Understanding State Capacity

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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 1

- 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:
  
  

• 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 individual inelastically supplies one unit of labor in each period and earns an income $\omega$.

- 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:

$$\alpha_s G_s + C_s^J. \quad (1)$$
• The parameter \( \alpha_s \in \{\alpha_L, \alpha_H\} \) reflects the value of (common interest) public goods.

  – let \( \phi \) 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 $\gamma$.
  - 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 $\sigma$ 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, $\tau$ 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 $\tau$ 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 $\tau_s$ which we denote by $\bar{\tau}$.

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

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

1. The initial condition is $\tau_s$ and the identity of last period’s incumbent $I_{s-1}$.

2. The level of public goods demand $\alpha_s$ 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: $\left\{ t_s, T^J_s, \right\}_{J_s \in \{I_s, O_s\}, G_s}$. The period-1 incumbent also chooses fiscal capacity for the next period $\tau_2$. 
5. Payoffs for period $s$ are realized and consumption takes place.
Policy Making in Each Period

• Whoever is in power will choose \( \{ G_s, t_s, T^I_s, T^O_s \} \) to maximize:

\[ \alpha_s G_s + (1 - t_s) \omega + T^I_s \]

subject to:

\[ t_s \leq \tau_s \]

\[ T^O_s \geq \sigma T^I_s. \]

and (2).

• This yields:

\[ T^I_s = 2 (1 - \theta) [t_s \omega - G_s - \sigma_s F (\tau_2 - \tau_1)] \]

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, \( \theta \), as reflecting more representative, or consensual, political institutions.

• The real-world counterparts of a high \( \theta \) 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: \( \theta \)
  - stability: \( \gamma \)

- In general, we think of democracy as having higher \( \theta \) and higher \( \gamma \).

- 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:

\[ W(\tau_2) = \omega (1 - \tau_2) + \lambda_2 \tau_2 \omega \]

where \( \lambda_2 = [\phi \alpha_H + (1 - \phi) 2 [(1 - \gamma) (1 - \theta) + \gamma \theta]] \) is the expected future value of public funds.
• And the first order condition for investing in state capacity is:

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

where

\[
\lambda_1 = \max \{\alpha_H, 2(1 - \theta)\}
\]

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:

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

- Investment is increasing in $\phi$, 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. $\tilde{\lambda}_2 \leq 1$
  2. $\lambda_2 > 1$. 
The Weak State \((\bar{\lambda}_2 \leq 1)\)

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

- When is this likely?
  - low \(\phi\)/low \(\alpha_H\)
  - 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 \((\bar{\lambda}_2 > 1)\)

- More likely if:
  - high \(\phi\)/high \(\alpha_H\)
  - Low \(\gamma\) – 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 $\omega$ 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 $\phi$ increases demand for fiscal capacity
  - Links out model to the literature on the impact of war on state development (Tilly)
Political Institutions

- Low $\gamma$ is good for investment as long as $\theta < 1/2$
  - But effect of turnover disappears as $\theta \rightarrow 1/2$.

- If $\theta$ is close to zero, better to have low turnover.

- Link to civil war literature
  - caused by low $\theta$ which leads to high $\gamma$.
  - 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:

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

- 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 \( \pi_s \) can be invested in at a cost \( L(\pi_2 - \pi_1) \).

- We can now add a period one decision to invest in \( \pi_2 \).
• Will these two types of state capacity be complements?

• Denote the second period expected utility as:

\[ W(\tau_2, \pi_2) = w(\pi_2)(1 - \tau_2) + \lambda_2 \tau_2 w(\pi_2) \]

• The key observation is that both types of investment will be complements if \( \lambda_2 > 1 \).

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

\[ w'(\pi_2) \left( 1 + \tau_2 \left( \lambda_2 - 1 \right) \right) = \lambda_1 L'(\hat{\pi}_2 - \pi_1). \]

• Now it is clear that an increase in \( \tau_2 \) increases the marginal benefit of investing in the state.
Growth

- State growth is now a source of endogenous growth
  
  - increases in $\pi_s$ 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 $\theta$ and $\gamma$.

- The following Table illustrates some results.
### Table 1  Economic and political determinants of state capacity across countries

<table>
<thead>
<tr>
<th></th>
<th>Legal capacity</th>
<th>Fiscal capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past incidence of external conflict</td>
<td><strong>0.604</strong>* (0.142)</td>
<td><strong>1.029</strong>* (0.277)</td>
</tr>
<tr>
<td>Past incidence of democracy</td>
<td><strong>0.116</strong> (0.081)</td>
<td><strong>0.122</strong> (0.052)</td>
</tr>
<tr>
<td>Past incidence of parliamentary democracy</td>
<td>-0.024 (0.072)</td>
<td>-0.010 (0.066)</td>
</tr>
<tr>
<td>English legal origin</td>
<td>-0.014 (0.036)</td>
<td><strong>0.156</strong> (0.060)</td>
</tr>
<tr>
<td>Socialist legal origin</td>
<td>—</td>
<td>0.023 (0.109)</td>
</tr>
<tr>
<td>German legal origin</td>
<td><strong>0.390</strong>* (0.094)</td>
<td><strong>0.409</strong>* (0.070)</td>
</tr>
<tr>
<td>Scandinavian legal origin</td>
<td><strong>0.351</strong>* (0.034)</td>
<td><strong>0.646</strong>* (0.061)</td>
</tr>
</tbody>
</table>

Observations 94 147 122 106 106 106
Adjusted R-squared 0.607 0.524 122 106 106 106

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 invest 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 $\tau_s$ and the identity of last period’s incumbent $I_{s-1}$.

2. The level of public goods demand $\alpha_s$ 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: $\left\{ t_s, T J_s, \right\}_{J_s \in \{I_s, O_s\}, G_s}$. The period-1 incumbent also chooses fiscal capacity for the next period $\tau_2$. 
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.

\[ W(\tau_2, \pi_2) = w(\pi_2) \hat{h}(\tau_2, \pi_2)(1 - \tau_2) + \lambda_2 w(\pi_2)^\psi \tau_2 (1 - \tau_2)^\psi. \]

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 \(\tau_2\) 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 $\omega$ (geography)
- common interests ($\phi, \alpha_H$)
- political economy ($\theta, \gamma$)
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