Understanding State Capacity

Tim Besley

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Issues

- One of the principal problems in the world today is the existence of weak states.

- Such states:
  - fail to have effective means of collecting revenue
  - have poor infrastructure for supporting/regulating markets
  - are often subject to problems of internal disorder.

Issues (Continued)

- The economics profession has largely ignored these issues taking as given state capacity for policy making

- For example:
  - models of markets often assume effective legal infrastructure
  - public finance models study what do with taxes and tax revenue rather than understand how effectively the state can tax and spend.

Issues (Continued)

- One of the striking features of economic development is the clustering of state development and market development.

- There are almost no examples of strong economies and weak states.
  - Moreover, there is very little (no?) evidence that small states are good for development

- That is not to argue though the state is always a force for good in the economy
  - there are plenty of examples of dysfunctional and predatory states.

Today's Lecture

- I want to give a progress report on a research project with Torsten Persson whose aim is to understanding the origins of state capacity.

- We define state capacity more broadly than most of the literature
  - to include the ability of the state to enforce contracts and make economies work.

- I will sketch for you a simple framework for thinking about the dynamic evolution of state capacity and the forces that shape it.

- I will use this to touch on a number of themes in the economics of institutions and their link to economic development.

- But a basic theme is that to understand development, we need to pay attention to the forces that lead to improvements in the state.

A Background Picture

- The following picture plots the relationship between:
  - tax revenue to GDP
  - private credit to GDP (crude measure of market development)

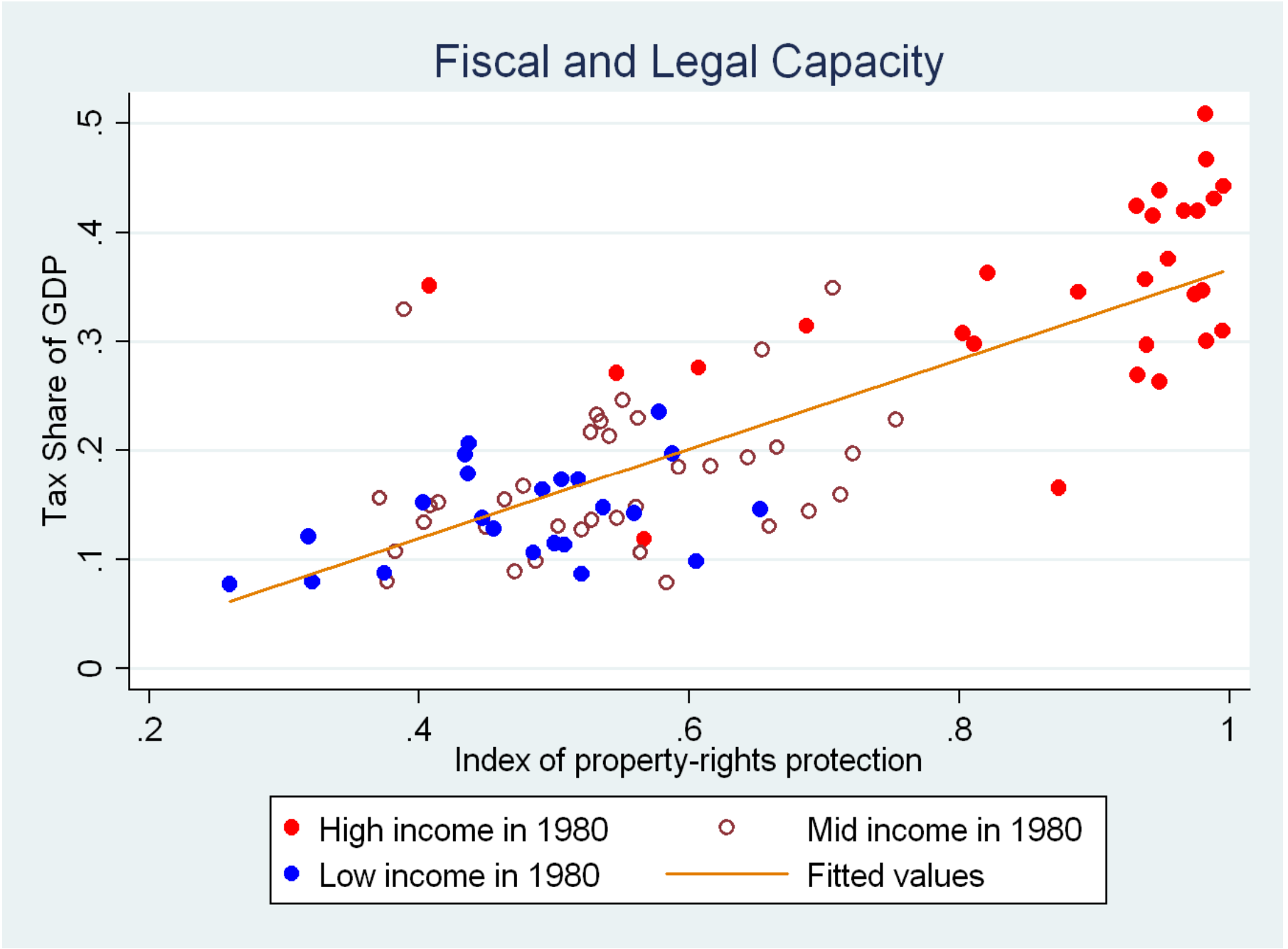

Figure 1 State capacity and income

Two Key Propositions

- Richer countries have more state capacity

- State and market development are positively correlated

Three Ingredients of the Approach

1. State capacities as investments

2. The creation of common interests

3. Complementarity of states and markets

Ingredients I

- State capacity as a capital investment
  - courts
  - tax collection authorities
- An interesting issue is how far such investments are irreversible

Ingredients II

- Sectional versus common interests
  - how is the state used?
- The role of war?
  - war when the existence of a polity is threatened is a key example of common interest
  - civil war when force is used to capture the state is a key example of sectional interest
- Political institutions should serve to mediate across these interests

Ingredients III

- Markets and taxation are complements
  - market transactions are easier to tax on the whole
  - so governments who care about taxation will tend to want to invest in markets

A Simple Model

- This mainly draws on two papers:
  - The Origins of State Capacity: Property Rights Taxation and Politics, American Economic Review, September 2010
  - State Capacity, Conflict and Development, Econometrica, January, 2010.
- I will begin by having only fiscal capacity and then add some complications including the possibility of legal capacity.

Basic model setup

- The model is stripped down to give a simple and transparent account of the important factors.

- Total population size is normalized to one.

- There are two groups, each of which comprises half the population in every time period.

- There are just two time periods, $s = 1, 2$, and the world ends after period 2.

  - Although artificial, this two-period approach allows us to make the main points of economic interest.

- 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.

Individual incomes and utility

- Each individuals inelastically supplies one unit of labor in each period and earns an income ω

- This can be transferred into public goods on a one-for-one basis.

- In each period s, individuals in group J value their own private consumption C_s^J and the (non-durable) public good G_s according to the linear function:

$$\alpha_s G_s + C^{J_s}. \tag{1}$$

- The parameter $\alpha_s \in \{\alpha_L, \alpha_H\}$ reflects the value of (common interest) public goods.
  - let ϕ be the probability that the outcome is $\alpha_H > 2$ and $\alpha_L < 1$.

Policies and Institutions

- The government has three policy choices in each period:
  - General public good G_s
  - Income tax t_s
  - Transfers T^{J_s}.
- Power can be peacefully transferred to the opposition, which happens with exogenous probability given by parameter γ.
  - This can be thought of as the reduced form of some underlying political process, which we do not model.

  - As a result, whoever wins becomes the new incumbent, I_2, and whoever loses becomes the new opposition, O_2.

- Incumbents are constrained to allocate at least σ units of consumption to the opposition for each unit of consumption it transfers to its own group.

- This gives the following constraint on transfers:

$$T^{O_s} \geq \sigma T^{I_s}.$$

Constraints on government

- Policies are constrained by state capacity: $t_s \leq \tau_s$
  - 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 $F(0) = F_\tau(0) = 0$.

– We can think of there being a technological limit on τ_s which we denote by $\bar{\tau}$.

- The government budget constraint in period s can be written as:

$$0 \leq \sum_{J_s \in \{I_s, O_s\}} \frac{t_s \omega - T^{J_s}}{2} - G_s - \begin{cases} F(\tau_2 - \tau_1) & \text{if } s = 1 \\ 0 & \text{if } s = 2 \end{cases} . \qquad (2)$$

Timing

1. The initial condition is τ_s and the identity of last period's incumbent I_{s-1}.

2. The level of public goods demand α_s is 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: $\left\{\left\{t_s, T^{J_s},\right\}_{J_s \in \{I_s, O_s\}}, G_s\right\}$. The period-1 incumbent also chooses fiscal capacity for the next period τ_2.

5. Payoffs for period s are realized and consumption takes place.

Policy Making in Each Period

- Whoever is in power will choose $\left\{G_s, t_s, T^{I_s}, T^{O_s}\right\}$ to maximize:

$$\alpha_s G_s + (1 - t_s)\,\omega + T^{I_s}$$

subject to:

$$t_s \leq \tau_s$$

$$T_s^O \geq \sigma T_s^I.$$

and (2).

- This yields:

$$T^{I_s} = 2\,(1-\theta)\,[t_s\omega - G_s - \sigma_s F\,(\tau_2 - \tau_1)]\,, \tag{3}$$

where $\theta = \frac{\sigma}{1+\sigma} \in [0, 1/2]$ and $\sigma_s = 1$ if $s = 1$ and zero otherwise.

- We interpret a higher value of the opposition's share of transfers, θ, as reflecting more representative, or consensual, political institutions.

- The real-world counterparts of a high θ may be a more proportional electoral system, or more minority protection through a system of constitutional checks and balances.

- If $\theta = 1/2$, then transfers are shared equally across the two groups.

- The tax level is

$$t_s = \tau_s$$

and the level of public good provides is:

$$\hat{G}_s(\alpha_s, \tau_s) = \begin{cases} \tau_s \omega - \sigma_s F(\tau_2 - \tau_1) & \text{if } \alpha_s = \alpha_H \\ 0 & \text{if } \alpha_s = \alpha_L. \end{cases}$$

Political Economy

- The parameters represent $\{\theta, \gamma\}$ our key political economy variables representing
  - inclusiveness: θ
  - stability: γ
- In general, we think of democracy as having higher θ and higher γ.
- A social planner will set $\theta = 1/2$.

Investment in Fiscal Capacity

- We are interested in studying what happens when the government in period one is deciding how much to invest in fiscal capacity.

- Denote the second period expected utility as:

$$W(\tau_2) = \omega(1-\tau_2) + \bar{\lambda}_2 \tau_2 \omega$$

where $\bar{\lambda}_2 = [\phi\alpha_H + (1-\phi)\,2\,[(1-\gamma)(1-\theta) + \gamma\theta]]$ is the expected future value of public funds.

- And the first order condition for investing in state capacity is:

$$\left[\bar{\lambda}_2 - 1\right] \omega = \lambda_1 F' \left(\tau_2 - \tau_1\right)$$

where

$$\lambda_1 = \max \left\{\alpha_H, 2\left(1 - \theta\right)\right\}$$

is the period one marginal cost of public funds.

- Denote the solution by $\hat{\tau}_2$

Social Planning Benchmark

- If $\theta = 1/2$, then the first order condition becomes:

$$\phi \left[\alpha_H - 1\right] \omega = \max \left\{\alpha_H, 1\right\} F' \left(\hat{\tau}_2 - \tau_1\right)$$

- Investment is increasing in ϕ, the likelihood of high demand for investment in public goods.

- It is state dependent depending on current marginal cost of public funds.

Political Economy

- Two cases:

  1. $\bar{\lambda}_2 \leq 1$

  2. $\lambda_2 > 1$.

The Weak State $\left(\bar{\lambda}_2 \leq 1\right)$

- There is no investment in fiscal capacity and the state remains weak.

- When is this likely?
  - low ϕ/low α_H
  - If $\phi = 0$, then $\bar{\lambda}_2 \leq 1$ if:

$$(1 - 2\gamma)(1 - 2\theta) < 0$$

  - or if $\gamma < 1/2$, i.e. high levels of political instability.

Developmental State $\left(\bar{\lambda}_2 > 1\right)$

- More likely if:
  - high ϕ/high α_H
  - Low γ – political stability.

- We will study the impact of three factors on the demand for fiscal capacity within the developmental:
  - economic development
  - demand for public goods
  - political institutions

Economic Development

- An increase in ω means more demand for state capacity.
  - This because the tax base is greater
- Implies that state size increases with development
  - although Baumol's law?

Demand for Public Goods

- An increase in ϕ increases demand for fiscal capacity
  - Links out model to the literature on the impact of war on state development (Tilly)

Political Institutions

- Low γ is good for investment as long as $\theta < 1/2$
  - But effect of turnover disappears as $\theta \longrightarrow 1/2$.
- If θ is close to zero, better to have low turnover.
- Link to civil war literature
  - caused by low θ which leads to high γ.
  - discourages state capacity investment.

Predatory State?

- Suppose that $\phi = 0$, then a strong state can emerge which is not cohesive if $\theta = 0$ and $\gamma = 1$.

- In this case, the investment condition is:

$$\omega = \frac{1}{2} F' \left(\hat{\tau}_2 - \tau_1 \right).$$

- This is the case of a long-lived ruler who faces no constraints.

Complementarity of the State and Market?

- We argued above that the data suggested a complementarity between effective states and effective markets.

- What does our model predict and what happens if we add an investment decision in legal capacity.
  - let $\omega = w(\pi_s)$
  - where π_s can be invested in at a cost $L(\pi_2 - \pi_1)$.

- We can now add a period one decision to invest in π_2.

- Will these two types of state capacity be complements?

- Denote the second period expected utility as:

$$W(\tau_2, \pi_2) = w(\pi_2)(1 - \tau_2) + \bar{\lambda}_2 \tau_2 w(\pi_2)$$

- The key observation is that both types of investment will be complements if $\bar{\lambda}_2 > 1$.

- To see this observe that the first order condition for investing in legal capacity is:

$$w'(\pi_2)\left(1 + \tau_2\left(\bar{\lambda}_2 - 1\right)\right) = \lambda_1 L'(\hat{\pi}_2 - \pi_1).$$

- Now it is clear that an increase in τ_2 increases the marginal benefit of investing in the state.

Growth

- State growth is now a source of endogenous growth
  - increases in π_s raise private sector incomes.

$$\text{growth rate} = \frac{w(\pi_2) - w(\pi_1)}{w(\pi_1)}.$$

- Now if $\bar{\lambda}_2 < 1$, there is less incentive to investment in growth enhancing state improvements.
  - So low growth and low fiscal capacity growth go together.

Empirical Evidence

- What are the kinds of factors that shape common interests, consensual decision making and political turnover?

- Charles Tilly has argued that war is one of the main forces shaping state formation.

- The model also suggests looking for factors that affect θ and γ.

- The following Table illustrates some results.

Table 1 Economic and political determinants of state capacity across countries

	Legal capacity			Fiscal capacity		
	(1)	(2)	(3)	(4)	(5)	(6)
	Private credit to GDP (1975-)	Contract enforcement (circa 2005)	GADP (1982-1997)	1 – share of informal sector (circa 2005)	Income taxes in total taxes (1975-)	Total taxes in GDP (1975-)
Past incidence of external conflict	0.604***	1.029***	0.635***	0.360***	0.437**	0.325***
	(0.142)	(0.277)	(0.122)	(0.137)	(0.221)	(0.108)
Past incidence of democracy	0.116	0.122**	0.121**	- 0.087*	0.028	0.041
	(0.081)	(0.052)	(0.057)	(0.051)	(0.057)	(0.027)
Past incidence of parliamentary democracy	- 0.024	- 0.010	0.139**	0.212***	0.180***	0.099***
	(0.072)	(0.066)	(0.057)	(0.052)	(0.067)	(0.031)
English legal origin	– 0.014	0.156**	– 0.013	– 0.047	0.018	0.013
	(0.036)	(0.060)	(0.044)	(0.037)	(0.046)	(0.025)
Socialist legal origin	—	0.023	0.011	0.096**	– 0.190***	– 0.036
		(0.109)	(0.034)	(0.048)	(0.066)	(0.034)
German legal origin	0.390***	0.409***	0.268***	0.178***	0.239***	0.104***
	(0.094)	(0.070)	(0.051)	(0.049)	(0.074)	(0.030)
Scandinavian legal origin	0.351***	0.646***	0.321***	0.112***	0.156*	0.171***
	(0.034)	(0.061)	(0.052)	(0.032)	(0.089)	(0.049)
Observations	94	147	122	106	106	106
Adjusted R-squared	0.607	0.524	0.639	0.524	0.474	0.634

Robust standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%. All regression also include (seven) continental indicator variables. Socialist legal origin dropped in Col 1, as data on private credit not available in that category.

Private Accumulation of Human Capital

- The model so far has focused exclusively on the state and its accumulation decisions.

- I will now briefly discuss what happens if we allow for there to be private accumulation decisions.

- This allows us to look at a further possible complementarity between state development and the development of the private economy.

- Suppose that individuals in period one can investment an amount in human capital h at private effort cost $c(h) = \frac{h^{1+\beta}}{1+\beta}$ with $\beta > 0$.

- Period two income is now $w(\pi_2)\, h$

- We will suppose that government first chooses $\{\tau_2, \pi_2\}$ before the private agents optimizes over h.

Revised Timing

- Each period has the following timing:

1. The initial condition is τ_s and the identity of last period's incumbent I_{s-1}.

2. The level of public goods demand α_s is 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: $\left\{\left\{t_s, T^{J_s},\right\}_{J_s \in \{I_s, O_s\}}, G_s\right\}$. The period-1 incumbent also chooses fiscal capacity for the next period τ_2.

5. Private agents choose their human capital level h.

6. Payoffs for period s are realized and consumption takes place.

- Now the expected period two payoff is:

$$W(\tau_2, \pi_2) = w(\pi_2) h(1 - \tau_2) + \bar{\lambda}_2 \tau_2 w(\pi_2) H$$

where H is the average level of human capital which is taken as given when agents choose their own h.

- Now the first order condition for the choice of human capital is:

$$(1 - \tau_2) w(\pi_2) = h^{\beta}$$

- This yields the indirect utility function which the policy maker maximizes.

$$W(\tau_2, \pi_2) = w(\pi_2)\hat{h}(\tau_2, \pi_2)(1-\tau_2) + \bar{\lambda}_2 w(\pi_2)^{\psi} \tau_2 (1-\tau_2)^{\psi}.$$

where $\psi = \frac{1+\beta}{\beta}$.

- (Bear in mind also that $c(h) = \frac{(\psi-1)[(1-\tau_2)w(\pi_2)]^{\psi}}{\psi}$ is deducted from first period utility)

- This will tend to make fiscal capacity less desirable and legal capacity more desirable.
  - Legal capacity is now complementary with private accumulation.
  - But taxes reduce the incentive to accumulate

- As long as both types of investment are positive, then they remain complements.

- There is now an upper bound on fiscal capacity given by:

$$\tau_2 \leq \frac{\bar{\lambda}_2 - 1}{\bar{\lambda}_2 (1 + \psi)}$$

- After τ_2 is reached, the state ceases to accumulate fiscal capacity
  - The bound is inversely related to the elasticity of the human capital supply function.
  - The bound is higher, the higher is $\bar{\lambda}_2$.
    - Thus, political economy factors and common interests shape the size of the state.
    - Note that this is a utility limit not a Laffer limit.

- Even after investment in state fiscal capacity is no longer desirable investment in legal capacity will continue.

Summary and Agenda

- The main aim of this lecture has been to lay out a framework for thinking about state development
  - the state in raising revenue for spending on public goods and transfers
  - the state as increasing productivity

- We have isolated three main factors in shaping this:
  - natural productivity enhancing factors that will affect ω (geography)
  - common interests (ϕ, α_H)
  - political economy (θ, γ)

The Future

- Which of the factors that we have taken as fixed can be endogenized?
  - common interests and national cultures
    - endogenous war and nationhood.
  - choice of political institutions