State Capacity, Conflict and Development*

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Abstract

We report on an on-going project, which asks a number of questions relevant to the study of state capacity. What are the main economic and political determinants of the state's capacity to raise revenue and support private markets? How do risks of violent conflict affect the incentives to invest in state building? Does it matter whether conflicts are external or internal to the state? When are large states associated with higher income levels and growth rates than small states? What relations should we expect between resource rents, civil wars and economic development? The paper is organized into three main sections: 1.The origins of state capacity, 2.The genius of taxation, and 3.The strategy of conflict. Each of these begins with a specific motivation. A simple model is formulated to analyze the determinants of state capacity in the first section, and modified to address the new issues that arise in subsequent sections. The theoretical results are summarized in six propositions. We discuss the implications of the theory, comment on its relation to existing literature, and explore a few of its empirical predictions

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Measures and analyses of economic development, tend to focus on expansion of the private economy. But the typical development path also entails significant expansion of the state. Just as private physical and human capital accumulation is a key engine of private sector growth, the buildup of public capital is an engine of state expansion. But a good part of investments in state infrastructure concerns the ability to implement a wider range of policies, an ability we will refer to as *state capacity*. Nowadays, this concept is commonplace in other social sciences and in the wider development community. Coined by historical sociologists such as Charles Tilly, state capacity originally referred to the power of raising revenue. In the process of development, the state also acquires many other capacities, however, such as the power to enforce contracts and to regulate.

The paper reports on an on-going project, which asks a number of questions relevant to the study of state capacity. What are the main economic and political determinants of the state's capacity to raise revenue and support markets? How do risks of violent conflict affect the incentives to invest in state building? Does it matter whether conflicts are external or internal to the state? Are large states associated with lower income levels and growth rates than small states? What relations should we expect between resource rents, civil wars and economic development? These questions are now occupying the attention of many scholars who try to understand patterns of development across time and place. We will set out a structure for approaching the questions and give a flavor of how they fit together.

The paper is organized into three main sections: 1. The origins of state capacity, 2. The genius of taxation, and 3. The strategy of conflict. Each of these has a similar structure. It begins with a specific motivation. A simple model is formulated to analyze the determinants of state capacity in the first section, and modified to address the new issues that arise in subsequent sections. The theoretical results in each section are summarized in two key propositions. We discuss the implications of the theory, comment on its relation to existing literature, and explore a few of its empirical predictions. A short concluding section takes stock of the findings and suggests topics for further research.

1 The origins of state capacity

Political and economic historians view the state's capacity to raise revenue as an important phenomenon in itself, a major explanation for military success and, more generally, a key to the successful development of nation states (see e.g., Tilly, 1985, Levi, 1988, or Brewer, 1989). Historically, the tax systems in countries such as the US, the UK, and Sweden, have indeed been reformed and expanded in connection with actual or latent external conflicts.

By contrast, economists generally pay little attention to state capacity. Researchers in public finance, political economics, or development rarely assume that a government, which finds a certain tax rate at a certain tax base optimal and incentive-compatible, is constrained by fiscal infrastructure. Similarly, economic theory typically does not assume that the state is constrained by a lack of legal infrastructure, when it comes to enforcing private contracts or, more generally, support private markets.

Presupposing sufficient capacities to tax and support markets does not rhyme well with the experience of many states, neither in history nor in the developing world of today. Moreover, international data suggest that the ability to raise revenue from advanced tax systems is strongly positively related to the ability of supporting private markets, as well as to the level of development. Figure 1 illustrates the positive correlations in contemporary data between the share of GDP raised by an income tax (vertical axis), the ratio of private credit to GDP (horizontal axis), and income (blue dots above, and red dots below, median income).

In Besley and Persson (2008a), we build a theory, where tax and market-supporting policies are constrained by the state's fiscal and legal capacity, and where the expansion of these capacities are modeled as forward-looking investments under uncertainty.[1] The central result is a basic complementarity between fiscal and legal capacity: the two forms of state capacity therefore become correlated with each other and with income, as they are in Figure 1. But we should not expect any simple causal relations between state capacities and income – these are all jointly determined by a common set of economic and political factors.

Drawing on Besley and Persson (2008a), this section illustrates the main theoretical results in simplified form, discusses the implications of the theory,

[1] Related papers include Acemoglu (2005), where governments can increase their future tax revnues by spending on public goods, and Acemoglu, Ticchi and Vindigni (2007) who study the buldup of government bureaucracies.

and presents some empirical evidence in line with the predictions.

1.1 Basic model setup

There are two groups. Each group has the same fraction – one half – of the population, which is constant over time and normalized to unity. Two alternative time structures give the same results. In one, time is infinite and one generation is alive in each period, making investment decisions based on a warm-glow motive. In the other, which we will stick to here, there are only two time periods, $s = 1, 2$, and the world ends after period 2.

At the beginning of period 2, the group that held power at the end of period 1 is the incumbent government, denoted by I_1. The other group is the opposition denoted by O_1. Power can be peacefully transferred to the opposition, which happens with exogenous probability given by parameter γ. As a result, whoever wins becomes the new incumbent, I_2, and whoever loses becomes the new opposition, O_2. At the end of period s, the current incumbent I_s sets a tax on the income of each group t^{J_s}, $J_s = I_s, O_s$, chooses a level of legal support for each group p^{J_s}, and spends on general public goods G_s. At the end of period 1, incumbent I_1 also makes investments in next period's state capacity (see below). In addition to tax income, the government(s) earns natural resource rents R_s. These are stochastic and drawn from a known distribution on $[R_L, R_H]$. None of the resource rents accrue directly to the private sector. They will remain unimportant until Section 3.

The precise timing of these different events are spelled out below.

Individual incomes and utility In period s individuals consume and produce, with members of group J_s earning a market income:

$$w^{J_s} = w\left(p^{J_s}\right) \ .$$

The variable p^{J_s} captures how well the state supports (financial) markets and w is thus an increasing function. Besley and Persson (2008a) derive an analogous formulation from a microfounded model with less than perfect enforcement (by the state) of collateral in (private) credit-market contracts.

Individual utility in period s is linear

$$\alpha_s G_s + c^{J_s} = \alpha_s G_s + (1 - t^{J_s}) w\left(p^{J_s}\right) \ , \tag{1}$$

where c^{J_s} is private consumption, and G_s is the level of public goods with parameter α_s reflecting the value of public goods. A specific interpretation is that G_s denotes spending on external defense and α_s the risk of external conflict. We assume that α_s is distributed on $[\alpha_L, \alpha_H]$ with c.d.f. $H(\alpha)$ and density $h(\alpha)$. The equality in (1) arises since individuals do not save between periods 1 and 2.

Constraints on government Policies are constrained by state capacity. The levels of fiscal capacity τ_s, and legal capacity π_s are inherited from the previous period. The incumbent group in period 1 chooses these levels for period 2 subject to the political institutions in place (see below).

In concrete terms, τ represents fiscal infrastructure such as a set of competent tax auditors, or the institutions necessary to tax income at source or to impose a value-added tax – we can think about τ as decreasing the share of her market income $(1-\tau)$ an individual can earn in the informal sector. Fiscal capacity does not depreciate, but can be augmented by I_1 through non-negative investments which cost $F(\tau_2 - \tau_1)$, where $F(\cdot)$ is an increasing convex function with $F(0) = F_\tau(0) = 0$. A higher τ_s allows the incumbent I_s to charge higher tax rates, such that $t^{J_s} \leq \tau_s$. To allow for redistribution in a simple way, we allow negative tax rates.

In concrete terms, π represents legal infrastructure investments such as building court systems, educating and employing judges and registering property or credit. Like fiscal capacity, legal capacity does not depreciate, but can be augmented with non-negative investments at cost $L(\pi_2 - \pi_1)$, where $L(\cdot)$ is an increasing convex function with $L(0) = L_\pi(0) = 0$. A higher π_s allows government I_s to better support private markets with $0 \leq p^{J_s} \leq \pi_s$.

The government budget constraint in period s can be written

$$0 \leq \sum_{J_s \in \{I_s, O_s\}} \frac{t^{J_s} w^{J_s}}{2} - G_s + R_s - \begin{cases} L(\pi_2 - \pi_1) - F(\tau_2 - \tau_1) & \text{if } s = 1 \\ 0 & \text{if } s = 2 \end{cases} . \quad (2)$$

Political institutions As mentioned, power can exogenously shift between groups. Because the opposition takes over with probability γ, this parameter becomes a crude measure of political instability.

We assume political institutions make incumbent governments internalize the preferences of the opposition, to some degree. Specifically, any incumbent attaches weights θ to the opposition group and $(1-\theta)$ to its own group, where

$\theta \in [0, \frac{1}{2}]$. This parametrization captures, albeit in a simple and reduced-form way, the representativeness of political institutions through checks and balances or electoral systems. When checks and balances are very strong, the incumbent behaves like a Utilitarian planner – treating both groups equally – in which case $\theta = \frac{1}{2}$. At the other extreme, an omnipotent autocrat faces no such constraints and behaves as if $\theta = 0$.

Timing Each period has the following timing:

1. The initial conditions are $\{\tau_s, \pi_s\}$ and the identity of last period's incumbent I_{s-1}.
2. The value of public goods α_s and natural resource rents R_s are realized.
3. Group I_{s-1} remains in office with probability $1 - \gamma$.
4. The new incumbent I_s determines a vector of tax rates, legal support, and spending on public goods: $\left\{ \left\{ t^{J_s}, p^{J_s}, \right\}_{J_s \in \{I_s, O_s\}}, G_s \right\}$. The period-1 incumbent also chooses state capacities for the next period τ_2, π_2.
5. Payoffs for period s are realized and consumption takes place.

1.2 Equilibrium policy

We begin with the policy choices at stage 4 of period s. Linearity allows us to study these separately from the choices of state capacity for period 2. With the assumed policy weights, we can write the objective of incumbent I_s as:

$$\begin{aligned} V^{I_s} &= (1-\theta) w\left(p^{I_s}\right)\left(1-t^{I_s}\right) + \theta w\left(p^{O_s}\right)\left(1-t^{O_s}\right) + \\ &\quad \alpha\left[\frac{t^{I_s} w\left(p^{I_s}\right) + t^{O_s} w\left(p^{O_s}\right)}{2} + z_s\right], \end{aligned} \tag{3}$$

where we have replaced G_s via the government budget constraint (2), and where residual revenue z_s is defined by

$$z_s = R_s - \begin{cases} L(\pi_2 - \pi_1) - F(\tau_2 - \tau_1) & \text{if } s = 1 \\ 0 & \text{if } s = 2 \end{cases}$$

This objective is maximized subject to: $G_s \geq 0$, $t^{J_s} \leq \tau_s$ and $p^{J_s} \leq \pi_s$.

Taxation and spending on public goods The simple form of (3) makes it easy to derive equilibrium fiscal policy. Whenever $\alpha_s \geq 2(1-\theta)$, it is optimal for I_s to tax its own group maximally, $t^{I_s} = \tau_s$, and use the revenue to expand G_s. Because I_s puts weight $\theta \leq 1-\theta$ on the opposition group, it also sets $t^{O_s} = \tau_s$. When $\alpha_s < 2(1-\theta)$, it becomes optimal to switch to a redistributive policy, where the opposition is still taxed fully, $t^{O_s} = \tau_s$, but no public goods are provided and

$$-t^{I_s} w\left(p^{I_s}\right) = \tau_s w\left(p^{O_s}\right) + 2z_s \ .$$

Intuitively, if α is high enough, the incumbent taxes both groups at fiscal capacity and spends all available revenue (less investment costs if $s = 1$) on public goods. We will refer to this as a common-interest state. If an α is drawn below the critical limit, $2(1-\theta)$, no public goods are provided and all available revenue is transferred to the incumbent group (through a negative tax rate). We will refer to this as a redistributive state.

The *realized* value of government funds in period s, which is obtained by differentiating V^{I_s} with regard to z_s in the two cases, is therefore given by

$$\lambda_s = \ \text{Max}[\alpha_s, 2(1-\theta)] \ .$$

Unless $\theta = \frac{1}{2}$, the political equilibrium underprovides public goods relative to a Utilitarian planner, who would provide public goods as long as their social value of α_s, exceeded their social cost (private value of goods) of 1.

Property rights It is easy to see that (4) is increasing in the legal protection of each group. Thus, it becomes optimal to exploit any existing legal capacity fully and set

$$p^{O_s} = p^{I_s} = \pi_s.$$

Intuitively, the incumbent group can only gain from improving property rights to both groups, either directly via a higher wage, or indirectly via a higher tax base. Simple as it is, this production efficiency result is in the spirit of Diamond and Mirrlees (1971). The result does not mean that property rights are well protected everywhere, however, since this hinges on the chosen value of π_s. Moreover, Section 2 will identify a set of circumstances when production efficiency fails and the incumbent does not fully exploit legal capacity for the opposition group.

Even though the setup is a bit different, the results on policy are similar to those in Besley and Persson (2008a). Collecting all the results, we have:

Proposition 1 *In all states* $p^{J_s} = \pi_s$ *for* $J_s \in \{I_s, O_s\}$ *and* $t^{O_s} = \tau_s$. *In common interest states,* $G_s = \tau w(\pi_s) + z_s$ *and* $t^{I_s} = \tau_s$, *while in redistributive states,* $G_s = 0$ *and* $-t^{I_s} = \tau_s + 2\frac{z_s}{w(\pi_s)}$.

1.3 Equilibrium state capacity

Preliminaries We can use the equilibrium policies in Proposition 1 to write the expected future payoff to the incumbent at stage 4 of period 1, when state capacity for period 2 is chosen:

$$\begin{aligned} E[V^{I_1}(\pi_2, \tau_2)] &= (1 - H(2(1-\theta))E_\alpha\{E[V^{I_1}(\pi_2, \tau_2) \mid \alpha_2 \geq 2(1-\theta)]\} \\ +H(2(1-\theta))E[V^{I_1}(\pi_2, \tau_2) &\mid \alpha_2 < 2(1-\theta)] \ . \end{aligned} \tag{4}$$

The outer expectation in the first row is taken over α_2 in common-interest states, where the payoff is $E[V^{I_1}(\pi_2, \tau_2) \mid \alpha_2 \geq 2(1-\theta)] = \alpha_2[\tau_2 w(\pi_2) + E(z_2)] + w(\pi_2)(1-\tau_2)$. The payoff in redistributive states is $E[V^{I_1}(\pi_2, \tau_2) \mid \alpha_2 < 2(1-\theta)] = w(\pi_2) + (1-2\theta)(1-2\gamma)\tau_2 w(\pi_2) + [(1-\theta) - \gamma(1-2\theta)]E(z_2)$. In the utilitarian special case, $\theta = \frac{1}{2}$, the latter reduces to $w(\pi_2) + E(z_2)$ – i.e., there are no gains from redistribution. Otherwise, the expected redistributive gains are larger, the lower are θ and γ – i.e., the less inclusive political institutions and the lower political instability.

Differentiating (4) with respect to $E(z_2)$, we obtain the *expected* value of government funds in period 2, as seen from period 1:

$$\begin{aligned} E(\lambda_2) &= (1 - H(2(1-\theta))E_\alpha[\alpha_2 \mid \alpha_2 \geq 2(1-\theta)] + \\ &\quad H(2(1-\theta))2[(1 - \theta - \gamma(1-2\theta)] \ . \end{aligned} \tag{5}$$

State capacity choices The choice by incumbent group I_1 of state capacity for period 2 maximizes:

$$E[V^{I_1}(\pi_2, \tau_2)] - \lambda_1[L(\pi_2 - \pi_1) + F(\tau_2 - \tau_1)] \ , \tag{6}$$

subject to $\pi_2 \geq \pi_1$ and $\tau_2 \geq \tau_1$. That is, I_1 trades off period 2 expected benefits against period 1 costs of investment, given the realized value of public funds. When doing so, it is uncertain about the future values of public goods and resource rents, as well as government turnover.

Carrying out the maximization, using (4)-(5), and performing some algebra, we can write the first-order (complementary-slackness) conditions as

$$w_p(\pi_2)\{1 + \tau_2[E(\lambda_2) - 1]\} \leq \lambda_1 L_\pi(\pi_2 - \pi_1) \tag{7}$$

and

$$w(\pi_2)[E(\lambda_2) - 1] \leq \lambda_1 F_\tau(\tau_2 - \tau_1) \ , \tag{8}$$

where (7) concerns legal capacity and (8) fiscal capacity. Conditions (7) and (8) reproduce, in somewhat different notation, the gist of the results in Besley and Persson (2008a). Since $L_\pi(0) = F_\tau(0) = 0$, a sufficient condition for positive investments in both forms of capacity is

$$E(\lambda_2) > 1 \ . \tag{9}$$

For the remainder of this section, we assume that (9) holds. This is more likely the more valuable are public goods and the lower is political instability.

Determinants of state capacity Under (9), the two investments are complements – the LHS of (7) is increasing in τ_2, while the LHS of (8) is increasing in π_2. Such complementarity is interesting in its own right. It also simplifies the analysis, because it implies supermodularity so that we can use standard results on monotone comparative statics (Milgrom and Shannon, 1994). For example, any factor that raises (cuts) the expected value of government funds $E(\lambda_2)$, for given λ_1, will raise (cut) investment in both legal and fiscal capacity. The same is true for any factor that weakly cuts (raises) the RHS of the two expressions, for given $E(\lambda_2)$.

Using (5) together with (7)-(8) and monotone comparative statics, we establish:

Proposition 2 *Investments in both legal and fiscal capacity go up with*
(*a*) *higher non-resource income* (*for given* π)
(*b*) *higher expected demand for public goods*
(*c*) *lower political instability*
(*d*) *more inclusive political institutions, if political instability is not too low*
(*e*) *lower costs of either form of investment* (*for given* π *or* τ)

Proof: Part (a) refers to a multiplicative upward shift of the wage function $w(\cdot)$, as this raises both $w(\pi_2)$ and $w_p(\pi_2)$ for any given π. Part (b) follows if we consider a stochastically dominating shift in α, which clearly raises $E(\lambda_2)$. So does a decrease in γ (part (c)), as $\frac{\partial E(\lambda_2)}{\partial \gamma} = -H(2(1-\theta))2(1-2\theta)$. To prove (d), we compute $\frac{\partial E(\lambda_2)}{\partial \theta} = h(2(1-\theta))2\gamma(1-2\theta) + H(2(1-\theta))2(2\gamma-1)$, which is positive unless γ is far enough below $\frac{1}{2}$. Finally, (e) refers to a multiplicative downward shift of either cost function $L(\cdot)$ or $F(\cdot)$. ■

Proposition 2(a) is consistent with Figure 1 where taxation and financial development are both positively correlated with income across countries. However, the causation runs from income to market support and taxation, not the other way around. The result is also consistent with Rajan and Zingales (2003) argument that financial development is positively correlated with openness to international trade (as the latter expands the returns to reallocating capital), and their historical evidence that financial development and openness have co-varied over the last century. We return to the relation between financial development and income (growth) in Sections 1.4 and 2.3. Finally, Proposition 2(a) suggests that investment in state capacity is declining in the share of resource rents in GDP, $Y_s = w(\pi_s) + R_s$.

Part (b) of the proposition is in line with Tilly's (1985) claim that war is important for building fiscal capacity, but extends it to legal capacity. While external defense is a natural example, the result applies to any national common-interest program, such as a universal welfare state or health program. If the demand for such public goods or services is expected to be high, any group has a large incentive to invest in fiscal capacity to finance future common-interest spending.

Part (c) arises because the incumbent group faces a smaller risk of the opposition using a larger fiscal capacity to redistribute against the incumbent. By the proof, the effect of instability is larger, the closer is θ to zero. Thus, we should not only observe higher political stability to induce more developed economic institutions, but a particularly large effect in countries with less representative political systems. We know of no systematic evidence on such interactions, but a historical case in point is England after the Glorious Revolution. During a parliament dominated by the Whigs for more than 40 years, tax income rose to 20% of GDP, and institutions for charging excise and indirect taxes were put in place (see e.g., Stasavage, 2007, and O'Brien 2005). In the second half of the 18th century, continued state capacity building by the dominant British elite culminated in the launch of an income tax during the Napoleonic wars, when the British government could raise taxes equal to a remarkable 36% of GDP (Mathias and O'Brien, 1976).

In (d), more representative political institutions lower the value of redistribution such that public goods are supplied in more states of the world. As the state becomes more about common interests, the value of fiscal capacity increases and, by complementarity, so does the value of legal capacity. A long tradition in political science, e.g., Lijphart (1999), considers proportional electoral systems more consensual than majoritarian systems, while

Persson, Roland and Tabellini (2000) argue that parliamentary democracies are more representative than presidential democracies. By the proposition, legal and fiscal capacity should be especially high in such democracies.

Finally, part (e) suggests a theoretical role for legal origins, the subject of many studies following La Porta et al (1998). If some legal origin, like a common-law tradition, makes it cheaper to facilitate private contracting, we would expect this to promote investments in the legal system. Less trivially, we would also expect the same legal origin to promote investments in the tax system, because of the complementarity of legal and fiscal capacity.

1.4 Implications

Economic growth According to the model and Proposition 1, economic growth between period 1 and period 2 is:

$$\frac{Y_2 - Y_1}{Y_1} = \frac{w(\pi_2) - w(\pi_1) + R_2 - R_1}{w(\pi_1) + R_1} \ .$$

If we ignore the exogenous resource rents, higher growth comes about only by higher legal capacity supporting private markets – and shows up as higher TFP.

Legal capacity may be closely related to financial development (in the microfounded model of Besley and Persson, 2008a, e.g., private credit to GDP is proportional to π). Financial development due to better institutions can thus cause growth. But the relationship can easily go the other way: according to Proposition 2(a), higher income generally raises incentives to invest in legal capacity leading to financial development.

The complementarity between fiscal and legal capacity has interesting implications for taxation and growth. If greater legal capacity is driven by the determinants in Proposition 2, we expect it go hand-in-hand with higher fiscal capacity. Variation in these determinants would induce a *positive* correlation between taxes and growth. In the case when $E(\lambda_2) < 1$ (when investment in fiscal capacity is zero), legal capacity and national income are still positively correlated, while there is zero correlation between taxation and growth.[2]

These observations relate to recent empirical findings in the macroeconomics of development. Many researchers have found a positive correlation

[2]Besley and Persson (2008a) show that changes in income distribution drive fiscal and legal capacity in opposite directions, inducing a *negative* correlation between taxes and growth.

between measures of financial development, or property-rights protection, and economic growth (e.g., King and Levine, 1993, Hall and Jones, 1999 and many subsequent papers), though Proposition 2(a) warns us that such correlations may not reflect a causal effect of financial markets, but reverse causation. But many researchers who expected to find a negative relation between taxes and growth have found nothing (see e.g., the overview in Benabou, 1997). Simple though it is, our model suggests a possible reason for these findings.

Of course, all of this ignores private capital accumulation. When one extends the model with private investment, building fiscal capacity has a "standard" disincentive effect on growth, because higher τ_2 raises expected taxes and lowers expected net private returns. However, building legal capacity has an additional positive effect on growth, because it raises gross returns, which stimulates private accumulation. By the complementarity between fiscal and legal capacity, both kinds of state capacity may still expand with overall income.

Data We explore the cross-sectional correlations in international data, motivated by the theory, which identifies a number of *common* determinants of legal and fiscal capacity. [3] Referring to Proposition 2(b), we take the historical incidence of war as a proxy for the past demand for common public goods. Exploiting the Correlates of War data set, we measure the share of all years between 1816 – or independence, if later – and 1975 that a country was involved in external military conflict

We also look at measures of political institutions, as Proposition 2(d) says their inclusiveness is a key factor shaping investments in state capacity. As in the case of war, we consider historical incidence measures, computing the share of years from 1800 (or independence) to 1975 that a country was democratic (using the Polity IV data set), and the share of years it was a parliamentary democracy.

Further, we consider indicators of legal origin. As mentioned about Proposition 2(e), if certain legal origins facilitate building of legal capacity they should also promote building of fiscal capacity. [4]

[3] To facilitate interpretation, all the variables are scaled to lie between 0 and 1. For more on the data, see Besely and Persson (2008a)

[4] We do *not* include GDP per capita, or other measures of development, among the determinants. According to Proposition 2(a), independent shocks to income can certainly affect investments in both forms of state capacity. But the rest of Proposition 2 indicates

We explore three different measures of legal capacity for market support. One is private credit to GDP (expressed as an average from 1975 onward), the most common indicator of financial development in the recent literature. Another measure comes from the World Bank's *Doing Business* surveys (data from the last few years), namely an index of the cost (in time and money) of enforcing contracts. We also consider a perceptions index of government legal protection (from ICRG, we average annual values from the early 1980s to the late 1990s), which has been extensively used in the macroeconomic development literature to gauge institutions promoting property rights.

Absent direct measures of investments in fiscal capacity, we rely on three proxies. The first is one minus the share of the informal sector of the economy in the last few years, as estimated by the World Bank from different sources – the idea being that a smaller informal sector, ceteris paribus, reflects investments in fiscal capacity by the state. The other proxies come form data for the structure of taxation, collected by the IMF and available annually for 125 countries for the last 30 years. We define two variables (as averages from 1975 onwards). The first is the share of income taxes in total tax revenue, since income taxation requires extensive infrastructure for compliance. We also use overall tax collection as a share of GDP, a catch-all measure of fiscal capacity.

Correlations Table 1 shows results from identically specified cross-country regressions on our six alternative measures of state capacity. The estimates paint a relatively consistent picture. A higher share of external conflict years in the past is always associated with higher measures of legal capacity (columns 1-3), as well as fiscal capacity (columns 4-6) in the present. To the best of our knowledge, this finding is new; moreover, the correlation would have been hard to predict without the underlying theory.[5] Inclusive political institutions also seem to play a role: past incidence of democracy or parliamentary democracy (the two variables are closely related) correlates positively with both types of state capacity (significantly so, in four cases out of six). In view of the legal-origins literature, it is perhaps surprising that English legal origin is uncorrelated with legal capacity, except when it

that other factors determine both state capacity and income Disentangling these two-way relations requires a more sophisticated empirical strategy.

[5]The correlation is robust to measuring the incidence of external conflict over an earlier period, and to replacing incidence with a simple binary indicator for having been involved in external conlicts at all (so as to remove the importancce of outliers).

comes to contract enforcement. But German and Scandinavian legal origins do display a robust positive correlation, not only with legal capacity but also with fiscal capacity. To summarize, several determinants identified by our theory appear to be stable and common predictors of the state's capacity to support markets and raise revenue.

2 The genius of taxation

The expansion of government activity and taxation is one of the most striking economic facts observed over the last century. The causes behind large and growing government are subject of much research in economics and other social sciences, including recent work in political economics.

Drawing also on the broader discussion about government intervention, one sees two opposing perspectives. Some observers adopt a view rooted in benevolent government, seeing the growth as a manifestation of the government's role in redistribution and correction of market failures, such as the under-supply of public goods. Others, take a more malevolent government view, arguing that large government reflects abuse of power or rent seeking. Both stylized views stem from simplistic notions about the motives of governments and the way in which they redistribute resources. The benevolent government view ignores the reality that some government activities are indeed hard to square with social welfare maximization and that vested interests play a role in policy formation. The malevolent view tends to overemphasize the use of taxes in redistribution, ignoring the fact that even if a tax system is poorly developed redistribution may happen in much less efficient ways not picked up by conventional measures of government size, and fails to recognize that suppressing vested interests may not be politically feasible.

In the data, evidence on the costs of large government is mixed. As mentioned, it is hard to find evidence in macroeconomic studies of aggregate data that high taxes affect incomes. Most microeconomic studies of individual data also tend to find fairly small behavioral effects of taxes on behavior.

In this section, we try to shed new light on these broad issues using an approach that emphasizes the importance of state capacity. We develop a simple example where large government – meaning high fiscal capacity – may be beneficial. By eliminating costly forms of redistribution, large

government may yield higher production and income than small government. This "genius of taxation" argument is really a positive-economics application of Diamond and Mirrlees (1971) results on production efficiency, which we alluded to in Section 1.2. In a nutshell, a government without access to sufficient fiscal capacity may choose legal protection in an inefficient way. Moreover, the resulting inefficiency may be an equilibrium outcome when state capacity is chosen endogenously.

In order to make these points, we extend the basic model in Section 1.1 with another factor, so that agents in each group earn some rents in production. As we shall see, it is these rents that sow the seeds of the inefficiency.

2.1 A simple two-factor economy

Now, think about $w\left(p^{J_s}\right)$ as a form of capital, the productivity of which depends on property-rights protection for the group. Only a share and the same share of each group, σ, has access to a constant-returns technology that combines capital and raw labor, l, to produce output.[6] The remaining share, $1-\sigma$, supplies a single unit of raw labor to an economy-wide labor market. We write the production technology on intensive form as $l^{J_s}B(k^{J_s})$, where k^{J_s} denotes the capital-labor ratio $w\left(p^{J_s}\right)/l^{J_s}$. Aggregate labor supply is thus $l=(1-\sigma)$ and we can define the aggregate capital-labor ratio

$$k(p^{I_s},p^{O_s})=\frac{\sigma[w\left(p^{I_s}\right)+w\left(p^{O_s}\right)]}{(1-\sigma)2}\ , \tag{10}$$

as an increasing function of the property-rights protection of each group. For an individual capital owners in group J_s, optimal factor demand satisfies the first-order condition $B(k^{J_s})-B_k(k^{J_s})k^{J_s}=\omega$, where ω is the economy-wide wage. As the technology is common across groups, the equilibrium wage is given by the same condition, evaluated at the aggregate capital-labor ratio:

$$B(k(p^{I_s},p^{O_s}))-B_k(k(p^{I_s},p^{O_s}))k(p^{I_s},p^{O_s})=\omega(p^{I_s},p^{O_s})\ .$$

[6] Assuming a common share σ across groups simplifies the algebra. Relaxing this assumption makes it easier to prove the possibility of inefficient outcomes (see Propositions 3 and 4). An incumbent group, I, with a large share σ^I of capital owners is more willing to select ineffecient policies to boost the group's rents than is a group with a small share.

Thus, the wage depends on property-rights protection for the two groups. Moreover, it is increasing in both of these policy variables, because

$$\frac{\partial \omega}{\partial p^{J_s}} = \eta(k(p^{I_s}, p^{O_s}))B_k(k(p^{I_s}, p^{O_s}))\frac{\sigma w_p\left(p^{J_s}\right)}{2l} > 0 \ ,$$

where $\eta(x) = -\frac{B_{kk}(x)x}{B_k(x)} > 0$. Intuitively, more productive capital in any sector drives up the demand for labor which raises the equilibrium wage. Finally, we can define the income of a representative member of group J_s as

$$y^{J_s}(p^{I_s}, p^{O_s}) = (1-\sigma)\omega(p^{I_s}, p^{O_s}) + \sigma l^{J_s}[B(k^{J_s}) - \omega(p^{I_s}, p^{O_s})] \ . \qquad (11)$$

In contrast to the basic model, the income of group J_s depends on the legal protection of the other group as well, through the endogenous equilibrium wage. The latter has a positive effects on group members with raw labor (the first term on the RHS of (11)), but a negative effect on those earning quasi-rents on their capital (the second term on the RHS).

2.2 Policy and state capacity

For the rest, the model works exactly as in Section 1. To analyze optimal policy, we just replace $w(p^{J_s})$ in (3) by the new income function $y^{J_s}(p^{I_s}, p^{O_s})$. The main consequence is that an incumbent group I_s with a large demand for labor, i.e., a high σ, may prefer a low wage. Moreover, the ruling group can engineer a lower wage by blocking the opposition group's legal protection and thus drive down the demand for labor. Going through similar steps as in Section 1.2, we can show:

Proposition 3 *If $\theta = \frac{1}{2}$ or $\tau_s = 1$ legal capacity is always fully utilized for both groups. For $\eta(x) < 1$, there exists a threshold $\widehat{\tau}(\theta, \alpha)$, such that the legal protection of the opposition group is minimal: $p^{O_s} = 0$ for all $\tau_s < \widehat{\tau}(\theta, \alpha)$, and where $\widehat{\tau}_\theta(\theta, \alpha) < 0$, and $\widehat{\tau}_\alpha(\theta, \alpha) < 0$ if $\alpha \geq 2(1-\theta)$.*

Proof: See Appendix.

In words, there is always full production efficiency in the utilitarian case, or when fiscal capacity is high enough. But when fiscal capacity is below a critical threshold, a politically motivated incumbent may prefer an inefficient policy which lowers the level of national income. In this specific example, maximizing (gross) income and using the tax system for redistribution may be

less useful than distorting production and raising quasi-rents by maintaining a supply of low-wage labor.[7]

As the proposition shows, the critical threshold for fiscal capacity depends on institutions and circumstances. When political institutions are more inclusive, as parameterized by a higher θ, existing fiscal capacity must be lower to trigger inefficiently low legal protection for the opposition. Similarly, in a common-interest state, with $\alpha > 2(1-\theta)$, the critical threshold for fiscal capacity is lower than in a redistributive state.

This argument is incomplete, however, as it takes fiscal capacity (as well as legal capacity) as given. Why would any government keep τ so low? Clues to the answer are found in the determinants of state capacity isolated by Proposition 2. To forcefully demonstrate how the state can fail, consider a simple example with a two-point distribution for the value of public goods: $\alpha \in \{\alpha_H, \alpha_L\}$, with $\alpha_L < 2(1-\theta) < \alpha_H$, and the common-interest state α_H occurring with probability μ. In this case, we have:

Proposition 4 *Suppose that $\tau_1 < \hat{\tau}(\theta, \alpha_L)$. Then, for μ close enough to zero, there is a range of $\gamma > 1/2$ such that $\tau_2 = \tau_1$, and investment in legal capacity is lower than it would be if $\tau_1 > \hat{\tau}(\theta, \alpha_L)$.*

Proof: See Appendix.

An immediate corollary of Propositions 3 and 4 is that whenever initial fiscal capacity fulfills $\tau_1 < \widehat{\tau}$, the opposition group in each period is not fully protected by the legal system. When political instability is high, the incumbent in period 1 does not want to expand the ability to tax, because it fears that such ability will be used to redistribute against its own group. As a result of the weak state, any period-2 incumbent uses inefficient legal protection to generate rents to the capital owners of its own group.

Proposition 4 thus describes an "investment trap", where political instability makes an incumbent group expect that larger state capacity will be used against its own interests. This expectation perpetuates a weak tax system, which causes inefficiencies in production.

[7] This is analogous to Diamond and Mirrlees (1971) normative result that production efficiency is preferreable only when the tax system is sufficiently rich.

2.3 Implications

Define the non-resource part of GDP in the economy of this section

$$Y_s = Y(p^{I_s}, p^{O_s}) = \frac{y^{I_s}(p^{I_s}, p^{O_s}) + y^{O_s}(p^{I_s}, p^{O_s})}{2} \ .$$

With an inefficient regulatory policy in period s, income becomes $Y(\pi_s, 0)$, where by symmetry $Y(\pi_s, 0) = Y(0, \pi_s)$. This is clearly lower than the level with efficient legal protection $Y(\pi_s, \pi_s)$.

In the specific two-point distribution example, consider two economies S and L where Propositions 3 and 4 apply. Assume the same initial legal capacity $\pi_1^S = \pi_1^L = \pi_1$, but $\tau_1^S < \widehat{\tau}(\theta^S, \alpha_L)$ and $\tau_1^L > \widehat{\tau}(\theta^L, \alpha_L)$ so that the economies find themselves at opposite sides of the fiscal capacity threshold due to different initial conditions, $\tau_1^S < \tau_1^L$.

Let us compare income levels in periods 1 and 2. It follows from Proposition 3 that

$$Y_1^L - Y_1^S = Y(\pi_1, \pi_1) - Y(\pi_1, 0) > 0 \ ,$$

i.e., in period 1, economy S has a lower income level due to the inefficient legal protection of the opposition group. As Proposition 4 holds, we have

$$Y_2^L - Y_2^S = Y(\pi_2^L, \pi_2^L) - Y(\pi_2^S, 0) > Y(\pi_1, \pi_1) - Y(\pi_1, 0) \ ,$$

where the inequality follows from the fact that $\pi_2^L > \pi_2^S$. Due to its low fiscal capacity, economy S pursues a policy of less efficient legal protection than economy L in period 2, whichever group is in power. But Proposition 4 tells us that economy S has also invested less in legal capacity than economy L. The larger state not only has the higher GDP level, but its income advantage to the smaller state is growing over time.

These results suggest yet another possible interpretation of the correlations in Figure 1. By the results in Section 1, we may observe large government together with high income because the two are jointly determined by other factors, or because high income causes large government (recall Proposition 2). By the results in this section, a large state can actually *cause* high income, to the extent it rules out policies that distort production. (Of course, our caveat about not considering tax distortions still applies.)

What may be ways out of inefficient legal protection or an investment trap? Propositions 3 and 4 suggests two possible answers: political reform

and lucky circumstance. Reform that introduced more inclusive political institutions (higher value of θ) may shift the boundary value $\widehat{\tau}(\theta, \alpha)$ below existing fiscal capacity, while reform that diminished political instability (lower value of γ) may induce first-period investment. And circumstance, such as a higher likelihood or expected severity of external conflict (higher μ or α_H in the example), by rasing the prospect of a future common-interest state may make it too costly to pursue inefficient legal protection.

Finally, let us briefly return to the work on political origins of financial development mentioned in Section 1, which argues that a desire to create or preserve rents can prevent a ruling elite from building the institutions needed for well-functioning financial markets (see e.g., Rajan and Zingales, 2003 or Pagano and Volpin, 2005). But this work generally considers the financial sector without reference to the tax system. So, the political-origins argument may implicitly assume a lack of fiscal capacity, which makes it unattractive for the incumbents to invest in private markets, maximize income, and instead carry out its desired redistribution via taxes and transfers. As stressed by Acemoglu (2003, 2006), it is important to pose the political Coase-theorem question explicitly, and our analysis here suggests a new way of doing so.

3 The strategy of conflict

Our discussion about the origins of state capacity highlighted the risk of external conflict. But all conflict is not external – internal conflicts plague many states particularly in the third world. Counting all countries and years since 1950, the average prevalence of civil war is about 6%, with a yearly peak of more than 12% (in 1991 and 1992), according to the Correlates of War data set. Figure 2a shows the variable time path of the worldwide prevalence of civil war. The cumulated death toll in civil conflicts since the Second World War exceeds 15 million (Lacina and Gledtisch, 2005).

The causes of civil war are subject to a large theoretical and empirical literature in political science and economics (see e.g., Sambanis, 2002 for a broad review). A robust empirical fact is that poor countries are disproportionately involved in civil war, even though the direction of causation may be difficult to establish.[8] The concentration to poor countries is shown in

[8] Miguel, Satyanath and Sergenti (2004) use weather shocks to instrument for income in African countries from the 1980s and onwards, and find that lower income raises the probability of civil conflict.

Figure 2b, which plots the share of years with civil war since 1950 (or independence, if later) against GDP per capita in the year 2000. In a debate about this fact, Fearon and Laitin (2003) see it as reflecting limited state capacity to put down rebellions, while Collier and Hoeffler (2004) see it as reflecting lower opportunity costs of fighting in low-income economies. There is also considerable debate about other suggested drivers of civil war, such as natural resource rents, ethnic conflicts, and political institutions.

Civil war is thus closely linked to development. How does it link up with our analysis of state capacity? One link has to do with the nature of conflict. While external conflict can be described mainly as a source of common interests across groups in a state, internal conflict is a graphic manifestation of conflicting interests across groups. As Besley and Persson (2008b) argue – theoretically and empirically – the two forms of conflict may therefore have opposite effects on the incentives to invest in fiscal capacity.

Another link is that the empirical civil-war literature typically treats variables such as incomes and state capacity as exogenous. A more satisfactory analysis would treat these variables as jointly determined with civil war. For example, there are two parallel literatures on the "resource curse", which imply that the same variables determine civil war and economic growth.[9] Sorting out the likely two-way relations between civil war and other aspects of development is a complex enough task, however, that we need clear guidance from an explicit theory when approaching the data. In Besley and Persson (2008c), we lay out a specific model with that task in mind. We now adapt the basic framework from Section 1 to illustrate some of the theoretical results in that paper, and how these can be used to take a fresh look at the data.

3.1 Conflict and takeover

Now, assume that power can not only be transferred peacefully, but also after a violent conflict. Specifically, the incumbent at the beginning of each period can mount an army, the size of which (in per capita terms) is denoted by $A^{I_{s-1}}$. There is no conscription, so soldiers are simply compensated for their lost income. This makes the cost of the army $w^{I_{s-1}}A^{I_{s-1}}$, which is financed out of the public purse. Decisions on the army is subject to the same political constraints as decisions on policy, and thus internalizes the preferences of the

[9] See Ross (2004) for a survey of the research on natural resources ansd civil war.

opposition group with weight θ.

The opposition can also mount armed forces $A^{O_{s-1}}$ to try and take over the government. When in opposition, each group has the capacity of taxing its own citizens in order to finance a private militia of insurgents. We denote this capacity, which is common across the two groups, by ν so that $w^{O_{s-1}}A^{O_{s-1}} \leq w^{O_{s-1}}\nu$. The decision on $A^{O_{s-1}}$ is internal to the opposition group and not subject to any political constraints.

The probability that group O_{s-1} wins power and becomes the new incumbent I_s depends on the resources devoted to fighting

$$\gamma\left(A^{O_{s-1}}, A^{I_{s-1}}\right) \ ;$$

γ is increasing in $A^{O_{s-1}}$ and decreasing in $A^{I_{s-1}}$. Below, we make a specific functional-form assumption.

There are thus two substantive changes of the model described in Section 1. First, the costs of the armed forces appear in the government budget constraint[10]

$$0 \leq \sum_{J_s \in \{I_s, O_s\}} \frac{t^{J_s} w^{J_s}}{2} - G_s + z_s - w(p^{I_{s-1})} A^{I_{s-1}} \tag{12}$$

and the consumption of the opposition group

$$c^{O_{s-1}} = w(p^{O_{s-1}})(1 - t^{O_{s-1}} - A^{O_{s-1}}) \ .$$

Second, stage 3 in the timing is replaced by the sequence

3a. Group O_{s-1} chooses the level of any insurgency $A^{O_{s-1}}$.

3b. The incumbent government I_{s-1} chooses the size of its army $A^{I_{s-1}}$.

3c. Group I_{s-1} remains in office with probability $1 - \gamma\left(A^{O_{s-1}}, A^{I_{s-1}}\right)$.

3.2 Incidence and intensity of civil war

Preliminaries It is easy to show that the (new) incumbent's policy choices at stage 4 of each period in Proposition 1 still apply. We can then write the objectives after the resolution of uncertainty over α_s and R_s at the end of

[10] This formulation assumes that resource revenues are large enough to finance the incumbent's army or, alternatively, that the new incumbent pays for the army ex post, honoring any outstanding "war debts".

stage 2, but before the choice of armies at stage 3. For the incumbent at stage 3b, the appropriate expression depends on the realized value of α_s:

$$E[V^{I_{s-1}}(\pi_s,\tau_s) \mid \alpha_s \geq 2(1-\theta)] = \alpha_s[\tau_s w(\pi_s)+z_s-w(\pi_s)A^{I_{s-1}}]+w(\pi_s)(1-\tau_s) \tag{13}$$

and (after some algebra)

$$\begin{aligned} E[V^{I_{s-1}}(\pi_s,\tau_s) \mid \alpha_s < 2(1-\theta)] &= w(\pi_s)+(1-2\theta)\tau_s w(\pi_s) \\ &+(1-\theta)2(z_s-w^{I_{s-1}}A^{I_{s-1}})- \\ &\gamma\left(A^{O_{s-1}},A^{I_{s-1}}\right)(1-2\theta)2[\tau_s w(\pi_s)+z_s-w(\pi_s)A^{I_{s-1}}]\ . \end{aligned} \tag{14}$$

Unconstrained by any common political institution, the opposition chooses its army $A^{O_{s-1}}$ at stage 3a, to maximize the group's expected utility, which also depends on α_s, namely

$$E[V^{O_{s-1}} \mid \alpha_s \geq 2(1-\theta)] = \alpha_s[\tau_s w(\pi_s)+z_s-w(\pi_s)A^{I_{s-1}}]+w(\pi_s)(1-\tau_s-A^{O_{s-1}})\ , \tag{15}$$

and

$$\begin{aligned} E[V^{O_{s-1}} \mid \alpha_s < 2(1-\theta)] &= \gamma\left(L^{O_{s-1}},L^{I_{s-1}}\right)2[\tau_s w(\pi_s)+z_s-w(\pi_s)A^{I_{s-1}}] \\ &+w(\pi_s)(1-\tau_s-A^{O_{s-1}})\ . \end{aligned} \tag{16}$$

Equilibrium armies We now characterize the Stackelberg equilibrium where the insurgents move first and denote this by $\left\{\widehat{A}^{O_{s-1}},\widehat{A}^{I_{s-1}}\right\}$. First, we state a useful (if perhaps obvious) result:

Proposition 5 *There is never any conflict in common-interest states:* $\widehat{A}^{O_{s-1}} = \widehat{A}^{I_{s-1}} = 0$.

Proof: The relevant objective functions when $\alpha_s \geq 2(1-\theta)$, (13) and (15), are strictly decreasing in $A^{I_{s-1}}$ and $A^{O_{s-1}}$, respectively. ■

Intuitively, all spending will be on common interest goods independently of who holds power, so there is nothing to fight over.

In redistributive states, $\alpha_s < 2(1-\theta)$, the situation is different, The payoffs (14) and (16) now expose a basic trade-off, where decision makers weigh the opportunity cost of higher armed forces against a higher probability of takeover and control over the redistributive cake. To study that trade-off we make

Assumption 1

(*a*) *The technology for conflict is:* $\gamma\left(A^O, A^I\right) = \mu\left[A^O - \xi A^I\right] + \gamma^O$
(*b*) $\mu\xi \leq \gamma^O \leq 1 - \mu\nu$
(*c*) $\xi + 2\gamma^O \geq \frac{1-\theta}{1-2\theta}$.

Part (a) says that a "linear probability model" governs the outcome of any conflict, while the peaceful turnover rate is γ^O. Restriction (b) on parameters guarantees a probability of turnover strictly between 0 and 1, and will hold if μ is small enough. Restriction (c) says that the fighting advantage to the incumbent ξ and the peaceful turnover probability γ^0 are large enough, or the political weight on the opposition θ is small enough.

Given (a)-(c), we get a straightforward characterization of conflict regimes by the size of public revenues. Define total revenue, the size of the redistributive cake, as

$$Z_s = \tau_s w\left(\pi_s\right) + z_s$$

and two bounds, namely

$$\underline{Z}_s = \frac{w(\pi_s)}{\mu} \frac{\left[1 - \theta - \gamma^O\left(1 - 2\theta\right)\right]}{\left(1 - 2\theta\right)\xi}$$

and

$$\overline{Z}_s = \frac{w(\pi_s)}{\mu}\left(1 + \frac{\gamma^O}{\xi}\right) .$$

By restriction (c), $\overline{Z}_s > \underline{Z}_s$. Note that both bounds are increasing in income, reflecting the opportunity cost of the army.

Under Assumption 1, we have

Proposition 6 *In redistributive states, there are three possibilities:*

1. *If* $Z_s < \underline{Z}_s$*, the outcome is peaceful with* $\widehat{A}^{O_{s-1}} = \widehat{A}^{I_{s-1}} = 0$*.*
2. *If* $Z_s \in \left[\underline{Z}_s, \overline{Z}_s\right]$*, there is no insurgency* $\widehat{A}^{O_{s-1}} = 0$*, but the incumbent government chooses an army to repress the opposition such that*

$$\widehat{A}^{I_{s-1}} = \frac{1}{2}\frac{\left(Z_s - \underline{Z}_s\right)}{w(\pi_s)} .$$

3. *If $Z_s > \overline{Z}_s$, there is a civil war, where the opposition mounts armed forces*

$$\widehat{A}^{O_{s-1}} = \frac{Z_s - \overline{Z}_s}{w(\pi_s)/\xi} ,$$

and the government chooses an army of size

$$\widehat{A}^{I_{s-1}} = \frac{1}{w(\pi_s)} \left[Z_s - \frac{\overline{Z}_s + \underline{Z}_s}{2} \right] .$$

Proof: See the Appendix.

The three cases in Proposition 6 are quite intuitive. With a small amount of residual government revenue, inclusive institutions (θ close to $\frac{1}{2}$), and/or high non-resource incomes, both sides find the prize of winning too low compared to the opportunity cost of mounting armed forces. This is case 1.

In case 2, the government represses the opposition to stay in power. It occurs when the natural resource rents commanded by the government are higher than in case 1. Assumption 1(c) guarantees that the incumbent government has a lower threshold for using coercive power than the opposition. The proposition shows that the marginal propensity to spend on coercion out of higher resource rents is one half.

Finally, case 3 has outright conflict. Civil war is associated with weak institutions, low incomes, and high natural resource rents. At this point, increases in public resources induce both groups to expand their forces. In fact, there is super crowding out – the government spends 100% of any additional resources on fighting, while the insurgents also divert resources from private production towards fighting. So natural resources are purely dissipated on more intensive conflict and add no consumption or utility when $Z_s > \overline{Z}_s$. Moreover, national income is falling if resources devoted to conflict by the opposition are counted as unproductive.

3.3 Implications

Endogenizing state capacity Our analysis in Section 3.2 took legal and fiscal capacity as given. The next step is to ask how the risk of civil war affects the incentives to invest in state capacity. This will give us a feel for how internal conflict shapes the prospects for state development. When there is no risk of future civil war, the analysis in Section 1.3 applies.

It turns out to be difficult to reach definitive conclusions, as there are several effects that can in either direction. However, the model is useful in giving a sense of the forces at work. It is helpful to define $\Gamma^O(Z_s) = \gamma^O(\widehat{A}^{O_{s-1}}, \widehat{A}^{I_{s-1}}) < \gamma^O$, as the equilibrium probability that probability that the opposition group seizes power.[11] Using this notation it is straightforward to see that:

$$\begin{aligned} E[V^{I_s}(\pi_2,\tau_2) \quad | \quad \alpha_2 < 2(1-\theta)] &= w(\pi_2)(1-\tau_2) \\ &+E\left\{\left[1-\theta-\Gamma^O(Z_2)(1-2\theta)\right]2\left[Z_2 - w(\pi_2)\hat{A}_2^{I_1}\right]\right\}, \end{aligned} \tag{17}$$

where expectations in the final term are taken with respect to R_2. This expression replaces the corresponding expression in (4 to get the expected period-two payoff of the incumbent group as a function of (π_2, τ_2). Comparing expressions (4 and (17), reveals two main differences. First, the cost of the publicly finance army is deducted from the "prize" of winning office. Second, the probability of retaining office is higher (as $\Gamma^O(Z_2) < \gamma^O$). We can derive the first-order conditions, parallel to (7) and (8), for fiscal and legal capacity:

$$\begin{aligned} &w_p(\pi_2)\{1+\tau_2 E\left(\bar{\lambda}(Z_2)\left(1-\frac{\hat{A}_2^{I_1}(Z_2)}{\tau_2}\right)-1\right) \\ &-\left[1-D\left(\overline{Z}_2-\tau_2 w(\pi_2)\right)\right]\frac{1-\theta}{\xi}w(\pi_2)E\left(\frac{\partial \hat{A}_2^{O_1}}{\partial \pi_2}: Z_2 \geq \overline{Z}_2\right) \\ &\leq \lambda_1 H_\pi(\pi_2-\pi_1) \end{aligned} \tag{18}$$

$$\begin{aligned} &w(\pi_2)([E(\bar{\lambda}(Z_2))-1] \\ &-\left[1-D\left(\overline{Z}_2-\tau_2 w(\pi_2)\right)\right]\frac{1-\theta}{\xi}E\left(\frac{\partial \hat{A}_2^{O_1}}{\partial \tau_2}: Z_2 \geq \overline{Z}_2\right)) \\ &\leq \lambda_1 F_\tau(\tau_2-\tau_1), \end{aligned} \tag{19}$$

[11] It is straightforward to show that

$$\Gamma^O(Z_s) = \begin{cases} \gamma^O & Z_s \leq \underline{Z}_s \\ \gamma^O - \frac{\mu\xi}{2w(\pi)}\left[Z_s - \underline{Z}_s\right] & Z_s \in \left[\underline{Z}_s, \overline{Z}_s\right] \\ \gamma^O - \frac{\mu\xi}{2w(\pi)}\left[\bar{Z}_s - \underline{Z}_s\right] & Z_s \geq \bar{Z}_s. \end{cases}$$

which is weakly decreasing in Z_s.

where $\bar{\lambda}(Z_2) = (1 - K(2(1-\theta)E[\alpha_2 \mid \alpha_2 \geq 2(1-\theta)] + K(2(1-\theta)2[(1-\theta - \Gamma^O(Z_2)(1-2\theta)]$. As before, the left-hand side of each first-order condition represents the marginal benefit of higher state capacity. Comparing these with (7) and (8), we gain a sense how the possibility of civil war shapes the investment incentives.

The final expression on the left-hand side of each condition represents how state capacity affects the resources committed to insurgency by the opposition. By Proposition 6, this term is positive in the case of legal capacity and negative in the case of fiscal capacity. This makes sense, since the former raises wages reducing the opposition's incentive to fight, while the latter raises the prize of winning increases opposition's willingness to fight. The possibility of conflict also affects investment incentives via the expression for $\bar{\lambda}(Z_2)$ representing the expected value of public funds. Since $\Gamma^O(Z_2) < \gamma^0$, the incumbent has greater security in office, and this raises the marginal benefit of investing in either kind of state capacity. Yet another difference is that the benefit from holding office is reduced by a factor $1 - \frac{\hat{A}_2^{I_1}(Z_2)}{\tau_2}$, reflecting that part of the tax revenues will be spent on an army. This reduces the marginal benefit from investing in legal capacity.

With effects going in competing directions, there is no general presumption how the possibility of civil war affects state-capacity investments. The effect of most economic interest is that an incumbent government trying to head off the possibility of a civil conflict may try to invest in greater legal capacity as a means of increasing income. However, for the same reason we would expect fiscal capacity to be maintained at a lower level, all else equal.

Data Propositions 5 and 6 predict that civil war arises due to high resource rents or low incomes, provided that political institutions are weak. To check whether these predictions have empirical contents, we consider a panel of annual data. Our dependent variable is whether a given country in a given year experiences civil war. As the external conflict indicator in Section 1.4, this indicator variable is obtained from the Correlates of War data set.[12]

To obtain plausibly exogenous variation in resource rents and real incomes, we exploit variation in international commodity prices. Using trade volume data from the NBER-UN Trade data set, and international price data for about 45 commodities from UNCTAD, we construct country-specific commodity export and commodity import price indexes for about 125 countries.

[12] See Besley and Persson (2008c) for more on the data.

Although these go back as far as 1960, they are the data constraining length of the panel. The price indexes for a given country have fixed weights, computed as the share of exports and imports of each commodity in the country's GDP in a given base year. We interpret a higher export price index as a positive shock to natural resource rents, and a higher import price index as a negative shock to (real) income.

As another source of real-income variation, we use natural disasters, documented in the EM-DAT data set. Specifically, we construct an indicator that adds together the number of floods and heat-waves in a given country and year, assuming that both act as a negative shock to real income.

We also include two binary political indicators for each country, one for parliamentary democracy (as in Section 1.4), another for high constraints on the executive (a maximum value of 7 for the *xconst* variable in Polity IV data). Both of these are used to split the sample, so as to check the prediction that natural resource rents and the opportunity cost of conflict only affect the risk of civil war in countries with non-inclusive political institutions.

Given the strong relation between civil war and income, we always use GDP per capita (from the Maddison data set) as a control, even though GDP and civil war are almost surely simultaneous.

Results To control (non-parametrically) for variation in the worldwide incidence of civil war (recall Figure 2a), we always include a set of year dummies in our panel regressions. To take into account the biased incidence across countries (recall Figure 2b), we also include a set of country dummies. Unlike most of the existing literature, we are thus identifying any effect of an independent variable on the occurrence of civil war solely from its within-country variation (relative to the world average). If we think about $\overline{Z}_s$ in Proposition 6 as unobserved, time variation in our price indexes and other variables changes the probability that a given country crosses this critical (and country-specific) bound for civil war.

Table 2 shows results. Column 1 exploits all countries and years and includes the export-price index, the import-price index, and GDP per capita. Column (2) considers only countries under parliamentary democracy, while column (3) instead excludes these democracies. Columns (4) and (5) also split the sample, but instead uses high constraints on the executive. Finally, at the cost of dropping nearly 20% of the full sample, column (6) puts in the weather shocks on the right-hand side.

All coefficients have the expected sign and most of them are quite precisely estimated (with robust standard errors). Moreover, the estimated effects are substantial: a one-standard-deviation hike in the export-price index raises the probability of civil war with a little more than one percentage point (almost 20% of the sample mean), and a one-standard-deviation hike in the import-price index has an effect of similar magnitude. As the theory suggests, shocks to resource income have little, or negative, effect on the probability of civil war in countries with inclusive political institutions. Although much more needs to be done, these estimates lend some credibility to the predictions and suggest that a theory-based approach is worth pursuing further.

4 Final remarks

In some fields outside economics, state capacity is viewed as an important object of study. We have illustrated a simple way of bringing the study of state capacity and its determinants into mainstream economics. In the development community, a lack of state capacity is often viewed as a major obstacle to development. We have shown that legal capacity can be crucial for economic growth (in Section 1), that lack of fiscal capacity can indeed contribute to low income (in Section 2), and that lack of legal capacity can indeed contribute to civil war (in Section 3). Our analysis also reveals a basic complementarity between these two forms of state capacity.

A few common themes emerge from the analysis in the three sections of the paper. First, the institutional arrangements affecting public resource allocation, represented in the model by θ, affect both static policy incentives – determining the likelihood of a common interest state – as well as having an impact on dynamic state development. Similarly, the level of economic development affects outcomes at a point in time, but also feeds dynamic state development. Finally, realized and prospective shocks to public revenues and public good preferences have both static and dynamic effects on policies and state development.

We have highlighted the distinction between circumstances where the state is mainly used as a vehicle to pursue common-interest goals and circumstances where it is mainly used to redistribute income. With this distinction, (threats of) external and internal conflict have quite opposite effects on the incentives to invest in state institutions.

Although our theory already helps us approach the data in novel ways,

the models are certainly very simple. To better understand long-run forces of development, it would be valuable to add private accumulation and go to a full-fledged dynamic framework. Another natural extension would endogenize political institutions; given the history of today's developed states, we may conjecture that the demand for more representative government goes up as the state expands its capacity to tax. Such extension might reveal an additional complementarity between political and economic institutions.

Despite its simplicity, we view the research presented here as a stepping stone to disentangling the complex interactions between state capacity, conflict and development.

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5 Appendix

Proof of Proposition 3 To prove Proposition 3, first observe that:

$$l^{J_s} = \frac{w\left(p^{I_s}\right) 2\left(1-\sigma\right)}{\left[w\left(p^{I_s}\right)+w\left(p^{O_s}\right)\right]\sigma}.$$

Hence, for all $p^{I_s} > p^{O_s}$

$$\begin{aligned}
\frac{\partial y^{I_s}(p^{I_s},p^{O_s})}{\partial p^{I_s}} &= \left\{ \begin{array}{c} \left[\frac{\left[(1-\sigma)-\sigma l^{I_s}\right]}{2(1-\sigma)}\eta\left(k(p^{I_s},p^{O_s})\right)+1\right]\cdot \\ B_k\left(k(p^{I_s},p^{O_s})\right)\sigma w_p\left(p^{I_s}\right) \end{array} \right\} \\
&= \left\{ \begin{array}{c} \left[\left[\frac{1}{2}-\frac{w\left(p^{I_s}\right)}{\left[w(p^{I_s})+w(p^{O_s})\right]}\right]\eta\left(k(p^{I_s},p^{O_s})\right)+1\right]\cdot \\ B_k\left(k(p^{I_s},p^{O_s})\right)\sigma w_p\left(p^{I_s}\right) \end{array} \right\} > 0
\end{aligned}$$

and

$$\begin{aligned}
\frac{\partial y^{I_s}(p^{I_s},p^{O_s})}{\partial p^{O_s}} &= \left\{ \begin{array}{c} \left[\frac{\left[(1-\sigma)-\sigma l^{I_s}\right]}{2(1-\sigma)}\eta\left(k(p^{I_s},p^{O_s})\right)\right] \\ \cdot B_k\left(k(p^{I_s},p^{O_s})\right)\sigma w_p\left(p^{O_s}\right) \end{array} \right\} \\
&= \left\{ \begin{array}{c} \left[\left[\frac{1}{2}-\frac{w\left(p^{I_s}\right)}{\left[w(p^{I_s})+w(p^{O_s})\right]}\right]\eta\left(k(p^{I_s},p^{O_s})\right)\right]\cdot \\ B_k\left(k(p^{I_s},p^{O_s})\right)\sigma w_p\left(p^{O_s}\right) \end{array} \right\} < 0.
\end{aligned}$$

Thus there is a conflict of interest between creating property rights for the ruling group and the non-ruling group.

In general, we can write the part of the government's objective function that depends upon (p^{I_s}, p^{O_s}) as:

$$V^{I_s}\left(p^{I_s},p^{O_s};\psi\right) = \psi y^{I_s}(p^{I_s},p^{O_s}) + y^{O_s}(p^{I_s},p^{O_s}) \ ,$$

where

$$\psi = \psi\left(\theta,\alpha\right) = \left\{ \begin{array}{cc} \frac{1-\theta+\tau\left(\frac{\alpha}{2}-(1-\theta)\right)}{\theta+\tau\left(\frac{\alpha}{2}-\theta\right)} & \text{if } \alpha \geq 2\left(1-\theta\right) \\ \frac{(1-\theta)}{\theta+\tau(1-2\theta)} & \text{otherwise.} \end{array} \right.$$

It is easy to check that $\psi\left(\theta,\alpha\right)$ is decreasing in θ and τ, and also decreasing in α if $\alpha \geq 2(1-\theta)$. Moreover, as $\tau \to 1$ and/or $\theta \to 1/2$, $\psi \to 1$ (independently of the value of α). In general, the condition for choosing p_s^J is:

$$\psi\frac{\partial y^{I_s}(p^{I_s},p^{O_s})}{\partial p_s^J} + \frac{\partial y^{O_s}(p^{I_s},p^{O_s})}{\partial p_s^J} \underset{>}{\leqq} 0 \ .$$

Observe that

$$\frac{\partial \left[y^{I_s}(p^{I_s}, p^{O_s}) + y^{O_s}(p^{I_s}, p^{O_s}) \right]}{\partial p^{J_s}} = B_k \left(k(p^{I_s}, p^{O_s}) \right) \sigma w_p \left(p^{J_s} \right) > 0.$$

From this, we conclude that as $\tau \to 1$ and/or $\theta \to 1/2$, $p^{I_s} = p^{O_s} = \pi_s$, i.e., production efficiency obtains, since the incumbent maximizes total income $y^{I_s}(p^{I_s}, p^{O_s}) + y^{O_s}(p^{I_s}, p^{O_s})$. Moreover, as $\theta \to 0$ and $\tau \to 0$, then $\psi \to \infty$ and the incumbent maximizes its own group's income $y^{I_s}(p^{I_s}, p^{O_s})$, such that $p^{I_s} = \pi_s$ and $p^{O_s} = 0$. The existence of the critical threshold now follows from the intermediate value theorem, given that $\psi(\theta, \alpha)$ is continuous in θ on $[0, 1/2]$. The property that $\widehat{\tau}_\theta(\theta, \alpha) < 0$ follows since ψ is decreasing in both θ and τ, while $\widehat{\tau}_\alpha(\theta, \alpha) < 0$, when $\alpha \geq 2(1-\theta)$, follows since ψ is decreasing in α in that domain. ■

Proof of Proposition 4 To prove the proposition, we note some useful preliminaries. It is straightforward to check that the income function has a convenient quasi-linear form:

$$\hat{y}^{J_s}(\pi_s, \alpha) = (1-\sigma)\omega + \sigma w \left(p^{J_s}(\pi_s, \alpha) \right) \psi(\omega)$$

where $\psi(\omega)$ is a homogenous convex function. Also, by Hotelling's lemma:

$$l^{J_s} = -w \left(p^{J_s}(\pi_s, \alpha) \right) \psi'(\omega).$$

Let

$$\overline{\omega}(\pi_s) = B\left(\frac{\sigma[w(\pi_s)]}{1-\sigma} \right) - B_k\left(\frac{\sigma[w(\pi_s)]}{1-\sigma} \right) \frac{\sigma[w(\pi_s)]}{1-\sigma}$$

and

$$\underline{\omega}(\pi_s) = B\left(\frac{\sigma[w(\pi_s) + w(0)]}{2(1-\sigma)} \right) - B_k\left(\frac{\sigma[w(\pi_s) + w(0)]}{2(1-\sigma)} \right) \frac{\sigma[w(\pi_s) + w(0)]}{2(1-\sigma)}.$$

denote equilibrium wages when the incumbent sets legal protection efficiently ($\overline{\omega}(\pi_s)$) and inefficiently ($\underline{\omega}(\pi_s)$). It is easy to check that $\overline{\omega}(\pi_s) > \underline{\omega}(\pi_s)$.

The incumbent maximizes the expected period 2 benefits

$$\begin{aligned}\Gamma(\pi_2,\tau_2) &= (1-\gamma)\left\{\begin{array}{c}\mu\left(\begin{array}{c}\left(1-\theta+\tau_2\left(\frac{\alpha_H}{2}-(1-\theta)\right)\right)\hat{y}^{I_2}(\pi_2,\alpha_H)+\\ \left(\theta+\tau_2\left(\frac{\alpha_H}{2}-\theta\right)\right)\hat{y}^{O_2}(\pi_2,\alpha_H)\end{array}\right)+\\ (1-\mu)\left[(1-\theta)\hat{y}^{I_2}(\pi_2,\alpha_L)+(\theta+\tau_2(1-2\theta))\hat{y}^{O_2}(\pi_2,\alpha_L)\right]\end{array}\right\}\\ &+\gamma\left\{\begin{array}{c}\mu\left(\begin{array}{c}\left(1-\theta+\tau_2\left(\frac{\alpha_H}{2}-(1-\theta)\right)\right)\hat{y}^{O_2}(\pi_2,\alpha_H)\\ +\left(\theta+\tau_2\left(\frac{\alpha_H}{2}-\theta\right)\right)\hat{y}^{I_2}(\pi_2,\alpha_H)\end{array}\right)+\\ (1-\mu)\left[1-\theta-(1-2\theta)\tau_2\right]\hat{y}^{O_2}(\pi_2,\alpha_L)+\theta\hat{y}^{I_2}(\pi_2,\alpha_L)\end{array}\right\}\\ &= \mu\left\{\begin{array}{c}\hat{y}^{I_2}(\pi_2,\alpha_H)\left[\frac{\alpha_H}{2}-\left[(1-2\theta)\gamma-(1-\theta)\right](1-\tau_2)\right]+\\ \hat{y}^{O_2}(\pi_2,\alpha_H)\left[\frac{\alpha_H}{2}+\left[(1-2\theta)\gamma-\theta\right](1-\tau_2)\right]\end{array}\right\}\\ &+(1-\mu)\left\{\left[\begin{array}{c}((1-\gamma)-\theta(1-2\gamma))\hat{y}^{I_2}(\pi_2,\alpha_L)+\\ \left[(1-2\gamma)\theta+\gamma-\tau_2(1-2\gamma)(1-2\theta)\right]\hat{y}^{O_2}(\pi_2,\alpha_L)\end{array}\right]\right\}.\end{aligned}$$

less the investment costs in period 1. The marginal benefits with regard to the two choice variables are :

$$\begin{aligned}\Gamma_\tau(\pi_2,\tau_2) &= \mu\left(\begin{array}{c}\hat{y}^{I_2}(\pi_2,\alpha_H)\left[\frac{\alpha_H}{2}+(1-2\theta)\gamma-(1-\theta)\right]\\ +\hat{y}^{O_2}(\pi_2,\alpha_H)\left[\frac{\alpha_H}{2}-(1-2\theta)\gamma-\theta\right]\end{array}\right)\\ &+(1-\mu)(1-2\gamma)(1-2\theta)\hat{y}^{O_2}(\pi_2,\alpha_L)\end{aligned}$$

and

$$\begin{aligned}\Gamma_\pi(\pi_2,\tau_2) &= \mu\left(\begin{array}{c}\hat{y}_\pi^{I_2}(\pi_2,\alpha_H)\left[\frac{\alpha_H}{2}-\left[(1-2\theta)\gamma-(1-\theta)\right](1-\tau_2)\right]\\ +\hat{y}_\pi^{O_2}(\pi_2,\alpha_H)\left[\frac{\alpha_H}{2}+\left[(1-2\theta)\gamma-\theta\right](1-\tau_2)\right]\end{array}\right)\\ &+(1-\mu)\left[\begin{array}{c}((1-\gamma)-\theta(1-2\gamma))\hat{y}_\pi^{I_2}(\pi_2,\alpha_L)+\\ \left[(1-2\gamma)\theta+\gamma-\tau_2(1-2\gamma)(1-2\theta)\right]\hat{y}_\pi^{O_2}(\pi_2,\alpha_L)\end{array}\right].\end{aligned}$$

If $\mu\to 0$ and $\gamma>1/2$, we have that:

$$\Gamma_\tau(\pi_2,\tau_2)=(1-2\gamma)(1-2\theta)\hat{y}^{O_2}\pi_2,\alpha_L<0$$

which implies that $\tau_2=\tau_1$. Moreover, as $\gamma\to 1/2$

$$\begin{aligned}\Gamma_\pi(\pi_2,\tau_2) &= \left[\begin{array}{c}((1-\gamma)-\theta(1-2\gamma))\hat{y}_\pi^{I_2}(\pi_2,\alpha_L)+\\ \left[(1-2\gamma)\theta+\gamma-\tau_2(1-2\gamma)(1-2\theta)\right]\hat{y}_\pi^{O_2}(\pi_2,\alpha_L)\end{array}\right]\\ &= \frac{1}{2}\left(\hat{y}_\pi^{I_2}(\pi_2,\alpha_L)+\hat{y}_\pi^{O_2}(\pi_2,\alpha_L)\right)\\ &= \frac{1}{2}\sigma w_p(\pi_s)\psi\left(\underline{\omega}(\pi_s)\right)\\ &< \sigma w_p(\pi_s)\psi\left(\bar{\omega}(\pi_s)\right).\end{aligned}$$

(This is true for the constant elasticity case and will definitely be true more generally for π_s low enough). ■

Proof of Proposition 6 To solve for the Stackelberg equilibrium in Proposition 6, we begin by deriving the reaction function of the government to some fixed level of $A^{O_{s-1}}$. Maximizing (14), the first-order condition for $A^{I_{s-1}}$ is:

$$-\left[1-\theta-\gamma^O\left(A^{O_{s-1}},A^{I_{s-1}}\right)(1-2\theta)\right]2w(\pi_s)+(1-2\theta)\,\mu\xi 2\left[Z_s-w(\pi_s)A^{I_{s-1}}\right]\leq 0.$$

Solving for an interior solution, we obtain:

$$w(\pi_s)A^{I_{s-1}}=\frac{1}{2}\left[A^{O_{s-1}}\frac{w(\pi_s)}{\xi}+Z_s-\underline{Z}_s\right]\ . \tag{20}$$

Clearly, $A^{I_{s-1}}$ is strictly positive for all $Z_s>\underline{Z}_s-A^{O_{s-1}}\frac{w(\pi_s)}{\xi}$. Thus, a necessary condition for $A^{I_{s-1}}=0$ is $Z_s<\underline{Z}_s$. Below, we show that this is also sufficient.

Now, consider the first-order condition to (16) for $A^{O_{s-1}}$, when $A^{I_{s-1}}>0$. This is given by:

$$-w(\pi_s)+\mu\left(1-\xi\frac{\partial A^{I_{s-1}}}{\partial A^{O_{s-1}}}\right)2[Z_s-w(\pi_s)A^{I_{s-1}}]$$
$$-\gamma^O\left(A^{O_{s-1}},A^{I_{s-1}}\right)2w(\pi_s)\frac{\partial A^{I_{s-1}}}{\partial A^{O_{s-1}}}\leq 0\ .$$

We can solve this, using Assumption 1(a) and observing that $\frac{\partial A^{I_{s-1}}}{\partial A^{O_{s-1}}}=\frac{1}{2\xi}$, to obtain:

$$-w(\pi_s)+\mu Z_s-\mu w(\pi_s)\frac{A^{O_{s-1}}}{\xi}-w(\pi_s)\frac{\gamma^O}{\xi}\leq 0\ . \tag{21}$$

We now prove the result. A sufficient condition for positive $A^{O_{s-1}}$ is that $Z_s\geq\overline{Z}_s$. Observe also that, as $\overline{Z}_s>\underline{Z}_s$, $A^{O_{s-1}}=0$ for $Z_s<\underline{Z}_s$ making $Z_s<\underline{Z}_s$ necessary and sufficient for a peaceful equilibrium.

Hence for $Z_s\in\left[\underline{Z}_s,\overline{Z}_s\right]$ we have $A^{I_{s-1}}>0$ with the level in case 2 of Proposition 6 given by (20). Finally, for $Z_s>\overline{Z}_s$, we find that:

$$\frac{A^{O_{s-1}}w(\pi_s)}{\xi}=Z_s-\overline{Z}_s\ , \tag{22}$$

as long as $A^{O_{s-1}}<\nu$, so the opposition is not constrained by its revenue-raising capacity. Plugging (22) into (20) gives $w(\pi_s)A^{I_{s-1}}$. ■

Figure 1 State capacities and income

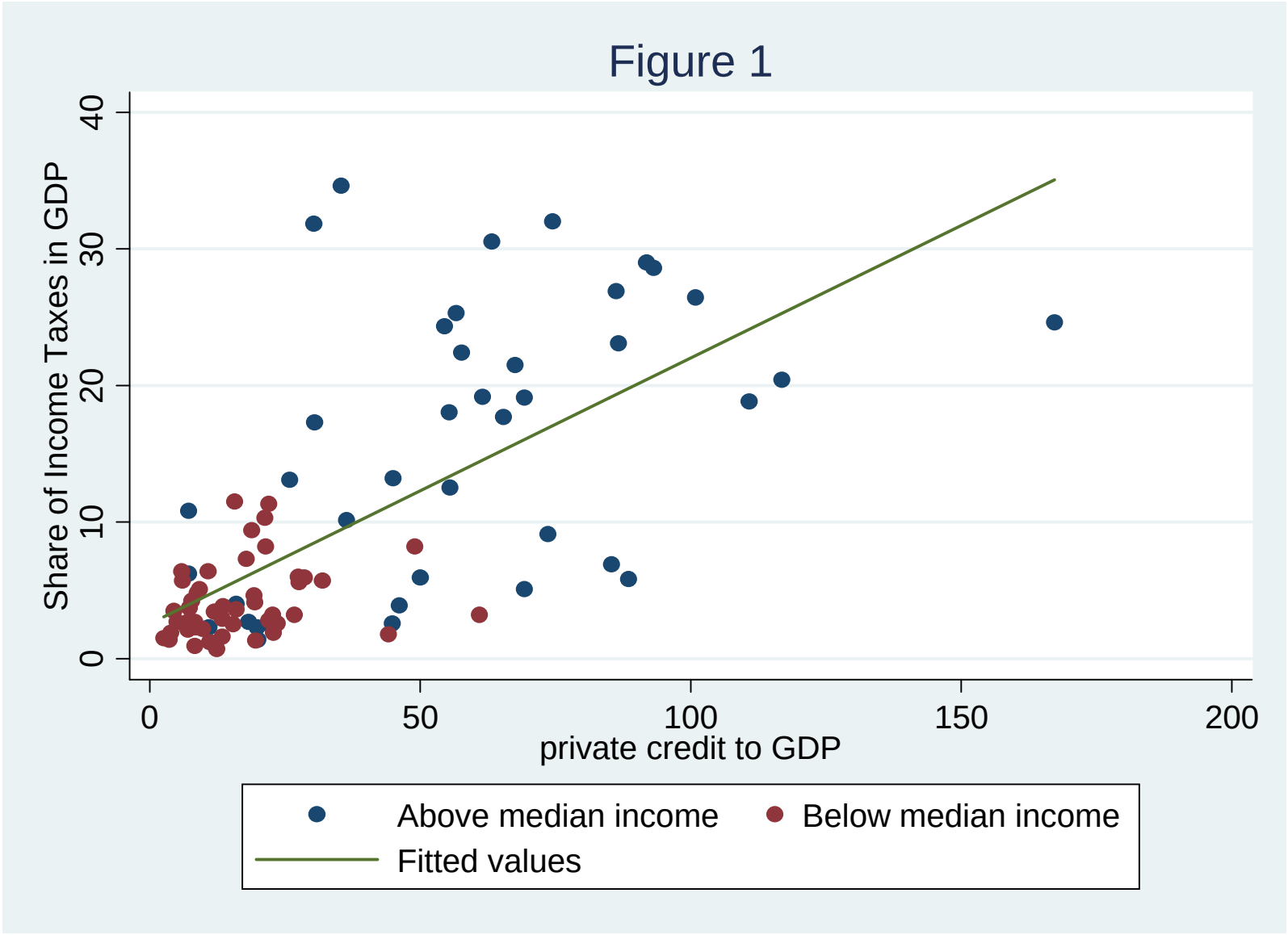

Figure 2 Incidence of Civil War

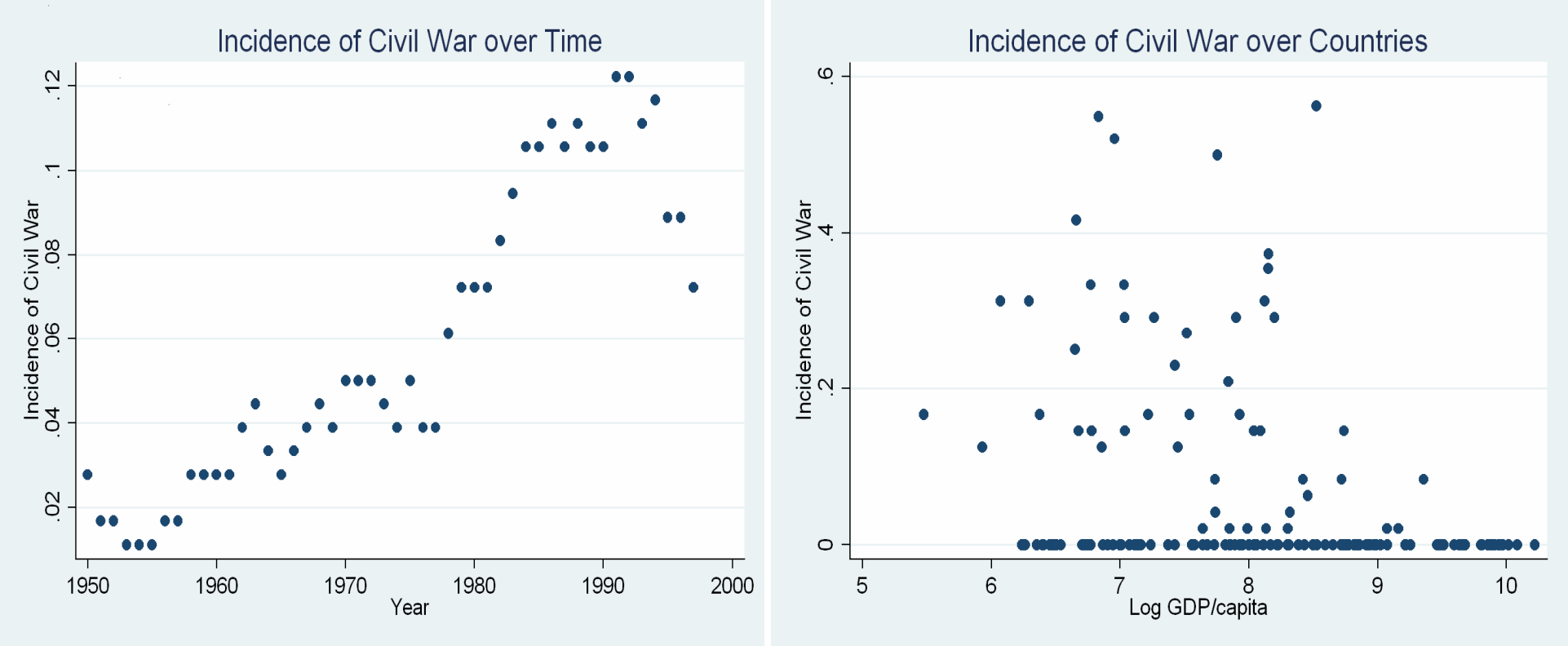

Table 1 Economic and Political Determinants of State Capacity across Countries

	Legal capacity			Fiscal capacity		
	(1) Private credit to GDP (1975-2000)	(2) Contract enforcement (circa 2005)	(3) GADP (1982-1997)	(4) 1 – share of informal sector (circa 2005)	(5) Income taxes in total taxes (1975-2000)	(6) Total taxes in GDP (1975-2000)
Incidence External Conflict up to 1975	**0.509*** (0.143)**	**1.010*** (0.277)**	**0.576*** (0.170)**	**0.478*** (0.137)**	**0.405* (0.221)**	**0.555*** (0.162)**
Incidence Democracy up to 1975	**0.095 (0.059)**	**0.044 (0.078)**	**0.125** (0.050)**	**0.128* (0.072)**	**0.072 (0.083)**	**0.088 (0.059)**
Incidence parliamentary Democracy up to 1975	**0.000 (0.062)**	**0.040 (0.087)**	**0.111* (0.061)**	**0.051 (0.075)**	**0.157* (0.089)**	**0.160** (0.067)**
English Legal Origin	**– 0.008 (0.033)**	**0.126** (0.059)**	**– 0.007 (0.040)**	**– 0.011 (0.053)**	**0.002 (0.047)**	**– 0.015 (0.042)**
Socialist Legal Origin	**—**	**0.185** (0.079)**	**0.096*** (0.034)**	**0.159*** (0.054)**	**– 0.130*** (0.032)**	**– 0.119** (0.031)**
German Legal Origin	**0.406*** (0.120)**	**0.466*** (0.062)**	**0.248*** (0.053)**	**0.234*** (0.046**	**0.206** (0.092)**	**0.010 (0.083)**
Scandinavian Legal Origin	**0.112*** (0.041)**	**0.551*** (0.081)**	**0.254*** (0.055)**	**0.127*** (0.052)**	**0.098 (0.098)**	**0.292*** (0.087)**
Observations	93	122	115	87	103	104
Adjusted R-squared	0.524	0.235	0.596	0.383	0.371	0.639

Robust standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.
Socialist legal origin dropped in Col 1, since data on private credit not available in that category.

Table 2 Economic and Political Determinants of Civil War within Countries

	(1) Year of civil war	(2) Year of civil war	(3) Year of civil war	(4) Year of civil war	(5) Year of civil war	(6) Year of civil war
Commodity Export Price Index	**0.036*** (0.013)**	**– 0.119*** (0.027)**	**0.049*** (0.015)**	**– 0.147*** (0.041)**	**0.046*** (0.015)**	**0.085*** (0.031)**
Commodity Import Price Index	**0.211*** (0.068)**	**– 1.55*** (0.303)**	**0.160** (0.065)**	**– 1.388*** (0.252)**	**0.287*** (0.083)**	**0.631*** (0.205)**
GDP per capita	**–5.20e-06*** (2.88e-07)**	**– 3.03e-05*** (4.63e-06)**	**–3.40e-06*** (1.13e-06)**	**– 2.21e-05*** (4.03e-06)**	**–4.59e-06*** (1.31e-06)**	**–1.22e-05*** (1.91e-06)**
Floods and heatwaves						**0.013** (0.006)**
Sample	**All countries**	**Parliament. democracies only**	**Parliament. democracies excluded**	**High exec. constraints only**	**High exec. constraints excluded**	**All countries**
Obs. (Countries)	4658(124)	1111(49)	3238(99)	1148(58)	3223(99)	3814(117)
Within R-squared	0.043	0.168	0.034	0.117	0.044	0.049

Robust standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.
All specifications include fixed country and year effects.