Pillars of Prosperity

The Political Economics of Development Clusters

Chapter 3: Legal Capacity

Tim Besley Torsten Persson

STICERD and Department of Economics
London School of Economics

Institute for International Economic Studies
Stockholm University

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Outline

Background

- Add productive role of government – legal capacity
- Government efforts to make private economy more productive focus on legal protection, subject to legal infrastructure
  - will allow us to endogenize income
- Two views of long-run causes of low productivity
  - it reflects lack of technology – the Solow tradition
  - it reflects misallocated resources – the Lewis tradition
- We will take the second view
  - poorly functioning economic institutions generate frictions in contracting or protection of property
  - potential for improvement by investing in legal infrastructure

Empirical Motivation

Figures 3.1 and 1.3

- Legal and fiscal capacity strongly correlated
- both with each other and income – recall Figure 1.3 for total tax take and protection of property rights
  - similar picture appears with alternative measures
  - share of income tax in total government revenue at end of 1990s from chapter 2
  - index of contract enforcement from World Bank Doing Business project circa 2005

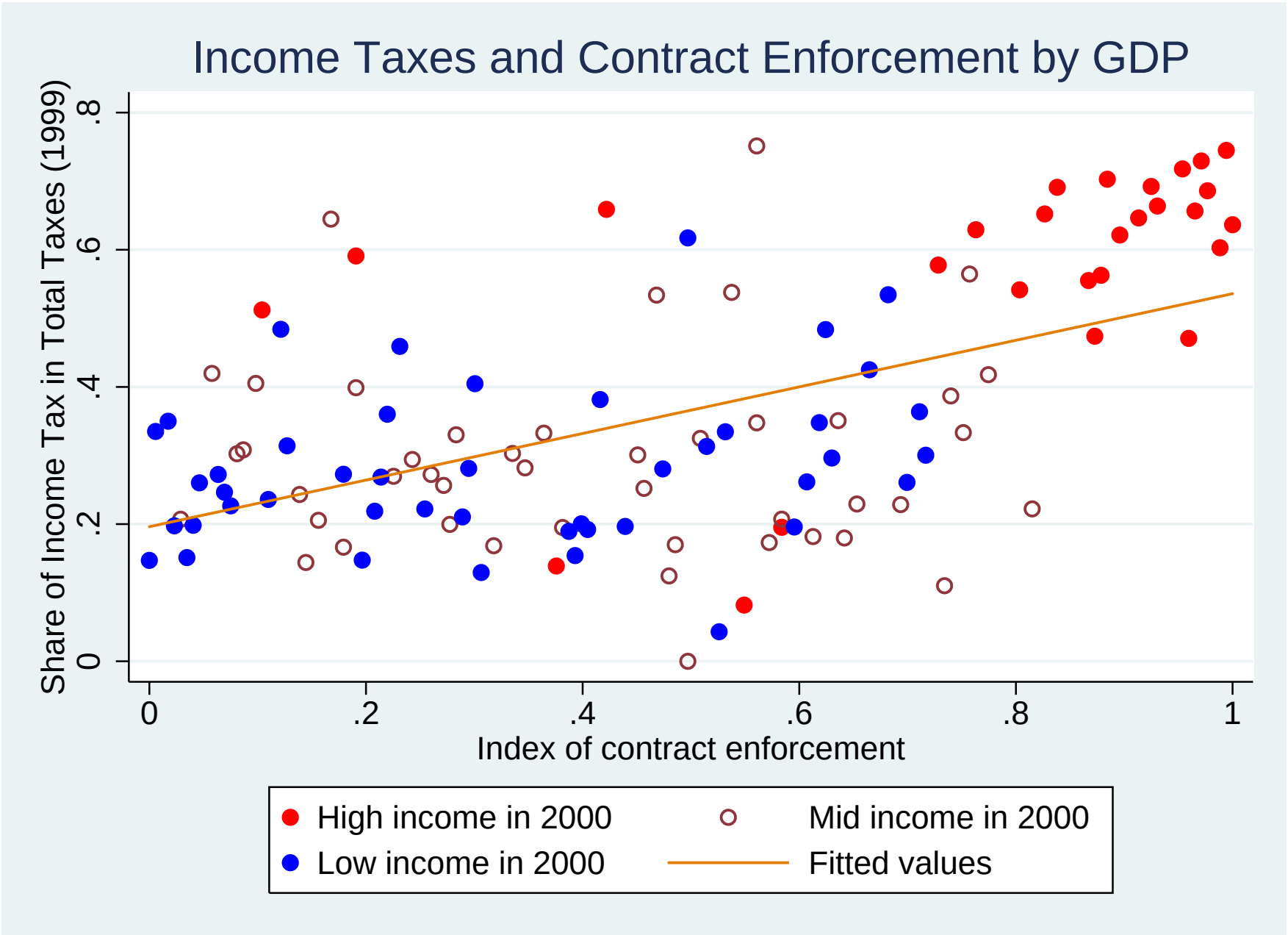

Figure 3.1 Income taxes and contract enforcement conditional on GDP

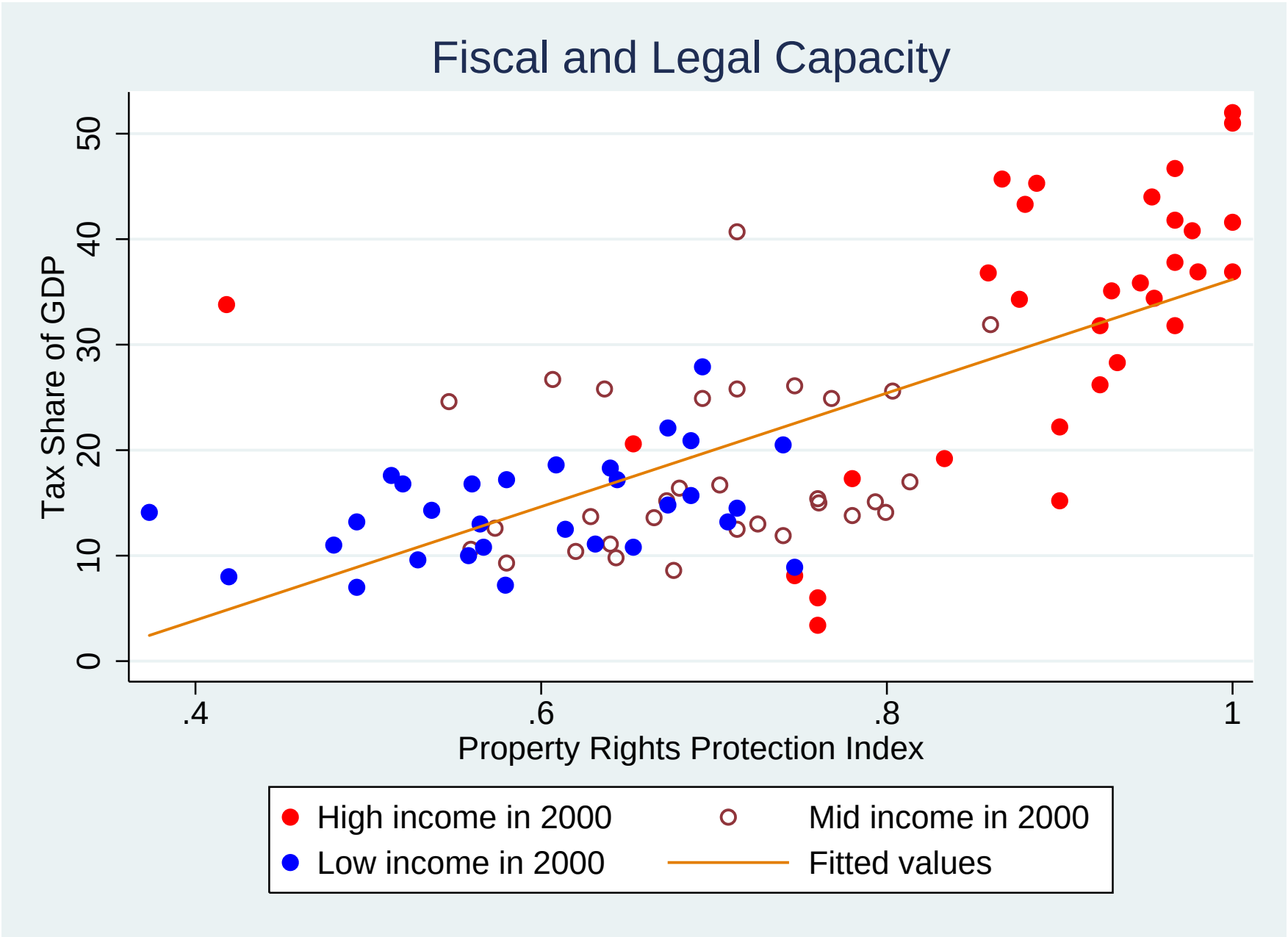

Figure 1.3 Legal and fiscal capacity conditional on income

Existing research

- Market-supporting institutions emphasized in economics and history
- North-Weingast on economic institutions – crucial for growth and unleashed by events like Glorious Revolution
  - Acemoglu-Johnson-Robinson (Hall-Jones) on productive vs. extractive institutions triggered by nature of colonial settlement
  - Engerman-Sokoloff on the how inequality (factor endowments) shaped more or less productive institutions across the Americas
- Political and legal origins of financial institutions
  - political origins of weak institutions, due to rent-seeking, polarization, etc. – Svensson, Rajan-Zingales, Pagano-Volpin
  - institutions may have deep historical roots as in La Porta, Silanes, Shleifer and Vishny on legal origins
- Our approach: other mechanisms and legal + fiscal capacity

Outline

Income and legal protection

- Consider group J's income at s
  - labeled y_s^J and depends on legal protection p_s^J

$$y_s^J = y(p_s^J)$$

    where y is an increasing function
  - think of p_s^J as "legal protection of contracts" or "legal protection of property rights"
  - will consider microfoundations in Sections 3 and 5

Legal protection and legal capacity

- Incumbent controls current legal protection
  - p_s^J can be group-specific
  - constrained by existing legal capacity, i.e., $p_s^J \leq \pi_s$
- Investment in legal capacity
  - takes form of courts, judges, credit or property registry
  - assume investment is irreversible, as for fiscal capacity
  - initial stock of legal capacity, π_1, as given, but can be augmented by non-negative investment $\pi_2 - \pi_1$
  - convex costs of investment $\mathcal{L}(\pi_2 - \pi_1)$, where $\mathcal{L}_\pi(0) = 0$

Other modifications

- We need to rewrite the budget constraints and indirect utilities
  - replace exogenous ω by endogenous $\frac{y(p_s^I)+y(p_s^O)}{2}$ or $y(p_s^J)$ as appropriate
  - total investment in state capacity is now

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

  - rest of the model is exactly as before

Equilibrium policy

- Will legal protecion be assigned equally to each group?
  - i.e., will there be "rule of law"

Proposition 3.1

For $s \in \{1,2\}$ any incumbent I_s, and any α_s, all legal capacity is fully utilized, $p^{I_s} = p^{O_s} = \pi_s$.

- "Obvious" result in the core model
  - relates to Diamond-Mirrlees production efficiency and a Political Coase Theorem
  - this result can break down with rents in Sections 4-5
- Other policies
  - taxes, transfers, public goods determined exactly as in Chapter 2.

Modified investment objective

- We now have two state variables $\{\tau_s, \pi_s\}$.
  - can rewrite the new investment objective as

$$W(\alpha_1, \tau_1, \pi_1, \mathcal{F}(\tau_2 - \tau_1) + \mathcal{L}(\pi_2 - \pi_1), 2(1-\theta)) \\ +(1-\gamma)U^I(\tau_2, \pi_2) + \gamma U^O(\tau_2, \pi_2)$$

where $U^J(\tau_2, \pi_2)$ are the new value functions for $J \in \{I, O\}$ defined over the new indirect utility functions W

State-capacity Euler equations

- Pair of Euler equations for legal and fiscal capacity
  - proceeding as in chapter 2, we get

$$\begin{aligned} y_\pi(\pi_2)[1+(E(\lambda_2)-1)\tau_2] &\leqslant \lambda_1 \mathcal{L}_\pi(\pi_2-\pi_1) \\ \text{c.s.} \quad \pi_2-\pi_1 &\geqslant 0 \end{aligned}$$

$$\begin{aligned} y(\pi_2)[(E(\lambda_2)-1] &\leqslant \lambda_1 \mathcal{F}_\tau(\tau_2-\tau_1) \\ \text{c.s.} \quad \tau_2-\tau_1 &\geqslant 0 \end{aligned}$$

Are both investments positive?

- Sufficient condition
  - as $\mathcal{F}_\tau(0) = \mathcal{L}_\pi(0) = 0$, all we need (as in chapter 2) is that

$$E(\lambda_2) - 1 \geq 0$$

  - although *necessary* condition for legal capacity is weaker

Three types of state as before

- Cohesiveness holds
  - implies common-interest state that invests in both capacities
- Stability holds, but Cohesiveness fails
  - implies redistributive state that invests in both capacities
- Neither Cohesiveness nor Stability hold
  - weak states with no investments in fiscal capacity and less investment (if any) in legal capacity

Complementarity

- Key idea
  - and a further implication of

$$E(\lambda_2) - 1 \geq 0$$

- Substance
  - higher π raises incentives to invest in τ and vice versa
    important cue to understanding correlation in the data
- Analytical convenience – monotone comparative statics
  - supermodularity holds
  - if reduced-form objective function $n(\tau_2, \pi_2; \varphi)$ supermodular in (τ_2, π_2), then (τ_2, π_2) monotonically increasing in φ if $\partial^2 n(\cdot)/\partial\tau_2\partial\varphi \geq 0$ and $\partial^2 n(\cdot)/\partial\pi_2\partial\varphi \geq 0$
- very easy to derive effects of most parameter shifts

Value of public goods

Proposition 3.2

A higher expected demand for public goods raises investments in state capacity in common-interest and redistributive states:

$$\frac{\partial E(\lambda_2)}{\partial \phi} = \alpha_H - \lambda_2^L > 0$$

- common interests make fiscal capacity more valuable
- external conflict promotes fiscal capacity, as in chapter 2 consistent with historical work by Hintze-Tilly and others
- now, auxiliary prediction for productive side of government

Political instability and cohesiveness

Proposition 3.3

If institutions are not cohesive and we are in a redistributive state, then investments in fiscal and legal capacity are promoted by lower political instability.

- lower γ raises the likelihood that Stability holds and increases λ_2^L if it does hold
- this effect is stronger, the more non-cohesive political institutions
- case study of England in 18th century: after Glorious Revolution (higher θ), Whigs rule for many decades (high γ), great expansion of tax capacity, and more independent and well-paid judiciary (higher τ, π)
- more cohesiveness has an uncertain effect on state capacity in redistributive state, but raise probability of common-interest state

Costs of investments

Proposition 3.4

Lower costs of either legal or fiscal capacity increase investments in both legal and fiscal capacity in common-interest and redistributive states.

- a downward multiplicative shift of $\mathcal{L}(\cdot)$ or $\mathcal{F}(\cdot)$ cuts the RHS of investment FOCs for given π_2 and τ_2
- this gives a theoretical rationale for "legal origins" hypothesis, but with an auxiliary prediction for fiscal capacity

Exogenous growth and income

- Exogenous productivity differences

$$y_s^J = \Lambda_s y\left(p_s^J\right)$$

perhaps due to geography or Hicks-neutral technology

Proposition 3.5

More productive economies (higher Λ_2) choose greater investments in fiscal and legal capacity in common-interest and redistributive states.

- higher Λ_2 raises $\Lambda_2 y(\pi_2)$ and $\Lambda_2 y_\pi(\pi_2)$ for given π_2, which makes both types of investments in the state more worthwhile

Corollary – Resource or aid dependence

- Define equilibrium GDP in period s as

$$Y(\pi_s, R) = R + \frac{\Lambda_s(y(\pi_s) + y(\pi_s))}{2}$$

and consider variations in R (and $\Lambda_s(y(\pi_s))$ that keep $Y(\pi_s, R)$ constant

Corollary

Higher resource or aid dependence, higher R for given $Y(\pi_2, R)$, means lower investments in legal and fiscal capacity in common-interest and redistributive states.

- clue why some aid or resource-dependent countries in Africa and South Asia may have weak incentives to build their states
- consistent with idea of "rentier states"

Endogenous growth

- The model also has "endogenous" growth
  - income grows due to investments in legal capacity whatever the source of these investments

$$\frac{Y(\pi_2, R) - Y(\pi_1, R)}{Y(\pi_1, R)}$$

  - growth driven by institutional deepening leading to more efficient private markets, when $\pi_2 > \pi_1$
  - by complementarity, (expected) government size grows together with legal capacity and income

Clustering of state capacity and income

- Recall corelations in Figures 1.3 and 3.1
  - earlier results shed further light on observed clustering
  - positive correlation can reflect higher (exogenous) income causing higher state capacity
  - but may also reflect other factors that lead to higher state capacity, which – in turn – spills over into higher (endogenous) income

Outline

Microfoundations – Contract Enforcement

Two-factor, two-sector model

- Microfound $y(p_s^J)$ using a two-sector, two-factor model
- Traditional sector
  - uses only labor and provides outside option with wage $\underline{\omega}$
  - Chapter 2 as if only such traditional sector with $\omega = \underline{\omega}$
- Advanced sector
  - uses capital and labor in (CRS) Cobb-Douglas production

$$H_s(K, L) = K^{\eta} L^{(1-\eta)}$$

  - a fraction, κ^J, of group-J members can operate this technology
    let $\kappa = \frac{\kappa^A + \kappa^B}{2}$ be the economy-wide fraction of "entrepreneurs"

Factor ownership and markets

- Capital
  - each group-J citizen owns exogenous amount of capital K_s^J at date s (endogenized by private capital accumulation later on)

    economy-wide stock is $K_s = \sum_J \frac{K_s^J}{2}$
  - can invest in a backstop technology with some return $\underline{\rho}$ (US T-bills)
- Labor
  - each citizen owns one unit, so that $L_s = 1$
- Traded in factor markets
  - capital market may be frictionless or not
  - (ρ, ω) price of capital and labour traded in the market
  - to have advanced sector production: $\rho > \underline{\rho}$ and $\omega > \underline{\omega}$

Allocations in frictionless necoclassical economy

- Work with intensive form of advanced production
  - capital intensity in advanced sector, $k = K/L$
  - given factor prices (ρ_s, ω_s), an entrepreneur maximizes

$$L\left[(k)^{\eta} - \rho_s k - \omega_s\right]$$

and optimal capital demand $\hat{k}$ solves

$$\rho_s = \eta(\hat{k})^{\eta-1}$$

and the wage is

$$\omega_s = (\hat{k})^{\eta} - \rho_s \hat{k}$$

- Four possible cases depending on whether returns on capital or labour are determined by the outside option ($\rho = \underline{\rho}$ and $\omega = \underline{\omega}$).
- Here focus on $\rho > \underline{\rho}$ and consider two cases: $\omega = \underline{\omega}$ or $\omega > \underline{\omega}$.

Assume capital is scarce

- We postulate that (other cases treated in chapter 3)

$$\rho_s = \eta \left(K_s\right)^{\eta-1} > \underline{\rho}$$

  - then all *capital* is employed in advanced sector
  - (hypothetical) wage when all *labor* is employed in the advanced sector

$$(1-\eta)\left(K_s\right)^{\eta}$$

Two possible cases

- Some traditional production (Case 3 in the book): $(1-\eta)(K_s)^{\eta} < \underline{\omega}$
  - traditional-sector productivity high enough to attract some labor but each entrepreneur operates capital K_s/κ in advanced sector
  - real wage pinned down by $\underline{\omega}$
- No traditional production (Case 4 in the book): $(1-\eta)(K_s)^{\eta} > \underline{\omega}$
  - economy like a one-sector model with factor rewards (ρ_s, ω_s)
  - each entrepreneur runs one advanced sector-firm with share K_s/κ of the economy's capital and $1/\kappa$ of its workforce
- Consider institutionally constrained economies instead
  - and analogs of the two cases mentioned here to study microfoundations of core model (this section) and genius of taxation (next section), respectively

Capital-market imperfections and legal capacity

- Frictions when borrower can walk away from her loan
  - collateral required of borrowers own capital
  - maximum capital used by entrepreneur in group J at s

$$K \leq (1 + p_s^J) K_s^J \ ,$$

  - where $p_s^J \in [0, \pi_s]$, by risk neutrality, the probability that a court enforces collateral if called upon to do so
  - note legal protection assumed excludable across groups

- Legal capacity
  - constraint on p_s^J by π_s naturally interpretable as # of courts and qualified judges, or existence and quality of a centralized credit registry

Are capital constraints binding?

- Compare frictionless and constrained demand for capital
  - entrepreneurs in group J constrained if

$$K_s^J(1+p_s^J) < K_s/\kappa^J$$

  - and economy institutionally constrained for both groups if

$$1+\pi_s < \min\{\frac{K_s}{\kappa^I K_s^I}, \frac{K_s}{\kappa^O K_s^O}\}.$$

  - assume π_s small enough that neither group can access the same capital as in the frictionless neoclassical economy
- Implication for labor demand?
  - if constraint binds, labor demand by entrepreneurs in J solves

$$\omega_s = (1-\eta)\left(\frac{(1+p_s^J)K_s^J}{\tilde{L}_s^J}\right)^{\eta}, \text{ for } J \in \{I, O\}$$

Group income and legal protection

case 3′: $\omega = \underline{\omega}$

- How do incomes depend on p_s^J ?
  - have to consider two cases above, i.e., we have or have not some traditional-sector production, so wage is or isn't pinned down by traditional-sector wage $\underline{\omega}$.

- Case 3′: Some traditional-sector production ($\omega = \underline{\omega}$)
  - per-capita income of group J member is

$$\begin{aligned} y^J(p_s^J) &= \kappa^J\left[\left((1+p_s^J)K_s^J\right)^{\eta}\left(\tilde{L}_s^J\right)^{1-\eta} - \underline{\omega}\tilde{L}_s^J\right] + \underline{\omega} \\ &= \eta\left[\frac{\underline{\omega}}{(1-\eta)}\right]^{(1-\frac{1}{\eta})}(1+p_s^J)\kappa^J K_s^J + \underline{\omega} \end{aligned}$$

  - first term is quasi-rent on capital, which is constrained
  - due to this quasi-rent, $y^J(p_s^J)$ is increasing

Group income and legal protection

case 4′: $\omega > \underline{\omega}$

- Case 4′: No traditional-sector production ($\omega > \underline{\omega}$)
- All labour employed in advanced sector and wage rate is

$$\omega_s\left(p_s^I, p_s^O\right) = (1-\eta)\left(\sum_J \frac{\kappa^J}{2}\left(1+p_s^J\right)K_s^J\right)^{\eta}$$

  - a pecuniary externality between groups $\frac{\partial \omega_s\left(p_s^I, p_s^O\right)}{\partial p_s^J} > 0$.
  - income in one group depends on legal protection offered to both groups.

- per-capita income of group J member is

$$y^J(p_s^I, p_s^O) = \kappa^J[((1+p_s^J)K_s^J)^{\eta}(\tilde{L}_s^J)^{1-\eta} - \omega_s(p_s^I, p_s^O)\tilde{L}_s^J] + \omega_s(p_s^I, p_s^O)$$

- once again first term is quasi-rent on capital, which is constrained

Microfoundations for core model

- Suppose equal ownership and entrepreneurship across groups ($K_s^J = K_s$ and $\kappa^J = \kappa$ for $J \in \{I, O\}$).
  - then, we have written down a microeconomic foundation for function $y\left(p_s^J\right)$, used in the core model; so all our analysis there applies to this symmetric case.
  - Then if $p_s^I = p_s^O = \pi_s$, we can write total credit/GDP ratio as

$$\frac{\pi_s}{(1+\pi_s)^\eta} \frac{(K_s)^{1-\eta}}{\kappa^\eta}$$

    which is monotonically increasing in π_s (Financial development is increasing in legal capacity.).

  - also easy to see how we can deal with asymmetries

The Genius of Taxation

Consider Case 4′: No traditional-sector production

- Now, we have a market-determined wage

$$\omega_s(p_s^I, p_s^O) = (\sum_J \kappa^J((1+p_s^J)K_s^J/2)^\eta (1-\eta) > \underline{\omega} \ .$$

  - increasing in *each* p_s^J – more labor demand raises the wage
- How is the group I's income affected by p_s^O?
- Take derivative of $y^I(p_s^I, p_s^O)$

$$\frac{\partial y^I(p_s^I, p_s^O)}{\partial p_s^O} = (1-\kappa^I \tilde{L}_s^I)\frac{\partial \omega_s(p_s^I, p_s^O)}{\partial p_s^O} \ \lessgtr 0 \quad \text{as} \quad \kappa^I \tilde{L}_s^I \lessgtr 1$$

  - cross effect is negative (positive), if group I is a net importer (exporter) of labor, so that $\frac{\kappa^I}{2}\tilde{L}_s^I > \frac{1}{2} > \frac{\kappa^O}{2}\tilde{L}_s^O$
  - in this case, analysis in previous sections may no longer apply

Revisit the period-1 incumbent's policy problem

- Rewrite period s policy payoff

$$\alpha_s g_s + (1 - t_s)\, y^I(p_s^I, p_s^O) + r_s^I.$$

and budget constraint

$$R + t_s Y(p_s^I, p_s^O) = g_s + m_s + \frac{r_s^I + r_s^O}{2}$$

where $Y(p_s^I, p_s^O)$ is national (non-resource) income per capita

$$Y(p_s^I, p_s^O) = \frac{\sum_J y^J(p_s^I, p_s^O)}{2} = \sum_J \frac{\kappa^J}{2}((1 + p_s^J)K_s^J)^\eta$$

- note that Y always increasing in p_s^O even though y^I may not be – cross-wage effect is pecuniary externality
- socially efficient to follow rule of law $p_s^I = p_s^O = \pi_s$

Equilibrium legal protection

- Still optimal to tax and transfer as before
  - imposing $t_s = \tau_s$, we have the policy objective

$$\alpha_s g_s + (1 - \tau_s)\, y^I(p_s^I, p_s^O) + 2(1 - \theta)\,[R + \tau_s Y(p_s^I, p_s^O) - g_s - m_s]$$

Proposition 3.6

Suppose that $\kappa^I K_s^I > \kappa^O K_s^O$, then there exists $\hat{\tau}(\alpha)$ with $\hat{\tau}(\alpha_H) < \hat{\tau}(\alpha_L)$ such that for all $\tau_s \geq \hat{\tau}(\alpha)$, all legal capacity is fully utilized, i.e., $p^{I_s} = p^{O_s} = \pi_s$. But if $\tau_s < \hat{\tau}(\alpha_s)$, then $p^{I_s} = \pi_s$ and $p^{O_s} = 0$.

- for a rich incumbent group, with higher κ^J or K_s^J, the fiscal gains from higher p_s^O may not be high enough to compensate for cut in quasi-rents from higher wages, if fiscal capacity low enough
- cutoff value for τ lower when value of public goods is high
- such rent-seeking leads to production inefficiency, violation of Diamond-Mirrlees, failure of Political Coase Theorem

Can this situation persist when τ endogenous?

- Answer is yes
  - may still have a weak state – $E(\lambda_2) < 1$, as in Section 2 if θ low and γ high – caught in a 'non-investment trap'
  - a richer group has lower incentives to invest in fiscal capacity than a poor group since it pays higher share of taxes (cf. ch 2)
- Motives to invest in legal capacity
  - with rent-seeking these are generally weaker as well, if $\hat{\tau}(\alpha_H) > \tau_2$, the marginal benefit of investment includes

$$Y_\pi(\pi_2, 0)(E(\lambda_2) - 1)\tau_2 < Y_\pi(\pi_2, \pi_2)(E(\lambda_2) - 1)\tau_2$$

How can weak fiscal capacity shape income and growth?

- Simple illustration
  - two states: W (for Weak) and S (for Strong)
  - same initial legal capacity $\pi_1^W = \pi_1^S = \pi_1$ and $R^W = R^S$, but $\tau_1^W < \widehat{\tau}(\alpha_L) < \tau_1^S$, so at opposite sides of fiscal-capacity threshold of Proposition 3.6.
- Compare incomes in period 1 and 2
  - period-1 difference is given by

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

  - W has lower income, as legal protection of O inefficient
  - period-2 difference (if incumbent persists)

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

  - income gap grows, since $\pi_2^S > \pi_2^W$

Further perspective on income/state-capacity clusters

- Recall positive correlations in Figures 1.3 and 3.1
  - results in the core model suggest: may reflect other factors causing low state capacity and hence low (endogenous) income, or low (exogenous) income causing low state capacity
  - results here suggest low state capacity may cause low (endogenous) income via production inefficiencies
- Ways out of inefficiencies in investment trap?
  - circumstances: higher ϕ or α_H, may make it too costly to stay with low fiscal capacity and inefficient production
  - institutions: higher θ, or lower γ, may pull the economy out of fiscal-capacity investment trap

Relation to debate about financial development?

- Work on political origins on financial (under)development
  - a ruling elite may hold off creating financial institutions so as to create or preserve its own rents
  - but that work generally considers financial sector alone without attention to the tax-transfer system
  - results may implicitly assume weak fiscal capacity
- Need to ask Political Coase Theorem question
  - why doesn't government maximize the size of the pie and then carry out the desired redistribution
  - stressed by Acemoglu (2003, 2005)
  - here the friction is the absence of a credible mechanism for transferring efficiency gains, beyond the institutional commitment entailed in θ.

Private Capital Accumulation

- Augment the microfounded core model (section 3.2.1 in the book) and allow for private capital accumulation.
  Focus on the case where $\omega > \underline{\omega}$.
- Assume full depriciation of capital in each period
- Model modifications
  - everyone is identical within and between groups
  - each citizen has probability κ of being an entrepreneur in each period. Accumulation decision before resolution of uncertainty.
  - suppose also: $p_s^I = p_s^J = \pi_s$.
  - expected per capita income:

$$y(\pi_s; K) = \begin{cases} \rho(K_2) K + \omega(K_2) + R & \text{if } \kappa(1+\pi_s) \geq 1 \\ (\kappa(1+\pi_s) K)^{\eta} + R & \text{otherwise} \end{cases}$$

where $\rho(K_2) = \eta(K_2)^{\eta-1}$ is the market-determined rental price of capital.

New timing

1. We begin with initial stocks of state capacities $\{\tau_1, \pi_1\}$, a capital stock per capita of K_1 and an incumbent group I_1.
2. All citizens choose how much capital, K, to accumulate for period 2.
3. Nature determines α_1 and R and which citizens are entrepreneurs in period 1.
4. I_1 chooses a set of of period-1 policies $\{t_1, r_1^I, r_1^O, p_1^I, p_1^O, g_1\}$, and determines (through investments) the period-2 stocks of fiscal and legal capacity $\{\tau_2, \pi_2\}$.
5. I_1 stays in power the probability $(1-\gamma)$, while nature determines $\alpha_2 \in \{\alpha_L, \alpha_H\}$ and which citizens are entrepreneurs in period 2.
6. I_2 chooses chooses period-2 policies $\{t_2, r_2^I, r_2^O, p_2^I, p_2^O, g_2\}$.

Optimal Private Investment

- The new interesting decision is capital accumulation in stage 2:

$$\hat{K}_2^I = \arg\max_{K \geq 0} \left\{ (1-\gamma)\, U^I\left(\tau_2, \pi_2; K, K_2\right) + \gamma U^O\left(\tau_2, \pi_2; K, K_2\right) - K \right\}$$

  - where U^J is period-2 value function for group-J.

- Both groups face the same production technology and tax rate in period 2 hence $\hat{K}_2^O = \hat{K}_2^I$.

Proposition 3.7

Suppose that $(1-\tau_2)\,\underline{\omega}^{\eta} < 1$. *Then, the optimal level of period-2 capital solves*

$$(1-\tau_2)\, y_K\left(\pi_2; \hat{K}_2^J\right) = 1 \text{ for } J \in \{I, O\}\ .$$

- very intuitive: net-of-tax return on capital has to be equal to the marginal value of period-1 consumption.

State Capacity Investments

- From proposition 3.7 when the economy is institutionally constrained, so that $\kappa(1+\pi_2) < 1$, then:

$$\frac{\partial \hat{K}_2}{\partial \pi_s} = \frac{\eta}{1-\eta}\frac{\hat{K}_2}{(1+\pi_s)} > 0 \ .$$

- complementarity between better legal institutions and private capital accumulation.
- Empirically: similar determinants of private investment and legal capacity

Microfoundations – Predation and Corruption

- Alternative important source of misallocation
  - look at economic costs (and political benefits) of predation
  - predation could be private, due to lacking legal protection
  - could also be public, as corrupt bureaucrats abuse their power
  - legal capacity allows for legal protection against predation
- Adapt earlier two-factor, advanced-traditional sector model
  - assume predation is only an issue in advanced sector
  - works as a tax and may hinder structural transformation
  - study simple symmetric case where every citizen holds capital K and each group has same share of entrepreneurs κ
- Also study the working of a predatory state
  - governed by rent-seeking elite that monopolizes predation

The mechanics of predation

- A given group of predators
  - share of members $n^J \in [0,1]$ from both groups such that $n^I + n^O = 1$
  - corruption is special case, where $n^I = 1 - n^O = 1$
- Predation as an informal tax
  - predators capture a share μ of output depending on their effort χ, which has convex cost $C(\chi)$
  - can target predation across groups, depending on how well groups are protected, i.e., depending on $p_s^J \in [0, \pi_s]$
  - simple formulation where predatory tax rate on a group

$$\mu(\chi, p) = (1 - p)\chi$$

falls in legal protection p, and rises in predatory effort χ

Expected incomes and returns

- Expected output in advanced sector
  - for group J in period s

$$[1-\mu(\chi_s^J, p_s^J)]K^{\eta}L^{1-\eta}$$

  - we focus again on scarce capital

$$[1-\mu(\chi_s^J, p_s^J)]\eta\,(K)^{\eta-1} > \underline{\rho}$$

- Again we have two cases
  - w or w/o traditional-sector production, depending on $\underline{\omega}$
- Predatory returns
  - all predators act jointly to maximize profits from group s

$$\mu(\chi_s^{,J}, p_s^J)K^{\eta}L^{1-\eta} - C(\chi_s^J)$$

  - and split these according to ownership shares n^I, n^O

Case 1: Some traditional production

- Labor demand $\tilde{L}_s^J$ by sector J entrepreneurs
  - solves
$$[1-\mu(\chi_s^J, p_s^J)]\,(1-\eta)\,(\frac{K_s}{\tilde{L}_s^J \kappa})^{\eta} = \underline{\omega}$$
- Optimal predation rate $\hat{\chi}_s^J$
  - given by condition
$$(1-p_s^J)\,(K_s)^{\eta}\,(\kappa \tilde{L}_s^J)^{1-\eta} = C_\chi(\hat{\chi}_s^J)$$
- Better protection of group J's property rights
  - higher p_s^J has two beneficial allocation effect
  - *predation* effect: lower $\hat{\chi}_s^J$ like decreasing production tax
  - *reallocation* effect: pulls more labor into the advanced sector

Case 2: No traditional production

- Labor demand
  - given by $\tilde{L}_s^J = \frac{1}{\kappa}$ and advanced-sector production net of predation is
$$(1 - \mu(\chi, p_s^J))\,(K_s)^\eta$$
- Optimal predation rate $\hat{\chi}_s^J$
  - (at interior solution) is now given by
$$(1 - p_s^J)\,(K_s)^\eta = C_\chi(\hat{\chi}_s^J)$$
  - now p_s^J has only a predation effect, no reallocation effect
- Consider Case 1 in the following analysis

Different types of income

- Define net income to group J
  - from production in the advanced sector

$$[1-\mu(\hat{\chi}_s^J, p_s^J)]\tilde{y}(p_s^J)$$

where $\tilde{y}(p_s^J) = (K_s)^{\eta}(\kappa \tilde{L}_s^J)^{1-\eta}$ is gross production

- Net income to group J from predation

$$n^J[\mu(\hat{\chi}_s^I, p_s^I)\tilde{y}(p_s^I) + \mu(\hat{\chi}_s^O, p_s^O)\tilde{y}(p_s^O) - C(\hat{\chi}_s^I) - C(\hat{\chi}_s^O)]$$

- Total income for incumbent group I
  - add these and income from the traditional sector

$$\begin{aligned} y^I(p_s^I, p_s^O) &= [1-n^O\mu(\hat{\chi}_s^I, p_s^I)]\tilde{y}(p_s^I) + n^I\mu(\hat{\chi}_s^O, p_s^O)\tilde{y}(p_s^O) \\ &\quad -n^I(\Sigma_J C(\hat{\chi}_s^J) + (1-\kappa\tilde{L}_s^I)\underline{\omega} \end{aligned}$$

  - income by predation of own members $n^I\mu(\hat{\chi}_s^I, p_s^I)\tilde{y}(p_s^I)$ nets out

Normative benchmark

- Total (non-resource) national income/capita
  - add $y^I(p_s^I, p_s^O)$ and $y^O(p_s^I, p_s^O)$, similarly defined

$$Y(p_s^I, p_s^O) = \frac{\sum_{J\in\{I,O\}} \tilde{y}(p_s^J) - C(\hat{\chi}_s^J) + (1 - \kappa\tilde{L}_s^J)\underline{\omega}}{2}$$

  - terms in $\mu(\hat{\chi}_s^J, p_s^J)$ are pure transfers, which drop out

Proposition 3.8

Income per capita is maximized when $p_s^I = p_s^O = \pi_s$, i.e., full legal protection is granted to producers, given the available legal capacity.

- gross production, $\sum_{J\in\{I,O\}} \tilde{y}(p_s^J) + (1 - \kappa\tilde{L}_s^J)\underline{\omega}$, maximized by minimizing implicit taxes on advanced-sector production
- deadweight loss from predation, $-\sum_{J\in\{I,O\}} C(\hat{\chi}_s^J)$, minimized by deterring predation as much as possible

Political equilibrium

- Incumbent faces similar problem as in Section 4
  - maximize expression in $y^I(p_s^I, p_s^O)$
  - assume that $n^I >> n^O$ – so that most predation rents captured by incumbent group
- Predation on group I
  - mostly redistributes within the group but generates substantial deadweight costs, cf. term $-n^I C(\hat{\chi}_s^I)$ in $y^I(p_s^I, p_s^O)$
  - may be optimal to set $p_s^I = \pi_s$
- Predation on group O
  - generates substantial income for group I, cf. term $n^I \mu(\hat{\chi}_s^O, p_s^O)\tilde{y}(p_s^O)$ in $y^I(p_s^I, p_s^O)$
  - may be optimal to set $p_s^O = 0$
- Formal argument as in Section 4 – omitted here

A predatory state

- Change assumption about who obtains the rents
  - so far rents accrue within each group, and incumbents act on behalf of all group members – presumes Coasian bargain
- Alternative, more realistic, assumption
  - all predatory rents go to an "elite", a share " $e^I << 1$ of any incumbent group, and bears all costs of predation
  - political turnover is between the two elite groups
  - add third political institutions parameter to θ and γ, viz. governance $\zeta \in [0,1]$ a transaction cost imposed on elite perhaps reflecting the independence of the judiciary
- Realized corruption rents per capita in the elite

$$\frac{\sum_{J\in\{I,O\}} \mu(\hat{\chi}_s^J, p_s^J)\tilde{y}(p_s^J) - C(\hat{\chi}_s^J)}{e^I}(1-\zeta)$$

Policy objective of incumbent elite

- Assumed to act selfishly
  - but considers membership of the elite as well as membership in group I

$$\frac{\sum_{J\in\{I,O\}} \mu(\hat{\chi}_s^J, p_s^J)\tilde{y}(p_s^J) - C(\hat{\chi}_s^J)}{e^I}(1-\zeta) +$$
$$\alpha_s g_s + (1-t_s)\left[1-\mu(\hat{\chi}_s^I, p_s^I)\right]\tilde{y}\left(p_s^I\right) + r_s^I$$

  - as $e^I << 1$, elite puts greater weight on itself than on its group
  - i.e., agency conflict within groups and conflict between groups
  - t_s, g_s, and r_s^I determined as before

Legal protection revisited

- For assignment of legal protection, we get

Proposition 3.9

The protection of property rights depends on the strength of governance. There are two thresholds: $\zeta_H(\tau_s, \pi_s, \lambda_s, e^I) > \zeta_L(\tau_s, \pi_s, \lambda_s, e^I)$ such that:

1. *If* $\zeta \geq \zeta_H(\tau_s, \pi_s, \lambda_s, e^I)$, *then* $p_s^I = p_s^O = \pi_s$.
2. *If* $\zeta \in (\zeta_L(\tau_s, \pi_s, \lambda_s, e^I), \zeta_H(\tau_s, \pi_s, \lambda_s, e^I))$, then $\pi_s \geq p_s^I > p_s^O \geq 0$.
3. *If* $\zeta \leq \zeta_L(\tau_s, \pi_s, \lambda_s, e^I)$, then $p_s^I = p_s^O = 0$.

- New results:
  - bad governance: both groups may be denied legal protection
    basically, the elite has to be small enough
  - intermediate governance: result like in Genius of taxation

Back to investments in legal capacity

- Define
  - **Bad governance**: $\zeta \leq \zeta_L(\tau_s, \pi_s, \lambda_s, e^I)$

Proposition 3.10

If Bad Governance holds, the state is predatory and has no incentive to invest in legal capacity. This also reduces the period-1 incumbent's incentive to invest in fiscal capacity.

- Intuition is simple
  - under bad governance $p_2^I = p_2^O = 0$, so the prospective benefits of investment $y_\pi(\pi_2) = 0$; no future incumbent uses legal capacity
  - by complementarity, fiscal-capacity investment is lower
- Legal-capacity investment trap under bad governance
  - a new possibility, to match earlier fiscal-capacity investment trap in weak states

Taking stock

- Implied effects of predation and corruption
  - usual static distortions of production, but also two *additional* margins, where predation distorts.
  - incentives for governments to provide legal protection to citizens, given existing legal capacity.
  - disincentives to build effective legal institutions.
- Normative implications for institutional reform
  - in core model, focus on cohesive institutions: high θ
  - in this model, focus on good governance: high ζ
  - in practice, the two may be closely related as both call for imposing constraints on discretion of incumbents.

Outline

Measuring legal capacity – Table 3.1

- Five proxies for legal capacity (ICRG and World Bank data)
  - index of government anti-diversion policy, end of 1990s
  - normalized rank on Doing Business indicators, circa 2006
  - normalized rank on ease of registering property
  - normalized rank in the ease of access to credit
  - normalized rank on a measure of enforcing contracts
- quite strongly, but not perfectly correlated

Table: Table 3.1 Correlations between legal capacity measures

	Government Antidiversion Policy	Doing Business	Registering Property	Obtaining Credit	Contract Enforcement
Government Antidiversion Policy	1				
Doing Business	0.797	1			
Registering Property	0.474	0.572	1		
Obtaining Credit	0.691	0.774	0.413	1	
Contract Enforcement	0.695	0.723	0.386	0.472	1

Parameters of core model

- Use same proxies as in chapter 2
  - common interests: proportion years in external war from 1816 (or independence) until 2000 (Correlates of War data)
  - polarization/heterogeneity: 1− degree of ethnic fractionalization (Fearon, 2003 data on (0,1))
  - cohesive institutions: average from 1800 (or independence) to 2000 of constraints on executive ("Xconst" in Polity IV data, 1-7 scale normalized to (0,1))
  - political stability: average scores on non-open & noncompetitive recruitment of executive (Polity IV, "Xrcomp" and "Xropen")
- Given theoretical results in Section 2
  - investment costs: legal origin indicators (La Porta et al 1998)

Partial correlations

Figures 1.8, 1.9 and Tables 3.2-3.4

- Compute partial correlations
  - as before, regress legal capacity on suggested determinants;
  - absolutely no claim of causal interpretation
  - but don't put income on RHS, given theory in this part
- Basic correlations in line with theory
  - for different measures of legal capacity
- Auxiliary predictions of theory?
  - interaction effects: mixed success
  - other outcomes than legal capacity: financial development, private investment, corruption: basically yes!
  - common determinants with fiscal capacity: basically yes!

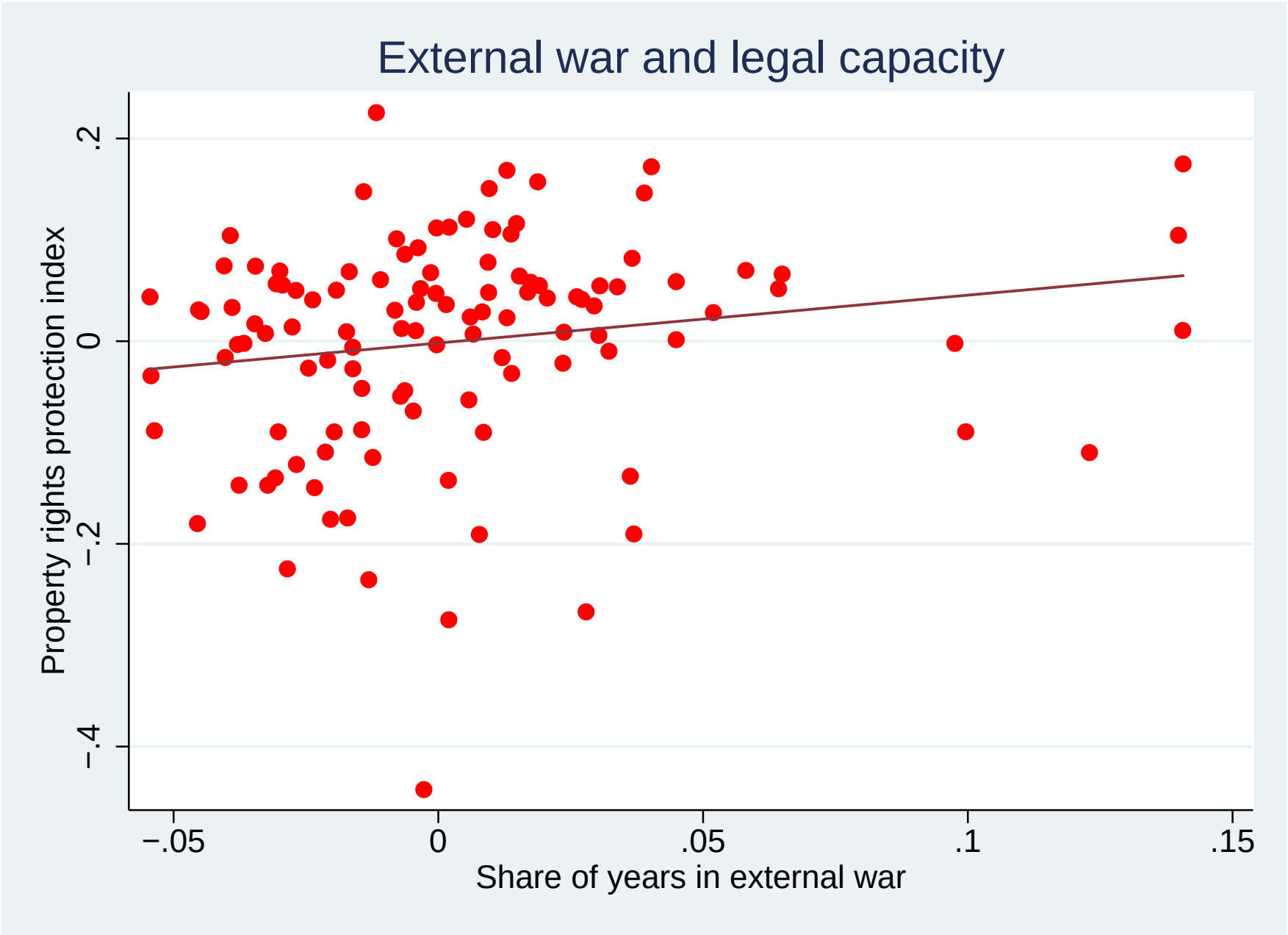

Figure 1.8 Legal capacity and external war

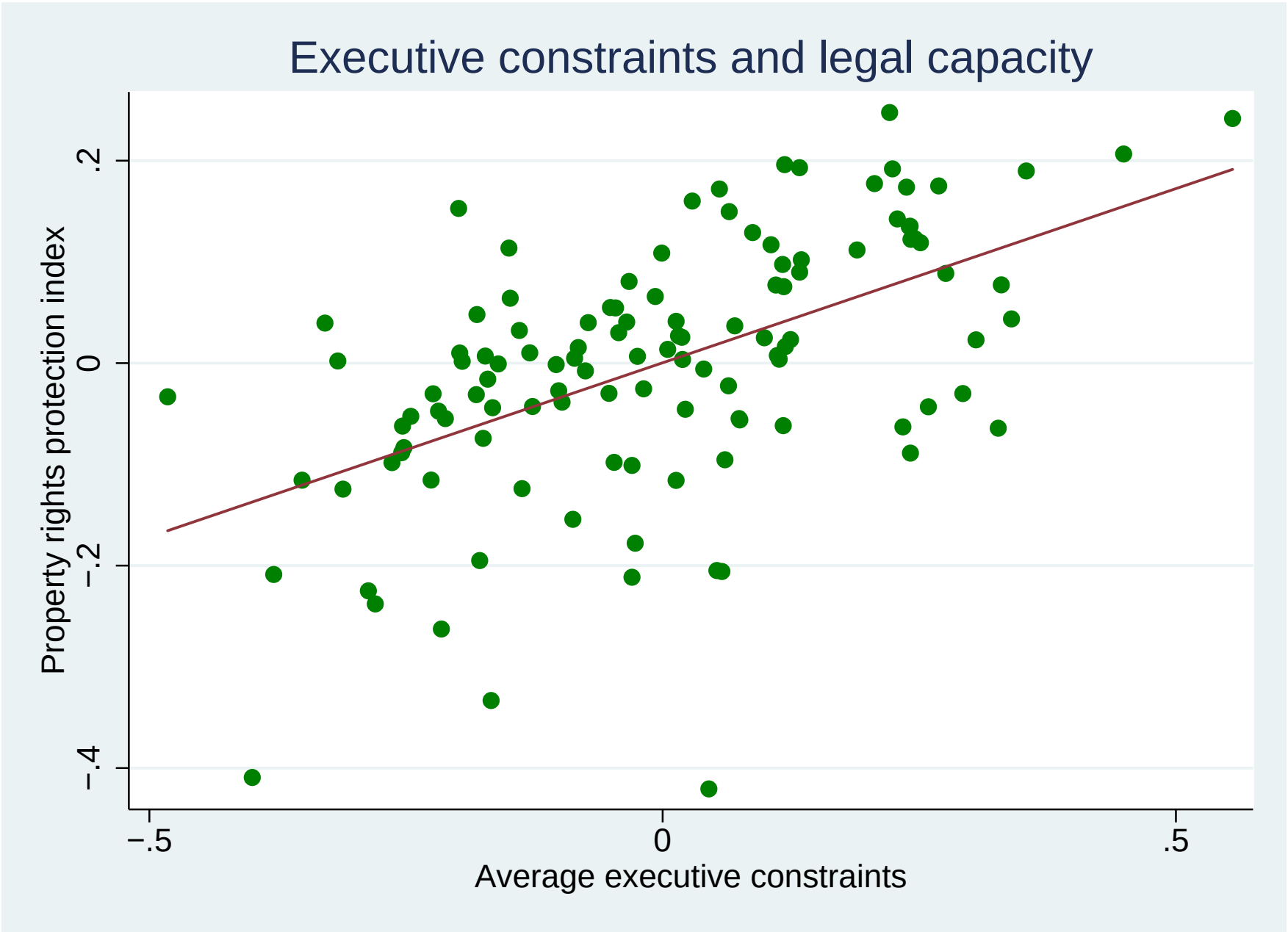

Figure 1.9 Legal capacity and executive constraints

Table: Table 3.2 Legal capacity and covariates: simple correlations

	(1) Government Antidiversion Policy	(2) Doing Business	(3) Registering Property	(4) Obtaining Credit	(5) Contract Enforcement
Prevalence external war before 2000	1.318 (0.594)**	0.454 (0.19)**	0.256 (0.448)	0.368 (0.211)*	0.834 (0.245)***
Average executive constraints before 2000	2.053 (0.295)***	0.527 (0.085)***	0.233 (0.124)*	0.352 (0.094)***	0.257 (0.108)**
Average nonopen executive recruitment before 2000	1.443 (0.304)***	0.23 (0.11)**	0.238 (0.154)	-.085 (0.115)	0.173 (0.109)
Ethnic homogeneity (1-ethnic fractionalization)	1.096 (0.269)***	0.247 (0.074)***	0.249 (0.091)***	0.29 (0.09)***	0.116 (0.097)
English Legal Origin	0.155 (0.171)	0.151 (0.051)***	0.097 (0.065)	0.065 (0.056)	0.121 (0.054)**
Scandinavian Legal Origin	0.703 (0.205)***	0.28 (0.067)***	0.322 (0.08)***	0.13 (0.081)	0.465 (0.069)***
German Legal Origin	0.611 (0.2)***	0.291 (0.055)***	0.252 (0.084)***	0.219 (0.052)***	0.381 (0.065)***
Socialist Legal Origin	0.002 (0.159)	0.069 (0.051)	0.148 (0.06)**	-.003 (0.061)	0.28 (0.052)***
Observations	118	143	143	143	143
R-squared	0.615	0.549	0.283	0.407	0.454

Table: Table 3.3 Legal capacity and covariates: interaction terms

	(1) Government Antidiversion Policy	(2) Doing Business	(3) Registering Property	(4) Obtaining Credit	(5) Contract Enforcement
Prevalence external war before 2000	1.543 (2.075)	0.931 (0.544)*	1.598 (0.596)***	0.712 (0.719)	1.521 (0.518)***
External war × high executive constraints dummy	-.022 (2.184)	-.518 (0.571)	-1.590 (0.711)**	-.399 (0.725)	-.788 (0.556)
Average nonopen executive recruitment before 2000	0.52 (0.615)	0.038 (0.195)	0.142 (0.25)	-.037 (0.205)	-.022 (0.219)
Nonopen executive recruitment × low executive constraints dummy	1.119 (0.643)*	0.222 (0.201)	0.051 (0.255)	-.026 (0.208)	0.183 (0.222)
High executive constraints dummy	0.072 (0.406)	-.022 (0.094)	-.009 (0.121)	-.186 (0.104)*	0.086 (0.102)
Average executive constraints before 2000	2.169 (0.575)***	0.615 (0.133)***	0.284 (0.179)	0.611 (0.153)***	0.192 (0.153)
Ethnic homogeneity (1- ethnic fractionalization)	1.152 (0.289)***	0.251 (0.071)***	0.231 (0.091)**	0.301 (0.09)***	0.105 (0.096)
English Legal Origin	0.127 (0.179)	0.147 (0.051)***	0.104 (0.067)	0.077 (0.055)	0.114 (0.057)**
Scandinavian Legal Origin	0.933 (0.281)***	0.339 (0.098)***	0.356 (0.088)***	0.169 (0.104)	0.496 (0.093)***
German Legal Origin	0.689 (0.165)***	0.312 (0.055)***	0.273 (0.081)***	0.217 (0.061)***	0.405 (0.066)***
Socialist Legal Origin	-.055 (0.173)	0.066 (0.052)	0.132 (0.062)**	0.008 (0.062)	0.265 (0.055)***
Observations	118	143	143	143	143
R-squared	0.629	0.563	0.311	0.434	0.464

Further reality checks – Table 3.4

- Look at three other outcomes suggested by theory (Cols (1) - (3))
  - Private credit should be monotonically related to determinants of legal capacity.
  - Private investment in the year 2006 from the Penn World Tables
  - Corruption: measured by Transparency International 2006.
- Another prediction of theory: common determinants of fiscal and legal capacity (Cols (4) - (6))

Table: Table 3.4 Other outcomes and covariates: Simple correlations

	(1) Private credit to GDP	(2) Corruption Perception	(3) Private investment rate	(4) Tax revenue share in GDP	(5) Income tax share	(6) Formal sector share
Prevalence external war before 2000	2.570 (0.571)***	2.357 (0.482)***	0.242 (0.684)	3.310 (1.179)***	2.105 (1.115)*	1.874 (0.76)**
Average executive constraints before 2000	1.724 (0.338)***	1.740 (0.275)***	0.89 (0.263)***	1.459 (0.421)***	1.652 (0.422)***	1.543 (0.377)***
Average nonopen executive recruitment before 2000	1.088 (0.436)**	0.808 (0.309)***	0.726 (0.356)**	0.614 (0.39)	0.81 (0.479)*	1.287 (0.467)***
Ethnic homogeneity (1-ethnic fractionalization)	0.484 (0.309)	0.674 (0.254)***	0.971 (0.215)***	0.634 (0.316)**	0.182 (0.292)	0.528 (0.36)
English Legal Origin	0.138 (0.227)	0.095 (0.159)	0.297 (0.163)*	0.058 (0.184)	0.246 (0.189)	0.073 (0.241)
Scandinavian Legal Origin	-.340 (0.244)	1.754 (0.211)***	0.159 (0.212)	1.981 (0.349)***	1.129 (0.293)***	0.464 (0.215)**
German Legal Origin	1.655 (0.478)***	1.130 (0.255)***	0.35 (0.244)	0.625 (0.407)	1.283 (0.233)***	0.91 (0.23)***
Socialist Legal Origin	N/A	-.368 (0.12)***	0.265 (0.149)*	-1.034 (0.17)***	-.309 (0.453)	-.230 (0.242)
Observations	93	145	150	101	101	105
R-squared	0.615	0.639	0.33	0.623	0.538	0.369