Pillars of Prosperity

The Political Economics of Development Clusters

Chapter 4: Political Violence

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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, politics has been kept in the background
  - the nature of political institutions (*cohesiveness*), and the rate of political turnover (*instability*).
  - still these parameters crucially shape the motives for building the state.
  - will be (partly) endogenized in this and the following chapter.

Motivation

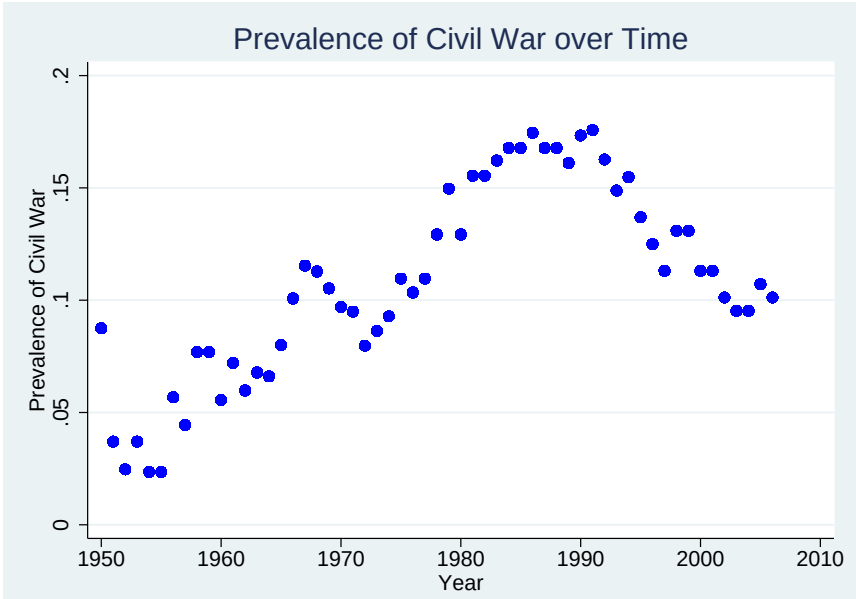
- Risk of external violence
  - by argument in chapter 3, can promote state building
  - common interest vs. redistributive (group) interest
- Risk of internal political violence – civil war, repression?
  - not common interests – rather, extreme redistributive struggle may entail very different incentives 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

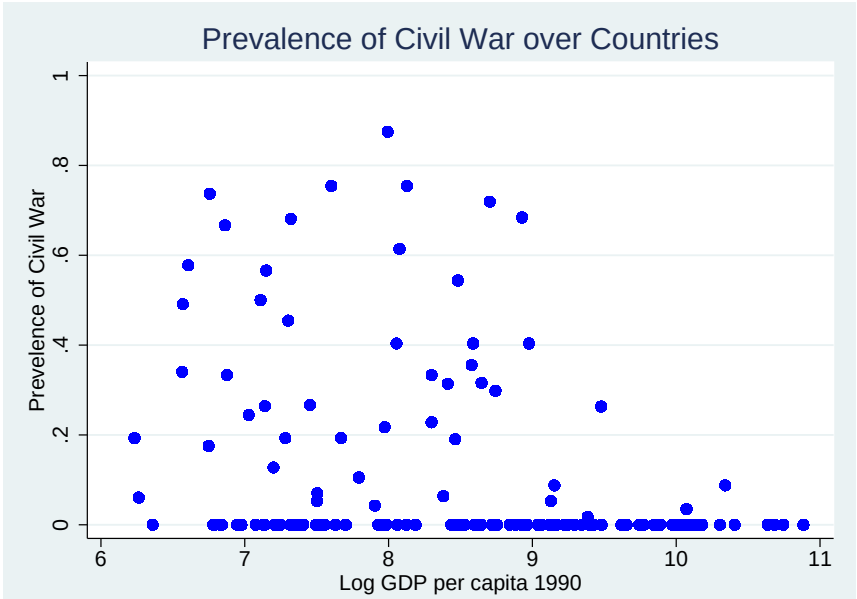
Facts about civil war

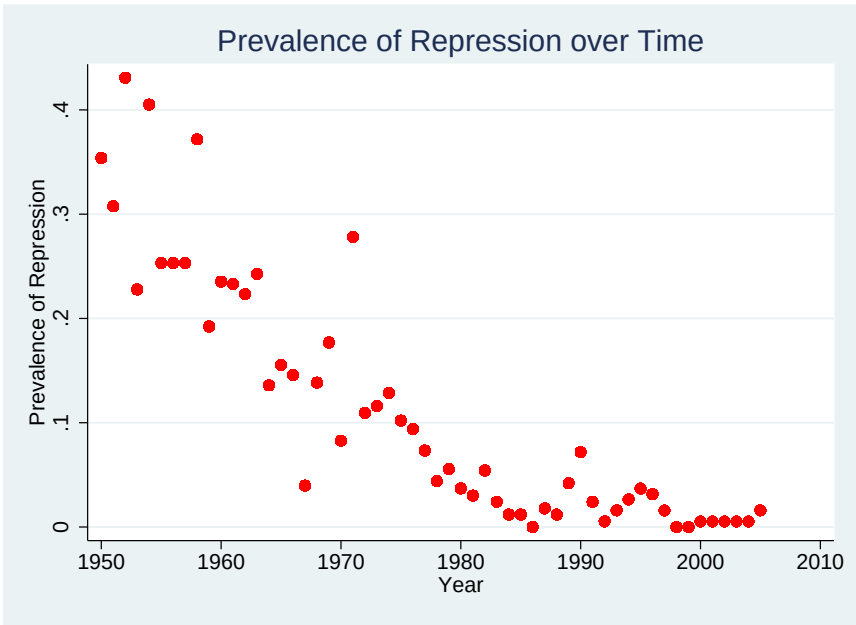
Figure 1.10 & Table 4.1

- 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
  - two leading interpretations of 2nd fact:
    - ★ reflects low opportunity costs of fighting (Collier-Hoeffler, 2004),
    - ★ reflects low state capacity (Fearon-Laitin, 2003)







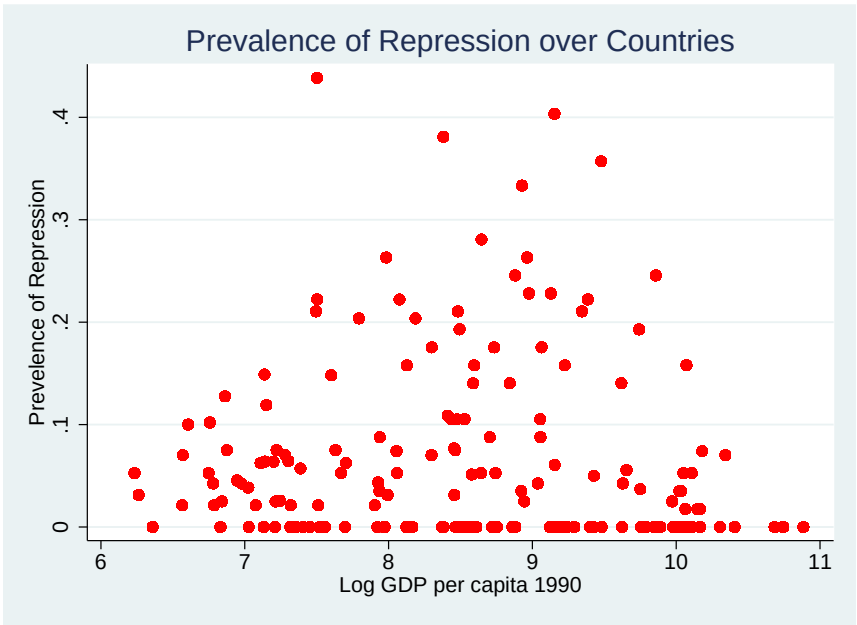


Figure 1.10 Prevalence of civil war and repression

Facts about government repression

Figure 1.10 & Table 4.1

- 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

Table 4.1 Repression and civil war by country

	Some civil war			No civil war				
Less than 5% repression	Bosnia			Australia	*Cyprus*	*Jamaica*	New Zealand	Switzerland
	Cameroon			Bahamas	Czech Republic	Kuwait	*Norway*	Tanzania
	Guinea-Bissau			Bahrain	*Denmark*	*Lesotho*	Oman	*Togo*
	Liberia			Barbados	Djibouti	*Luxembourg*	*Panama*	Trinidad-Tobago
	Nepal			Belize	*Equatorial Guinea*	*Madagascar*	New Guinea	Tunisia
	Rwanda			Benin	Fiji	*Malawi*	Qatar	*United Kingdom*
	Sierra Leone			Bhutan	Gabon	*Malaysia*	*Saudi Arabia*	Uzbekistan
	Yemen			Botswana	Gambia	Maldives	*Senegal*	
				Brunei	*Guinea*	*Mali*	*Singapore*	
				Burkina Faso	Guyana	Malta	Slovak Republic	
				Canada	*Honduras*	Mauritania	Slovenia	
				Cape Verde	Iceland	Mauritius	Solomon Islands	
				Central African Republic	*Ireland*	*Mongolia*	Suriname	
				Costa Rica	*Israel*	Namibia	Swaziland	
				Croatia	Ivory Coast	Netherlands	*Sweden*	
More than 5% repression	Afghanistan	India	South Korea	Albania	Ghana	Taiwan		
	Algeria	Indonesia	Sri Lanka	Austria	Greece	Thailand		
	Angola	Iran	Sudan	Bangladesh	Haiti	Uruguay		
	Argentina	Iraq	Syria	Belgium	Hungary	Venezuela		
	Burundi	Laos	Turkey	Bolivia	Italy	Zambia		
	Cambodia	Lebanon	Uganda	Brazil	Japan			
	Chad	Libya	United States	Bulgaria	Jordan			
	China	Morocco	Vietnam	Chile	Kenya			
	Colombia	Mozambique	Zimbabwe	Comoros	Mexico			
	Congo	Nicaragua		Dominican Republic	Niger			
	Cuba	Nigeria		Ecuador	Paraguay			
	El Salvador	Pakistan		Egypt	Poland			
	Ethiopia	Russia		Estonia	Portugal			
	France	Somalia		Finland	Romania			
	Guatemala	South Africa		Germany	Spain			

Note: Countries with fewer than 5%, but more than 0%, of all years (since 1950 or independence) in repression are printed in italics.

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 chapter
  - study a simple model of political violence, extending model in **chapter 3,** but treat legal and fiscal capacity decisions as given
  - (long) detour confront conflict model's implications with data
- Second step – next chapter
  - reintroduce state-capacity investments in new framework
  - return briefly to the data
  - put pieces together

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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 **chapter 3**
  - replace earlier exogenous transition of power by outcome of (potential) conflict, triggered by investment in violence
  - but 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 $L^O \leq \overline{L}^O$, paid within group, at marginal cost of funds ν
  - incumbent group I_1 can invest in army $L^I \leq \overline{L}^I$, paid out of the public purse, at marginal cost λ_1
  - no conscription: each soldier just paid the period-1 wage $\omega(\pi_1)$
- 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. 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 period-1 policies $\{t_1, r_1^I, r_1^O, p_1^I, p_2^O, g_1\}$ and determines (through investments) the period-2 stocks of fiscal and legal capacity $\{\tau_2, \pi_2\}$. I_1 and O_1 simultaneously invest in violence levels L^I and L^O.
3. I_1 remains in power with probability $1 - \gamma(L^O, L^I, \xi)$, and nature determines α_2.
4. I_2 chooses period-2 policy $\{t_2, r_2^I, r_2^O, p_2^I, p_2^O, g_2\}$.

   - we will study subgame perfect equilibrium in investments in violence and policy at stages 2 and 4
   - in **chapter 5**, we will revisit state-capacity investments τ_2 and π_2 at stage 2 – now take those and $y(\pi_2)$ as given

Stage 4 – New incumbent 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 **chapter 3,** also in period 1
- Indirect payoff and value functions
  - in earlier notation, we have

$$\begin{aligned} W(\alpha_s, \tau_s, \pi_s, R, m_s, \beta^J) &= \alpha_s G(\alpha_s, \tau_s) + (1 - \tau_s) y(\pi_s) + \\ &\quad \beta^J [R + \tau_s y(\pi_s) - G(\alpha_s, \tau_s) - m_s] \end{aligned}$$

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

Stage 2 – 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 2 – 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

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

  - and

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

  - 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 $L^J \in \left[0, \overline{L}^J\right]$, *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 (cf. 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 (1) $\alpha_L \geq 2(1-\theta)$, or (2) $\phi \to 1$, no group invests in violence, i.e. $\hat{L}^I = \hat{L}^O = 0$.

- 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 $Z^I(\theta;\xi)$ and $Z^O(\theta;\xi)$,

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

such that:

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

Moreover, $\widehat{L}^O$ and $\widehat{L}^I$, 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 chapter 3
  - 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 **chapter 5**
- ... but first we quickly sketch a couple of extensions and make a (long) detour into the empirics of political violence

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Asymmetries across groups

- General property
  - incentives to invest in violence depend on group in power
- Different versions
  - economic inequality – ω^J: richer group might be less inclined to violence (e.g. if there is a "loyalty premium").
  - fighting efficiency – ν^J: civil conflict more likely when the low-ν group is in opposition.
  - No full monopoly on R: likelihood of violence depends on identity of incumbent.

Polarization

- Ethnic polarization and conflict
  - quite a large literature: e.g., Esteban-Ray (2008) on theory Montalvo-Reynal-Querol (2005) on empirics
- Polarization as conflict about public goods
  - adopt same formulation as in **Chapter 2**
  - can write crucial benefit term in first-order conditions as

$$U^I(\tau_2, \pi_2) - U^O(\tau_2, \pi_2) = \phi\iota[\alpha_H - \alpha_L] + \omega(\pi_1)\,2(1-2\theta)\,Z$$

  - i.e., benefit from holding office is larger, as it goes beyond the control of redistributive transfers

Greed vs. Grievance as drivers of civil war

- Distinction made by Collier and Hoeffler (2004)
  - has become common (although murky) idea
  - basic model emphasizes greed, 2^{nd} term in expression, while polarization extension adds grievance, 1^{st} term
- Possible further extension
  - let groups pick leaders that are more or less polarizing say $\iota = 0$ or $\iota = 1$
  - if hardliner allows commitment to repression (but not civil war), this could be preferred action
  - cf. leadership changes and Israel-Palestine conflict

Anarchy

- Relax assumption 4.1 and allow for undefended insurgency – anarchy
- Incumbent government is so weak that only the opposition invests in violence
- Incumbent would eventually lose power
- Allow for anarchy by replacing assumption 4.1b with

$$\frac{-\gamma_I(0,0;\xi)}{\gamma_O(0,0;\xi)} < \frac{2(1-\theta)}{\nu}.$$

- When ν is low and ξ giving an advantage to the opposition.
- There is a Nash equilibrium with $\hat{L}^I = 0$ and $\hat{L}^O > 0$.

Predation

- Consider groups that are run by small predatory elites
  - adopt same formulation as in **Chapter 3**, where $p_s^I = p_s^O = 0$ and rents earned by the ruling elite

$$\hat{\Pi}_0 = \frac{\sum_{J \in \{I,O\}} \left[\mu\left(\hat{\chi}_0, 0\right) \tilde{y}\left(0\right) - C\left(\hat{\chi}_0\right)\right]}{e^I}$$

- Value difference in and out of future power
  - term in first-order conditions becomes

$$U^I\left(\tau_2, \pi_2\right) - U^O\left(\tau_2, \pi_2\right) = \hat{\Pi}_0 \left[1 - \zeta\right] + \omega\left(0\right) 2 \left(1 - 2\theta\right) Z$$

where

$$Z = \frac{R + \tau_2 E(y(0)) - E(G(\alpha_2, \tau_2))}{\omega(0)}$$

Differences with basic model

- Proposition 4.1 no longer holds
  - high demand for public goods no longer sufficient to rule out conflict, as new rents term in $U^I - U^O$ remains
  - this adds to the incentives to invest in violence, formally, thresholds Z^I and Z^O are shifted down
- Wage may be lower $\omega(0)$, not $\omega(\pi_s)$, in Z
  - cheaper invest in violence, unless ω pinned down by $\underline{\omega}$
- Income lower than in non-predatory state
  - $y(0) \leq y(\pi_s)$, so smaller incentive to fight but likely dominated by the rent effect
- Possible extension
  - violence within groups to control the elite, coups d'etat

Investing in Coercive Capacity

- Spending on defense in period 1 might have the side effect of being more effective in violence against an insurgent group.
- The government advantage, ξ, could be subject to investment (e.g. secret police, surveillance).
- Need to add a stage where ξ is chosen prior to conflict stage.
- New complementarity:
  - If θ is low, investments in coercive capacity would raise incidence of repression relative to peace or civil war.
  - Complementarity of coercive capacity and other forms of state capacity in redistributive states.

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Preliminaries – observability

- Back to basic model in Section 2
  - which parts of Z_s and Z_s^I observed for 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 $Z_s - Z_s^I$ as

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

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

Preliminaries – observability (continued)

- Similarly, we can write

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

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

- 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 t if

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

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

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

- 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

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

  - down with R_s up with ω_s *unless* $\phi \to 1$ *or* $\alpha_L \geq 2(1-\theta)$
- Conditional probability of observing repression

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

  - 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

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

- 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

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

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

  - where $\widetilde{Z}_{c,s}$ 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 $\widetilde{Z}_{c,s}$
  - within-country variation no panacea, unless we can also credibly argue that variation in $\widetilde{Z}_{c,s}$ is exogenous to violence

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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 $\widetilde{Z}_{c,s}$

- 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 Prop 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

Unconditional Correlations – Tables 4.2 & 4.3

- Table 4.2:
  - Highest 25% of income countries are identified as rich
  - These are overrepresented in the upper-right quadrant of table.
- Table 4.3:
  - the one-fifth of countries with cohesive political institutions are identified.
  - again these are overrepresented in the upper-right quadrant of table.

Table 4.2 Repression and civil war by country and high income

	Some civil war			No civil war				
Less than 5% repression	Bosnia			*Australia*	*Cyprus*	Jamaica	*New Zealand*	*Switzerland*
	Cameroon			*Bahamas*	*Czech Republic*	*Kuwait*	*Norway*	Tanzania
	Guinea-Bissau			*Bahrain*	*Denmark*	Lesotho	*Oman*	Togo
	Liberia			*Barbados*	Djibouti	*Luxembourg*	Panama	Trinidad-Tobago
	Nepal			Belize	Equatorial Guinea	Madagascar	New Guinea	Tunisia
	Rwanda			Benin	Fiji	Malawi	*Qatar*	*United Kingdom*
	Sierra Leone			Bhutan	Gabon	Malaysia	*Saudi Arabia*	Uzbekistan
	Yemen			Botswana	Gambia	Maldives	Senegal	
				Brunei	Guinea	Mali	*Singapore*	
				Burkina Faso	Guyana	*Malta*	Slovak Republic	
				Canada	Honduras	Mauritania	*Slovenia*	
				Cape Verde	*Iceland*	Mauritius	Solomon Islands	
				Central African Republic	*Ireland*	Mongolia	Suriname	
				Costa Rica	*Israel*	Namibia	Swaziland	
				Croatia	Ivory Coast	*Netherlands*	*Sweden*	
More than 5% repression	Afghanistan	India	South Korea	Albania	Ghana	Taiwan		
	Algeria	Indonesia	Sri Lanka	*Austria*	*Greece*	Thailand		
	Angola	Iran	Sudan	Bangladesh	Haiti	Uruguay		
	Argentina	Iraq	Syria	*Belgium*	Hungary	Venezuela		
	Burundi	Laos	Turkey	Bolivia	*Italy*	Zambia		
	Cambodia	Lebanon	Uganda	Brazil	*Japan*			
	Chad	*Libya*	*United States*	Bulgaria	Jordan			
	China	Morocco	Vietnam	Chile	Kenya			
	Colombia	Mozambique	Zimbabwe	Comoros	Mexico			
	Congo	Nicaragua		Dominican Republic	Niger			
	Cuba	Nigeria		Ecuador	Paraguay			
	El Salvador	Pakistan		Egypt	Poland			
	Ethiopia	Russia		Estonia	*Portugal*			
	France	Somalia		*Finland*	Romania			
	Guatemala	South Africa		*Germany*	*Spain*			

Note: Countries with per capita income above the 75th percentile in 1990, by PWT 6.3, Real GDP per capita (2005 international prices), are printed in italics.

Table 4.3 Repression and civil war by country and cohesive political institutions

	Some civil war			No civil war				
Less than 5% repression	Bosnia			**Australia**	Cyprus	Jamaica	New Zealand	**Switzerland**
	Cameroon			Bahamas	Czech Republic	Kuwait	Norway	Tanzania
	Guinea-Bissau			Bahrain	**Denmark**	Lesotho	Oman	Togo
	Liberia			Barbados	Djibouti	**Luxembourg**	Panama	Trinidad-Tobago
	Nepal			Belize	Equatorial Guinea	Madagascar	New Guinea	Tunisia
	Rwanda			Benin	Fiji	Malawi	Qatar	**United Kingdom**
	Sierra Leone			Bhutan	Gabon	Malaysia	Saudi Arabia	Uzbekistan
	Yemen			Botswana	Gambia	Maldives	Senegal	
				Brunei	Guinea	Mali	Singapore	
				Burkina Faso	Guyana	Malta	Slovak Republic	
				Canada	Honduras	Mauritania	Slovenia	
				Cape Verde	**Iceland**	Mauritius	Solomon Islands	
				Central African Republic	**Ireland**	Mongolia	Suriname	
				Costa Rica	**Israel**	Namibia	Swaziland	
				Croatia	Ivory Coast	**Netherlands**	**Sweden**	
More than 5% repression	Afghanistan	India	South Korea	Albania	Ghana	Taiwan		
	Algeria	Indonesia	Sri Lanka	**Austria**	**Greece**	Thailand		
	Angola	Iran	Sudan	Bangladesh	Haiti	Uruguay		
	Argentina	Iraq	Syria	**Belgium**	Hungary	Venezuela		
	Burundi	Laos	Turkey	Bolivia	**Italy**	Zambia		
	Cambodia	Lebanon	Uganda	Brazil	**Japan**			
	Chad	Libya	**United States**	Bulgaria	Jordan			
	China	Morocco	Vietnam	Chile	Kenya			
	Colombia	Mozambique	Zimbabwe	Comoros	Mexico			
	Congo	Nicaragua		Dominican Republic	Niger			
	Cuba	Nigeria		Ecuador	Paraguay			
	El Salvador	Pakistan		Egypt	Poland			
	Ethiopia	Russia		**Estonia**	Portugal			
	France	Somalia		**Finland**	Romania			
	Guatemala	**South Africa**		**Germany**	Spain			

Note: Countries with predominantly cohesive political institutions, according to the definition described in the text, are printed in boldface.

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: 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 (0.11)***	0.299 (0.111)***	0.278 (0.109)**	0.327 (0.112)***	0.37 (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 (0.43)***	-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 × Strong institutions		-.701 (0.374)*	-.333 (0.318)		-.618 (0.376)*		-1.233 (0.595)**	
Security council member × Strong institutions		1.975 (1.173)*	2.940 (1.123)***		2.186 (1.178)*			
Security council member in cold war × Strong institutions		-2.577 (1.375)*	-3.379 (1.247)***		-2.746 (1.381)**			
Strong institutions measure		High executive con-straints 1950-2005	Parliamentary Democ-racy 1950-2005		High executive con-straints 1950-2005		High executive con-straints 1950-2005	
Estimation method	FE Ordered Logit	FE Ordered Logit	FE Ordered Logit	FE Logit	FE Logit	FE Logit	FE Logit	FE Ordered Logit
Observations	4251	4251	4251	4251	4251	2061	2061	4251
No. of countries	97	97	97	97	97	49	49	97

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

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 earlier table, 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: 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 disburse-ments	(7) Political Violence	(8) Civil War
Natural Disaster	0.024 (0.013)*	0.029 (0.017)*	0.029 (0.013)**	0.043 (0.016)***	-.005 (0.003)	0.105 (0.043)**		
Security council member	-.066 (0.027)**	-.092 (0.029)***	-.051 (0.023)**	-.053 (0.023)**	0.009 (0.008)	-.269 (0.092)***		
Security council member in cold war	0.09 (0.04)**	0.129 (0.045)***	0.034 (0.029)	0.036 (0.029)	-.004 (0.01)	0.434 (0.113)***		
Natural disaster × Strong institutions		-.024 (0.037)		-.079 (0.024)***				
Security council member × Strong institutions		0.148 (0.054)***						
Security council member in cold war × Strong institutions		-.205 (0.068)***						
Two-year lagged Log GDP per capita					0.905 (0.013)***			
Log GDP per capita							0.062 (0.039)	0.046 (0.04)
Log aid disbursements							0.191 (0.046)***	0.161 (0.05)***
Observations	5880	5880	5880	5880	6300	5067	3914	3914
Number of countries	158	158	158	158	178	150		
R-squared								