

Zvi Griliches Lectures 2011
Pillars of Prosperity
The Political Economics of Development Clusters

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C. Adding Political Violence and D. State Spaces

The story so far

Determinants of state capacity

we have developed a framework to analyze investments in the extractive and productive parts of the state
fiscal and *legal capacity*

Up to now, explicit politics has been kept in the background

the nature of political institutions (*cohesiveness*), and the rate of political turnover (*instability*)

still these parameters, θ and γ , crucially shape the motives for building the state

will be (partly) endogenized in this and following lecture

C. Political violence

1. Motivation

Risk of external violence

by argument in **B**, can promote state building
common interest vs. redistributive (group) interest

Risk of internal political violence – civil war, repression?

not common interests – rather, extreme redistributive struggle
may entail very different incentives to invest in state

one way to endogenize political instability, with high relevance
for many developing countries

of course, better understanding of political violence is also
important in and of itself

Facts about civil war – Figure 1.10

Unfortunately, this is a common phenomenon

civil war has plagued many nations in postwar period
prevalence over all nations and years since 1950 above 10%,
cumulated death toll exceeds 15 million

Two big facts

prevalence varies greatly over years,
peaks above 15% in early 1990s

prevalence varies greatly over countries,
civil war and poverty (low GDP/capita) strongly correlated

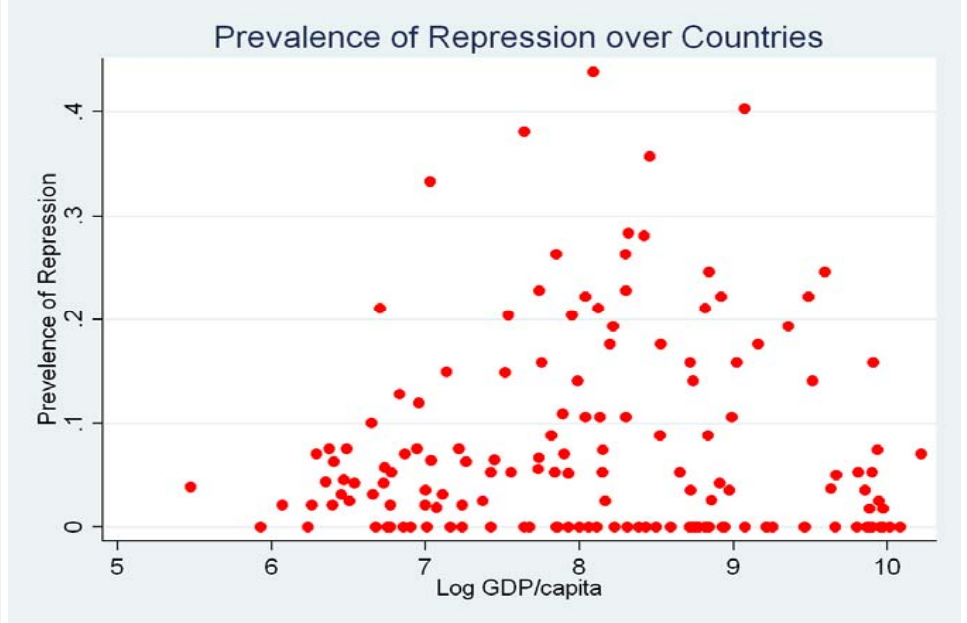
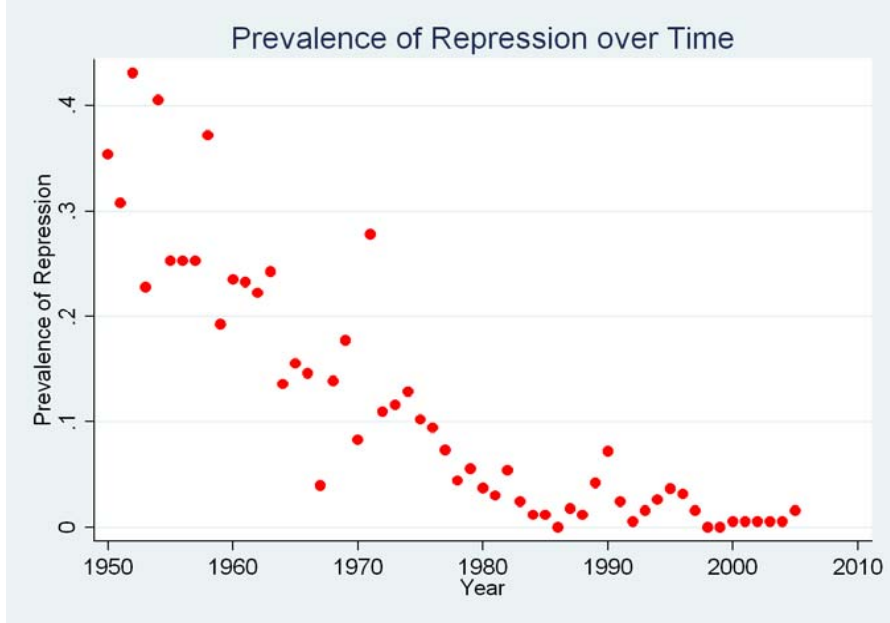
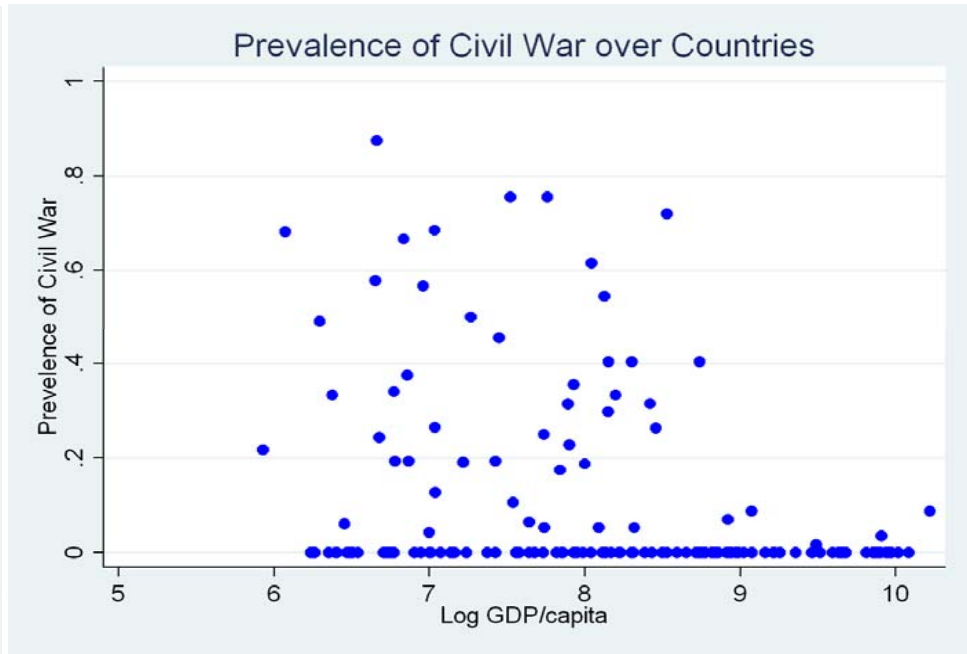
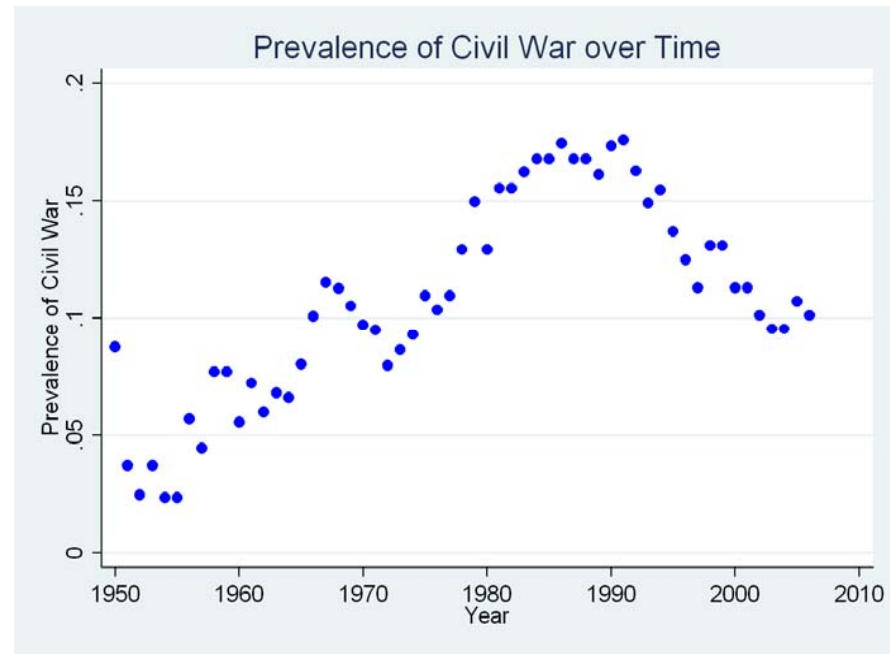


Figure 1.10 Prevalence of civil war and repression

Facts about government repression – Figure 1.10

One-sided political violence

many governments use violent means to raise their probability of staying in power without civil war breaking out
such repression shows up in violations of human rights:
executions, political murders, imprisonments, brutality, ...

Prevalence?

by strict measure, purges, about 8% of country-years since 1950
by wider measure, human-rights violations, about 32%, 1976-2006

Relation to civil war facts

purges have opposite trend to civil wars until early 1990s
peaks among higher-income countries than civil war
hint of substitutability between the two

Existing research

Theory of civil conflict

little role for institutions, including state capacities

Empirical work on civil war and repression

weak connections to theory, so difficult to interpret results

takes income as given, though violence and income likely have similar determinants – e.g., parallel "resource curse" literatures

separate literatures on civil war and repression, though both reflect that institutions fail to resolve conflicts of interest

Need for theoretical work

Political violence, income, and state capacity?

political violence clusters with income – cf. Fig 1.10

as well as state capacity – recall Fig 1.4

two-way relations amongst these outcomes

same economic and political determinants may cause all three

Complex relations in the data calls for explicit theory

existing theory does not take institutions well into account

need explicit theory to build bridge to empirical work

explicit theory may also help us understand relation between

civil war and repression – and their relation to state capacity

Analytical approach

First step – this part

study a simple model of political violence, extending model
in part **B**, but treat legal and fiscal capacity decisions as given
(long) detour confront conflict model's implications with data

Second step – part **D**, later in this lecture

reintroduce state-capacity investments in new framework
return briefly to the data
put pieces together

2. The Core Model with Political Violence

Modifications of earlier setup

start out from exactly the same model of policy and state-capacity investments as in part **B**

replace earlier exogenous transition of power by outcome of (potential) conflict, triggered by investment in violence

treat state capacity at $s = 1, 2$ as given

Violence and transitions of power

Incumbent and opposition can simultaneously invest in violence

period 1 opposition group O_1 can mount insurgency with

army $L^O \leq \bar{L}^O$, paid within group, at marginal cost of funds ν

incumbent group I_1 can invest in army $L^I \leq \bar{L}^I$,

paid out of the public purse, at marginal cost λ_1

no conscription: each soldier just paid the period-1

wage $\omega(\pi_1)$ – an increasing function of π_1

Probability of opposition takeover – conflict technology

$\gamma(L^O, L^I; \xi)$ increasing in L^O , decreasing in L^I

winner becomes next period's incumbent, $I_2 \in \{A, B\}$

loser becomes new opposition, $O_2 \in \{A, B\}$

Peaceful transitions

if nobody arms, transition probability is $\gamma(0, 0; \xi)$

New timing

1. Start with state capacity τ_1, π_1 and incumbent group I_1 , nature determines α_1, R
2. I_1 chooses first-period policies $\{(p_1^J), (r_1^J), t_1, g_1\}$ and invests in period-2 state capacities τ_2 and π_2
3. At same time as 2, I_1 and O_1 simultaneously invest in violence L^I and L^O
4. I_1 remains in power with probability $1 - \gamma(L^O, L^I, \xi)$ nature determines α_2
5. New incumbent I_2 chooses policy $\{(p_2^J), (r_2^J), t_2, g_2\}$

we will study subgame perfect equilibrium in investments in violence and policy at stages 3 and 5

in part **D** below, we revisit investments τ_2 and π_2 at stage 2 – for now, take those and $y(\pi_2)$ as given

Stage 5 – New I_2 policymaker

Period-2 budget and policy instruments

exactly as before with budget constraint

$$R + \frac{t[y(p_2^I) + y(p_2^O)]}{2} = g_2 + \frac{r_2^I + r_2^O}{2}$$

Equilibrium policies

same outcome as in part **B**, also in period 1

Indirect payoff and value functions

in earlier notation, we have

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

$$U^J(\tau_2, \pi_2) = \frac{[\phi W(\alpha_H, \tau_2, \pi_2, R, 0, \beta^J) + (1 - \phi) W(\alpha_L, \tau_2, \pi_2, R, 0, \beta^J)]}{2}$$

Stage 3 – Define the investment objectives

Expected utilities of groups I_1 and O_1

$$W(\alpha_1, \tau_1, \pi_1, m_1, \beta^J) \\ + (1 - \gamma(L^O, L^I, \xi))U^I(\tau_2, \pi_2) + \gamma(L^O, L^I, \xi)U^O(\tau_2, \pi_2)$$

and

$$W(\alpha_1, \tau_1, \pi_1, m_1, \beta^J) - \nu\omega(\pi_1)L^O \\ + \gamma(L^O, L^I, \xi)U^I(\tau_2, \pi_2) + [1 - \gamma(L^O, L^I, \xi)]U^O(\tau_2, \pi_2)$$

now, m_1 includes violence investment by I_1 , i.e., $\omega(\pi_1)L^I$,
whereas investment by O_1 deducted from period-1 payoff

Stage 3 – Preliminaries

Prospective tradeoff

when incumbent and opposition decide how much to invest, they weigh investment cost against higher probability of policy control

First-order conditions

$$-\gamma_I(\hat{L}^O, \hat{L}^I, \boldsymbol{\xi}) \left[U^I(\tau_2, \pi_2) - U^O(\tau_2, \pi_2) \right] - \lambda_1 \omega(\pi_1) \leq 0$$

and

$$\gamma_O(\hat{L}^O, \hat{L}^I, \boldsymbol{\xi}) \left[U^I(\tau_2, \pi_2) - U^O(\tau_2, \pi_2) \right] - \nu \omega(\pi_1) \leq 0$$

common first term can be written

$$U^I(\tau_2, \pi_2) - U^O(\tau_2, \pi_2) = \omega(\pi_1) 2(1 - 2\theta) Z$$

where

$$Z = \frac{R + \tau_2 y(\pi_2) - E(G(\alpha_2, \tau_2))}{\omega(\pi_1)}$$

is the wage-adjusted, expected redistributive pie in period 2

Restrictions on conflict technology

Make following assumption

Assumption 4.1 For all $L^J \in [0, \bar{L}^J]$, we have:

- a. if $\gamma \in (0, 1)$, $\gamma_O > 0$, $\gamma_I < 0$, $\gamma_{OO} < 0$, $\gamma_{II} > 0$,
- b. $\frac{-\gamma_I(0,0;\xi)}{\gamma_O(0,0;\xi)} \geq \frac{\alpha_H}{\nu}$, and
- c. $\frac{\gamma_I \gamma_{OO}}{\gamma_O} \geq \gamma_{IO} \geq \frac{\gamma_O \gamma_{II}}{\gamma_I}$

consistent with commonly used contest functions with certain assumptions on parameters (see ch 4)

this assumption allows us to pin down the Nash equilibrium associated with the two first-order conditions

Peaceful resolution of conflict game

Suppose $\alpha_2 = \alpha_H > 2 \geq 2(1 - \theta)$

then, $G(\alpha_H, \tau_2) = R + \tau_2 y(\pi_2) \Rightarrow Z = 0$

i.e., no transfers will be paid at stage 4

Suppose $\alpha_2 = \alpha_L \geq 2(1 - \theta)$

then, Cohesiveness holds, and we have a common-interest state

i.e., $Z = 0$ and any residual revenue again spent on public goods

in both cases expected payoff for J is decreasing in L^J ,

whichever group gets into power, so $L^J = 0, J = I, O$

Proposition 4.1 *If $\alpha_L \geq 2(1 - \theta)$ or if $\phi \rightarrow 1$,
no group invests in violence*

there is always peace in common-interest states,
or in states with high risk of external violence.

Prospectively violent solution to conflict game

Proposition 4.2 *If Assumption 4.1 holds, $\alpha_L < 2(1 - \theta)$ and $\phi < 1$, there are two thresholds $Z^I(\theta, \phi; \xi)$ and $Z^O(\theta, \phi; \xi)$*

$$\begin{aligned} Z^I(\theta, \phi; \xi) &= \frac{\lambda_1}{\gamma_I(0, 0; \xi) (1 - \phi) 2(1 - 2\theta)} \\ &< Z^O(\theta, \phi; \xi) = \frac{\nu}{\gamma_O(0, 0; \xi) (1 - \phi) 2(1 - 2\theta)} \end{aligned}$$

such that:

1. *if $Z \leq Z^I$, there is peace with $\hat{L}^O = \hat{L}^I = 0$*
2. *if $Z \in (Z^I, Z^O)$, there is repression with $\hat{L}^I > \hat{L}^O = 0$*
3. *if $Z \geq Z^O$, there is civil conflict with $\hat{L}^I, \hat{L}^O > 0$.*

Moreover, \hat{L}^O and \hat{L}^I , whenever positive, increase in Z

Anatomy of three regimes

1. Peace: $Z < Z^I$

wages ω_1 high, non-tax income R low, opposition's share θ high; too expensive to fight, or not enough to fight over

2. Repression: $Z \in [Z^I, Z^O]$

ω_1 lower/ R higher/ θ lower, so more redistribution at stake, and incumbent's arming threshold lower, by Assumption 4.1b.

3. Civil war: $Z > Z^O$

even more at stake, so both parties invest in violence, and nobody stops fighting as Z goes up, by Assumption 4.1c; in fact, I always fights more intensively

Parallels with state-capacity determinants

Common-interest states

never have violence; recall they always invest in state capacity

Redistributive states

sometimes have violence; variables that trigger more violence
also generate low state capacity

high resource-rent or cash-aid share, high R gives high Z

low cohesiveness of political institutions, low θ gives low Z^I, Z^O

low demand for public goods, low ϕ gives low Z^I, Z^O

low income (given τ and π), low ω_1 gives high Z

Weak states

often have violence; recall that weak states – in countries
with low θ , and low ϕ – do not invest in the state at all

Role of political stability

State capacity framework in part **B**

there, stability treated as parametric – a high value of γ
implies weak motives to invest in state capacity

Political violence framework

here, γ is endogenous

How do the forces highlighted in the two frameworks interact?

a natural question – posed and answered in part **D**

... but first a (long) detour into the empirics of political violence

3. From Theory to Evidence

Preliminaries – observability

Which parts of Z_s and Z_s^I observed for a certain country, at time s ?

can measure, or find decent proxies for R_s, ω_s and θ

but genuinely hard to measure $\phi, \gamma_O(0, 0; \xi_s)$ and $\gamma_I(0, 0; \xi_s)$

and cost parameters λ and ν

Unobserved randomness in determinants of violence

treat (τ, π) as given and write random variable $Z_s - Z_s^O$ as

$$Z_s - Z_s^O = \frac{R_s}{\omega_s} - \bar{Z}^O - \frac{\varepsilon_s^O}{\omega_s}$$

where \bar{Z}^O is a constant and ε_s^O an "error term" with c.d.f. $F^O(\varepsilon)$

Preliminaries – observability (continued)

Similarly, we can write

$$Z_s - Z_s^I = \frac{R_s}{\omega_s} - \bar{Z}^I - \frac{\varepsilon_s^I}{\omega_s}$$

where error ε_s^I has c.d.f. $F^I(\varepsilon)$

Incidence of violence ?

we do not directly observe Z_s , Z_s^I and Z_s^O

but do observe if there is civil war, or repression, in s

and may observe $\alpha_s = \alpha_H$ (if interpret as external conflict)

Conditional probability of civil war

By Proposition 4.2, civil war in country c at date s if

$$Z_s - Z_s^O \geq 0 \Leftrightarrow \varepsilon_s^O \leq R_s - \omega_s \bar{Z}^O$$

given the information available to us, the conditional probability – i.e., the likelihood – to observe this event is

$$F^O(R_s - \omega_s \bar{Z}^O)$$

Prediction

higher R_s or lower ω_s raises probability of observing civil war
but, by Proposition 4.1, no effect if ϕ close to 1 or $\alpha_L \geq 2(1 - \theta)$
can test this with time-varying measures of R and ω

Conditional probability of other violence states

Conditional probability of observing peace

but not civil war, at date s

$$1 - F^I(R_s - \bar{Z}^I \omega_s)$$

down with R_s up with ω_s unless $\phi \rightarrow 1$ or $\alpha_L \geq 2(1 - \theta)$

Conditional probability of observing repression

$$F^I(R_s - \bar{Z}^I \omega_s) - F^O(R_s - \bar{Z}^O \omega_s)$$

effects of shocks, now depend on densities

Alternative way of stating model predictions

higher R_s or lower ω_s raise the probability
of observing some form of political violence

states of peace, repression, and civil war *ordered* in Z_s

calls for estimating ordered logit

Identification – what variation to use in data?

How clean inference from unobserved determinants?

using cross-sectional variation risks confounding variables of interest, like R and ω , with nuisance parameters, like ξ_s instead estimate panel regressions with fixed *country* effects equivalent to estimating, e.g., for civil war

$$F^O(R_s - \bar{Z}^O \omega_s) - E\{F^O(R_s - \bar{Z}^O \omega_s)\}$$

Heterogeneity in incidence of violence over time

now driven by time variation in R and ω

add fixed *year* effects to allow for world-wide shocks,

non-parametric trends in violence – recall Figure 1.10

exploit only *country-specific* time variation in R and ω

Specification and identification – further issues

How take fact that predictions conditional on θ into account?

let $\Theta = 1$ be cohesive political institutions ($\alpha_L \geq 2(1 - \theta)$)

and $\Theta = 0$ non-cohesive political institutions

represent index function, in country c period s , as

$$R_{c,s} - \bar{Z}^O \omega_{c,s} = a_c(\Theta_c) + a_t(\Theta_c) + b(\Theta_c) \tilde{Z}_{c,s}$$

where $\tilde{Z}_{c,s}$ are time-varying regressors proxying for $R_{c,s}$ and $\omega_{c,s}$

according to the theory $b(0) > 0$, while $b(1) = 0$

Still need exogenous variation in $\tilde{Z}_{c,s}$

within-country variation no panacea, unless we can also

credibly argue that variation in $\tilde{Z}_{c,s}$ is exogenous to violence

4. Data and Empirical Results

Political violence data

Civil war

binary indicator from Uppsala/PRIO data set, 1950-2005

alternative: COW data, but shorter series (end in 1997)

Repression

purges variable from Banks (2005) data set, 1950-2005

alternative: PTS data, but shorter series (begin in 1976) and

doubts about US State Department's coding during cold war

Construct ordered dependent variable

combine repression and civil war measures as follows

peace = 0, repression/but not civil war = 1, civil war = 2

Political institutions data

Main indicator of weak and strong institutions

indicator for highest score (7 on 1-7 scale) for

Executive Constraints variable in the Polity IV data set

corresponds best to θ in the theory

set indicator for the whole panel $\Theta_c = 1$ only if

(i) positive prevalence pre-1950 *and* (ii) sample prevalence > 0.6

conservative criterion: selects less than 20% of sample

Alternative measure

indicator based on parliamentary democracy taken

from Polity IV and Persson-Tabellini data sets

analogous (i)-(ii) definition for $\Theta_c = 1$

Two forms of shocks to $\tilde{Z}_{c,s}$

Natural disasters – negative shocks to ω or positive shocks to R

from EM-DAT data set, 1950-2005

indicator for having at least one out of four disaster events:

heat-wave, flood, slide, or tidal wave – associated with
2.5% lower level of GDP/capita

Cold-war, security-council membership – positive shocks to R

agnostic about effect of membership, in general

but insist members likely to get more *aid* due to geopolitical
importance during cold war (Kuziemko–Werker 2006, for US)

An initial observation

By Proposition 4.1 – no violence when $\alpha_L \geq 2(1 - \theta)$?

32 countries in our panel classified as $\Theta_c = 1$

only 8 (25%) of those has some year with either
civil war or repression from 1950 to 2005

125 countries classified as $\Theta_c = 0$

97 (80%) of those has some year with either
civil war or repression in same period

informative, but hazardous to draw causal inference from
such cross-sectional variation

Basic results – Table 4.4

Estimate ordered logits implied by the theory

columns (1)-(3)

fixed-effect ordered logits – implement as suggested by Ferrrer-i-Carbonell and Frijters (2004)

full sample, and interaction effects with indicators for cohesive institutions and measured by constraints on executive parliamentary democracy, respectively

Results in line with theoretical predictions

only significant effects on violence with expected sign in samples with low executive constraints or non-parliamentary democracies
statistically robust: results hold up when bootstrap standard errors in column (8)

Table 4.4 Basic econometric results

Dependent variable	(1) Ordered variable	(2) Ordered variable	(3) Ordered variable	(8) Ordered variable
Natural Disaster	0.263** (0.107)	0.317*** (0.110)	0.299*** (0.111)	0.263** (0.111)
Security council member	-1.048*** (0.399)	-1.194*** (0.417)	-1.382*** (0.456)	-1.048** (0.413)
Security council member in cold war	1.275*** (0.439)	1.461*** (0.458)	1.657*** (0.495)	1.275** (0.504)
Natural disaster x strong institutions		-0.701* (0.374)	-0.333 (0.318)	
Security council member x strong institutions		1.975* (1.173)	2.940*** (1.123)	
Security council member in cold war x strong institutions		-2.577* (1.375)	-3.379*** (1.247)	
Strong institutions measure		High executive constraints 1950-2005	Parliamentary Democracy 1950-2005	
Estimation method	FE Ordered Logit	FE Ordered Logit	FE Ordered Logit	FE Ordered Logit
Significance of interactions (<i>p</i> -value)		0.61	0.49	
Observations	4251	4251	4251	4251
Number of Countries	97	97	97	97

Notes: The time period covered is 1950 to 2006. For definitions of variables refer to the text. Standard errors are in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%. Robust standard errors are in columns (1)-(7) with bootstrapped standard errors in column (8). The *p*-value refers to the significance of a test of the hypothesis that $\text{coeff_}[\text{natural disaster} \times \text{strong institutions}] = -\text{coeff_}[\text{natural disaster}] + \text{coeff_}[\text{security council member} \times \text{strong institutions}] - \text{coeff_}[\text{security council member}] + \text{coeff_}[\text{security council member in the cold war} \times \text{strong institutions}] = -\text{coeff_}[\text{security council member in the cold war}]$, where *coeff_* is the estimated coefficient on the variable in question. The reduced sample size in columns (6) and (7) is due to all countries which never had a civil war during this period being dropped.

Look at alternative violence margins – Table 4.4

Estimate conditional logits implied by the theory – columns (4)-(7)

conditional (fixed effect) logit for two margins where theory

has bite: peace vs. violence, and non-civil war vs. civil war

full sample and interaction effects with high executive constraints

Results again, basically, in line with theoretical predictions

only see significant effects on both forms of violence

with low executive constraints

Table 4.4 Basic econometric results

Dependent variable	(1) Ordered variable	(2) Ordered variable	(3) Ordered variable	(4) Political violence	(5) Political violence	(6) Civil war	(7) Civil war	(8) Ordered variable
Natural Disaster	0.263** (0.107)	0.317*** (0.110)	0.299*** (0.111)	0.278** (0.109)	0.327*** (0.112)	0.370** (0.152)	0.431*** (0.155)	0.263** (0.111)
Security council member	-1.048*** (0.399)	-1.194*** (0.417)	-1.382*** (0.456)	-1.110*** (0.412)	-1.269*** (0.430)	-1.360** (0.545)	-1.383** (0.547)	-1.048** (0.413)
Security council member in cold war	1.275*** (0.439)	1.461*** (0.458)	1.657*** (0.495)	1.267*** (0.453)	1.465*** (0.472)	1.074* (0.633)	1.105* (0.635)	1.275** (0.504)
Natural disaster x strong institutions		-0.701* (0.374)	-0.333 (0.318)		-0.618* (0.376)		-1.233** (0.595)	
Security council member x strong institutions		1.975* (1.173)	2.940*** (1.123)		2.186* (1.178)			
Security council member in cold war x strong institutions		-2.577* (1.375)	-3.379*** (1.247)		-2.746** (1.381)			
Strong institutions measure		High executive constraints 1950-2005	Parliamentary Democracy 1950-2005		High executive constraints 1950-2005		High executive constraints 1950-2005	
Estimation method	FE Ordered Logit	FE Ordered Logit	FE Ordered Logit	FE Logit	FE Logit	FE Logit	FE Logit	FE Ordered Logit
Significance of interactions (<i>p</i> -value)		0.61	0.49		0.66		0.17	
Observations	4251	4251	4251	4251	4251	2061	2061	4251
Number of Countries	97	97	97	97	97	49	49	97

Notes: The time period covered is 1950 to 2006. For definitions of variables refer to the text. Standard errors are in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%. Robust standard errors are in columns (1)-(7) with bootstrapped standard errors in column (8). The p-value refers to the significance of a test of the hypothesis that $\text{coeff_}[\text{natural disaster} \times \text{strong institutions}] = -\text{coeff_}[\text{natural disaster}] \& \text{coeff_}[\text{security council member} \times \text{strong institutions}] = -\text{coeff_}[\text{security council member}] \& \text{coeff_}[\text{security council member in the cold war} \times \text{strong institutions}] = -\text{coeff_}[\text{security council member in the cold war}]$, where coeff_ is the estimated coefficient on the variable in question. The reduced sample size in columns (6) and (7) is due to all countries which never had a civil war during this period being dropped.

Inspecting the mechanism – Table 4.5

Go further than the reduced forms in earlier tables?

columns (1)-(4)

fixed-effect OLS (linear probability model); useful check on robustness of cols (4)-(7) in Table 4.4, and results easier to interpret in quantitative terms

columns (5)-(6)

"first stage" effects on total aid (OECD data) and GDP per capita (PWT data) of natural disasters and UN Security Council

columns (7)-(8)

"second stage" of fixed-effects IV; at best a diagnostic, as the exclusion restrictions not necessarily satisfied

Mechanism?

appears to run mainly through higher aid flows

Table 4.5 Extended econometric results

Dependent Variable	(1) Political violence	(2) Political Violence	(3) Civil War	(4) Civil War	(5) Log GDP per capita	(6) Log Aid Disbursements	(7) Political Violence	(8) Civil War
Natural Disaster	0.024* (0.013)	0.029* (0.017)	0.029** (0.013)	0.043*** (0.016)	-0.005 (0.003)	0.105** (0.043)		
Security council member	-0.066** (0.027)	-0.092*** (0.029)	-0.051** (0.023)	-0.053** (0.023)	0.009 (0.008)	-0.269*** (0.092)		
Security council member in cold war	0.090** (0.040)	0.129*** (0.045)	0.034 (0.029)	0.036 (0.029)	-0.004 (0.010)	0.434*** (0.113)		
Natural disaster x strong institutions		-0.024 (0.037)		-0.079*** (0.024)				
Security council member x strong institutions		0.148*** (0.054)						
Security council member in cold war x strong institutions		-0.205*** (0.068)						
2-year lagged log GDP per capita					0.905*** (0.013)			
Log GDP per capita							0.062 (0.039)	0.046 (0.040)
Log Aid Disbursements							0.191*** (0.046)	0.161*** (0.050)
Observations	5880	5880	5880	5880	6300	5067	3914	3914
Number of Countries	158	158	158	158	178	150		
R-squared	0.030	0.031	0.056	0.059	0.914	0.136		

Notes: The time period covered is 1950 to 2006. For definitions of variables refer to the text. Robust standard errors adjusted for clustering by country in parentheses (* significant at 10%; ** significant at 5%; *** significant at 1%). The specification in columns (1) through (6) is OLS. The results in columns (7) and (8) are IV specifications in which natural disaster, security-council member and security-council member in the cold war and 2-year lagged log income per capita are used as instruments for Log GDP per capita and Log Aid Disbursements.

E. Putting Pieces Together

Preliminaries – Endogenous turnover

Return to state capacity investments

political violence model endogenizes political turnover
structure of model gives convenient recursive structure, where
violence shapes incentives only via political instability

Equilibrium turnover

define the endogenous takeover probability as

$$\Gamma(Z, \nu, \xi) = \begin{cases} \gamma(\hat{L}^O, \hat{L}^I, \xi) & Z > Z^O(\theta, \nu, \xi) \\ \gamma(0, \hat{L}^I, \xi) & Z^O(\theta; \nu, \xi) \geq Z > Z^I(\theta, \lambda_1, \xi) \\ \gamma(0, 0, \xi) & Z^I(\theta, \lambda_1, \xi) \geq Z \end{cases}$$

define parameter ξ that raises (lowers) incumbent's (opposition's)
marginal return to fighting $-\gamma_{I\xi}(0, 0, \xi) > 0$ ($\gamma_{O\xi}(0, 0, \xi) < 0$)

Preliminaries – Comparative statics of Z

Proposition 5.1 *The probability that the incumbent loses office varies with (Z, ν, ξ) as follows:*

1. *higher Z reduces the probability that the incumbent loses office, when there is either repression or civil war.*
2. *higher ν reduces the probability that the incumbent loses office, when there is civil war.*
3. *higher ξ reduces the probability that the incumbent loses office, when there is either repression or civil war.*

these comparative statics follow from Assumption 4.1

Implications for investment

State capacity problem is recursive

Euler equations for legal and fiscal capacity become

$$y_{\pi}(\pi_2)[1 + (E(\lambda_2; Z, \nu, \xi, \theta) - 1)\tau_2] \leq \lambda_1 \mathcal{L}_{\pi}(\pi_2 - \pi_1)$$

c.s. $\pi_2 - \pi_1 \geq 0$

$$y(\pi_2)[(E(\lambda_2; Z, \nu, \xi, \theta) - 1)] \leq \lambda_1 \mathcal{F}_{\tau}(\tau_2 - \tau_1)$$

c.s. $\tau_2 - \tau_1 \geq 0$

where

$$E(\lambda_2; Z, \nu, \xi, \theta) = \phi \alpha_H + (1 - \phi) E(\lambda_2 | \alpha_L; Z, \nu, \xi, \theta)$$

is *expected* value of public funds with

$$E(\lambda_2 | \alpha_L; Z, \nu, \xi, \theta) = \begin{cases} \alpha_L & \text{if } \alpha_L \geq 2(1 - \theta) \\ 2[(1 - \theta)(1 - \Gamma(Z, \nu, \xi)) + \theta \Gamma(Z, \nu, \xi)] & \text{else} \end{cases}$$

The three types of states

Again, the same two conditions

Cohesiveness condition is unaffected

no effect of allowing for conflict, as common-interest states are always peaceful, by Proposition 4.1

Stability condition becomes

Stability: $\phi\alpha_H + (1 - \phi) 2 [(1 - \Gamma(Z, \nu, \xi)) (1 - \theta) + \Gamma(Z, \nu, \xi) \theta] \geq 1$

LHS increases in Z, ν, ξ , as does violence by Propositions 4.2, 5.1; this drives stability – and hence investments in state – in same direction as violence outside peaceful state

but extension with private investment (see ch 4) adds extra channel; civil-war risk cuts private investment, spills over to state building

Role of common interests and cohesive institutions

Parameters ϕ and θ tie things together

high θ /high ϕ : we see high investments in fiscal and legal capacity, as well as low violence

low θ /low ϕ : we see low investments in fiscal and legal capacity, as well as repression or conflict

Opposite link within the repression and conflict regimes

feedback mechanism actually means that lower θ raises investment in state capacity, as it raises the incumbent's propensity to fight, which reduces expected turnover.

Back to clustering of income and conflict – Figure 5.1

Distinct empirical pattern

robust negative correlation between low income and conflict

Several theoretical interpretations possible

underlying parameters, such as ϕ and θ , may endogenously drive income and conflict in opposite directions

exogenous shocks to income may drive down the risk of conflict (by raising opportunity cost of fighting)

exogenous shocks to conflict propensity, via parameters such as R , ν and ξ may drive down income via lower private investment (see extension in ch 4)

hazardous to to interpret raw correlation in causal way

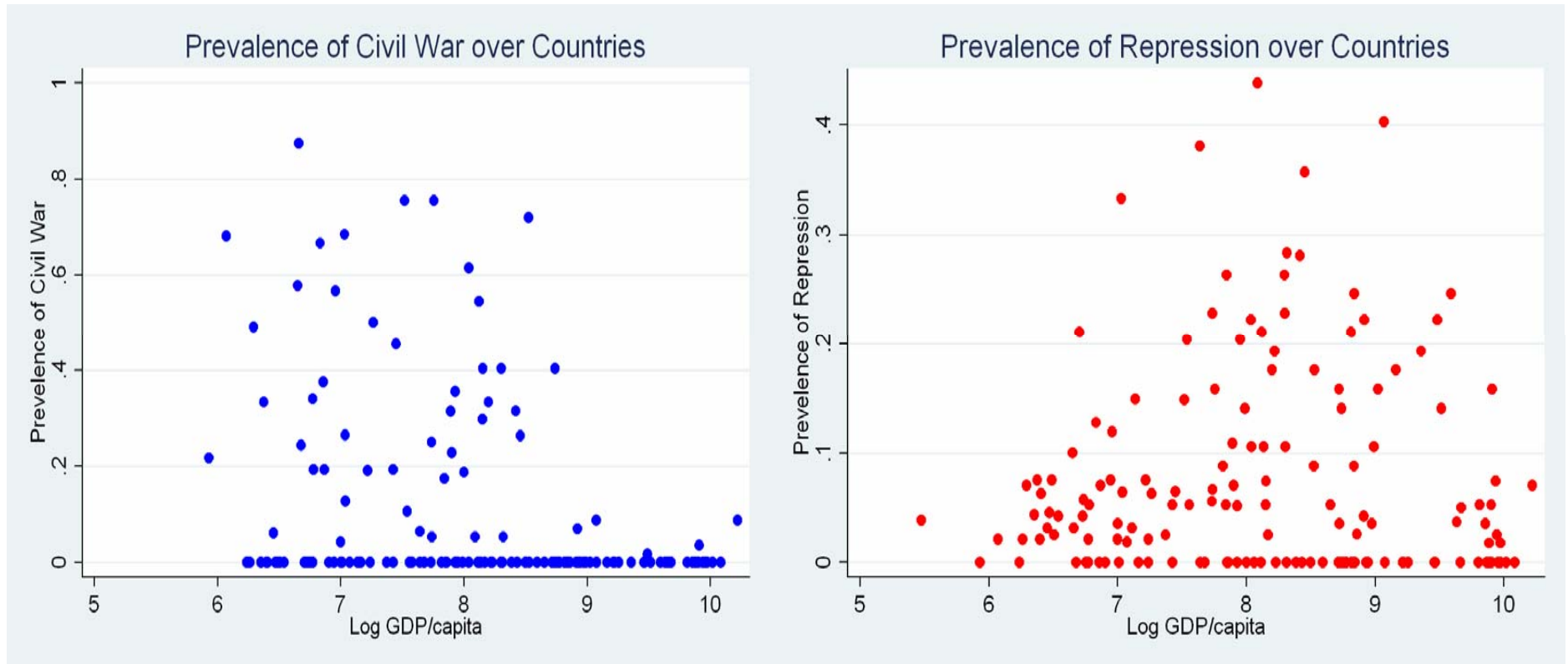


Figure 5.1 Prevalence of civil war and repression by income

Clustering of state capacity and conflict – Figures 5.2-3

How interpret correlations between state capacity and conflict?

according to our framework, there are two possibilities

(i) Raw correlations – Figure 5.2 – due to omitted θ and ϕ

high θ and ϕ drive high investment in state capacity, which feeds back to income, and this lowers risk of conflict;

high θ and ϕ also directly give low risk of violence and conflict

(ii) Partial correlations – Figure 5.3 – due to omitted R , ν and ξ

given low θ and ϕ , some countries with low ν or high R more civil-war prone, and some with low ξ less repression prone

these factors raise γ and may cut investments in state capacity

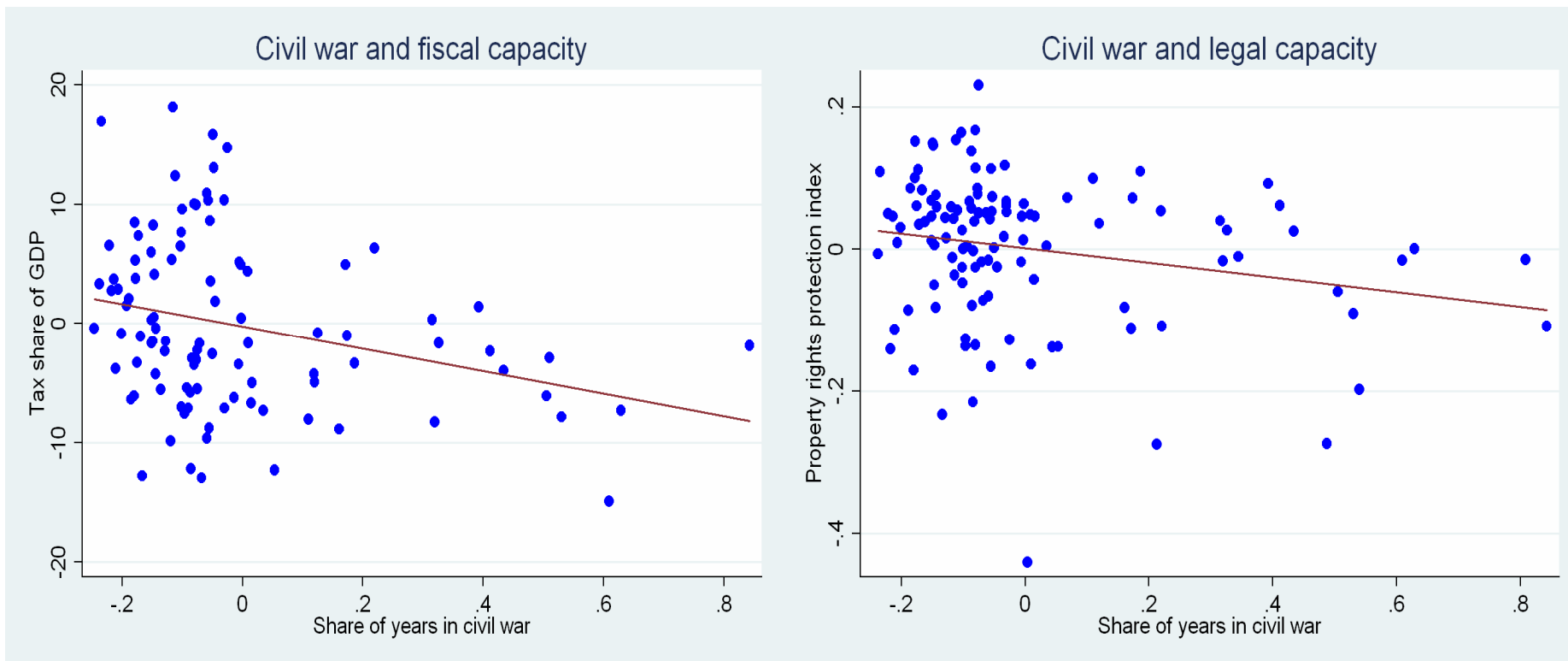


Figure 5.3 State capacity and civil war

Our state space – Table 5.1

Summarize insights from our core model, so far

	Weak	Redistributive	Common interest
Peace	low θ, ϕ, ξ, R high ν	high ϕ low θ	high θ, ϕ
Repression	low θ, ϕ, ξ, R high ν	low θ, ϕ, R high ν, ξ	n/a
Civil war	low θ, ν, ξ, ϕ high R	low θ, ϕ, ν high ξ, R	n/a

An *Anna Karenina* principle – cf. 1st line of L. Tolstoy's novel

"All happy families resemble each other; each unhappy family is unhappy in its own way"