Pillars of Prosperity

The Political Economics of Development Clusters

Lecture I

Overview, The Core Model of State Capacity, Partial Correlations

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This Lecture Series

- Try to tell the major story
- describe overall approach and main messages of book
  - use our core, macroeconomic and macropolitical, model
  - omit details, extensions, microfoundations, and references
  - look at data in more or less depth
- Road map
  - **Lecture I**: Overview, The Core Model of State Capacity, Partial Correlations
    summarizes chapters 1, 2, 3
  - **Lecture II**: Political Violence, State Spaces
    summarizes chapters 4, 5
  - **Lecture III**: Development Assistance, Political Reform, Lessons Learned
    summarizes chapters 6, 7, 8

Outline - Lecture I

1. Overview
   - Motivation, Objectives and Background
   - Book Outline
2. The Core Model of State Capacity
   - Basic Structure
   - Politically Optimal Policy
   - Investments in State Capacity
   - Comparative Statics
3. Data and Partial Correlations

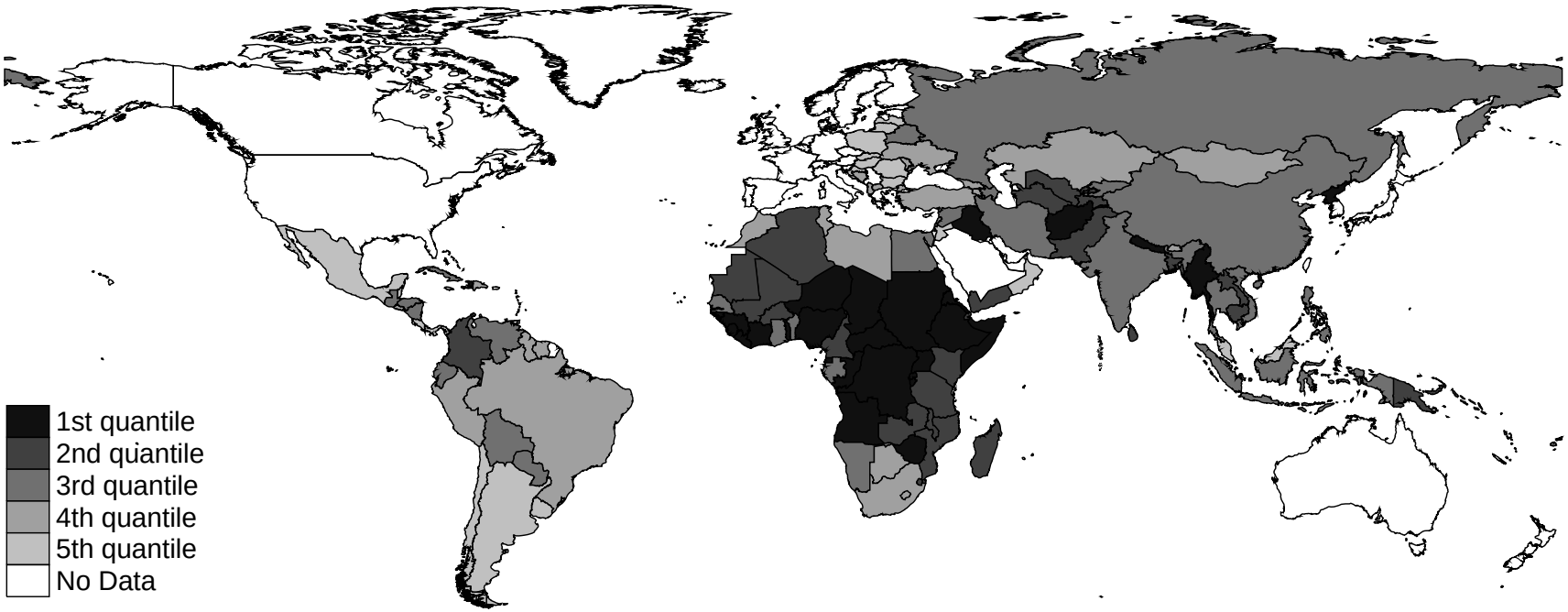
Huge Income Disparities

- Massive gap between rich and poor countries
  - ratio of income per capita on the order of 200
- Why are some countries rich and others poor?
  - classical question in economics, and in other social sciences
  - also of paramount importance for donors in various forms of development assistance
- But development not only about income
  - very clear in policy discussion about weak (fragile) states

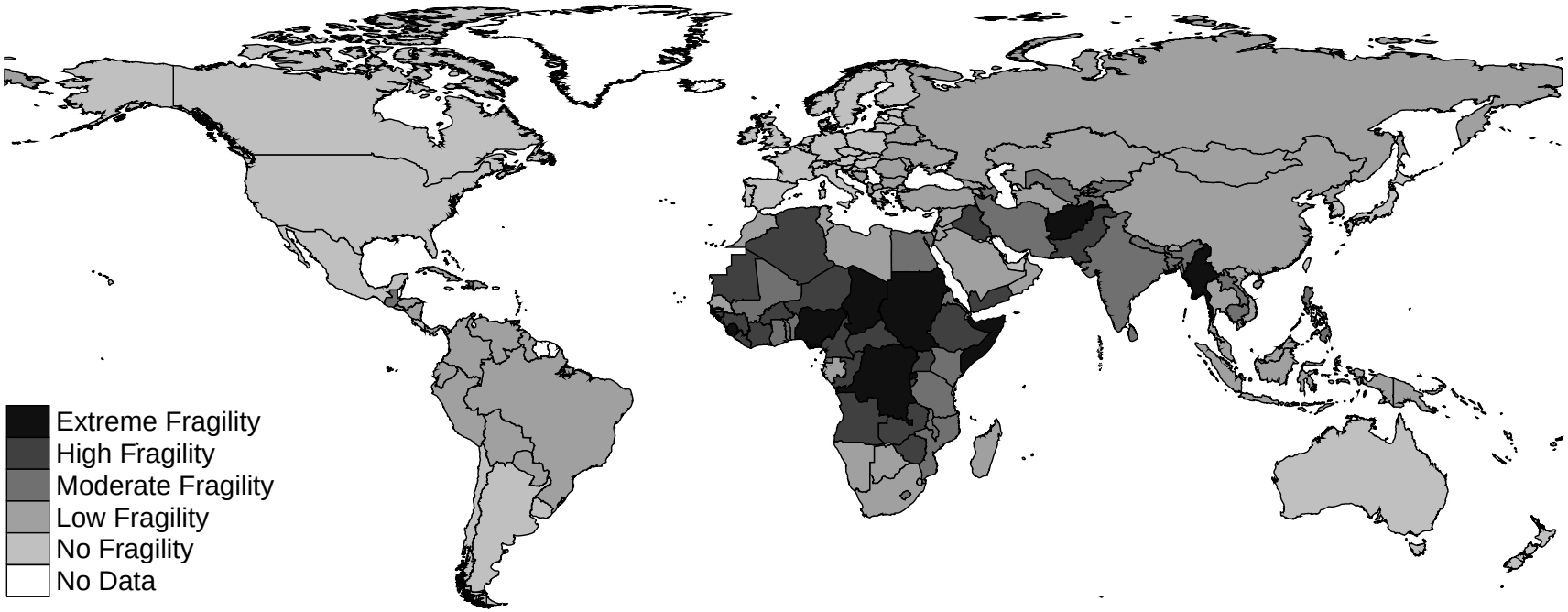
Weak (fragile) states - figures 1.1 and 1.2

- Central concept in development policy community
  - subject of various initiatives
- What is a weak (fragile) state?
  - it can not support basic economic functions, raise any substantial revenues, deliver basic services, keep law and order, ...
- Existing indexes
  - examples from Brookings Institute and Polity IV projects, though definitions appear to mix up symptoms and causes
  - incidence depends on definition, but 20-30 states failed/very weak, equally many fragile/weak, and others in risk zone
  - concentration in Sub-Saharan Africa, south/central Asia

Brooking Institute Index of State Weakness (2008)



Polity IV State Fragility Index (2008)



Development Clusters

- *State institutions* link with *income*, but also with *violence*
  - weak states in countries with massive poverty and societies plagued by internal conflicts
  - developed countries: high income, institutions work, policies in good order, conflicts resolved peacefully, ...
  - strong clustering of state capacity in different dimensions few strong economies with weak states
- Multidimensional problem — *the* development problem?
  - clustering of low income, violence, and a number of dysfunctional institutions

Example of Clustering - Figures 1.3 - 1.5

- Two forms of *state capacity*
  - extractive capacity: e.g., infrastructure to raise taxes from broad bases, like income or value added
  - productive capacity: e.g., infrastructure to enforce contracts or protect property rights
- Illustrate with two specific measures
  - alternative measures produce similar results
  - *fiscal* capacity: total taxes as share of GDP in 1999 (IMF data)
  - *legal* capacity: index of protection of property rights in 1997 (ICRG data)
  - strongly positively correlated with each other, income per capita (Fig 1.3), prevalence of civil war (Fig 1.4), and fragile state indexes (Fig 1.5)

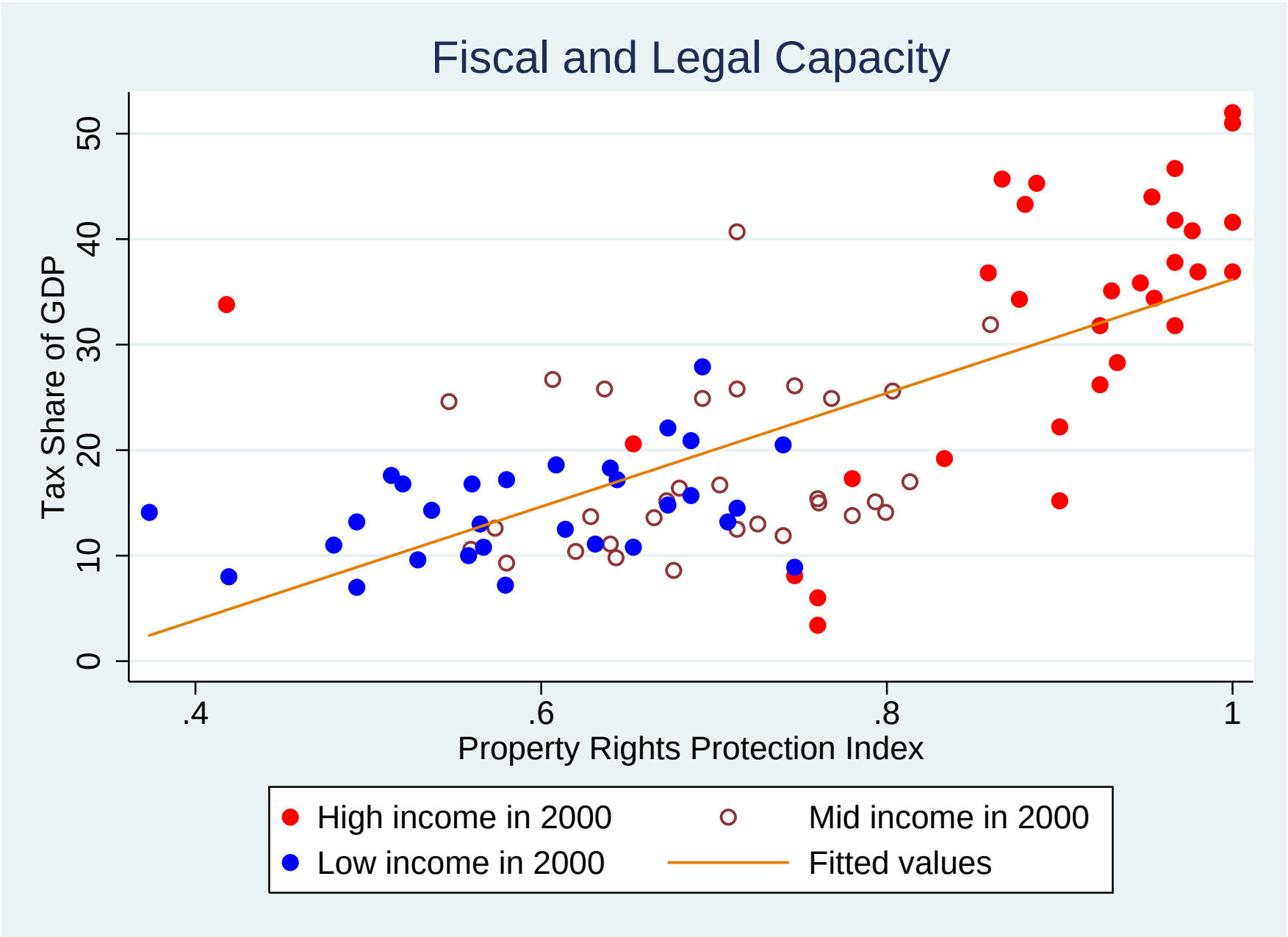


Figure 1.3 Legal and fiscal capacity conditional on income

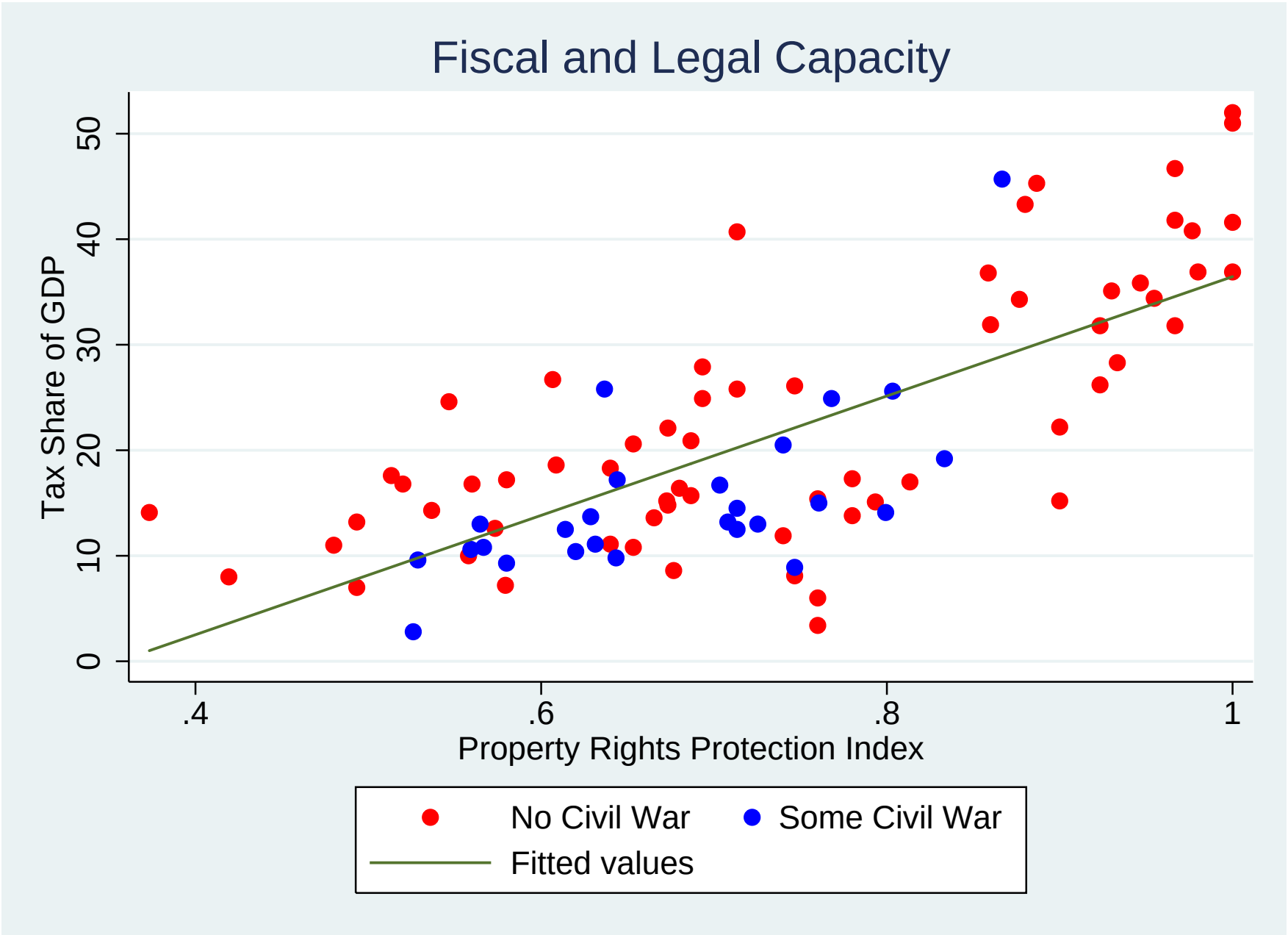


Figure 1.4 Legal and fiscal capacity conditional on civil war

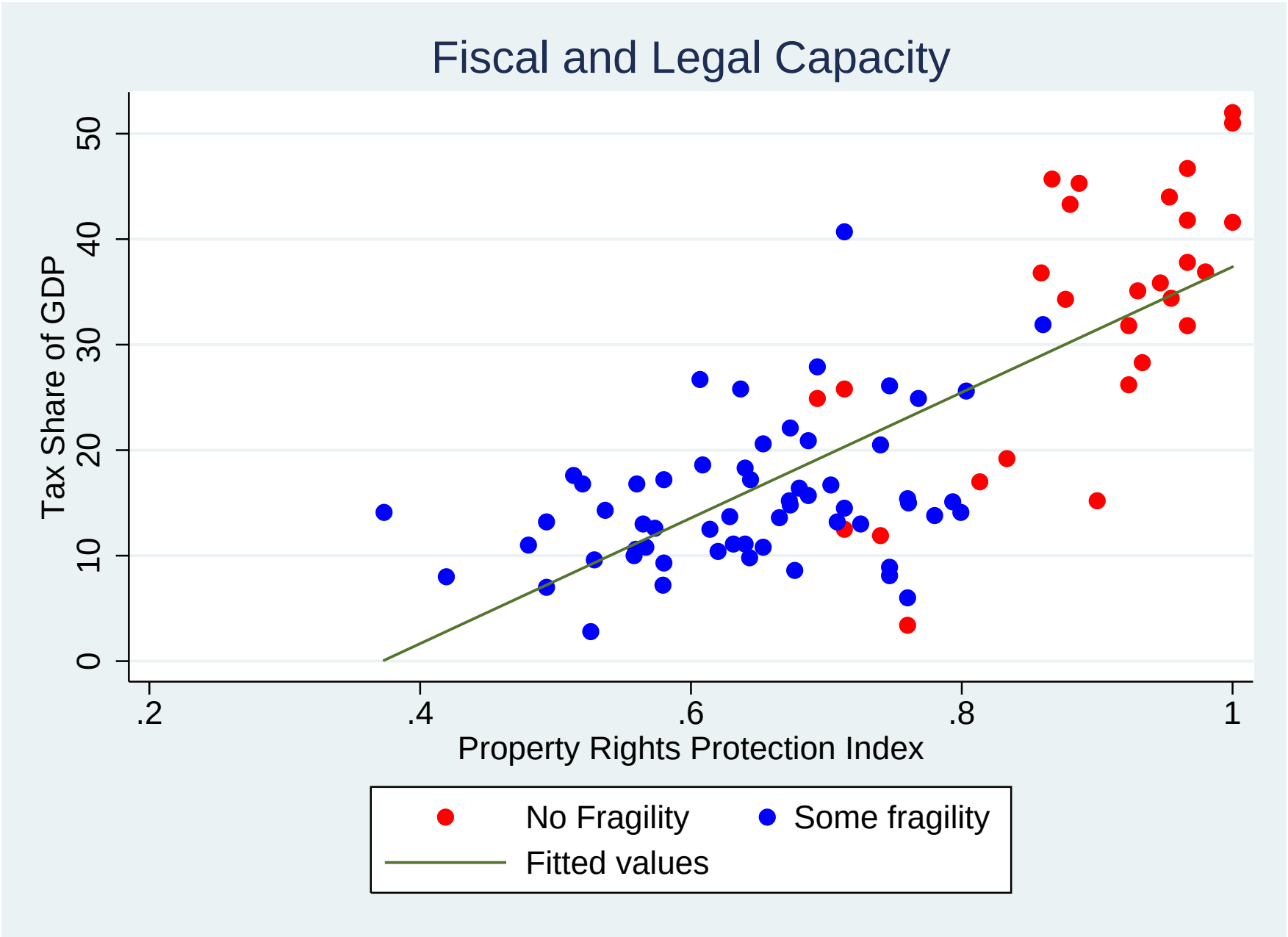


Figure 1.5 Legal and fiscal capacity conditional on fragility

How understand such patterns in the data?

- Basically need to pose — and answer — three general questions

Question 1

What forces shape the building of different state capacities and why do these capacities vary together?

Question 2

What factors drive political violence in different forms?

Question 3

What explains the clustering of state institutions, violence, and income?

Scope of the Book

- Some over-arching objectives
  - analyze the politics and economics of state building and political violence in the process of development
  - try to understand the observed development clusters of institutions, income, and violence
  - aim at constructing new theory and uncovering new evidence
  - hope to bring state capacity into mainstream of economics
- Pool together four broad research agendas
  - determinants of long-run development
  - determinants of different forms of political violence
  - importance of history in explaining today's patterns of development
  - interaction of economics and politics in shaping of societies

Background - earlier and ongoing research

- "Wars and state capacity", JEEA, 2008
- "Repression or civil war?", AER, Papers and Proceedings, 2009
- "The origins of state capacity: Property rights, taxation and politics", AER, 2009
- "State capacity, conflict and development", Econometrica, 2010
- "The logic of political violence", QJE, forthcoming, 2011
- "Fragile states and development assistance", JEEA, forthcoming, 2011
- "Weak states and steady states: The dynamics of fiscal capacity", mimeo (3rd coauthor Ethan Ilzetzki), 2010
- "From trade taxes to income taxes: Theory and evidence on fiscal capacity and development", mimeo, 2010

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Overview

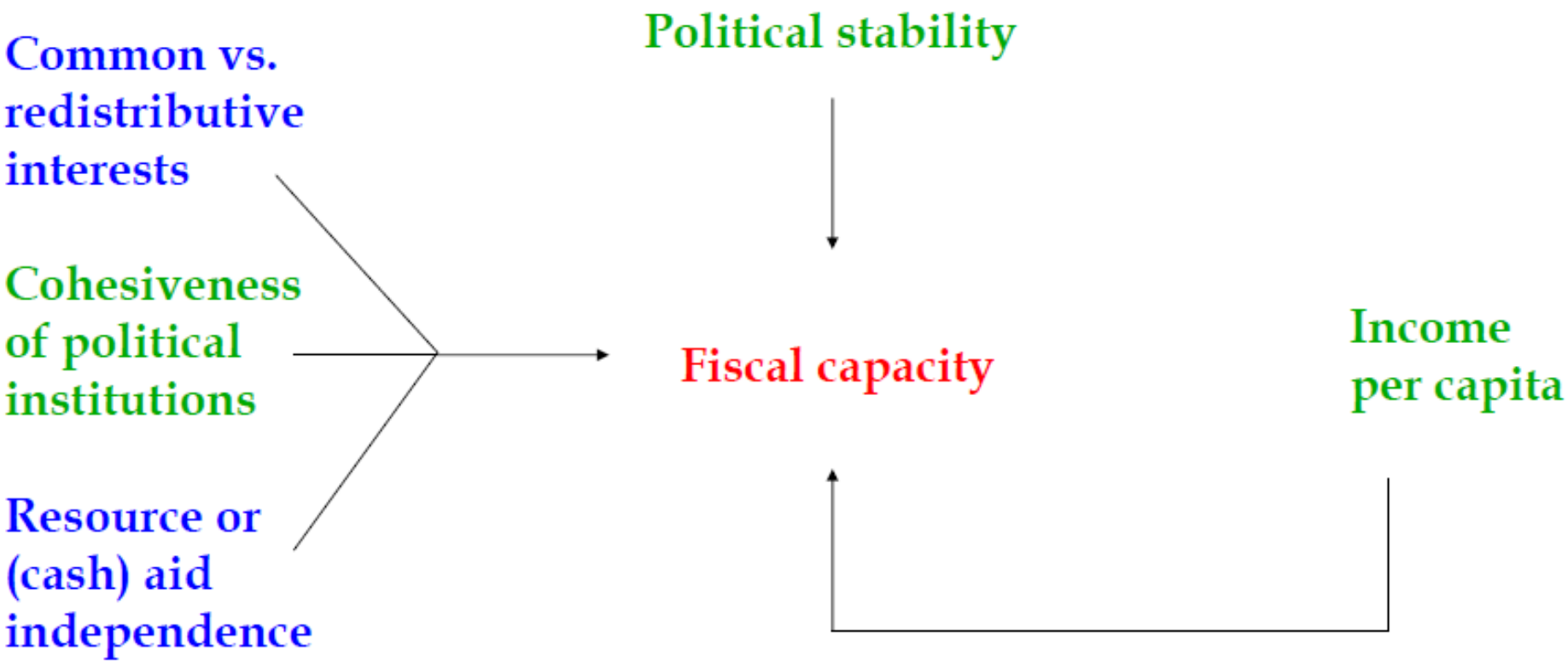
General modeling approach

- Analytical building blocks
  - two groups that can alternate in power
  - distinguish policy and institutions, which constrain policy
  - purposeful investments in institutions and in violence
- Build analysis successively
  - start by simple framework with a single dimension for policy and investment, constrained by number of parameters
  - gradually endogenize several of these parameters — turn them into new endogenous variables
  - revisit data as we go along

Chapter 2 – Figure 1.6

- Investments in fiscal (extractive) capacity
  - solve simple investment problem under uncertainty
  - uncover proximate and ultimate determinants
  - find analytical typology with three types of states
  - look at the data
- Deepen and broaden basic framework
  - microfoundations for fiscal capacity
  - more general models of public goods
  - polarization between groups
  - tax distortions
  - other tax bases than income
  - income inequality and size asymmetry
  - infinite horizon

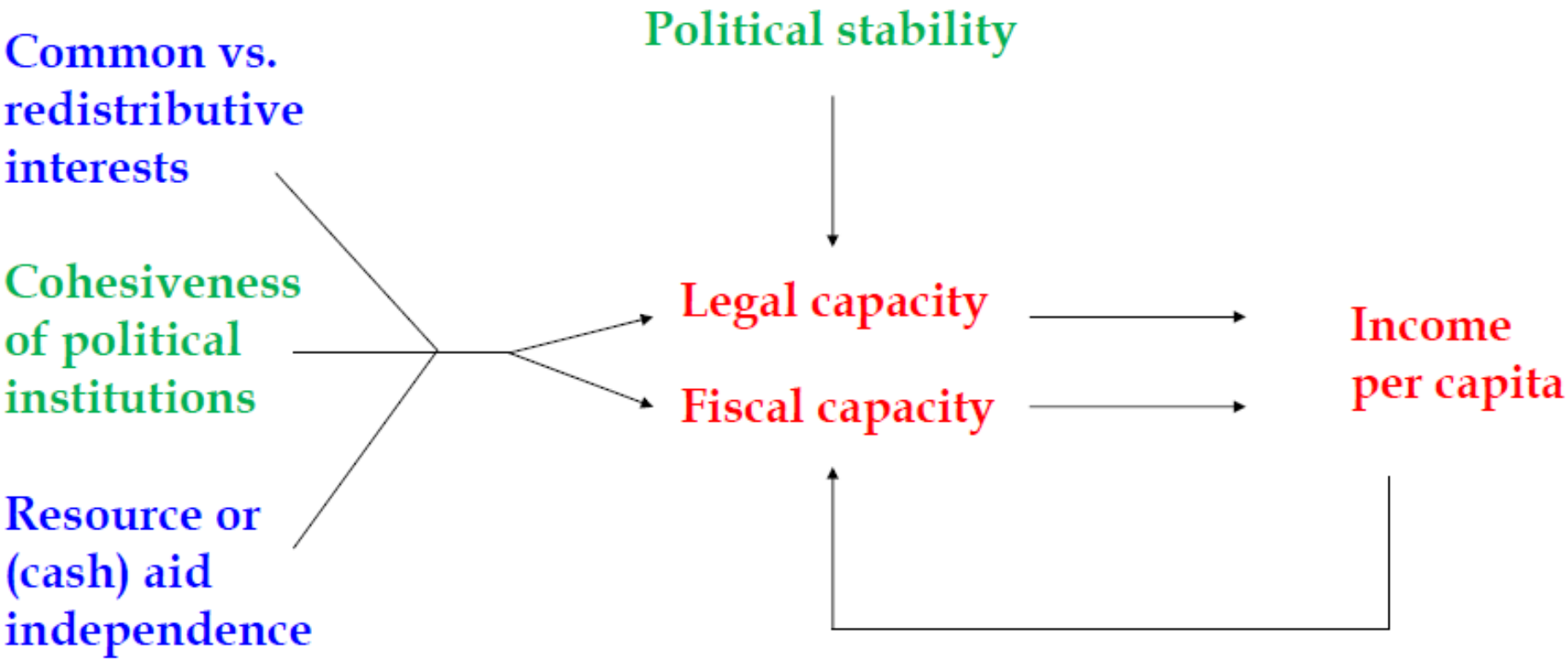
Figure 1.6 Scope of Chapter 2



Chapter 3 – Figure 1.7

- Add investments in legal (productive) capacity
  - endogenize income
  - basic complementarity of two types of investments
  - perform comparative statics and look at data
- Deepen and broaden basic framework
  - microfoundations for legal capacity
  - production inefficiencies and rent seeking
  - additional sources of complementarity
  - private capital accumulation
  - predation and corruption

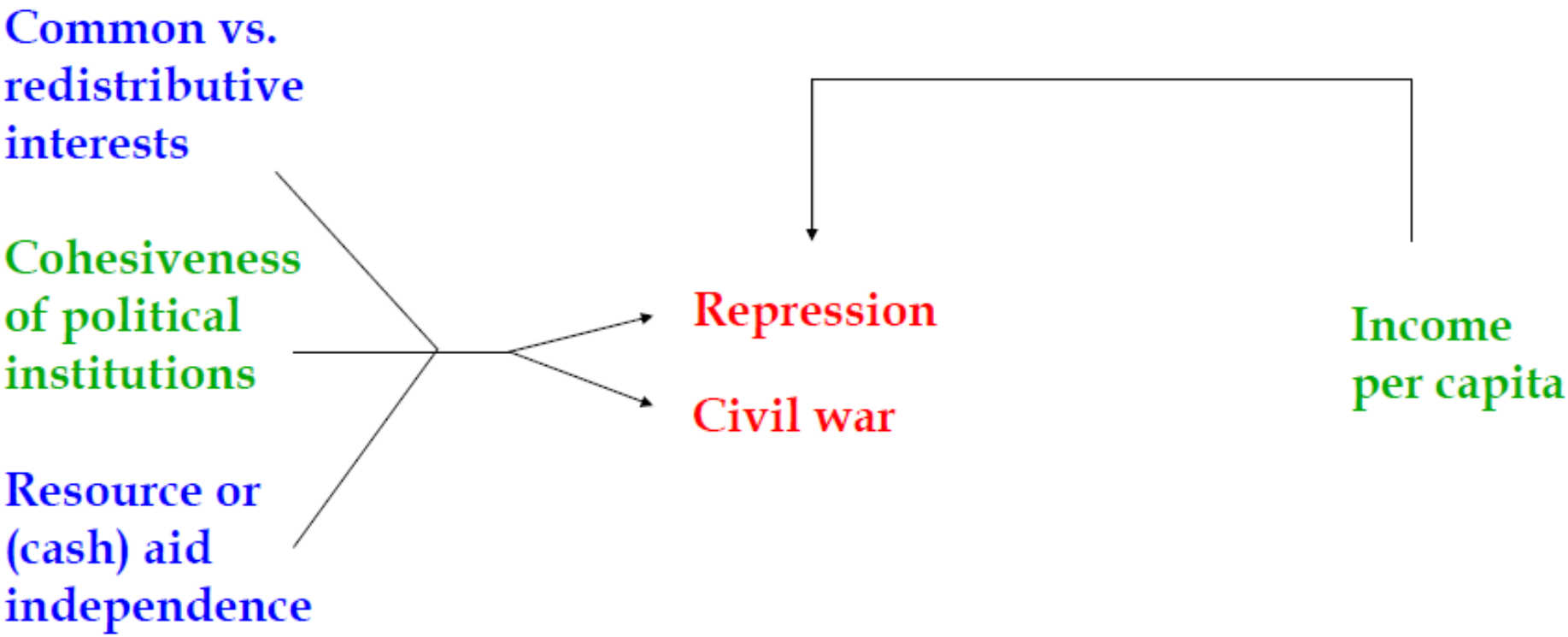
Figure 1.7 Scope of Chapter 3



Chapter 4 – Figure 1.11

- Add investments in political violence
  - solve for investments in violence by two groups
  - find analytical typology with three violence states
  - endogenize political (in)stability
  - uncover determinants of violence
- Long empirical detour
  - from theory to data
  - present econometric results

Figure 1.11 Scope of Chapter 4



Chapter 5 – Figures 1.12, 1.14

- Putting pieces together
  - revisit investments in state capacity with endogenous political stability (turnover)
  - common determinants and feedback effects may cluster strong state capacities in rich peaceful societies, or vice versa
  - gives new perspectives on the data
  - partial correlation of state capacity and violence is consistent with theory
- Summarize analysis that far
  - local and global comparative statics imply two-way, state-space matrix, and *Anna Karenina Principle of Development*

Figure 1.12 Scope of Chapter 5

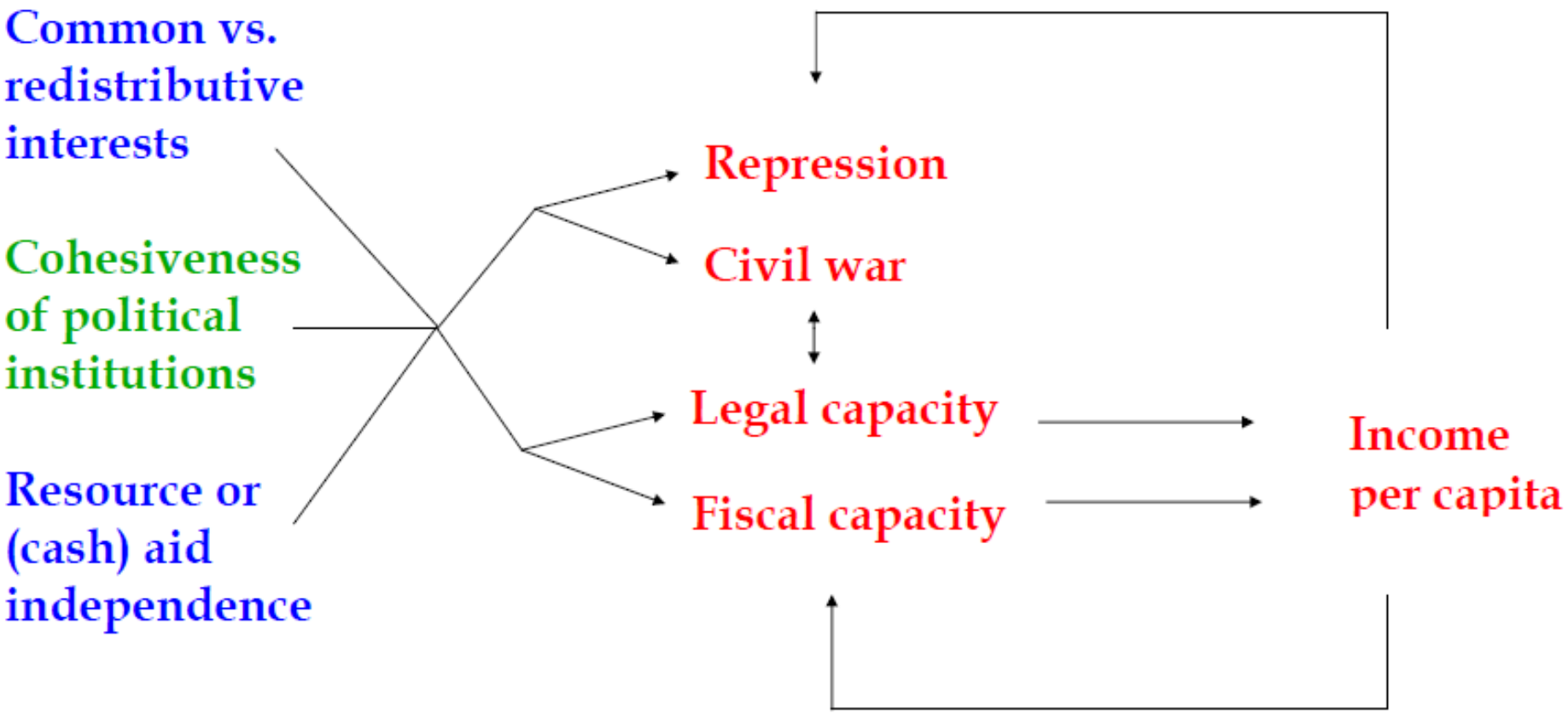


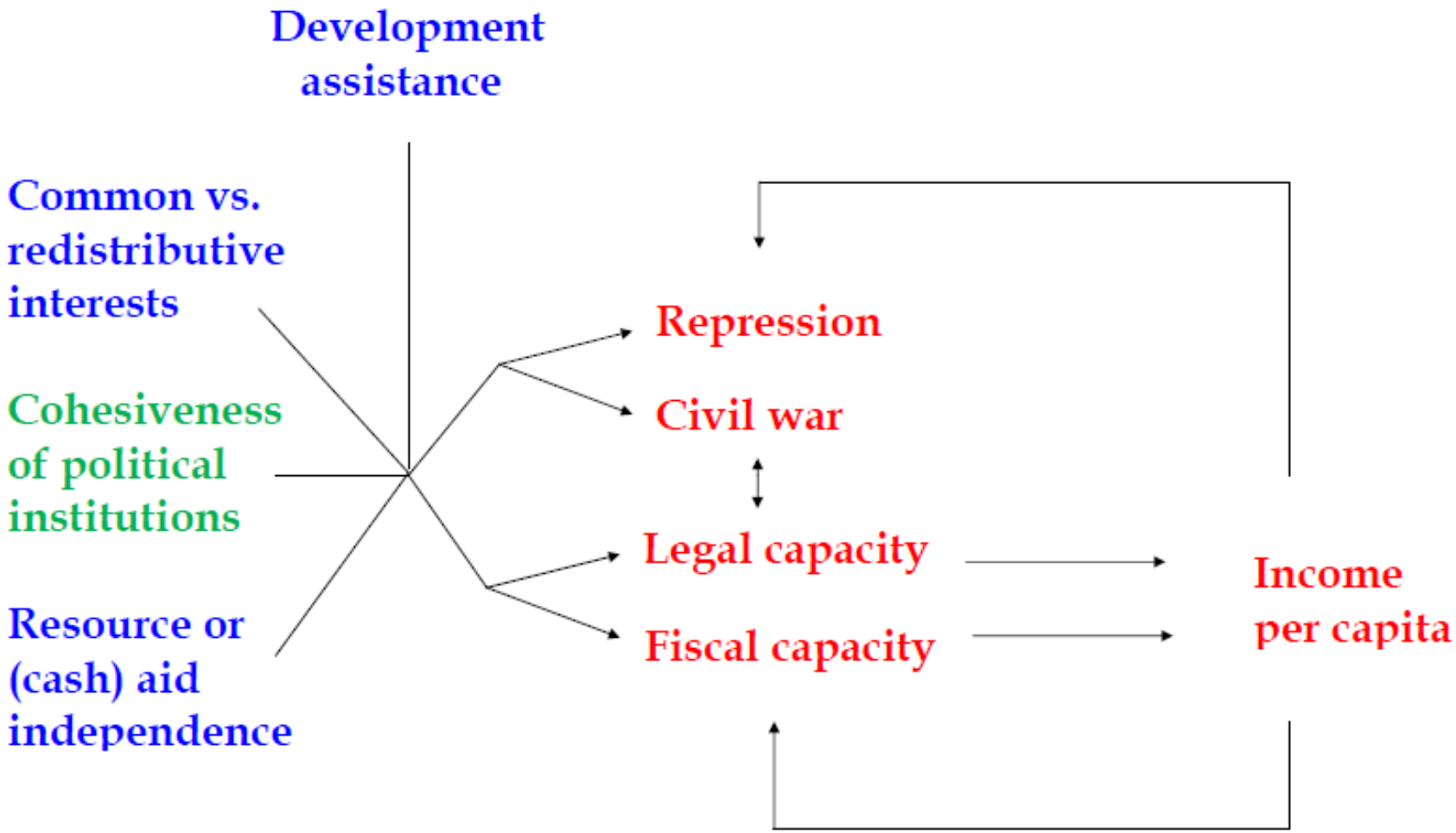
Figure 1.14 Our state space

	Weak	Redistributive	Common interest
Peace			
Repression			
Civil war			

Chapter 6 – Figure 1.15

- Discuss consequences of development assistance
  - use model framework to evaluate effects of different forms of assistance in different forms of states
  - cost-benefit analysis for donor, with endogenous responses of policy, state-capacity investment and violence
  - provide consistent perspective on outside interventions in weak or fragile states

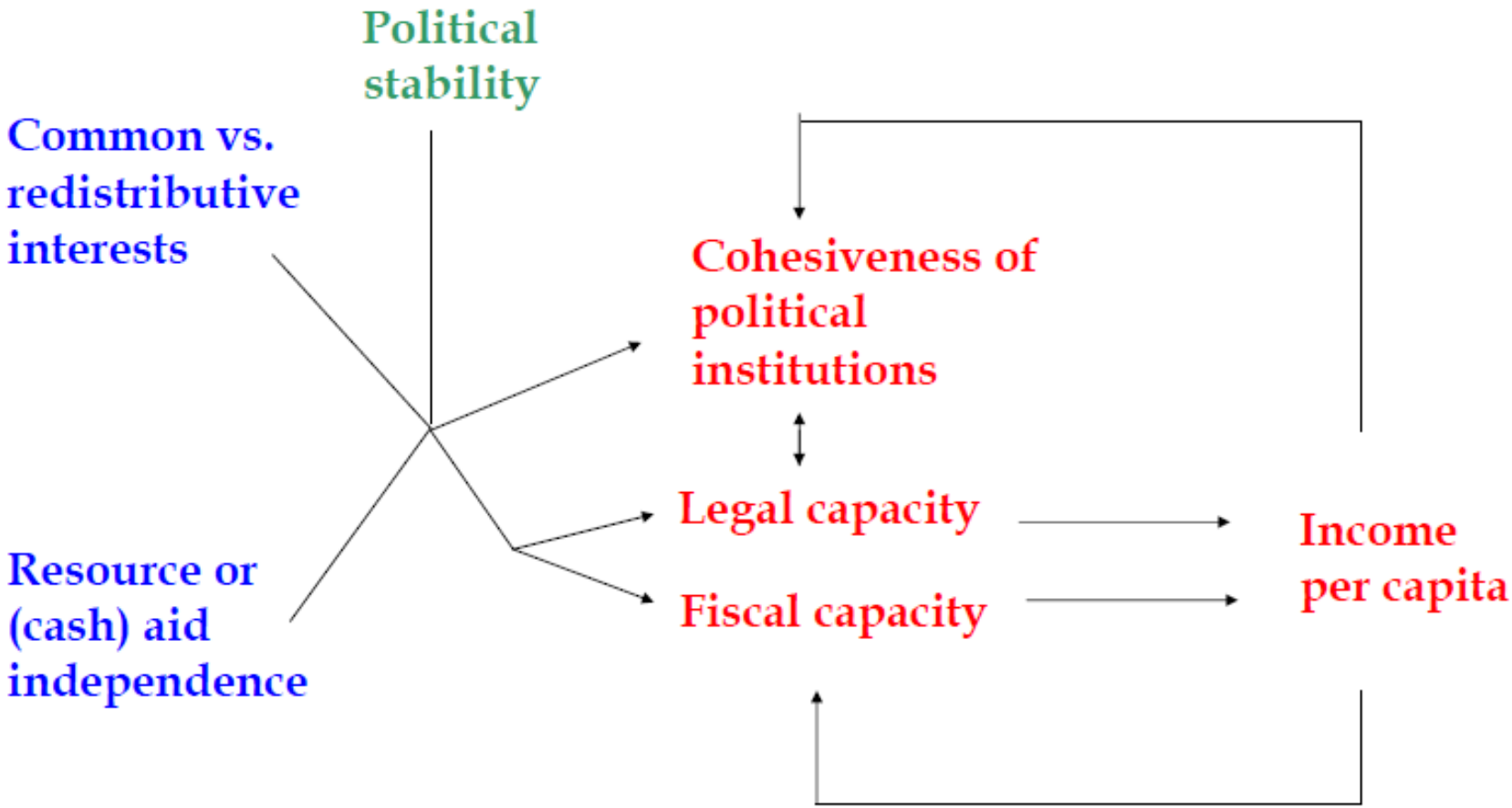
Figure 1.15 Scope of Chapter 6



Chapter 7 – Figure 1.16

- Add possibility of political reform
  - cohesiveness of political institutions central determinant of investments in state capacity and violence
  - analyze incentives to reform these institutions
  - stability of strong (weak) and peaceful (violent) states? reforms away from and towards cohesiveness?
- Deepen and broaden the analysis
  - provide some microfoundations for cohesiveness and the rate of (peaceful) political turnover
  - additional implications for development assistance?

Figure 1.16 Scope of Chapter 7



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Basic Structure

- Two time periods, $s = 1, 2$
- Two identical groups of individuals, $J = A, B$
  - each has share $\frac{1}{2}$ of population size, which is normalized to 1 (asymmetries in ch 2)
- Incumbents and opponents
  - at beginning of $s = 1$, one group holds power we call this group the incumbent $I_1 \in \{A, B\}$
  - the other group is the opponent $O_1 \in \{A, B\}$
  - with exogenous probability γ, there is a peaceful transition of power until $s = 2$
  - thus γ measures political instability (turnover) (endogenized in chs 4 and 7)

Private utility

- Linear utility functions
  - linear utility buys us risk neutrality
  - and a model that is *recursive* in policy and investments

$$u_s^J = c_s^J + \alpha_s g_s$$

  - c_s^J private consumption of group-J member at s
  - no savings (one of extensions in ch 3)
  - g_s utility from consumption of public goods, α_s their value; think about as "defense", and "threat of external conflict" (adding curvature one extension in ch 2)

Value of public goods

- Value of public goods stochastic
  - α_s has two-point distribution $\alpha_s \in \{\alpha_L, \alpha_H\}$, where $\alpha_H > 2 > \alpha_L > 1$, and Prob$[\alpha_s = \alpha_H] = \phi$ (continuous distribution one extension in ch 2)
  - shocks to α iid over time
  - realization of α_s known when policy set in s

Taxation and fiscal capacity

- Government has discretion over current taxation
  - taxes income at rate t_s, but is constrained by existing fiscal capacity, i.e., $t_s \leq \tau_s$
- Microeconomic foundations (see ch 2)
  - individual can earn some income in informal (untaxed) sector, but incentives to hide depend on risk and cost of getting caught
- Investments in fiscal capacity
  - e.g., tax authority, compliance structures, infrastructure to enforce income tax (or impose value-added tax)
  - initial stock τ_1 is given, but can be augmented
  - to achieve fiscal capacity τ_2 requires non-negative investment $\tau_2 - \tau_1$ at $s = 1$ (depreciation and reversibility in ch 2)
  - convex cost $\mathcal{F}(\tau_2 - \tau_1)$, where $\mathcal{F}_\tau(0) = 0$

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"
- Alternative microfoundations in two-sector model (see ch 3)
  - (i) symmetric credit-market model with partial enforcement of collateralized debt contracts: higher p_s^J, better enforcement
  - (ii) model of coercive theft from producers of output by other citizens: higher p_s^J, more clamp-down on predatory activity

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 $\mathcal{L}_\pi(0) = 0$

Government budget

- Budget items at s
  - $g_s, t_s, \{r_s^J\}_{J=I,O}$, and m_s total investments

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

  - budget constraint is

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

    where r_s^J is a non-negative targeted transfer to group J
  - R is additional (constant) revenue source accruing to government
    interpret as natural resource rents, or foreign (cash) aid
    R is randomly distributed on support $[R_L, R_H]$

Political institutions

- Model as constraint on incumbent
  - incumbents must give fixed share σ to opposition of any given unit of transfers to its own group
  - by the budget constraint

$$r_s^J = \beta^J[R + t_s \frac{y(p_s^I) + y(p_s^O)}{2} - g_s - m_s]$$

  - where $\beta^I = 2(1-\theta)$ and $\beta^O = 2\theta$ and where O 's share $\theta = \frac{\sigma}{1+\sigma} \in [0, \frac{1}{2}]$ represents more *cohesive* institutions the closer is θ to its maximum of $\frac{1}{2}$
  - interpret as more checks and balances on executive, or better representation of opposition (micropolitical foundations in ch 7)

Timing

1. We begin with initial stocks of state capacities $\{\tau_1, \pi_1\}$ and an incumbent group I_1. Nature determines α_1 and R.
2. 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 $\{\tau_2, \pi_2\}$.
3. I_1 remains in power with probability $1-\gamma$, and nature determines α_2.
4. I_2 chooses chooses period-2 policies $\{t_2, r_2^I, r_2^O, p_2^I, p_2^O, g_2\}$.

- goal is to solve for a subgame-perfect equilibrium in policy, and state-capacity investments – treat in that order

Policymaking in period s

- Policy objective
  - linearity makes model recursive, so that we can study policy choice at stages 2 and 4 separately from investments
  - whoever holds power, chooses $\{t_1, r_1^I, r_1^O, p_1^I, p_1^O, g_1\}$ to maximize

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

subject to

$$p_s^J, p_s^J \leq \pi_s, \quad t_s \leq \tau_s, \quad r_s^O \geq \sigma r_s^I$$

and the government budget constraint

- Optimal policy design?
  - can be described by four observations

Observation 1 – legal protection

- Will legal protection be allocated in same way to each one of the groups – i.e., will there be rule of law?
- *For* $s \in \{1, 2\}$ *any incumbent* I_s, *any* α_s *and any* R, *regulation fully utilizes all legal capacity,* $p^{I_s} = p^{O_s} = \pi_s$
- "Obvious" result in the current set up
  - relates to Diamond-Mirrlees production efficiency and a Political Coase Theorem
  - this result can be violated, when there are rents (two of extensions in ch 3 entail strong violations)

Observation 2 – public goods

- Equilibrium public-good provision
  - linear preferences give us a "bang-bang", corner solution
  - the level of public goods provided is

$$G(\alpha_s, t_s) = \begin{cases} R + t_s y(\pi_s) - m_s & \text{if } \alpha_s \geq 2(1-\theta) \\ 0 & \text{if } \alpha_s < 2(1-\theta) \end{cases}$$

  - depending on whether public goods is worth more to the incumbent than transfers to her own group (1^{st} row), or not (2^{nd} row)

Observation 3 – taxes

- Equilibrium tax rate

$$t_s = \tau_s$$

- Interpretation
  - always worthwhile to fully utilize all fiscal capacity, since gain of higher tax rate is, at least, $2(1-\theta)\,y(\pi_s)$, while loss is $y(\pi_s)$

Observation 4 – transfers

- Equilibrium transfers to incumbent group
  - follow from

$$r_s^J = \beta^J \left[R + \tau_s y(\pi_s) - G\left(\alpha_s, \tau_s\right) - m_s \right]$$

- Interpretation – recall $\beta^I = 2(1-\theta)$ and $\beta^O = 2\theta$
  - higher value of the opposition's share, θ, reflects more cohesive political institutions
  - as stated earlier, this may reflect more minority protection by constitutional checks and balances, or more representation through PR elections or parliamentary form of government
  - if $\theta = 1/2$, transfers shared equally across the two groups

Indirect utility and value functions

- Plug in optimal policy in utility at s to get

$$W(\alpha_s, \tau_s, \pi_s, m_s, \beta^J) = \alpha_s G(\alpha_s, \tau_s) + (1-\tau_s) y(\pi_s) + \beta^J [R + \tau_s y(\pi_s) - G(\alpha_s, \tau_s) - m_s]$$

  - period s utility of group J

- Define "value functions"

$$U^I(\tau_2, \pi_2) = \phi W(\alpha_H, \tau_2, \pi_2, 0, \beta^I) + (1-\phi) W(\alpha_L, \tau_2, \pi_2, 0, \beta^I)$$

- and

$$U^O(\tau_2, \pi_2) = \phi W(\alpha_H, \tau_2, \pi_2, 0, \beta^O) + (1-\phi) W(\alpha_L, \tau_2, \pi_2, 0, \beta^O)$$

  - for being incumbent or opposition group in period 2 depending on the two state variables

Investments in State Capacity

Preliminaries

- Investment objective is

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

- What's the shadow cost of public funds for incumbent?
  - value *realized* in period 1

$$\lambda_1 = \max\{\alpha_1, 2(1-\theta)\}$$

  - and value *expected* for period 2

$$E(\lambda_2) = \phi\alpha_H + (1-\phi)\lambda_2^L$$

where

$$\lambda_2^L = \begin{cases} \alpha_L & \text{if } \alpha_L \geq 2(1-\theta) \\ 2[(1-\theta)(1-\gamma) + \gamma\theta] & \text{otherwise} \end{cases}$$

Euler equations

- First-order conditions
  - for fiscal and legal capacity are

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

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

- Marginal cost of investment – RHS
  - period-1 foregone consumption of public or private goods
- Marginal net benefit of investment – LHS
  - collect any direct effect on period-2 private income plus indirect effects via the government budget

When is investment positive?

- Because $\mathcal{F}_\tau(0) = \mathcal{L}_\pi(0) = 0$, it is sufficient that

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

  - expected value of public funds must to be large enough
  - this depends on key parameters: $\{\phi, \alpha_H, \alpha_L, \theta, \gamma\}$
- Immediate interim agenda
  - analyze optimal investment
  - understand how it depends on the model parameters

Two conditions

- To pin down the type of equilibrium, define

Cohesiveness: $\alpha_L \geq 2(1-\theta)$

- requires θ close enough to $1/2$ or large enough α_L
  i.e., strong enough common-interest vs. redistributive motives
  - guarantees that $E(\lambda_2) - 1 \geq 0$

Stability: $\phi\alpha_H + (1-\phi)\,2\left[(1-\gamma)(1-\theta) + \gamma\theta\right] \geq 1$

- relevant only when Cohesiveness fails – depends on γ
  e.g., holds as $\gamma \to 0$ even if $\phi \to 0$
  - also guarantees that $E(\lambda_2) - 1 \geq 0$
- These conditions uniquely define three possible outcomes

Three types of state

- *If Cohesiveness holds, then the outcome is a* ***common-interest state*** *(the same as chosen by a Pigouvian planner). Public goods are provided for any* α_s *and there is positive investment in fiscal and legal capacity* (Proposition 2.2).
- *If Cohesiveness fails, while Stability holds, the state is* ***redistributive****. Public revenues finance only transfers when* $\alpha_s = \alpha_L$ *and the state invests in both fiscal and legal capacity (Proposition 2.3).*
- *If Cohesiveness and Stability fail, the state is* ***weak*** *with no investments in fiscal capacity and lower investments in legal capacity than in a common-interest or redistributive state (Proposition 2.4).*

- this is one dimension of our state-space (Anna Karenina) matrix

Complementarity and supermodularity

- Complementarity
  - a further consequence of $E(\lambda_2) - 1 \geq 0$
  - has two important implications
- Substance
  - higher π raises motives to invest in τ and vice versa
- Analytical convenience – monotone comparative statics
  - supermodularity holds (by positive cross-partial)
  - 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 – Figure 3.1

- Strong positive associations
  - recall correlations in Figure 1.3
  - similar picture appears with alternative measures: income tax share in government revenue (IMF, late 1990s) vs. index of contract enforcement (World Bank, 2005)
- Earlier results shed 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

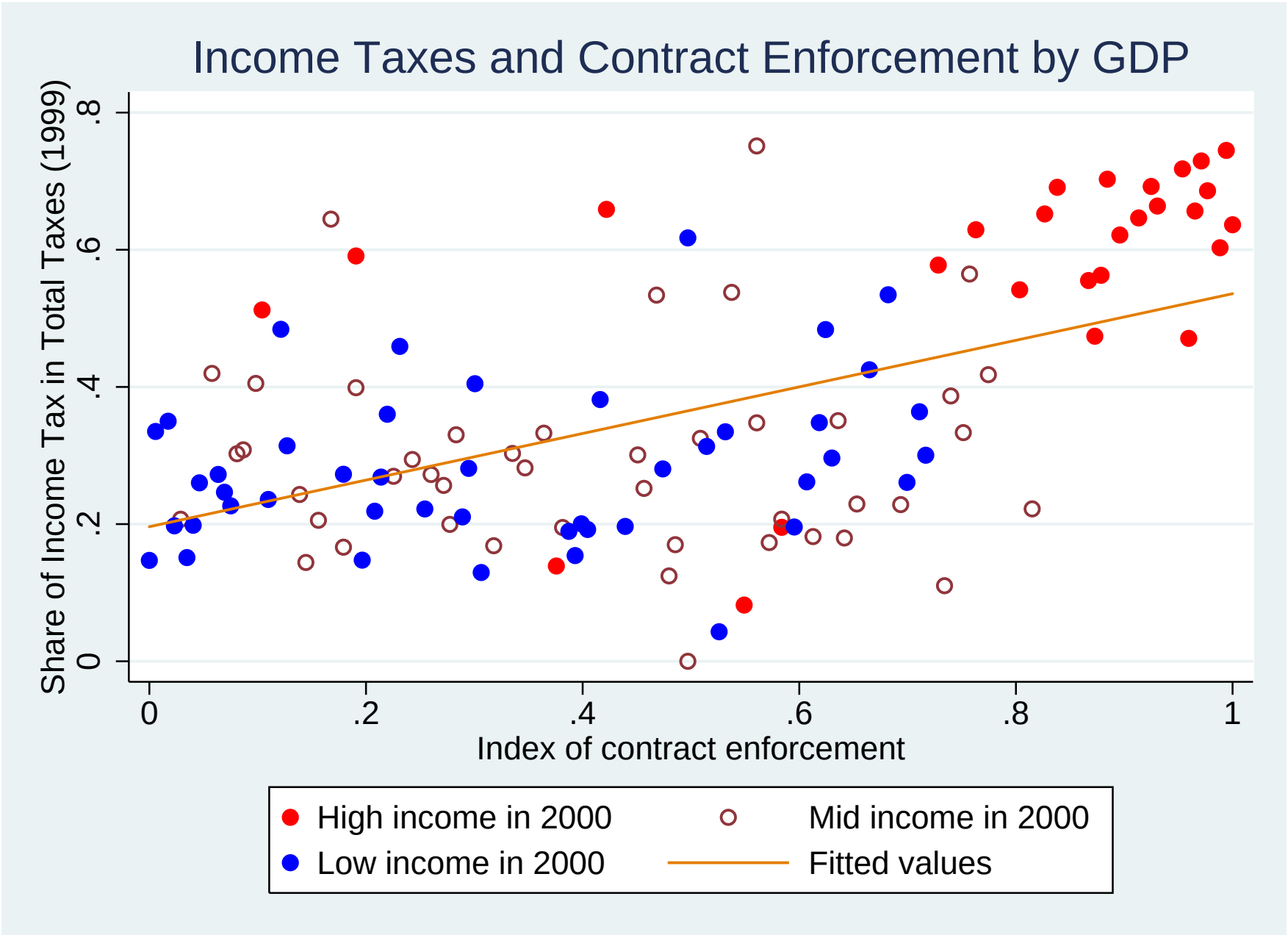


Figure 3.1 Income taxes and contract enforcement conditional on GDP

Extension: Polarization/heterogeneity

- Different valuations of public goods across groups
  - assume drawn from same two-point distribution $\{\alpha_H, \alpha_L\}$
  - $\{\alpha_s^I, \alpha_s^O\}$ period-s realizations for groups I and O and

$$(1-\iota) = \text{Prob}\ \{\alpha_s^O = z | \alpha_s^I = z\} \leq 1$$

  - greater polarization/heterogeneity, when ι high, gives lower expected value of public funds

$$\frac{dE(\lambda_2)}{d\iota} = -\gamma\phi(\alpha_H - \alpha_L) < 0$$

Proposition 2.5

If Cohesiveness fails, increased polarization/heterogeneity, as measured by a higher value of ι, decreases fiscal-capacity investments in a redistributive state and raises the likelihood that the economy is in a weak state. Both of these effects are larger when there is greater political instability (a higher value of γ).

Outline

1 Overview

2 The Core Model of State Capacity

3 Data and Partial Correlations

Measuring state capacity

- Five proxies for *present* fiscal capacity (IMF, World Bank data)
  - ratio of total tax revenue to GDP, at end of 1990s
  - share of income taxes in total revenue, at end of 1990s
  - share of *non*-trade taxes in revenue at end of 1990s
  - difference between income-tax and trade-tax share
  - 1− share of informal economy in GDP around 2006
- 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

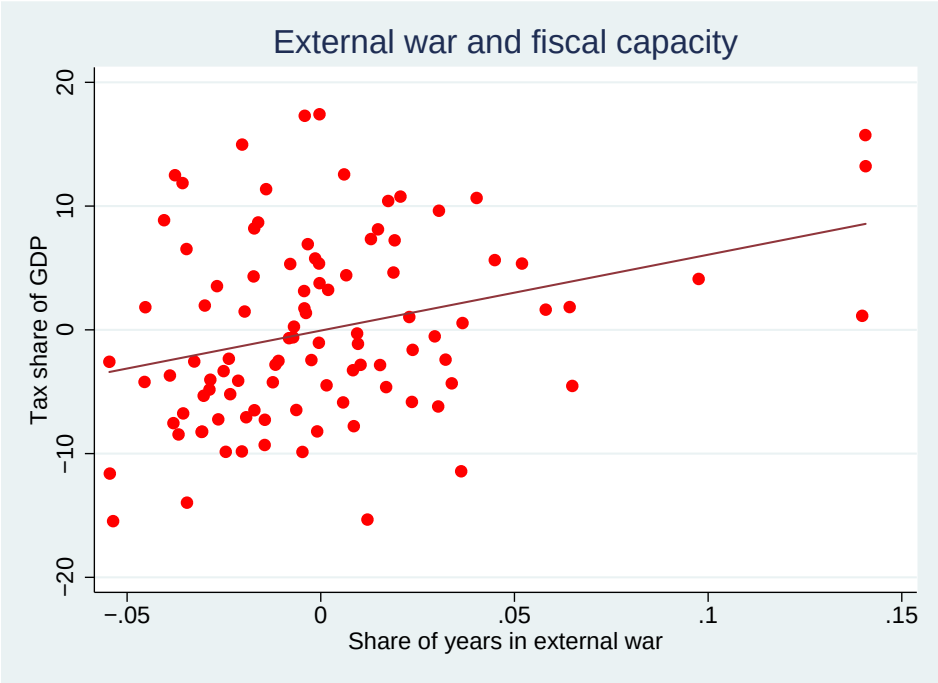
Measuring parameters of the model

- Use various proxies for *past* positive determinants of investment
  - common interests: proportion years in external war from 1816 (or independence) until 2000 (Correlates of War data)
  - nonpolarization/homogeneity: 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: same period average of non-open and non-competitive recruitment of executive (normalized (0,1) score for "Xrcomp"+"Xropen" in Polity IV)
  - investment costs: legal origin indicators (La Porta et al 1998)

Partial correlations

Figures and tables

- Compute partial correlations
  - regress measure of state capacity on suggested determinants; of course, absolutely no claim of causal interpretation
- Basic correlations in line with theory
  - for different measures of fiscal as well as legal capacity
- Auxiliary predictions of theory?
  - interaction effects are mixed success
  - additional measures implied by extensions (in ch 3) – private investments, private credit, corruption – also correlated with basic determinants in line with model predictions



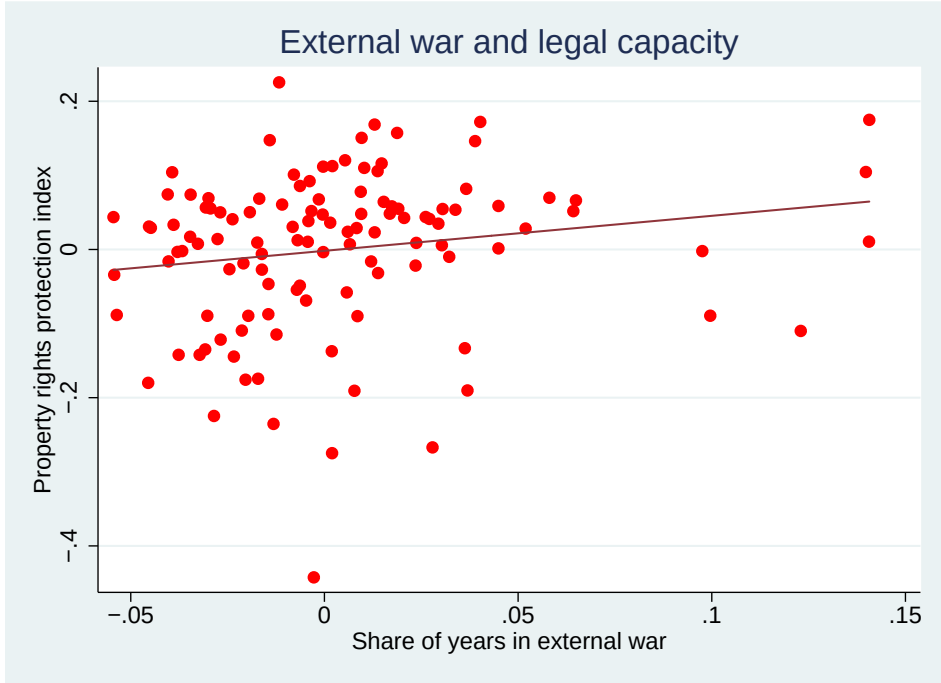
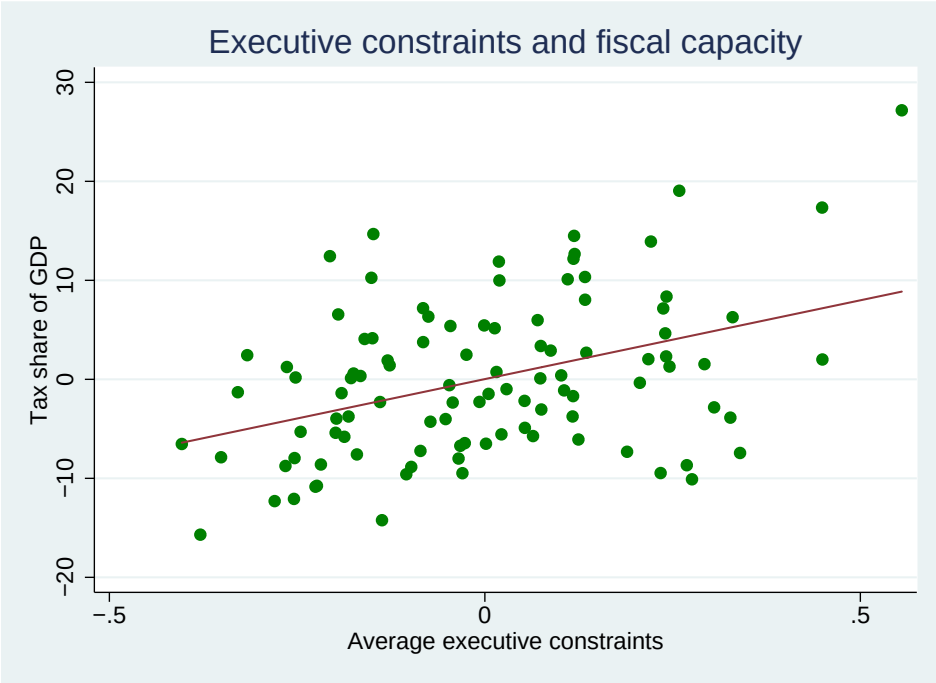


Figure 1.8 State capacity and external war



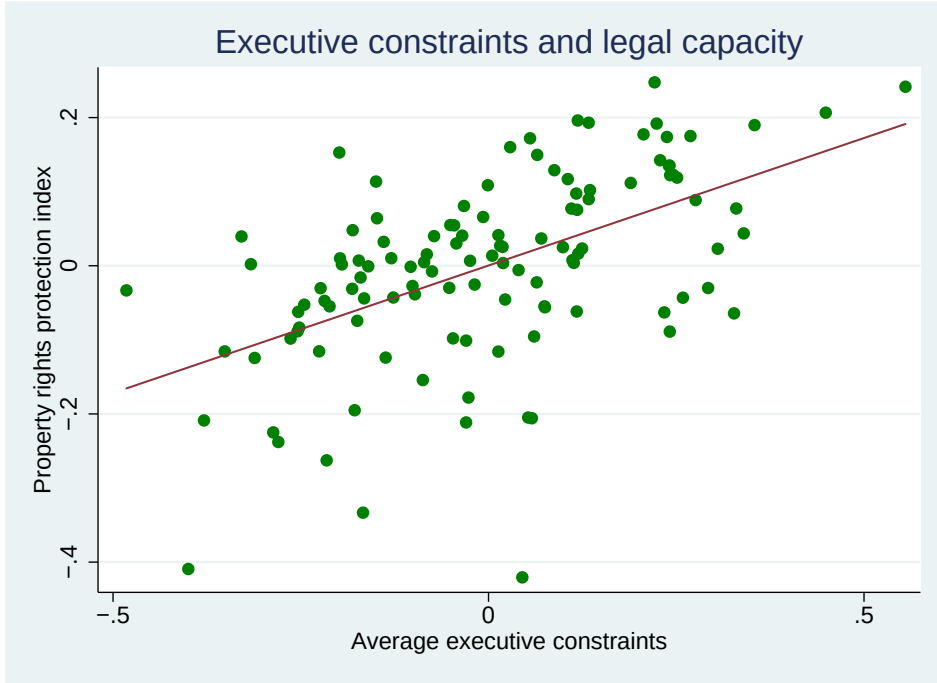


Figure 1.9 State capacity and executive constraints

Table: Table 2.1 Correlations between fiscal capacity measures

	Tax revenue share in GDP	Income tax share	Non-trade tax share	Income tax bias	Formal sector share
Tax revenue share in GDP	1				
Income tax share	0.818	1			
Non-trade tax share	0.675	0.638	1		
Income tax bias	0.839	0.949	0.848	1	
Formal sector share	0.55	0.561	0.52	0.599	1

Table: Table 2.2 Fiscal capacity and covariates: simple correlations

	(1) Tax revenue share in GDP	(2) Income tax share	(3) Non-trade tax share	(4) Income tax bias	(5) Formal sector share
Prevalence external war before 2000	1.992 (1.145)*	1.290 (0.956)	2.416 (0.918)***	2.037 (0.962)**	1.482 (0.675)**
Average executive constraints before 2000	2.089 (0.376)***	2.263 (0.335)***	1.115 (0.311)***	1.962 (0.308)***	1.790 (0.358)***
Average nonopen executive recruitment before 2000	1.044 (0.435)**	1.216 (0.455)***	0.531 (0.394)	1.026 (0.395)***	1.512 (0.449)***
Ethnic homogeneity (1-ethnic fractionalization)	1.019 (0.31)***	0.398 (0.277)	0.631 (0.311)**	0.569 (0.275)**	0.647 (0.306)**
Observations	101	101	100	100	105
R-sqaured	0.493	0.455	0.293	0.472	0.308

Table: Table 2.4 Fiscal capacity and covariates: additional controls

	(1) Tax revenue share in GDP	(2) Income tax share	(3) Formal sector share	(4) Tax revenue share in GDP	(5) Income tax share	(6) Formal sector share
Prevalence external war before 2000	1.605	0.92	0.775	0.858	0.573	1.026
	(1.087)	(0.871)	(0.615)	(1.361)	(0.867)	(0.578)*
Average executive constraints before 2000	1.574	1.715	0.863	1.139	1.185	1.109
	(0.416)***	(0.382)***	(0.39)**	(0.45)**	(0.397)***	(0.415)***
Average nonopen executive recruitment before 2000	0.663	0.83	0.99	0.862	0.418	1.244
	(0.41)	(0.413)**	(0.425)**	(0.476)*	(0.395)	(0.466)***
Ethnic homogeneity (1-ethnic fractionalization)	0.702	0.059	-.132	0.406	-.003	-.084
	(0.371)*	(0.339)	(0.371)	(0.388)	(0.321)	(0.394)
Log(GDP per capita) in 2000	0.204	0.222	0.442	0.346	0.349	0.433
	(0.108)*	(0.101)**	(0.106)***	(0.117)***	(0.084)***	(0.116)***
Low value of inequality				0.528	0.351	-.165
				(0.304)*	(0.152)**	(0.179)
Observations	100	100	105	80	80	87
R-squared	0.52	0.487	0.408	0.579	0.565	0.489

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

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 3.4 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