xi_H (\mu)] \quad (12)$$

and

$$t_L (\mu, \tau, \sigma) = \frac{\tau}{2} [1 - \mu \Lambda e(\sigma) \xi_L (\mu, \sigma)]. \quad (13)$$

Together these imply that:

$$t_H (\mu, \tau) > t_L (\mu, \tau, \sigma)$$

for all $\mu > 0$ so the tax rate is higher in the public goods regime and lower in the transfers regime compared to the benchmark. The rate of taxation is higher in an economy that spends on public goods regime because with civic-minded citizens, this enhances tax compliance. This is the kind of tax morale argument that is often applied to understanding why Scandinavian countries are able to obtain high levels of tax compliance at high marginal rates of taxation. It is because their governments also provide public goods and citizens respond to that by reciprocally paying more tax.\(^\text{19}\) The model explains the logic of tax morale more generally but particularly to the arguments developed in Levi (1988) which forges an explicit link between compliance and government provision of public goods.

In the analysis below, the key ratio is $\xi_L (\mu, \sigma) / \xi_H (\mu) < 1$, i.e. taxes paid when the government spends on transfers compared to spending on public goods. It indicates how much of a difference the public spending mix makes to the levels of taxation that the elite can raise. For example, when this ratio is low, then spending on transfers rather public goods depresses tax revenues a lot. This ratio is decreasing in $\mu$, i.e. the impact of spending on tax compliance is higher when there are more civic-minded citizens in the population.

We now have the following result describing the conditions under which different levels of public spending are chosen:

\(^\text{19}\)For an interesting discussion along these lines, see Kleven (2014).
Proposition 1  Optimal public expenditures depend on the realization of \( \alpha \) given \( \{\sigma, \mu, \tau\} \) as follows:

1. If \( 1 \geq \theta (\sigma) \frac{\xi_L(\mu, \sigma)}{\xi_H(\mu)} \), then for \( \alpha \in [1, A] \), then \( G^* (\alpha, \sigma, \tau, \mu) = \tau \xi_H (\mu) \) and \( B^* (\alpha, \sigma, \tau, \mu) = 0 \).

2. If \( A > \theta (\sigma) \frac{\xi_L(\mu, \sigma)}{\xi_H(\mu)} > 1 \) then then:
   
   (a) for \( \alpha \geq \theta (\sigma) \frac{\xi_L(\mu, \sigma)}{\xi_H(\mu)} \), then \( G^* (\alpha, \sigma, \tau, \mu) = \tau \xi_H (\mu) \) and \( B^* (\alpha, \sigma, \tau, \mu) = 0 \);
   
   (b) for \( \alpha < \theta (\sigma) \frac{\xi_L(\mu, \sigma)}{\xi_H(\mu)} \), then \( G^* (\alpha, \sigma, \tau, \mu) = 0 \) and \( B^* (\alpha, \sigma, \tau, \mu) = \theta (\sigma) \tau \xi_L (\mu, \sigma) \).

3. If \( A < \theta (\sigma) \frac{\xi_L(\mu, \sigma)}{\xi_H(\mu)} \) then for \( \alpha \in [1, A] \), then \( G^* (\alpha, \sigma, \tau, \mu) = 0 \) and \( B^* (\alpha, \sigma, \tau, \mu) = \theta (\sigma) \tau \xi_L (\mu, \sigma) \).

The logic of the result comes from two things. First, \( T (t (z, \mu, \tau), z, \mu, \tau) \) is convex in \( z \) and second, the payoff function is linear in \( G \) and \( B \). There is then a cutoff value \( \theta (\sigma) \frac{\xi_L(\mu, \sigma)}{\xi_H(\mu)} \) with public goods being provided only if \( \alpha \) exceeds this. This value is decreasing in \( \mu \) and \( \sigma \). Thus the model illustrates how a stronger civic culture implies that citizens exercise de facto control over how the state behaves above and beyond constraints imposed by the institutions represented by \( \sigma \). Thus culture affects government policy making spending on public goods more or less likely.

In the first case, even at the lowest valuation of public goods, there is spending on public goods. This corresponds to what Besley and Persson (2011) refer to as a common interest state where the elite follows the policy preferences of the non-elite citizens. This is only possible in the model for \( \sigma < 1 \) with \( \mu > 0 \) since \( \theta (\sigma) > 1 \). A common interest state is more likely if \( \sigma \) is close enough to one.

In the second case, the mix of public spending depends upon the realization of \( \alpha \). For high \( \alpha \) realizations, spending is on public goods while for low realizations, it is on transfers. The probability of transfers implied by Proposition 1 is given by

\[
\rho (\sigma, \mu) = H \left( \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \in [0, 1],
\]

\[\text{(14)}\]

\[\text{Introducing curvature into the utility function would be straightforward but the insights are less clean.}\]
which, using Lemma 1, is decreasing in $\mu$ and $\sigma$.

The third case is where tax revenue is spent on transfers. This is most likely when $\sigma$ is close to zero and $\epsilon$ is small. It is also facilitated by $\mu$ being low.

One feature of the model is that all citizens benefit from taxation when $G > 0$ regardless of whether they are civic-minded. This is the case since $\alpha > 1$ and all citizens pay the same share of the cost of public spending. Thus, increasing $\mu$ makes it more likely that policy follows the Wicksellian prescription of unanimity rule. That said, this result is special since we have assumed that valuation of public goods and incomes are identical. Allowing for a distribution of $\alpha$ among the non-elite citizens would make it unlikely that providing public goods is unanimously preferred by all citizens.

4.2 The Dynamics of Civic Culture

An Evolutionary Dynamic We now make $\mu_s$ endogenous by applying an evolutionary model of the type studied in Sandholm (2010). This is similar to an established approach in the literature such as Alger and Weibull (2013) and Sethi and Somanathan (2001) where we posit that the dynamics of change follows the payoff difference between being a civic-minded and materialist citizen.

Sandholm (2010) emphasizes two elements of an evolutionary dynamic that we use: (i) agents do not continually change their types but do so only sporadically (inertia) and (ii) agents condition these switches on current behavior and opportunities (myopia). We do not specify explicit micro-foundations but we have in mind a background in which a process of socialization, both peer-to-peer and between older and younger generations, influences preferences so that $\mu_s$ is changing over time. The most natural way to interpret this is as inter-generational dynamics. However, citizens could also be influenced over the life-cycle by their peers and personal experience.

Let $U^J(\mu_s, \sigma)$ be the expected utility of being a type $J \in \{M, V\}$ when there is a fraction $\mu_s$ of civic minded types in the population in the population at date $s$. An evolutionary dynamic is based on a revision protocol. Formally, this is a continuous function $\varsigma_{IJ}(U^V(\mu_s, \sigma), U^M(\mu_s, \sigma), \mu_s) \in [0, 1]$ which specifies a conditional switch rate from type $I$ to $J$ given the payoffs and proportion of types in the population. Sandholm (2010) suggests a general
class of mean dynamics which yield:

\[ \mu_{s+1} - \mu_s = (1 - \mu_s) \varsigma_{VM} - \mu_s \varsigma_{MV} \tag{15} \]

where

\[ \varsigma_{IJ} > 0 \iff U^I (\mu, \sigma) - U^J (\mu_s, \sigma) > 0. \]

This class of dynamics is convenient since they depend only on comparisons of the payoff of one type with the potential payoff from being the other type. It is assumed, therefore, that everyone knows the potential payoffs from each type. The essential ingredient of this model is Darwinian since type which “thrives” will tend to reproduce faster depending on the payoff difference between one type and another.\textsuperscript{21} The specification in (15) includes the popular replicator dynamic as a special case.\textsuperscript{22}

**Timing** The timing of events unfolds as follows:

1. There is an initial level of civic-culture \( \mu_s \).
2. Nature determines the value of public goods \( \alpha_s \).
3. The elite choose policies: \( \{G_s, B_s, t_s\} \).
4. Citizens choose their compliance decisions \( n_s \) which determines the level of tax revenues.
5. Payoffs are realized.
6. The next generation of citizens is socialized as represented by (15) which determines \( \mu_{s+1} \).

\textsuperscript{21} Arieli and Young (2016) use this essential element feature of evolutionary dynamics in a stochastic model and show that there is convergence to Nash equilibrium under quite weak conditions.

\textsuperscript{22} This would be:

\[ \mu_{s+1} - \mu_s = \mu_s (1 - \mu_s) [U^V (\mu, \sigma) - U^M (\mu, \sigma)] \]

which corresponds to

\[ \varsigma_{MV} = \mu_s \max \left\{ \left[ U^V (\mu, \sigma) - U^M (\mu, \sigma) \right], 0 \right\} \]

and

\[ \varsigma_{VM} = (1 - \mu_s) \max \left\{ \left[ U^M (\mu, \sigma) - U^V (\mu, \sigma) \right], 0 \right\}. \]
**Fitness**  To understand the dynamics of civic culture, we need to explore how the fraction of civic minded types affects this expected utility difference between civic-minded and materialist citizens denoted by $\Delta (\mu, \sigma)$. To derive this, note that for any realization of $\alpha$, the utility of a non-elite citizen is:

$$\alpha G^* (\alpha, \sigma, \tau, \mu) + \sigma B^* (\alpha, \sigma, \tau, \mu) + w [1 - v (\hat{m} (\alpha, \sigma, \tau, \mu, \lambda))]$$

where $\hat{m} (\alpha, \sigma, \tau, \mu, \lambda) = \frac{1}{2} [\tau + [\mu - 1] \lambda (G^* (\alpha, \sigma, \tau, \mu) - eB^* (\alpha, \sigma, \tau, \mu))].$

Using Proposition 1, the expected utility difference between being a civic-minded and materialist citizen is therefore given by:

$$\Delta (\mu, \sigma) = \rho (\sigma, \mu) \left[ v \left( \frac{t_L (\mu, \tau, \sigma)}{\tau} \right) - v \left( \frac{t_L (\mu, \tau, \sigma)}{\tau} + \Lambda e \theta (\sigma) \xi_L (\mu, \sigma) \right) \right] + (1 - \rho (\sigma, \mu)) \left[ v \left( \frac{t_H (\mu, \tau)}{\tau} \right) - v \left( \frac{t_H (\mu, \tau)}{\tau} - \Lambda e \theta (\sigma) \xi_H (\mu, \sigma) \right) \right]$$

We will refer to (16) as the *fitness advantage* of civic-minded citizens. This is the difference between the compliance utility when there is spending on transfers and when there is spending on public goods.

The following property of (16) is useful in what follows:

**Lemma 2:** The fitness advantage of civic-minded citizens, $\Delta (\mu, \sigma)$, is increasing in both $\mu$ and $\sigma$.

This underpins an important complementarity in the growth of civic culture since having more civic-minded citizens is beneficial to the fitness of being civic-minded rather than a materialist. There second part of Lemma 2 expresses a complementarity between civic-culture and institutions.\(^{23}\)

**Steady States** There are three candidate steady states for the long-run fraction of civic minded citizens: $\mu = 1, \mu = 0$ and $\Delta (\mu, \sigma) = 0$. We will focus on steady states that are stable in the face of small “mutations” in the population to $\mu \pm \nu$ for $\nu > 0$. Given Lemma 1, the Appendix shows that the only stable steady states have either $\mu = 1$ or $\mu = 0$. The conditions for each of these to emerge given a starting point $\mu_0$ is given in:

**Proposition 2** Given a starting value, $\mu_0$, a long-run civic cultures emerge as follows:

\(^{23}\)Since $v (\cdot)$ is proportional to $\tau$, note that the level of formal enforcement affects the magnitude but not the sign of $\Delta (\mu, \sigma)$.\)
1. If \( \tilde{\Delta} (0, \sigma) > 0 \) then, for all \( \mu_0 \in [0, 1] \), the the long run civic culture has \( \mu = 1 \).

2. If \( \tilde{\Delta} (\mu_0, \sigma) < 0 \) then, for all \( \mu_0 \in [0, 1] \), the the long run civic culture has \( \mu = 0 \).

3. If \( \tilde{\Delta} (1, \sigma) > 0 > \tilde{\Delta} (0, \sigma) \), there exists a critical value of \( \hat{\mu} (\sigma) \) which is decreasing in \( \sigma \) such that a civic culture emerges and in the long run \( \mu \rightarrow 1 \) if and only if \( \mu_0 \geq \hat{\mu} (\sigma) \).

In the first case of Proposition 2, spending on public goods is frequent enough to guarantee that a civic culture emerges. If this holds at \( \mu_0 = 0 \), then a strong civic culture emerges for sure. The opposite is true in the second case where civic minded citizens have a psychological fitness disadvantage at \( \mu_0 \). If this holds at \( \mu_0 = 1 \), then there is convergence to \( \mu = 0 \) from all starting points. The third case illustrates a tipping point where there is a critical value of \( \mu_0 \in [0, 1] \) above which there is convergence to \( \mu = 1 \) and below which convergence is \( \mu = 0 \). This case illustrates hysteresis where the starting point has a persistent effect.

It is straightforward to understand the logic behind Proposition 2. Since \( \tilde{\Delta} (\mu, \sigma) \) is increasing in \( \mu \), there is a complementarity between the payoff of a civic-minded citizen and the proportion of such citizens in the population as a whole, i.e. it is more attractive to be civic-minded when there are more civic-minded citizens around. The key to this lies in Proposition 1 which shows that spending on public goods is more likely when \( \mu \) is high. Moreover, if the probability of the public goods regime is greater, then the civic-minded citizens, whose reciprocal natures make them happier to comply with taxes in this case, have a psychological fitness advantage. Given the proposed evolutionary dynamics, the population of civic-minded citizens grows over time if \( \tilde{\Delta} (\mu, \sigma) > 0 \) which further reinforces the dynamics since expected spending on public goods is higher in future. A similar logic works in reverse when \( \mu \) is low and hence the probability of spending on public goods rather than transfers is low.

The model therefore predicts either a virtuous or vicious circle when it comes to state capacity dynamics and civic culture. Figure 2 illustrates the chain of logic behind the model which generates steady state outcomes. The left-hand panel shows a positive feedback loop where civic-culture grows over time and the opposite is true in the negative feedback loop in the right-hand panel.
Proposition 2 is reminiscent of the analysis of fiscal capacity developed in the historical account of state capacity by Levi (1988) who emphasizes how quasi-voluntary compliance grew as states developed greater tax capacity encouraged by governments becoming more constrained. In the model developed here, the key element is that higher public goods spending sets a positive feedback loop in train.

**Initial conditions** Proposition 2 raises the question of where $\mu_0$ comes from. The natural starting point for many economic approaches would be $\mu_0 = 0$. However, this could be questioned on the back of evidence from developmental psychologists (see, for example, Tomasello, 2009). Moreover, given the support from the biological literature on the importance of reciprocity, assuming that $\mu_0 > 0$ may reflect a genetically-based element of human nature in some people.

We now discuss three possible reasons why $\mu_0 > 0$ based on socio-economic considerations. First, in colonies this could be influenced by colonial settlers and their imported values. More generally, the civic culture could be influenced by migration patterns. Second, civic culture could be inherited from previous forms of government in small-scale societies. For example, community-based government could encourage civic culture to emerge in small scale societies (due to being in case 1 of Proposition 1) and hence at the point of creating a successful central state, this becomes an endowment that could be utilized.\(^{24}\) Third, there are other autonomous processes for creating civic cultures particularly through education. We saw in the Table 1 above, that there is a positive correlation between attitudes towards tax compliance as expressed in the World Values Survey and educational attainment. This is confirmed in a wider literature on the link between civic values and education (such as Dee, 2004 and Milligan et al, 2004). This suggests a tendency for societies to acquire a larger stock of civic-minded citizens as they become more educated.\(^{25}\)

\(^{24}\)This argument is elaborated in section 6 below.

\(^{25}\)Appealing to the influence of education would also question the rather stark implication of the model that, in the long-run, we could get $\mu = 0$. There are other social influences on civic culture at work that could mean, more realistically that there is a lower bound on $\mu$ above zero. But we could also posit other direct forms of socialization that
5 Core Implications

This section draws out three implications of the framework for the evolution of civic culture and state capacity. The first emphasizes how variations in the strength of institutional cohesiveness shape the path of civic culture. The second shows how that the structure of common interests plays a role in shaping how state capacity and civic culture evolves. This provides a link to debates about the relationship between civic-culture and national emergencies such as war. Finally, the model is extended to allow citizens to have a say in choosing which elites hold office, forging a link between the dynamics of state capacity, civic culture and extension of the franchise.

Cohesiveness of Institutions

The fact that $\bar{\Delta}(\mu, \sigma)$ is increasing in $\sigma$ (Lemma 2) embodies the idea that, when the government is more constrained not to use the state for transfer purposes, this enhances the fitness of civic-minded citizens. This generates a complementarity between institutional cohesiveness and civic culture which we now explore.

To generate implications in the starkest way possible, consider two polities with different values of cohesiveness $\sigma \in \{\sigma_L, \sigma_H\}$. This could be the same polity at two different dates, as in England before and after the Glorious Revolution in 1688, or two different polities with similar initial conditions that differ in the form of institutions for constraining power such as Argentina and the USA in 1910.

To get stark implications of this institutional variation suppose that, for the starting condition $\mu_0 \in [0, 1]$, we have:

$$\bar{\Delta}(\mu_0, \sigma_H) > 0 > \bar{\Delta}(\mu_0, \sigma_L).$$

(17)

Values of $\sigma_L$ and $\sigma_H$ for which (17) holds always exist for small enough $\epsilon$.

If (17) holds, then whether a polity has strong or weak common interests as measured by $\sigma$ has an impact on state capacity and the strength of the civic culture in the long-run. This is given in:

**Proposition 3** Suppose that (17) holds at $\mu_0$, then a polity with $\sigma_H$ converges to $\mu = 1$ and a polity with $\sigma_L$ converges to $\mu = 0$.

discouraged the emergence of a civic culture and implied that there is an upper bound on $\mu$ which is less than one.

\footnote{The first part of (17) holds as $\sigma_H \to 1$, since there is never spending on transfers in this limit implying a fitness advantage for the civic-minded citizens. The second part of (17) holds as $\sigma_L \to 0$ if $\xi_L(\mu, 0)/\xi_H(\mu) > \epsilon A$.}
This vividly illustrates the complementarity between institutions and civic-culture in the model. A combination of weak institutions (low $\sigma$) and a weak initial civic culture (low $\mu$) can together undermine the prospects for fiscal capacity and civic-culture to grow. While, beginning with a strong civic culture can, to some extent, make up for having non-cohesive institutions, there are limits to this possibility.

The result can be used to think about what happens in a country following an institutional reform which enhances constraints on executive power thereby increasing cohesiveness. This could lead to a new path for the evolution of civic culture. This is particularly likely when $\mu_0$, the value at the point of reform, is close to $\hat{\mu}(\sigma)$ as defined in Proposition 2. More generally, this reminds us that the impact of an institutional reform is likely to depend on the strength or weakness of the civic culture at the time that the reform is made.

**Strength of Common Interests** The distribution of $\alpha$ has so far been taken as given. However, the demand for public goods may differ across countries and over time. How far there is a common goal for the state is a potentially important part of establishing a cohesive polity as emphasized in Besley and Persson (2009). A good example to illustrate this is the ebb and flow of external threats to a country as emphasized in classic accounts of the fiscal state by historical sociologists such as Hintze (1906) and Tilly (1990).

To illustrate this in the current model, index the distribution of $\alpha$ by $\kappa$, i.e. $H(\alpha : \kappa)$ with $H_\kappa(\alpha : \kappa) < 0$, so that an increase in $\kappa$ constitutes a first-order stochastic dominating shift in the demand for public goods. In order to have an impact on civic culture and the time path of fiscal capacity, we now index the fitness advantage by $\kappa$, i.e. $\bar{\Delta}(\mu, \sigma, \kappa)$ which is increasing in $\kappa$ since (14) is decreasing in $\kappa$. Hence, there is a stronger incentive to develop a civic culture if $\kappa$ increases since, all else equal, it is more likely that public goods are provided (see Proposition 1).

We now explore how variation in $\kappa$ such as a change in an external threat can shift a country's state capacity trajectory via influencing its civic culture. This idea can be applied either to cross-sectional comparisons or time-series changes in $\kappa$. Using similar logic to the last section, we therefore consider two values of $\kappa \in \{\kappa_L, \kappa_H\}$ with $\kappa_H > \kappa_L$ such that for the initial condition $\mu_0 \in [0, 1]$, we have

$$\bar{\Delta}(\mu_0, \sigma, \kappa_H) > 0 > \bar{\Delta}(\mu_0, \sigma, \kappa_L). \quad (18)$$
If this holds then whether a polity has strong or weak common interests as measured by $\kappa$, has an impact on state capacity and the strength of the civic culture. The following result parallels Proposition 3:

**Proposition 4** Suppose that (18) holds at $\mu_0$, then a polity with $\kappa_H$ converges to $\mu = 1$ and a polity with $\kappa_L$ converges to $\mu = 0$.

This gives an interesting twist on the Hintze-Tilly hypothesis on the importance of the threat of war for the development of a fiscal state. In this model, this will happen only for specific values of $\{\mu_0, \kappa\}$. Thus, we would only expect this to be the case when the starting point is right. A country with a weak civic culture may not move to a path where fiscal capacity expands even though the war threat increases and it fights wars from time to time. This is likely to be the case where the initial civic culture and/or institutions are initially weak so that $\Delta(\mu_0, \sigma, \kappa_H) < 0$. This is a possible explanation for the claim that the Hintze-Tilly hypothesis is a poor fit for the experience of Latin America as argued, for example, by Centano (1997).

The framework also emphasizes the potential gains to a polity from being more effective at delivering public spending efficiently as a means of encouraging the development of a strong civic culture. A positive shock to $\kappa$ could be due to an increase in bureaucratic efficiency or a reduction in corruption which increases provision of public goods. The importance of a competent bureaucracy in encouraging voluntary compliance is emphasized in Levi and Sacks (2007) and is a feature of the model developed here. That said, such reforms are unlikely to occur by accident and it would be interesting to study incentives to invest in the efficiency of public service delivery in the framework.

**Representative Institutions and Selection of Elites** We have supposed so far that there is single entrenched elite. We now allow the possibility that government is chosen from among competing elites with heterogeneous preferences for public goods.

To fix ideas, suppose that demand for public goods among the citizens is always $A > 1$ emphasizing that they always prefer spending on public goods. The stochastic draws of public goods valuations therefore only affects the demands of elites. Since they choose policy, it is only their views which matter for policy choice as in Proposition 1. As in the last section, let the
valuation be drawn from a distribution $H(\alpha : \kappa)$ where $\alpha \in [1, A]$ and an increase in $\kappa$ induces first-order stochastic dominance.

We will now suppose that $\kappa$ is part of elite preferences. Specifically, suppose that there are two sub-groups within the elite denoted by $L$ and $H$, one of which is closer to the citizens, $\kappa_H > \kappa_L$. This says that type $H$ elites are closer in their valuation of public goods to what the non-elite citizens want. Let $\gamma \in [0, 1]$ be the probability that the elite is of type $H$ i.e. better aligned with non-elite citizen preferences. We assume that each elite group is represented by a citizen-candidate who represents their group when in power. Finally, let $e_J$ be the fraction of the elite population that are of type $J \in \{L, H\}$ so that $e = e_H + e_L$. A state variable will be the group-identity of the elite in power at date $s$. That elite will choose policy based on the realization of $\alpha$ among that elite group.

The timing of the model is now modified to include the choice of the elite and becomes:

1. There is an initial level of civic-culture $\mu_s$.
2. The type of the new elite is determined for period $s$ with $\gamma$ being the probability that the elite is of type $H$.
3. Nature determines the value of public goods $\alpha_s$.
4. The elite choose policies: $\{G_s, B_s, t_s\}$.
5. Citizens choose their compliance decisions $n_s$ which determines the level of tax revenues.
6. Payoffs are realized.
7. The next generation of citizens are socialized which determines $\mu_{s+1}$.

It is key that the realization of $\alpha_s$ is after the elite has been chosen. Then for a given value of $\mu, \sigma$, we have, using (14), that

$$\rho(\mu, \sigma, \gamma) = \gamma H\left(\frac{\theta(\sigma) \xi_L(\mu, \sigma)}{\xi_H(\mu)} : \kappa_H\right) + (1 - \gamma) H\left(\frac{\theta(\sigma) \xi_L(\mu, \sigma)}{\xi_H(\mu)} : \kappa_L\right)$$

is the probability that the elite will spend on transfers which is increasing in $\gamma$. The transfer regime is less likely if type $H$ elite group member is more likely to hold power.
We now write down a model of the choice of elite and how this depends on the citizens’ preferences. If the latter could choose which group to have in power before the realization of $\alpha_s$, they would unanimously prefer a type $H$ elite member and hence $\gamma = 1$. Suppose instead that there is a simple probabilistic “voting” model of elite control, where putting the word voting in quote marks emphasizes that the model could represent a variety of ways in which the identity of the elite in power is sensitive to what non-elite citizens want. Franchise extension towards the non-elite is a natural way of thinking about giving the non-elite a larger say and connects the modelling to the literature on the impact of franchise extension on economic outcomes such as Acemoglu and Robinson (2000) and Lizzeri and Persico (2004).

Suppose that in each period, there is a contest for power between a representative of the $H$ and $L$ elites and that the group with more support wins. Moreover, suppose that there is a shock to power holding $\chi \in [-e, e]$ normalized to be a pro group-$H$ with a symmetric distribution function $K(\cdot)$. This shock can be thought of as representing non-economic factors such as the relative charisma or persuasiveness of the candidate put up by each group.

Let $\phi \in [0, 1]$ index how much influence non-elite citizens have in choosing who holds power. We assume that the group with highest level of support holds office. Then group $H$ will hold power if $e_H + \phi [1 - e] + \chi \geq e_L$. Hence

$$\gamma = K(e_H - e_L + \phi (1 - e))$$

is the probability that a type $H$ elite member controls policy. This is increasing $\phi$, and that there exists $\hat{\phi}$ such that $\gamma = 1$ for all $\phi \geq \hat{\phi}$. Hence with a sufficiently large extension of the franchise there will always be a member of elite group $H$ in office. However, if $\phi$ is low and $e_H$ is small then group $L$ elites will dominate.

To draw a parallel with the previous two sub-sections, suppose that the fitness advantage of civic-minded citizens is now a function of $\gamma$, i.e. denoted as $\hat{\Delta}(\mu, \sigma, \gamma)$. This is increasing in $\gamma$ since the probability of transfers is lower as $\gamma$ increases. So now consider two values of $\gamma \in \{\gamma_L, \gamma_H\}$ where $\gamma_H > \gamma_L$. These could correspond to different polities with varying levels of the franchise. Suppose also that for $\mu_0 \in [0, 1]$ that:

$$\hat{\Delta}(\mu_0, \sigma, \gamma_H) > 0 > \hat{\Delta}(\mu_0, \sigma, \gamma_L). \quad (19)$$

Note that this implied by (18) if $\gamma_H$ and $\gamma_L$ are far enough apart. We now have a parallel result to Propositions 3 and 4:
Proposition 5  Suppose that (19) holds at $\mu_0$, then a polity with $\gamma_H$ converges to $\mu = 1$ and a polity with $\gamma_L$ converges to $\mu = 0$.

Thus democratic transitions towards greater openness in power may result in a stronger civic culture and greater tax capacity. But this will only happen around suitable values of $\mu_0$. This is important as there may be little average effect of such changes on outcomes except when societies are at critical junctures.

6  Further Issues

This section explores some additional implications of the model. We first discuss what happens when different civic traditions from heterogeneous communities are merged together. Second, we investigate how incentives for investment in coercion are influenced by the strength of civic culture. Third, we discuss aid dependence and natural resources. Fourth, we discuss the possibility of reciprocal behavior between taxpayers. Fifth, we study the implications of economic development. Sixth, we discuss some alternative ways of thinking about socialization and cultural transmission.

Bottom-up State Building  Frequently people feel a stronger sense of reciprocity in small-scale societies and local communities. Moreover, modern states were often built from the ground up by merging heterogeneous communities with differing degrees of self-government and civic cultures. This makes a lot of sense if there were pre-existing decentralized communities at the founding of a nation state. Potentially strong local cultures could then be leveraged in building a centralized state. The framework developed in this paper is useful in thinking about this process.

As a starting point, suppose that there are two different communities which we label as $J \in \{1, 2\}$. Suppose that each faces the issues of governance and policy proposed in the model having an elite group and a set of non-elite citizens. To fix ideas, the communities are identical except for the quality of institutions that regulate how public resources are used denoted by $\sigma_J$ for $J \in \{1, 2\}$. These differences may have historical roots in informal institutions but we will take them as an exogenous starting point. Suppose that at date 0, all citizens are materialists. At any date $s > 0$ thereafter, let $\mu_{Js}$ be the state variable representing the civic culture in community $J$. 

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If institutions in the two communities are such that \( \Delta (0, \sigma_1) > 0 > \Delta (0, \sigma_2) \), then appealing to Proposition 3, the two communities will diverge in forming civic cultures and, after a period of time, \( \mu_{1s} > \mu_{2s} = 0 \). Now consider what would happen if the two communities merged and decision-making over taxes and public goods across the two communities were unified as a result. To study the merged entity, it is natural to assume that \( \mu_s = \varphi \mu_{1s} \) where \( \varphi \in [0, 1] \) is the fraction of citizens in the population who are from community 1. The consequences of the merger for institutions is less clear-cut. Suppose that \( \sigma = \beta \sigma_1 + (1 - \beta) \sigma_2 \) where \( \beta = 1 \) is the optimistic assumption that most cohesive institutions are adopted and \( \beta = 0 \) is the opposite case.

The merger creates the possibility of positive and negative externalities between the communities with the subsequent evolution of civic culture will depending on the sign of \( \Delta (\varphi \mu_{1s}, \beta \sigma_1 + (1 - \beta) \sigma_2) \) which can be positive or negative. A successful merger is a case where

\[
\Delta (\varphi \mu_{1s}, \beta \sigma_1 + (1 - \beta) \sigma_2) > 0,
\]

since the merged community now has an incentive to build a strong civic culture. In this case, the successful community 1 creates a positive externality for community 2. This is more likely if \( \beta \) is close to one. Thus the creation of central state from merging communities could lead to a take-off in the region where a civic culture has failed to emerge because the civic minded citizens from community 1 encourage the government to provide public goods. In an unsuccessful merger

\[
0 > \Delta (\varphi \mu_{1s}, \beta \sigma_1 + (1 - \beta) \sigma_2).
\]

This is case where a negative externality is inflicted on community 1 and a previously effective civic culture is now destroyed.

These considerations illustrate the risk associated with merging civic cultures from different countries to form nation states. And there is ample evidence that artificial mergers of ethnic groups into contrived nation states has more often than not result in lower levels of public good provision as argued, for example, by Alesina et al (1999) and study in terms of pre-colonial institutions by Papaioannou and Michalopoulos (2013).

In future work, it would be interesting to investigate how decisions about institutional structures and responsibilities of government at different tiers are affected by the considerations raised here. We have considered only
“all-or-nothing” centralization. But there are options to retain local responsibilities for some kinds of taxation and public goods as an insurance device, i.e. in order to preserve strong civic cultures at the local level. An interesting extension of the framework would be to consider the coexistence of local and national civic cultures. Reciprocity which encourages voluntary compliance may endogenously be different between communities and nations. And this will affect the assignment of policy responsibilities for spending and taxation between the central states and local communities.

The analysis in this section is also relevant to thinking about the impact of migration on civic culture. Migrants who come from a country or region where \( \mu \) is high or low could have an impact on the direction of the civic culture of the recipient country even if institutions do not change. However, this will be most likely when a country is around a critical value of \( \mu \) as in the third case of Proposition 2.

**Coercion and Civic Culture** We now consider what happens if investments in coercion are allowed along the lines considered in Besley and Persson (2009, 2011). This will allow us to assess whether investments in enforcement capacity by increasing the cost of non-compliance with taxation is a complement with or a substitute for a strong civic culture.

To study this, suppose that \( \mu \) is fixed and consider the possibility of investment to increase \( \tau \) at a cost of \( F(\tau_s - \delta \tau_{s-1}) \) where \( F(\cdot) \) is increasing and convex and depreciation is at rate \( \delta \). In considering the investment decision, define the marginal cost of public funds to the elite from investing as follows:

\[
\lambda(\alpha, \sigma, \mu) = \begin{cases} 
\alpha & \text{if } \alpha \geq \frac{\theta(\sigma) \xi_L(\mu, \sigma)}{\xi_H(\mu)} \\
\theta(\sigma) & \text{otherwise}, \end{cases} \quad (20)
\]

for a given realization of \( \alpha \). This is the cost in either forgone transfers or public goods if the government invests more in fiscal capacity. The composition of public spending determines how costly investment in coercion will be in period \( s \).

The payoff of the elite in period \( s \) if a stock, \( \tau_{s-1} \), of coercive power is inherited in period \( s \) is given by:

\[
\varpi(\tau, \sigma, \mu; \tau_{s-1}) = w + \tau V(\alpha, \sigma, \mu) - \lambda(\alpha, \sigma, \mu) F(\tau - \tau_{s-1}).
\]

This is the utility from private goods and transfers less the cost of investment valued at the marginal cost of public funds. Now the value function
associated with choosing fiscal capacity, for fixed $\tau$, is:

$$\Omega (\alpha, \sigma, \mu, \tau) = \arg \max_{r \geq 0} \left\{ \varpi (r, \sigma, \mu; \tau) + \int \Omega (\alpha, \sigma, \mu, r) \, dH (\alpha) \right\}$$

Given a value of $\mu$, this is a stationary problem since the value of public goods is iid over time.\(^{27}\)

Associated with this problem is an optimal level of coercive capital, $\tilde{\tau} (\alpha, \mu, \tau)$, defined by following Euler equation:

$$E \left( \alpha : \alpha \geq \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \xi_H (\mu) + H \left( \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \theta (\sigma) \xi_L (\mu, \sigma)$$

$$= \lambda (\alpha, \sigma, \mu) F' (\tilde{\tau} (\alpha, \mu, \tau) - \delta \tau) \tag{21}$$

assuming an interior solution.\(^{28}\) Equation (21) uses the convenient that the value of coercive power is linear in $A$ and depends on $\xi_H (\mu)$ and $\xi_L (\mu, \sigma)$. The left-hand-side of (21) is therefore independent of $\tau$. This yields a very convenient form for optimal coercive capacity as:

$$\tilde{\tau} (\alpha, \mu, \tau) = \delta \tau + D (\alpha, \sigma, \mu)$$

where $D (\alpha, \sigma, \mu) = F'^{-1} \left( \alpha : \lambda (\alpha, \sigma, \mu) \xi_H (\mu) + H \left( \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \theta (\sigma) \xi_L (\mu, \sigma) \right).$

To investigate how $\mu$ affects the incentive to invest in $\tau$, note that left hand side of (21), differentiate (21) with respect to $\mu$ to yield:

$$E \left( \alpha : \alpha \geq \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \frac{\partial \xi_H (\mu)}{\partial \mu} + H \left( \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \frac{\partial \xi_L (\mu, \sigma)}{\partial \mu}. \tag{22}$$

The first term in (22) is positive while the second term is negative as long as $\frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \in (1, A).$\(^{29}\) Thus for low $\mu$, a stronger civic culture reduces the

---

\(^{27}\)The case where both $\mu$ and $\tau$ vary over time is left for future work.

\(^{28}\)This is guaranteed as long as there exists $\{\tau, \bar{\tau}\}$ such that:

$$E \left( \alpha : \alpha \geq \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \xi_H (\mu) + H \left( \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)} \right) \theta (\sigma) \xi_L (\mu, \sigma) = \theta (\sigma) F' (\bar{\tau} - \delta \bar{\tau}) = AF' (\bar{\tau} - \delta \bar{\tau}) > 0.$$

\(^{29}\)Note that there can also be jump in the investment cost but only if

$$\alpha = \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{\xi_H (\mu)}$$
marginal benefit from investing in coercion while for high $\mu$, it increases it. This finding makes intuitive sense. When $\mu$ is low, then tax revenues are low and the benefits from investing in coercion are weak. But when $\mu$ is high, tax revenues are also high creating a higher marginal return to investing in public goods.

This suggests that societies that have developed stronger civic-cultures will invest most in formal investments that increase tax compliance. However, the opposite is true when $\mu$ is low. Such countries may perceive, on the basis of local returns to investing, that reforming bureaucracies towards more efficient tax collection is fruitless given that the returns are low. This is an equilibrium for the elites in control who invest period-by-period. However, there could be a role for a big push investment although this will not make sense unless it is accompanied by complementary reforms in institutions and the delivery of public goods.

**Natural Resources and/or Aid-dependence** The model focuses on tax revenues from incomes. But a feature of many low-income countries and weakly institutionalized polities is high dependence on natural resource royalties and aid flows to fund the government. To consider the implications of this, let non-tax revenues per capita be denoted by $R$.

The main effect of adding such revenues is that the critical ratio of $\alpha$ which determines whether a polity is in a public goods or transfers regime is now modified, following the logic of Proposition 1, to:

$$\alpha > \theta (\sigma) \left[ \frac{R + \tau \xi_L (\mu, \sigma)}{R + \tau \xi_H (\mu)} \right].$$

The elite can spend $R$ on transfers or public goods independently of $\mu$ so tax revenues on income are comparatively less important as are the effects of $\mu$ identified in Proposition 1. The right hand side of (23) is increasing in $R$. Hence, all else equal, a higher value of $R$ increases the probability that the state spends on transfers. The probability of transfer spending is now given by:

$$\rho (\mu, \sigma, R) = H \left( \theta (\sigma) \left[ \frac{R + \tau \xi_L (\mu, \sigma)}{R + \tau \xi_H (\mu)} \right] \right)$$

which is increasing in $R$. This affects the fitness advantage of the civic-minded citizens which we now write as $\Delta (\mu, \sigma, R)$ and is decreasing in $R$. so we can safely ignore this when considering a marginal change in $\mu$. 

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By making transfer spending more likely, this lowers the relative payoff of civic-minded citizens.

Now consider two different levels of non-tax revenues from natural resources $R \in \{R_L, R_H\}$ where $R_H > R_L$. This could be a comparison across countries or the same country before and after a resource discovery. Suppose also that for $\mu_0 \in [0, 1]$ that:

$$\bar{\Delta} (\mu_0, \sigma, R_L) > 0 > \bar{\Delta} (\mu_0, \sigma, R_H).$$

We now have the following result which parallels Propositions 3, 4 and 5:

**Proposition 6** Suppose that (24) holds at $\mu_0$, then a polity with $R_L$ converges to $\mu = 1$ and a polity with $R_H$ converges to $\mu = 0$.

The situation for strongly resource dependent countries is particularly stark where $\rho (\mu, \sigma, R) = 0$. Such countries will not develop a civic-culture in our framework. If $R$ eventually falls, e.g. as resources run dry, then it may be difficult to build civic cultures given a starting point of low $\mu$. Thus without reforming institutions, countries may face a persistent effect on civic-culture from having had natural resources in the past.

**Reciprocity Between Taxpayer Citizens** The focus has been on reciprocity between citizens and government. But the effects of reciprocity are even stronger if we also consider reciprocal compliance between citizens. This can be captured simply by supposing that preferences are modified to

$$\alpha G + w \left[ 1 - (1 - n) \right] \left[ t - \lambda \omega \left[ (G - eB) - \beta N \right] - \tau C (n) \right] + b.$$

where $N$ is the aggregate level of non-compliance and $\beta$ represent the externalities that arise between tax payers if they care about aggregate compliance. $^\text{30}$ We assume that externalities are bounded so that $\beta \Lambda < 1$. Compliance decisions will now form a Nash equilibrium between citizens as well as depending on how government allocates resources.

Solving for the Nash equilibrium using the formulation in (25), aggregate non-compliance will be

$$N = \frac{t - \mu \Lambda (G - eB)}{\tau [1 - \mu \Lambda \beta]}.$$  

$^\text{30}$This formulation assumes that this external only affects the civic-minded citizens. However, in principle, all citizens could care about the compliance of their fellow citizens.
assuming an interior solution for individual compliance. The term $[1 - \mu \Lambda \beta]$ is the “multiplier” due to citizens caring about each others’ compliance decisions. Aggregate non-compliance will be more sensitive to $(G - eB)$ for $\mu > 0$ than in the model without non-compliance externalities. The effects of reciprocity between citizens and government will therefore be stronger.

At an interior solution individual non-compliance is

$$ \hat{n} = \frac{1}{\tau} \left[ t - \lambda \omega \left[ (G - eB) - \beta \left( \frac{t - \mu \Lambda (G - eB)}{\tau [1 - \mu \Lambda \beta]} \right) \right] \right] $$

Compliance is increasing in $G - eB$ as in the core model is robust to adding this additional element of reciprocity. That said, there is now a direct dependence of $\mu$ on compliance working through the compliance externality. So there is an additional source of potential complementarities between having more civic-minded citizens and tax revenues generated depending on whether or not government provides transfers or public goods.

**Economic Development** The model implies that changes in the level of income, represented by $w$, have an impact on the emergence of a civic culture. This is because higher wages imply larger tax revenues and hence magnify the importance of the government spending decision in the eyes of the civic-minded citizens.\textsuperscript{31} Formally, $\Lambda (G - eB)$ is increasing $w$ all else equal which magnifies the compliance effect. Then how government behaves is more salient to civic-minded citizens. Higher wages will also, from (13) and (12), increase the tax rate when there is spending on public goods while decreasing it when there is spending on transfers.

The upshot of this is that public spending will rise more than proportionally with income in an economy with more civic-minded citizens due to greater tax compliance for a given tax rate. This is consistent with Wagner’s Law (Wagner, 1883) that the size of government grows as a share of national income as a society gets richer. To see this formally, note that

$$ \frac{\partial \log (\tau \xi_H (\mu))}{\partial w} = \frac{1}{1 - \left[ \frac{1 - \epsilon}{2} w \Lambda \mu \right] (1 + \mu \Lambda \xi_H (\mu))} > 1 $$

\textsuperscript{31}This is the flip side of the argument that we made about natural resources since it is the productive side of the economy that is being taxed.
where the term in the denominator is like a multiplier due to increased compliance as income rises. Here effects of wages and civic culture interact to magnify the effect on the size of the state.

However, this effect holds only in economies where a government is spending tax receipts on funding public goods. If spending is on transfers, then there will be a less than proportional increase in revenue with income. And there are countries where economic growth has not led to appreciable increases in tax revenues. Suffice it to say, therefore, that there is no automatic tendency for the tax share to increase with national income. We would also expect this relationship to depend on institutions since economies with strong institutions will enhance state capacity and will encourage citizens to form a stronger civic culture. This will further reinforce the growth of government as a share on national income over time.

This discussion also shows why there is no automatic link between economic development and the emergence of a civic culture. Indeed, economic development, as higher wages, could even flip a society into a situation where a civic culture starts to break down by making the use of transfers more salient to civic-minded citizens. This might be the case, for example, for a society has a civic culture which is close to the tipping point in Proposition 2. Then an increase in income will also affect the negative compliance utility when the state is used to make transfer. Use of the state for transfers can actually be more damaging in prosperous economies since tax revenues are larger.

The Basis of Cultural Transmission It is psychological rather than material payoffs that drive cultural transmission in the approach taken here. For this to work, there need to be intrapersonal comparisons so that citizens are able to appreciate the psychic gains and losses associated with being a different type. This is in contrast to a more standard economic view where the only observable signal of what it is like to be one the types in the model is the material life styles that each type enjoys. Material payoffs are given by

$$
\hat{Y}(x) = 1 - t \left( 1 - \hat{f} \left( \frac{t - x}{\tau} \right) \right) - \tau C \left( \hat{f} \left( \frac{t - x}{\tau} \right) \right)
$$

where $x = 0$ for materialists and $x = \Lambda [G - eB]$ for civic-minded citizens. A key observation is that $\hat{Y}(x)$ is maximized at $x = 0$. This makes sense since the only benefits from choosing higher or lower tax compliance when a
citizen is civic-minded is that she gets a higher non-material payoff.

Now the expected material payoff difference of the civic-minded and materialist citizens will be

\[ \Delta (\mu, \sigma) = \rho (\mu, \sigma) \hat{Y} (\Lambda \tau \xi_H (\mu)) + (1 - \rho (\mu, \sigma)) \hat{Y} (-e \theta (\sigma) \Lambda \tau \xi_L (\mu, \sigma)) - \hat{Y} (0) < 0. \]

Hence having citizens who care exclusively about their material payoffs cannot in this framework explain why a civic culture emerges.

This highlights an essential feature of societies that build civic culture; that this has to come from some kind of non-material “intrinsic motivation”. One could, however, be open-minded about where this comes from. For example, an alternative foundation for a psychological effect could emerge from the approach of Benabou and Tirole (2006) who emphasized the importance of reputation as a motive for pro-social actions. However, they assume that the action that expresses “virtue” is fixed. In contrast, we have supposed that what is viewed as the pro-social action will depend on a reciprocal action of the state, i.e. whether or not it is providing public goods.

Another extension of the model for future work is looking at the role of the education system as a source of civic values. Indeed, there is a body of evidence that educated individuals are more likely to engage in civic activities such as volunteering (see, for example, Dee, 2004, and Milligan et al, 2004). Governments could then choose to spend resources on investing in civic education as a form of state capacity with a view to changing the preferences of its citizens. This could have a direct impact on \( \mu_a \) in the model.

7 Concluding Comments

This paper has explored the interplay between civic culture, effective governance and state capacity. The proposed framework captures an argument that has been put forward by historians and political scientists, that a driving
force being changes in society comes from changing civic culture which encourages greater voluntary compliance. They key idea developed in the paper is that intrinsic reciprocity between the state and its citizens evolves based on the relative payoffs of materialists and civic-minded citizens. We supposed that higher expected payoffs to civic-minded citizens relative to materialists will lead to an expansion in the group of such citizens over time. This also provides a link to the literature on the nature of the social contract, with citizens complying with the demands of government in exchange for provision of collective goods.

The framework has focused on two important complementarities which affect the dynamic path that a polity takes. First, a society with a strong (weak) civic culture encourages provision of public goods which increases (decreases) the payoff of civic-minded citizens relative to materialists. Thus weak or strong civic-cultures are mutually reinforcing. This feature of the model can generate multiple steady states leading to hysteresis with eventual outcome depending on the initial conditions. The second complementarity comes from cohesive institutions constraining government and therefore favoring civic-minded citizens over materialists. Governments who lack constraints will tend to disappoint their civic-minded citizens leading to an erosion in civic culture over time when relative psychological payoffs matter to the replication process. In similar vein, we have also shown how making elites more accountable to their citizens can foster the emergence of a stronger civic culture.

The framework is very simple leaving lots of potential avenues for future development.

The focus of the paper has been on the agency problem between elites and citizens ignoring the cleavages between different groups with varying priorities for the state. We have shown how decentralization of some aspects of the state may help to cope with such cleavages but there is a risk that a common civic-culture may fail to emerge. And there are many examples where states are poorly held to account because of weak sense of nationhood and hence a weaker social contract between the state and citizens. The implications of such heterogeneity and polarization needs much more attention than it has been given here.

An interesting extension would be to consider the evolution of elite cultures. When we considered selection of elites, we supposed that the elite were exogenously partitioned into groups with high and low public spending priorities. Groups with lower spending priorities will on average benefit more
from transfers. Hence, there could be an evolution of the elite away from caring about public goods and with a greater focus on developing a “predatory” culture. The advantage of a system in which the elite are subject to elections is that they have an incentive to develop norms and values which are more in tune with serving non-elite citizens and less towards extracting transfers. Their fitness advantage would lie potentially in the electoral success for such elites. Where power-holding has other independent benefits such as prestige and ego rents, then this motivation could be to create a path towards more a leadership in tune with what non-elite citizens desire.

The paper has also only considered a single dimension of state capacity. But voluntary compliance is also important in building legal capacity which relies on compliance with laws and regulations. Extending the ideas in this paper to such domains would be interesting.

The focus has been on an outcomes based approach, i.e. it is what government does with its state capacity that is the driving force. However, it would also be interesting to think of the direct role of “due process” in generating compliance and civic culture. For example, the laws created by rulers who have emerged from an open contest for power may be deemed to be more legitimate than those who are hereditary. Thus, the process by which government policy is made may have a bearing on how state capacity is generated.

Finally, there is the possibility of linking the ideas in this paper to the sustainability of institutional reform building on the ideas in Besley and Persson (2018). The complementarity between institutions and civic culture means that institutional reforms will be more long-lasting and robust when a stronger civic culture emerges to enhance their benefits.
References


A Proofs

Proof of Lemma 1: Let
\[ T_H = \frac{(1 - e) w}{\tau} \left[ \tau + \mu \Lambda T_H \right]^2 \]
and
\[ T_L = \frac{(1 - e) w}{\tau} \left[ 1 - \theta (\sigma) e \mu \Lambda T_L \right]^2 \]
Now let \( \tau Z_H = T_H \) and \( \tau Z_L = T_L \). Then we have that
\[ Z_H = \frac{(1 - e) w}{4} \left[ 1 + \mu \Lambda Z_H \right]^2 \]
and
\[ Z_L = \frac{(1 - e) w}{4} \left[ 1 - \theta (\sigma) e \mu \Lambda Z_L \right]^2 \]
This is a common quadratic with form
\[ \hat{X} (A, b) = A \left[ 1 + b \hat{X} (A, b) \right]^2. \]
Choosing the lowest root, we have that:
\[ \frac{T_H}{\tau} = \hat{X} \left( \frac{(1 - e) w}{4}, \mu \Lambda \right) \]
\[ = - \frac{2}{(1 - e) w (\Lambda \mu)^2} \left[ \sqrt{1 - (1 - e) w \Lambda \mu} + \frac{(1 - e) w \Lambda \mu}{2} - 1 \right] = \xi_H (\mu) \]
\[ \frac{T_L}{\tau} = \hat{X} \left( \frac{(1 - e) w}{4}, -\mu \Lambda e \theta (\sigma) \right) \]
\[ = \frac{2}{(1 - e) w (\theta (\sigma) e \Lambda \mu)^2} \left[ -\sqrt{1 + \theta (\sigma) e (1 - e) w \Lambda \mu} + 1 + \frac{\theta (\sigma) e (1 - e) w \Lambda \mu}{2} \right] = \xi_L (\mu, \sigma). \]
It is straightforward to verify that \( \xi_H (\mu) \) is increasing in \( \mu \) and \( \xi_L (\mu, \sigma) \) is increasing in \( \sigma \) and decreasing in \( \mu \). Moreover:
\[ \frac{\partial \theta (\sigma) \xi_L (\mu, \sigma)}{\partial \sigma} = \frac{\theta (\sigma) \xi_L (\mu, \sigma)}{1 + \frac{(1 - e) w}{2} \left[ 1 - \mu \Lambda e \theta (\sigma) \xi_L (\mu, \sigma) \right] e \theta (\sigma) \mu \Lambda} < 0. \]
Proof of Proposition 1: Define

\[ T = \frac{(1-e)w}{4\tau} \left[ \tau + \mu \Lambda (G-eB) \right]^2 \]

\[ \hat{B}(G) = \left[ T \left( t, \lambda \left[ G-e\hat{B}(G) \right], \mu, \tau \right) - G \right] \theta(\sigma) \]

and note that

\[ \hat{B}'(G) = \frac{[\Gamma (G-eB) - 1] \theta(\sigma)}{[1 + \theta(\sigma) e\Gamma (G-eB)]} \]

where \( \Gamma (G-eB) = \left[ \frac{1-e}{2\tau} w\Lambda \mu \right] (\tau + \mu \Lambda [G-eB]) > 0 \). Moreover,

\[ 1 - e\hat{B}'(G) = \frac{1 - e\theta(\sigma)}{[1 + \theta(\sigma) e\Gamma (G-eB)]}. \]

Then, using this, note that:

\[ \hat{B}''(G) = \theta(\sigma) \frac{[1 + \theta(\sigma) e]^2}{[1 + \theta(\sigma) e\Gamma (G-eB)]^3} \Gamma' (G-eB) > 0. \]

Substituting (11) into (10), the choice of \( G \) maximizes the following convex function:

\[ \alpha G + \hat{B}(G) \]

and hence yields a corner solution at either \( G = 0 \) or \( G = T_H (\mu, \tau) \). Hence we can now compare \( \alpha T_H (\mu, \tau) \) and \( \theta(\sigma) T_L (\mu, \tau, \sigma) \) which yields the three cases in the Proposition.

Proof of Lemma 2: Begin from (16) and (14). Now first consider the effect of a change in \( \mu \). Note that \( \rho(\sigma, \mu) \) is decreasing in \( \mu \) and

\[ \delta_L (\mu, \sigma) = v \left( \frac{t_L (\mu, \tau, \sigma)}{\tau} \right) - v \left( \frac{t_L (\mu, \tau, \sigma)}{\tau} + \Lambda e\theta(\sigma) \xi_L (\mu, \sigma) \right) < 0 \]

and

\[ \delta_H (\mu) = v \left( \frac{t_H (\mu, \tau)}{\tau} \right) - v \left( \frac{t_H (\mu, \tau)}{\tau} - \Lambda \xi_H (\mu) \right) > 0 \]

since \( v(\cdot) \) is an increasing function. Then note that

\[ \frac{\partial \delta_H (\mu)}{\partial \mu} = \tau \left[ \left( 1 - \frac{t_H (\mu, \tau)}{\tau} \right) - \left( 1 - \frac{t_H (\mu, \tau)}{\tau} - \Lambda \xi_H (\mu) \right) \right] \frac{\partial t_H (\mu, \tau)}{\partial \mu} \]

\[ + \tau \left( 1 - \frac{t_H (\mu, \tau)}{\tau} - \Lambda \xi_H (\mu) \right) \frac{\partial \xi_H (\mu)}{\partial \mu} \]
which are both positive. Together these imply that \( \Delta (\mu, \sigma) \) is increasing in \( \mu \).

How about dependence on \( \sigma \)? First note that \( \rho (\sigma, \mu) \) is decreasing in \( \sigma \). Then

\[
\Delta_\sigma (\mu, \sigma) = \rho_\sigma (\sigma, \mu) [\delta_L (\mu, \sigma) - \delta_H (\mu)] +
- \rho (\sigma, \mu) \frac{\partial \delta_L (\mu, \sigma)}{\partial \sigma} > 0,
\]

since

\[
\frac{\partial \delta_L (\mu, \sigma)}{\partial \sigma} = \tau \left[ \left( 1 - \frac{t_L (\mu, \tau, \sigma)}{\tau} \right) - \left( 1 - \frac{t_L (\mu, \tau, \sigma)}{\tau} + \Lambda e^{\theta (\sigma)} \xi_L (\mu, \sigma) \right) \right] \frac{\partial t_L (\mu, \tau, \sigma)}{\partial \sigma} - \tau \left( 1 - \frac{t_L (\mu, \tau, \sigma)}{\tau} + \Lambda e^{\theta (\sigma)} \xi_L (\mu, \sigma) \right) \frac{\partial \xi_L (\mu, \sigma)}{\partial \sigma},
\]

which is negative since \( \frac{\partial \xi_L (\mu, \sigma)}{\partial \sigma} > 0 \) and \( \frac{\partial \xi_L (\mu, \sigma)}{\partial \sigma} > 0 \) from (13).

**Proof of Proposition 2:** To prove this, we start from

\[
\mu_{s+1} - \mu_s = (1 - \mu_s) \varsigma_{VM} - \mu_s \varsigma_{MV}.
\]

Note that if \( \Delta (\mu, \sigma) > 0 \) for all \( \mu \in [0, 1] \) then \( \varsigma_{VM} > 0 \) and \( \varsigma_{MV} \leq 0 \) and (26) is positive so \( \mu \) converges to one globally. The opposite is true if \( \Delta (\mu, \sigma) < 0 \) for all \( \mu \in [0, 1] \). Now consider the case where there exists \( \hat{\mu} (\sigma) \) such that \( \Delta (\hat{\mu} (\sigma), \sigma) = 0 \). Then from Lemma 1 since \( \Delta (\mu, \sigma) \) is globally increasing for \( \mu \in [0, 1] \), then at \( \Delta (\mu (\sigma), \sigma) = 0 \), we must have \( \mu_{s+1} - \mu_s \geq 0 \) for all \( 1 \geq \mu \geq \hat{\mu} \), while \( \mu_{s+1} - \mu_s < 0 \) for all \( 0 \leq \mu < \hat{\mu} \). The interior steady state is therefore unstable. Moreover since \( \Delta (\mu, \sigma) \) is globally increasing implies that if \( \Delta (1, \sigma) \geq 0 \geq \Delta (0, \sigma) \). Hence

\[
\mu_{s+1} - 1 + \nu = (1 - \nu) \varsigma_{VM} - \nu \varsigma_{MV} > 0
\]
\[
\mu_{t+1} - \nu = \nu \varsigma_{VM} - (1 - \nu) \varsigma_{MV} < 0
\]

for small enough \( \nu > 0 \). This implies that the steady states at \( \mu = 0 \) and \( \mu = 1 \) are stable.
Proofs of Propositions 3, 4, 5, & 6 The argument in cases is essentially identical for all four Propositions. Hence, we give the proof only for Proposition 3. Since (17) holds, then from (15), then for $\mu = \mu_0$, if $\sigma = \sigma_H$, then $\mu_1 > \mu_0$ and since $\Delta$ is increasing in $\mu$, then $\mu_{s+1} > \mu_s$ for all $s > 1$. A similar argument holds in reverse for $\mu = \mu_0$ and $\sigma = \sigma_L$ which implies that $\mu_{s+1} - \mu_s < 1$ for all $s > 0$. ■
B Conditions for an interior solution

For compliance to be at an interior solution, we require that

\[ 0 < \frac{t - \Lambda \mu (G - eB)}{\tau} < 1 \]  

for all \( \mu \in [0, 1] \). For the tax rate to be interior, we need

\[ 0 < \frac{1}{2} [\tau + \mu \Lambda (G - eB)] < 1. \]  

Note that for (27), we require that

\[ t \left[ \frac{1 - \Lambda w}{\tau} \right] > 0 \]  

and

\[ t \left[ \frac{1 + \Lambda we\mu}{\tau} \right] < 1. \]  

The first condition holds for all \( t \in [0, 1] \) if \( \Lambda w < 1 \) which is implied by (4).

For the second condition, we require that this holds when

\[ t = \frac{1}{2} [\tau - \mu e\Lambda wt]. \]

Substituting this into (30) yields

\[ \frac{\tau}{2 \left[ 1 + \frac{\Lambda we\mu}{2} \right]} \left[ \frac{1 + \Lambda we\mu}{\tau} \right] < 1. \]

So finally we need to check that

\[ \frac{\tau}{2 \left[ 1 - \frac{\Lambda w}{2} \right]} < 1 \]

or \( 2 - \tau > \Lambda w \) which is also implied by (4).

C Numerical illustration

Let \( \frac{(1-e)w}{4} = 1 \) and \( \Lambda = 0.2 \) and plot for \( \mu \in [0, 1] \). Let \( b = \Lambda \mu \in [0, 0.2] \) for the case of spending on public goods and \( b \in [0, 0.1] \) for the case spending on transfers, i.e. \( e \theta (\sigma) = 0.5 \).

\[ \xi_H (b) = \frac{1}{2b^2} \left( -\sqrt{1 - 4b} - 2b + 1 \right) \]
\[ \xi_L (b) = \frac{1}{2b^2} \left[ -\sqrt{1 + 4b + 1 + 2b} \right] \]

\[ \frac{\xi_L (b)}{\xi_H (b)} = \frac{(-\sqrt{2b + 1} + b + 1)}{(-\sqrt{1 - 4b - 2b + 1})} \]
Taxes and share of income tax over time

Countries in time series are: Argentina, Australia, Brazil, Canada, Chile, Colombia, Denmark, Finland, Ireland, Japan, Mexico, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and the United States.

Figure 1:
Figure 2
<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low confidence in government</td>
<td>-</td>
<td>-0.172***</td>
<td>-</td>
</tr>
<tr>
<td>Low trust in people</td>
<td>-</td>
<td>-0.006</td>
<td>-</td>
</tr>
<tr>
<td>Male</td>
<td>-0.198***</td>
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</tr>
<tr>
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<td>0.216***</td>
<td>0.218***</td>
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<tr>
<td>Age 50+</td>
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<td>0.549***</td>
<td>0.556***</td>
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<tr>
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<td>0.073***</td>
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</tr>
<tr>
<td>Education: Upper</td>
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<td>0.133***</td>
<td>0.128***</td>
</tr>
<tr>
<td>Income 2</td>
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<tr>
<td>Income 3</td>
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<td>-0.014</td>
<td>-0.017</td>
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<tr>
<td>Income 4</td>
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<td>-0.089*</td>
<td>-0.091***</td>
</tr>
<tr>
<td>Income 5</td>
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<td>-0.047</td>
<td>-0.051***</td>
</tr>
<tr>
<td>Income 6</td>
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<td>-0.147***</td>
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<tr>
<td>Income 7</td>
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<td>-0.166***</td>
<td>-0.169***</td>
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<tr>
<td>Income 8</td>
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<td>-0.183***</td>
<td>-0.186***</td>
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<tr>
<td>Income 9</td>
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<td>-0.212***</td>
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<tr>
<td>Income 10</td>
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<td>-0.303***</td>
<td>-0.301***</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>248909</td>
<td>248909</td>
<td>248909</td>
</tr>
</tbody>
</table>

**Table 1**

Notes: All specifications include wave and country dummies with standard errors clustered at the country level. Standard errors adjusted for clustering at the country level: * significant at 10%, ** significant at 5%, *** significant at 1%. For income: Here is a scale of incomes. We would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions. For confidence: I am going to name a number of organizations. 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? Use answers on “government in capital”. Coded 1 if answer is “Not very much” or “None at all”. Generalized Trust: Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people? Coded 1 if “You cannot be too careful”