

Wars and State Capacity*

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September 14, 2007

Abstract

The paper builds a simple model to investigate how different types of armed conflict shape fiscal capacity: the state's ability to raise revenue from taxes. It starts from the simple observation that external war tends to generate common interests across groups in society, while internal, civil war entails deep conflicting interests across groups. Our model predicts that – compared to a society without conflict – civil wars lead to smaller investments in fiscal capacity, while prospects of external war generally lead to larger investments. Correlations in international data on conflicts and taxation are, by and large, consistent with these predictions.

*We thank Jim Fearon and Philippe Martin for helpful comments, and CIFAR, ESRC (RES-051-27-0166), and the Swedish Research Council for generous financial support.

1 Introduction

At the heart of state capacity lies the ability to levy taxes to finance public goods and make transfers. A common argument among historians is that the prospects of external war may promote the development of state capacity: governments who build more power to tax are more likely to win such wars and may also face less opposition from tax payers.¹

Internal conflicts leading to civil war mainly take the form of insurgencies by rebel groups (see, e.g., Fearon 2007), which again requires the state to devote resources to fighting. How civil conflicts affect investments in state capacity has not received much attention, however, even though such conflicts are much more common in low income countries.²

While external war may induce a common interest across different groups in society, civil war inherently reflects conflicting interests. This crucial difference is the starting point for our paper. Unlike the existing literature, which asks how state capacity shapes the incidence of conflict, we focus on how the probability of these two types of conflict affects incentives to invest in (one type of) state capacity.

We build on Besley and Persson (2007), which develops a model of the state's investment in (legal) capacity to promote markets and (fiscal) capacity to levy taxes. We use a stripped down version of that model to analyze the difference between internal and external conflict.

The next section lays out our model, where a government investing in the fiscal system can levy more taxes in the future. Section 3 studies optimal tax and spending decisions, and derives predictions about the two types of conflict and investments in fiscal capacity. Section 4 takes a preliminary look at the data, and Section 5 offers a few concluding comments.

2 Model

Basic There are two periods $s = 1, 2$. Private consumption takes place in both periods, but consumers cannot save. Preferences of all agents are linear in private consumption, as well as in government spending.

¹See, e.g., Brewer (1989), Hoffman and Rosenthal (1997), O'Brien (2005) and Tilly (1990). There is also a large political science literature showing that democracies fight fewer external wars than autocracies (see e.g., Maoz and Russett, 1993), although some authors claim that this "democratic peace" largely reflects the fact that democracies have higher incomes and are more economically intergrated (see e.g., Gartzke, 2007).

²See Elbadawi and Sambanis (2002) for a review of the empirical work on the incidence of civil wars. A robust finding of this literature is that poor countries are disproportionately involved in civil war, even though the direction of causation is difficult to establish. In a debate over the interpretation of this finding, Fearon and Laitin (2003) see it as reflecting limited state capacity to put down rebellions, while Collier and Hoeffler (2004) see it as reflecting the lower opportunity cost of fighting in low-income economies.

In each period, the government makes taxing and spending decisions. The period1 government invests in fiscal capacity, assuming that the world ends in period 2. This simple dynamic framework captures the essentials of a representative time period within a fully specified dynamic model.

Two groups, $J = A, B$, make up shares $\beta^A, \beta^B = 1 - \beta^A$ of the population. Group membership is determined by some attribute observable by everybody, including the government. All agents within groups have identical income levels denoted by Y^J . We also define aggregate income and the income shares of each group as $Y = \sum_J \beta^J Y^J$, and $\omega^J = \beta^J Y^J / Y$.

Spending, taxes, state capacity, and external conflict Because the government observes income, tax rates in period s can be made group specific, t_s^J . To allow for redistribution in the simplest possible way, we allow tax rates to be negative. Taxation is constrained, as any individual can earn a fraction $(1 - \tau_s)$ of her market income in an informal sector where taxation is avoided. Therefore, tax rates in period s must satisfy $t_s^J \leq \tau_s$. Let τ_1 be the initial period1 stock of "fiscal capacity" (a higher τ raises the feasible tax rate). Fiscal capacity does not depreciate but can be augmented by nonnegative investment in period 1, which costs $F(\tau_2 - \tau_1)$. We assume costs are increasing and convex, with $F(0) = 0$ and $F_\tau(0) > 0$.

A public good with stochastic benefits is provided in quantity G_s . The value is high $\alpha_s = \alpha > 1$ with probability ε , and low $\alpha_s = 0$ with probability $(1 - \varepsilon)$. Realizations of α_s are *iid* over time. We interpret ε as the probability of external conflict, α_s as the level of external threat, and G_s as the level of defense against such threat.

By linearity, indirect utility of a member of group J is:

$$v_s^J(t_s^J, G_s) = \alpha_s G_s + (1 - t_s^J) Y^J. \quad (1)$$

The government budget constraints are

$$\sum_J t_1^J \beta^J Y^J = G_1 + F(\tau_2 - \tau_1) \quad \text{and} \quad \sum_J t_2^J \beta^J Y^J = G_2. \quad (2)$$

Their different form reflects the assumption of no investments in period 2.

Government preferences, turnover, and internal conflict In each period, power is held by a government, which represents group A or group B and seeks to maximize the utility of group members in (1). Turnover is stochastic and *iid* over time. To simplify the algebra, we make the "neutral" assumption that group J holds power in period s with probability equal to its population share, β^J .³

³Besley and Persson (2007) study a richer model, where they separately investigate the effects on state capacity of political turnover, political stability, and political polarization.

Once the government (group) in power is known, the losing group may trigger a violent insurgency (civil war). Such internal conflicts occur only when there is no external conflict. The conditional (on no external conflict) probability of an insurgency is δ , and the unconditional probability is $(1-\varepsilon)\delta$. We assume that all existing fiscal resources are absorbed in internal conflicts.

Timing Society starts out each time period with some fiscal capacity, τ_s . The subsequent timing is as follows:

1. Nature determines the value of public goods (external threat) α_s , which group J holds political control, and whether there is internal conflict.
2. Absent internal conflict, the government freely picks its policy vector of taxes and government spending, $\{t_s^A, t_s^B, G_s\}$ and invests in fiscal capacity (only in period 1), $\tau_2 - \tau_1$.
3. Agents consume.

3 Results

Given the specific structure of our model, the choice of taxes and spending in each period can be studied separately from the period-1 investment decision.

Optimal policy Let group J be in power and group K be out of power. Absent internal conflict, the policy vector $\{t_s^J, t_s^K, G\}$ chosen at stage 2 maximizes the indirect utility of a group J member in (1), for given α_s subject to the appropriate part of (2) and the institutional constraints:

$$t_s^J \leq \tau_s \text{ and } t_s^K \leq \tau_s .$$

If $\alpha_s = \alpha > 1$, this maximization yields $t_s^J = t_s^K = \tau_s$ for $s \in \{0, 1\}$ and

$$G_1 = \sum_J \tau_1 \beta^J Y^J - F(\tau_2 - \tau_1) \text{ and } G_2 = \sum_J \tau_2 \beta^J Y^J .$$

If $\alpha_s = 0$, then instead $G_s = 0$, $t_s^K = \tau_s$ for $s \in \{0, 1\}$ and

$$t_1^J = \frac{F(\tau_2 - \tau_1) - \tau_1 \beta^K Y^K}{\beta^J Y^J} \text{ and } t_2^J = \frac{-\tau_2 \beta^K Y^K}{\beta^J Y^J} .$$

Intuitively, the value of external defense either exceeds the value of transfers (unity) or not, Thus, the ruling government uses existing fiscal capacity to finance either spending on defense (public goods) or transfers to its own group. The group out of power is always taxed as much as possible.

Finally, by assumption, all fiscal resources are used up in any internal conflict, i.e.,

$$t_s^J = t_s^K = \tau_s \quad \text{and} \quad G_s = 0 \quad \text{for } s \in \{1, 2\},$$

and there is no investment in state capacity, i.e., $\tau_2 = \tau_1$, if internal conflict breaks out in period 1.

Optimal investments in state capacity In period 1, group J invests in fiscal capacity under uncertainty over the future realizations of α_2 and the period-2 group in power. Drawing on the results in Section 3 and a little algebra we can define the expected net payoff

$$Y^J \left\{ 1 + \tau_2 \left[\beta^J \left(1 + \frac{\omega^K}{\omega^J} \right) [\varepsilon\alpha + (1 - \varepsilon)(1 - \delta)] - 1 \right] \right\} - \lambda(\alpha_1)F(\tau_2 - \tau_1),$$

where

$$\lambda(\alpha_1) = \begin{cases} \alpha & \text{if } \alpha_1 = \alpha \\ 1 & \text{if } \alpha_1 = 0 \text{ and there is no civil conflict} \\ \infty & \text{if } \alpha_1 = 0 \text{ and there is civil conflict} \end{cases} \quad (3)$$

is the (income-normalized) cost of investment. This reflects the opportunity cost of funds, which is higher when the realized external threat is high. The first-order condition for state capacity is

$$\begin{aligned} & Y^J \left[\beta^J \left(1 + \frac{\omega^K}{\omega^J} \right) [\varepsilon\alpha + (1 - \varepsilon)(1 - \delta)] - 1 \right] \\ \leq & \lambda(\alpha_1)F_\tau(\tau_2 - \tau_1) \quad \text{c.s. } \tau_2 - \tau_1 \geq 0. \end{aligned} \quad (4)$$

The right-hand side of (4) is the marginal cost of investment in fiscal capacity, while the left-hand side is the (net) marginal benefit. Fiscal capacity is valuable for group J either when the external threat is high whoever is in power at $s = 2$, an event that occurs with probability ε , or when the external threat is low, no insurgency occurs, and group J holds on to power, a joint event that occurs with probability $(1 - \varepsilon)(1 - \delta)\beta^J$. But since taxes lower private income, we have to deduct from these marginal benefits the marginal cost of foregone income.

As mentioned above, there is no investment in state capacity in the wake of period-1 internal conflict. We assume that ε and α are high enough that (4) holds with equality and positive investments in fiscal capacity are made (except during internal conflict) in period 1. The equilibrium level of investment is defined by $T(\alpha_1, \varepsilon, \delta)$.

Empirical predictions How do investments depend on the probabilities for external and internal conflict? To answer this question we first state two provisional results that speak to the effect of future anticipated conflicts, and the effect of current realized conflicts, respectively.

Lemma 1 *Absent internal conflict in period 1, investment in fiscal capacity is reduced by greater risk of future internal conflict, $T_\delta(\cdot) < 0$, but raised by greater risk of future external conflict, $T_\varepsilon(\cdot) > 0$.*

To prove Lemma 1, observe that neither δ nor ε enter the right-hand side of (4), and the left-hand side is decreasing in δ but increasing in ε . As the right-hand side is increasing in τ_2 , the result follows. Intuitively, higher prospects of future external conflict makes it more likely that any future government will use fiscal capacity for common-interest defense. The risk of internal conflict diminishes investment incentives, because all fiscal resources are absorbed in such conflicts.

Lemma 2 *Absent internal conflict in period 1, high current threat of external conflict reduces investment in fiscal capacity, $T(\alpha, \cdot) < T(0, \cdot)$.*

This lemma follows because α_1 does not enter the left hand side of (4) while the opportunity cost of funds, $\lambda(\alpha_1)$, is increasing in α_1 . Intuitively, a period 1 internal conflict or high external threat reduce investment in fiscal capacity because they raise the cost of public funds.⁴

Since the data at any given point in time will reflect both past anticipations and past realizations of conflicts, we define (unconditionally) expected investment as

$$E(T) = \varepsilon T(\alpha, \varepsilon, \delta) + (1 - \varepsilon)(1 - \delta)T(0, \varepsilon, \delta) . \quad (5)$$

In this expression, the ε and δ parameters outside (inside) the investment function capture their effect on the expected frequency of period 1 (period 2) states. Differentiating (5) and drawing on Lemmas 1 and 2, we have the main prediction of the paper:⁵

Prediction *Expected fiscal capacity is decreasing in the probability of internal conflict. The probability of external conflict has an ambiguous effect, but raises fiscal capacity if δ is high enough.*⁶

⁴Besley and Persson (2007) shows that complementarity between investments in fiscal capacity and legal capacity creates positive feedbacks to income per capita. Amending the model with this mechanism would thus imply a lower future income.

⁵The second part follows because a higher value of δ cuts the negative effect of making the high current investment state less likely (the $(1 - \varepsilon)$ in the second term in (5) and raises the positive effect of future external threat in any current state (a higher value of $T_\varepsilon(\cdot)$).

⁶The model also predicts that the risks of both conflicts exert larger effects on state capacity if the ruling group internalizes a smaller share of income, because it commands a smaller income share (ω^J) than the other group. The comparative statics of parameter β^J are harder to interpret, since they mix up relative group size and political stability.

4 Data

How do the theoretical results relate to available data? Following a number of previous papers, we use the (annual) Correlates of War data to measure the incidence of internal and external wars in the period from 1945 to 1997.⁷ In an average year of this period, 5.5% of the 180 countries in the sample were engaged in a civil war and 3.2% took part in an external war. About 24% of the countries had an internal conflict and 31% an external conflict in at least one year between 1945 and 1997.⁸ We define a dummy variable, for each type of conflict, which takes a value of 1 if a country experienced any conflict in this period.

Our measures of fiscal capacity emanate from data on taxation collected by Baunsgaard and Keen (2005), which is available annually for 125 countries between 1975 and 1997. Absent direct data on past investments in fiscal capacity, we proxy it in three ways by overall tax collection, as a percentage of GDP (with a sample mean of 21%); by the share of income taxes as a percentage of total taxes, as income taxation requires institutionalized compliance structures (mean 35%); and by the average inflation rate, as seigniorage is more likely used with fewer institutionalized sources of tax revenue (mean 15%).

The main correlations are given in Table 1 which runs regressions of our fiscal capacity measures on our conflict dummies, and on binary indicators for (eight) regions and (five) legal origins.⁹ Because of the findings in the literatures on external and internal conflict noted in the introduction and the results in Besley and Persson (2007), we sometimes also include measures for the proportion of years which a country has been democratic as well as the level of income. Given the likely simultaneity of the left and right hand side variables, nothing causal can be read into these regressions. But the correlations are interesting.

Column 1 shows that countries involved in internal conflict have a GDP share of taxes around 7% lower than countries without conflict, while countries involved in external conflicts have a tax share around 7% higher. The former result is qualitatively robust (column 2) to controlling for democracy and income, which are both positively correlated with raising taxes. In column 3, income taxes as a share of total taxes are 8% lower in countries that

⁷<http://www.correlatesofwar.org/>. Specifically, we say that a country is involved in an external war in a specific year if either (or both) of the binary (0,1) variables *interstatewar* or *extrastatewar* is equal to one. A country is said to be involved in an internal war if *civilhomewar* is equal to one.

⁸Over this period, 27 of the 180 countries are engaged in both an internal and an external conflict. In line with our theory, however, simultaneous external and internal conflicts are extremely rare.

⁹The results are similar if we, instead of the conflict dummies, use the share of years since 1945 that a country has been involved in each type of conflict. The alternative measures are closer to the theory but also create more outliers.

experienced an internal conflict and 16% higher in countries that took part in an external conflict. The latter result is robust to controlling (column 4) for democracy and income. Finally, column 5 shows that countries that fought a civil war, on average, have an inflation rate 14% higher than others. This is a large effect indicating that such countries have poorly developed fiscal capacity and therefore resort to inflation for raising revenue in periods of conflict. This result, too, is robust (column 6) to democracy and income.

5 Conclusion

This paper has focused on determinants of long-run state development and the role of war in shaping investments in fiscal capacity. We have presented a simple theory, where prospects of internal and external conflicts have very different effects on incentives for building capacity to collect taxes, and some correlations consistent with this theory.

The work reported here is part of a broader research agenda that does not take the existence of effective government for granted. Our suggested approach aims to identify economic and political features that shape the incentives to invest in state institutions, which in turn affect policy outcomes. We believe that such an approach can help bring together ideas from economics, political science and history.

The existing literature on civil war has tended to take fiscal capacity as given along with the level of economic development. A more complete treatment of the causes and consequences of conflict will have to treat the incidence of conflict, the level of development, and investments in state capacity as jointly determined. This presents a challenge for future theoretical and empirical research.

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Table 1: Fiscal capacity and different types of war

	(1) Taxes as a percentage of GDP	(2) Taxes as a percentage of GDP	(3) Income taxes as a percentage of total taxes	(4) Income taxes as a percentage of total taxes	(5) Average percentage inflation rate	(6) Average percentage inflation rate
Any internal war during 1945-1997	- 6.993*** (1.843)	- 2.723** (1.310)	- 7.953** (3.960)	- 3.094 (3.574)	14.346*** (4.790)	12.551** (5.567)
Any external war during 1945-1997	6.911*** (2.267)	1.604 (1.569)	16.157*** (3.713)	6.653** (3.317)	3.586 (5.863)	6.676 (6.628)
Share of years in democracy during 1945-1997		5.028** (2.368)		1.902 (7.020)		- 3.979 (11.157)
Share of years in parliamentary democracy during 1945-1997		6.529*** (1.939)		7.553 (6.401)		- 5.403 (4.395)
Mean (log of) income during 1945-1997		3.302*** (1.067)		7.936*** (2.231)		0.974 (3.934)
Observations	125	105	125	105	116	100
R-squared	0.489	0.739	0.390	0.598	0.307	0.370

Robust standard errors in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%)

In addition to the variables shown, all specifications include a set of dummies for (eight) regions and (five) legal origins.