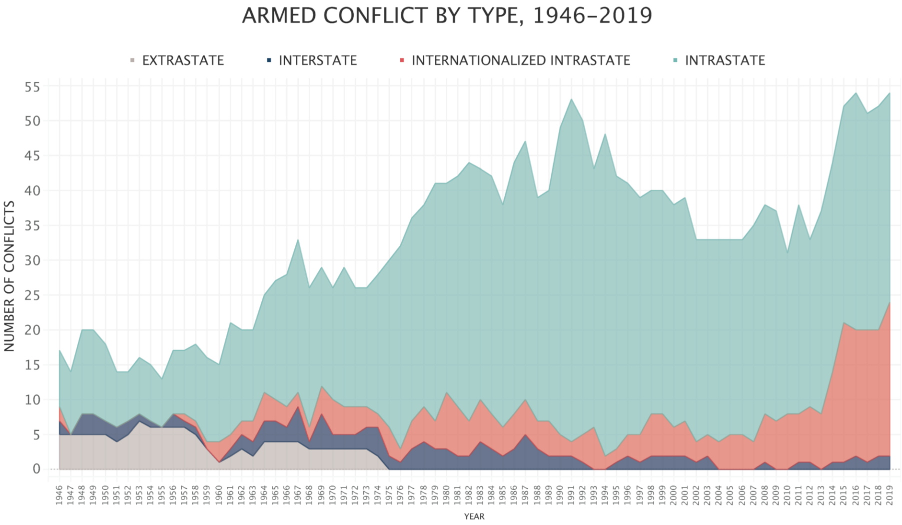
EC9AA Term 3: Lectures on Economic Inequality

Debraj Ray, University of Warwick, Summer 2024

- Slides 5: Inequality and Conflict

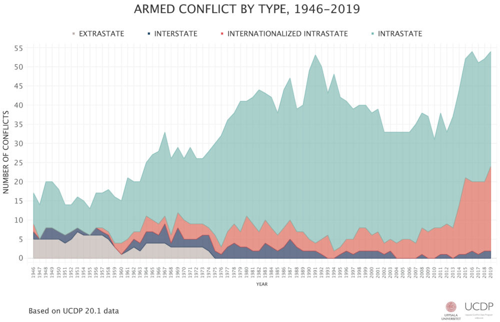
Conflict



Based on UCDP 20.1 data

UPPSALA UNIVERSITET UCDP

Conflict



- WWII $\rightarrow$ 2000: 240 *intrastate* armed conflicts:
  - Battle deaths 5–10m (3–8 m for interstate)
  - Mass assassination (25m civilians), forced displacement (60m civilians)
  - In 2019: Over 50 ongoing intrastate conflicts.

UCDP/PRIO definition: armed conflict, 25+ yearly deaths.

Beyond the Market

Reactions to Uneven Economic Change:

- Occupational choice versus political economy

Within-Country Conflict

- Sustained, organized violence across groups
  - or between some “group” and the State
- A precise definition would be useful, but not central to this talk.
  - E.g., PRIO threshold: 25 battle deaths per year
  - I am just as (or more) interested in low level “simmering” violence.

Within-Country Violence

Low-level persistent violence that stops short of full conflict; e.g.,

- Hindu-Muslim
- ETA
- Racial unrest in the US
- Anti-immigrant sentiment

And of course, open conflicts, such as:

- Sinhala-Tamil civil war
- Bosnian war
- The French Wars of Religion
- Rwandan genocide

Ethnic Salience

- 1945–1998, 100/700 ethnic groups active in rebellion Fearon 2006
- "[E]clipse of the left-right ideological axis." Brubaker and Laitin (1998)

One of the great questions of political economy:

- It isn't that the Marxian view is entirely irrelevant, but ...
- Economic similarity often a more direct threat.

Ethnicity or Class?

Conflict over directly contested resources:

- land, jobs, business resources, government quotas, religious space ...

The implications of direct contestation:

- Ethnic markers.
- Instrumentalism v. primordialism (Huntington, Lewis)

Do Ethnic Divisions Matter?

- Two ways to approach this question:
  - Historical and ethnographic studies of conflicts.
  - Statistical

Statistical Approach

Collier-Hoeffler 2002, Fearon-Laitin 2003, Miguel-Satyanath-Sergenti 2004)

- Typical variables for conflict: demonstrations, processions, strikes, riots, casualties and on to civil war.
- Explanatory variables:
  - Economic. per-capita income, inequality, resource holdings …
  - Geographic. mountains, separation from capital city …
  - Political. “democracy”, prior war …
- And, of course, ethnic. But how measured?

- Information on ethnolinguistic and religious diversity from:
  - World Christian Encyclopedia
  - Encyclopedia Britannica
  - Atlas Narodov Mira
  - CIA FactBook
  - L'Etat des Religions dans le Monde
  - The Statesman's Yearbook

Fractionalization

Fractionalization index widely used:

$$F = \sum_{j=1}^{m} n_j(1 - n_j)$$

where n_j is population share of group j.

- Special case of the Gini coefficient

$$G = \sum_{j=1}^{m} \sum_{k=1}^{M} n_j n_k \delta_{ik}$$

where δ_{ik} is a notion of distance across groups.

- Fractionalization used in many different contexts:
  - growth, governance, public goods provision.
  - But it shows no correlation with conflict.

    Collier-Hoeffler (2002), Fearon-Laitin (2003), Miguel-Satyanath-Sergenti (2004)

  - Fearon and Laitin (*APSR* 2003):

"The estimates for the effect of ethnic and religious fractionalization are substantively and statistically insignificant . . . The empirical pattern is thus inconsistent with . . . the common expectation that ethnic diversity is a major and direct cause of civil violence."

Polarization

- And yet ... what about this quote from Donald Horowitz (1985)?

"In dispersed systems, group loyalties are parochial, and ethnic conflict is localized ... A centrally focused system [with few groupings] possesses fewer cleavages than a dispersed system, but those it possesses run through the whole society and are of greater magnitude..."

  - Motivates the use of polarization measures.

Polarization

- Society is divided into “groups” (economic, social, religious, spatial...)
  - Identity. There is “homogeneity” within each group.
  - Alienation. There is “heterogeneity” across groups.
- Esteban and Ray (1994) presumed that such a situation is conflictual:

“We begin with the obvious question: why are we interested in polarization? It is our contention that the phenomenon of polarization is closely linked to the generation of tensions, to the possibilities of articulated rebellion and revolt, and to the existence of social unrest in general . . . ”

Measuring Polarization

Space of unnormalized densities $n(x)$ on income, political opinion, etc.

- A person located at x feels
  - Identification with "similar" x ($i = n(x)$)
  - Alienation from "dissimilar" y ($a = |x - y|$)
- Effective Antagonism of x towards y:

$$T(i, a)$$

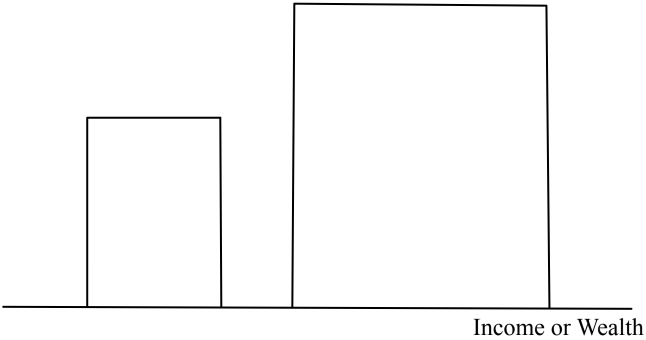
- View polarization as the "sum" of all such antagonisms

$$P(f) = \int \int T\left(n(x), |x - y|\right) n(x) n(y) dx dy$$

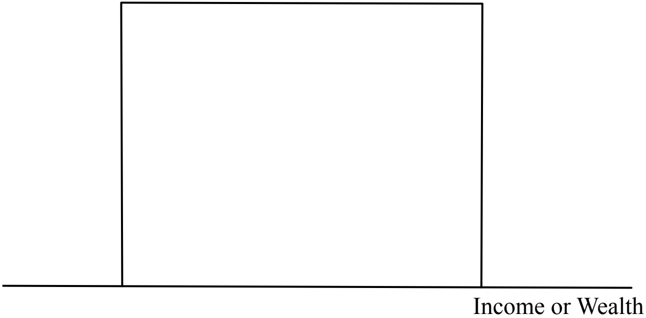
Measuring Polarization

$$P(f) = \int\int T\left(n(x), |x-y|\right) n(x)n(y)dxdy$$

Axioms to narrow down P: distributions built from uniform kernels.



- **Axiom 1.** “Global compression” of one uniform kernel cannot increase polarization.



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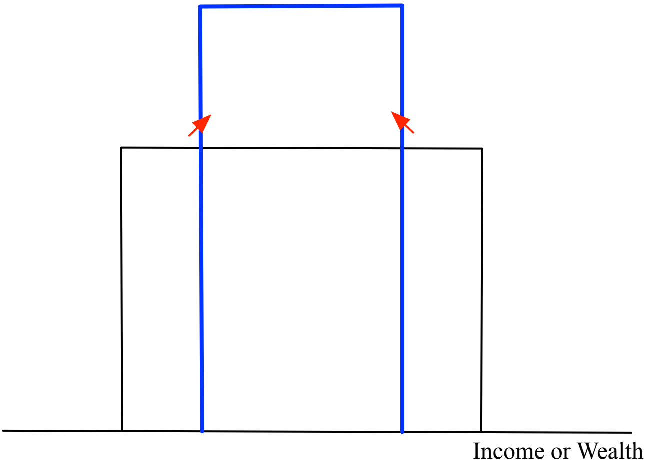
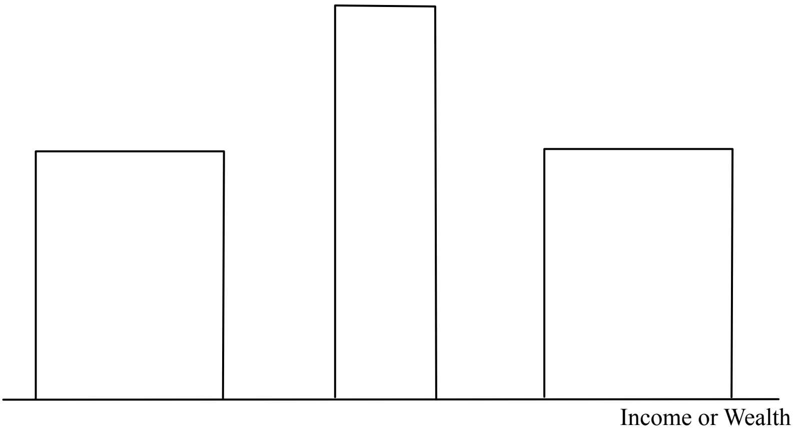


- Axiom 2. If a symmetric distribution is composed of three uniform kernels, then a compression of the side kernels cannot reduce polarization.



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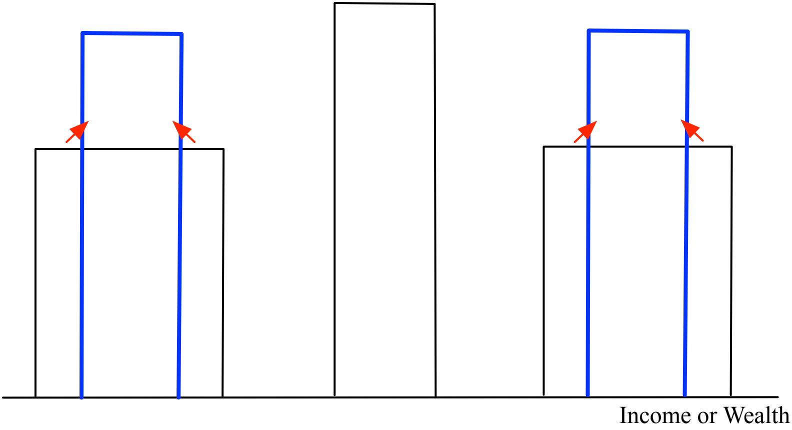
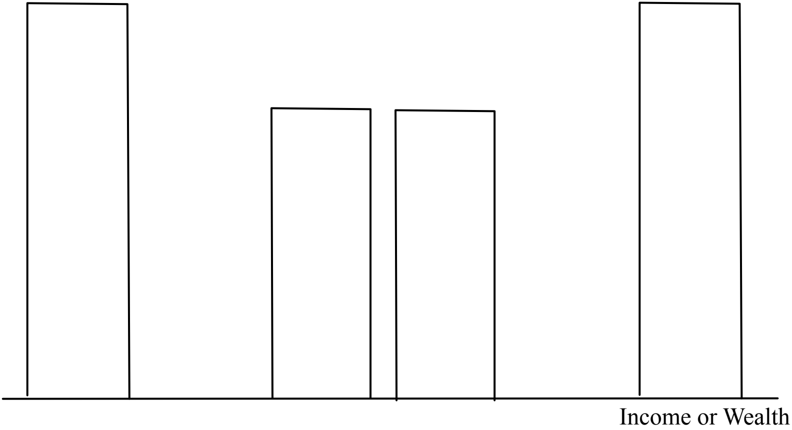


- Axiom 3. If a symmetric distribution is composed of four uniform kernels, then a symmetric slide of the two middle kernels away from each other must increase polarization.



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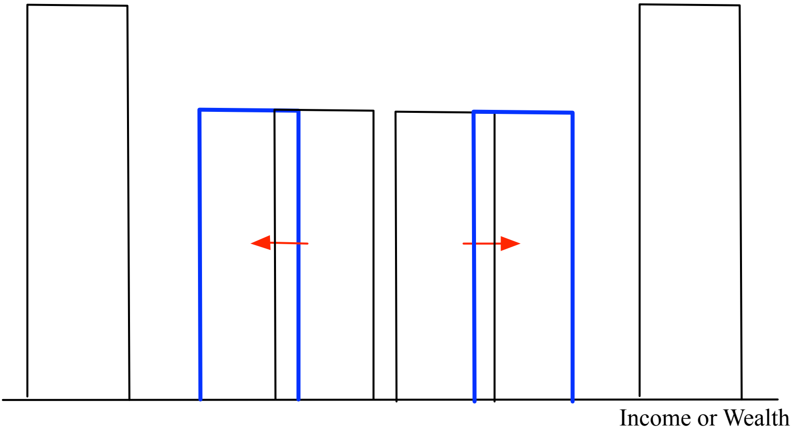


- Axiom 4. [Population Neutrality.] Polarization comparisons are unchanged if both populations are scaled up or down by the same percentage.

Proposition 1

A polarization measure satisfies Axioms 1–4 if and only if it is proportional to

$$\int \int n(x)^{1+\alpha} n(y) |y - x| dy dx,$$

where $\alpha \in [0.25, 1]$.

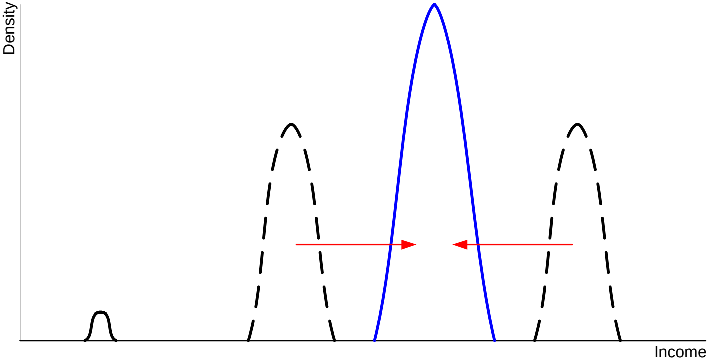
- Compare with the Gini coefficient / fractionalization index:

$$\text{Gini } = \int \int n(x) n(y) |y - x| dy dx.$$

- It's α that makes all the difference.

Some Properties

- 1. Not Inequality. See Axiom 2.
- 2. Bimodal. Polarization maximal for bimodal distributions.
- 3. Contextual. Same movement can have different implications.



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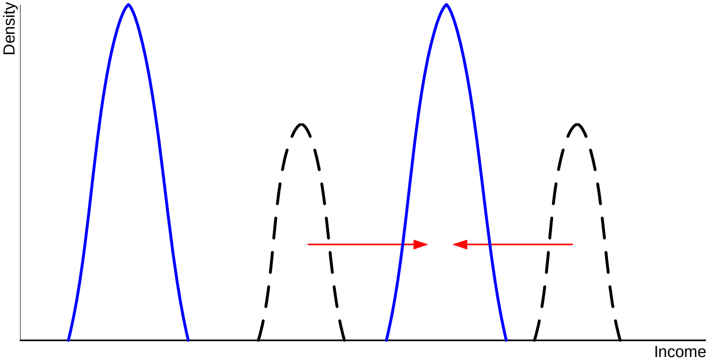
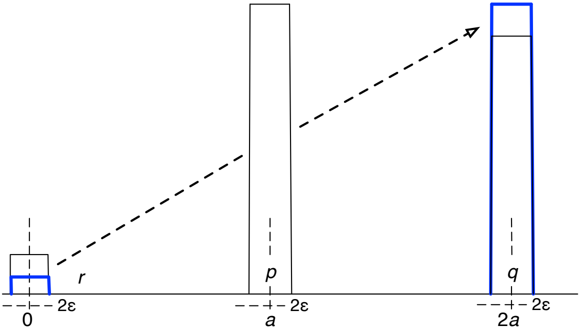


More on α

$$\text{Pol} = \int\int n(x)^{1+\alpha} n(y)|y-x|dydx, \qquad \alpha \in [0.25, 1].$$

- Axiom 5. If $p > q$ but $p - q$ is small and so is r, a small shift of mass from r to q cannot reduce polarization.



Proposition 2

Under the additional Axiom 5, $\alpha = 1$, so

$$\text{Pol} = \int\int n(x)^2 n(y)|y - x|dydx.$$

- Easily applicable to ethnolinguistic or religious groupings.
- Say m "social groups", n_j is population proportion in group j.
- If all inter-group distances are binary, then

$$\text{Pol} = \sum_{j=1}^{M}\sum_{k=1}^{M} n_j^2 n_k = \sum_{j=1}^{M} n_j^2(1 - n_j).$$

- Compare with $F = \sum_{j=1}^{M} n_j(1 - n_j)$ [use uniform distributions]

Polarization and Conflict

- Axioms suggest (but don’t establish) link between polarization and conflict.
- Two approaches:
  - Theoretical. A “natural” model to link conflict with these measures.
  - Empirical. Take the measures to the data .

Theory: Public and Private Prizes

- m groups engaged in conflict.
  - n_i: population share of group i, $\sum_{i=1}^{m} n_i = 1$.
- Public prize: payoff matrix $[\ \pi u_{ij}\ ]$ scaled by per-capita size π.
  - (religious dominance, political control, hatreds, public goods)
- Private prize μ per-capita budget, so μ/n_i if captured by group i.
  - Oil, diamonds, scarce land

Theory: Contributions

- Individual resource contribution r at convex utility cost $c(r)$.
  - (more generally $c(r, y_i)$).
- R_i is total contributions by group i. Define

$$R = \sum_{i=1}^{m} R_i.$$

- Probability of success given by

$$p_j = \frac{R_j}{R}$$

- R our measure of overall conflict.

Payoffs

(per-capita)

- $\pi u_{ii} + \mu / n_i$

(in case i wins the conflict), and

- πu_{ij}

(in case j wins).

- Net per-capita payoff to group i is

$$\Psi_i = \sum_{j=1}^{m} p_j \pi u_{ij} + p_i \frac{\mu}{n_i} - c(r_i).$$

pub **priv** **cost**

Contributing to Conflict

- Assume group leader chooses r_i to maximize group per-capita payoff:

$$\Psi_i = \sum_{j=1}^{m} p_j \pi u_{ij} + p_i \frac{\mu}{n_i} - c\left(r_i\right).$$

- Alternative: individuals max combination of own and group payoff.

- Equilibrium: Every group leader unilaterally maximizes group payoffs.

Proposition 3

An equilibrium exists. If $c'''(r) \geq 0$, it is unique.

- Payoff function for group i:

$$\Psi_i = \sum_{j=1}^{m} p_j \pi u_{ij} + p_i \frac{\mu}{n_i} - c\left(r_i\right).$$

- Payoff function for group i:

$$\Psi_i = \sum_{j=1}^{m} p_j \lambda u_{ij} + p_i \frac{(1-\lambda)}{n_i} - \frac{1}{\pi + \mu} c\left(r_i\right).$$

- Payoff function for group i:

$$\Psi_i = \sum_{j=1}^{m} p_j v_{ij} - \frac{1}{\pi + \mu} c\left(r_i\right).$$

where $v_{ii} = \lambda u_{ii} + (1-\lambda)(1/n_i)$ and $v_{ij} = \lambda u_{ij}$ if $j \neq i$.

- First-order conditions:

$$\left[\frac{n_i}{R} v_{ii} - n_i \sum_j \frac{n_j r_j}{R^2} v_{ij}\right] = \frac{1}{\pi + \mu} c'\left(r_i\right)$$

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$$\sum_j p_i p_j \Delta_{ij} = \frac{1}{\pi + \mu} r_i c'(r_i)$$

where $\Delta_{ij} = v_{ii} - v_{ij}$.

- Define $\gamma_i = p_i / n_i$. Then

$$\sum_j \gamma_i \gamma_j n_i n_j \Delta_{ij} = \frac{1}{\pi + \mu} r_i c'(r_i)$$

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where $\Delta_{ij} = v_{ii} - v_{ij}$.

- Define $\gamma_i = p_i/n_i$. Then

$$\sum_i \sum_j n_i^2 n_j \Delta_{ij} \simeq \frac{Rc'(R)}{\pi + \mu}$$

(approximation)

- Payoff function for group i:

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- Define $\gamma_i = p_i / n_i$. Then

$$\sum_i \sum_j n_i^2 n_j \lambda \delta_{ij} + \sum_i \sum_{j \neq i} n_i^2 n_j \frac{1 - \lambda}{n_i} \simeq \frac{Rc'(R)}{\pi + \mu}$$

- Opening up Δ_{ij} and defining $\delta_{ij} = u_{ii} - u_{ij}$.

- Payoff function for group i:

$$\Psi_i = \sum_{j=1}^{m} p_j v_{ij} - \frac{1}{\pi + \mu} c(r_i) .$$

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- Opening up Δ_{ij} and defining $\delta_{ij} = u_{ii} - u_{ij}$.

Approximation Theorem

Proposition 4

R *"approximately" solves*

$$\frac{Rc'(R)}{\pi + \mu} = \lambda P + (1 - \lambda)F,$$

where

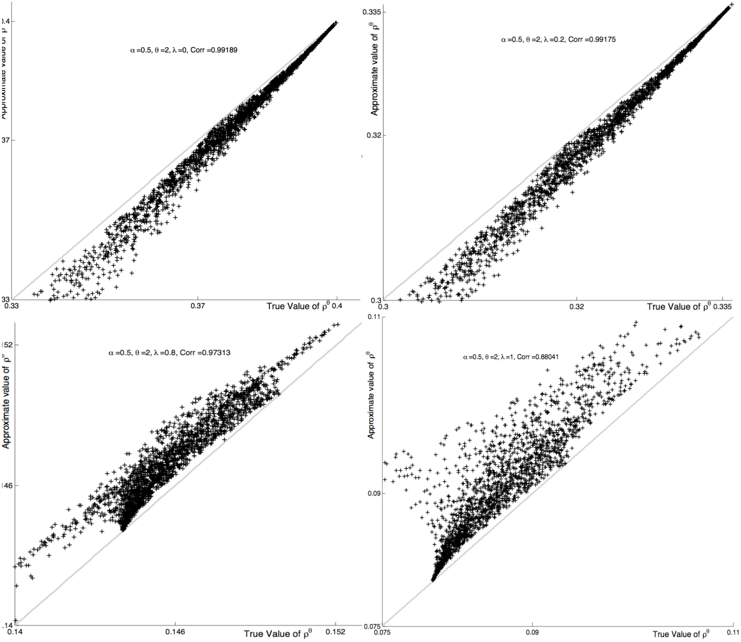
- $\lambda \equiv \pi/(\pi + \mu)$ *is relative* ***publicness*** *of the prize.*
- P *is squared* ***polarization***: $\sum_i \sum_j n_i^2 n_j d_{ij}$
- F *is* ***fractionalization***: $\sum_i n_i(1 - n_i)$.

- Note: theorem more complex with finite population + free-rider problem.

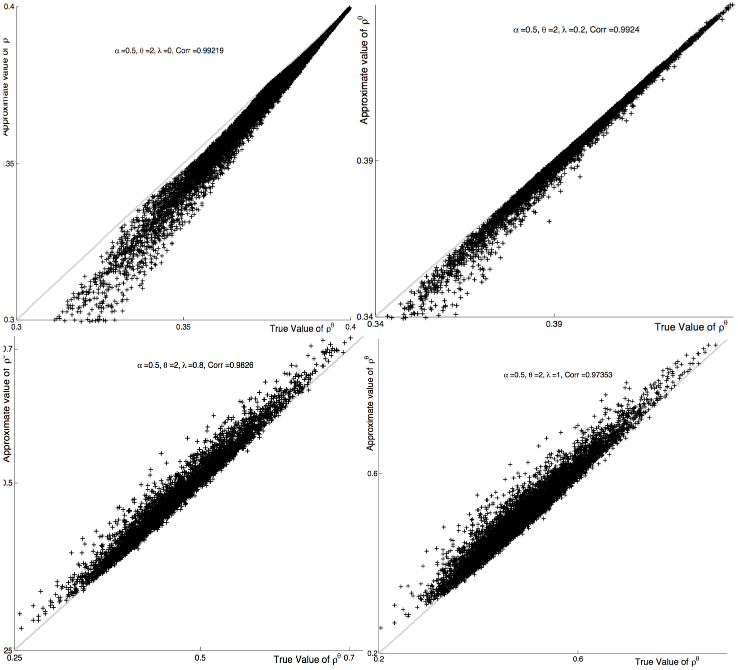
How Good is the Approximation?

- Exact with two groups and pure public prizes.
- Exact with many equally-sized groups and symmetry in public prize valuations.
- Almost exact for contests when conflict is high enough.
- Can numerically simulate.

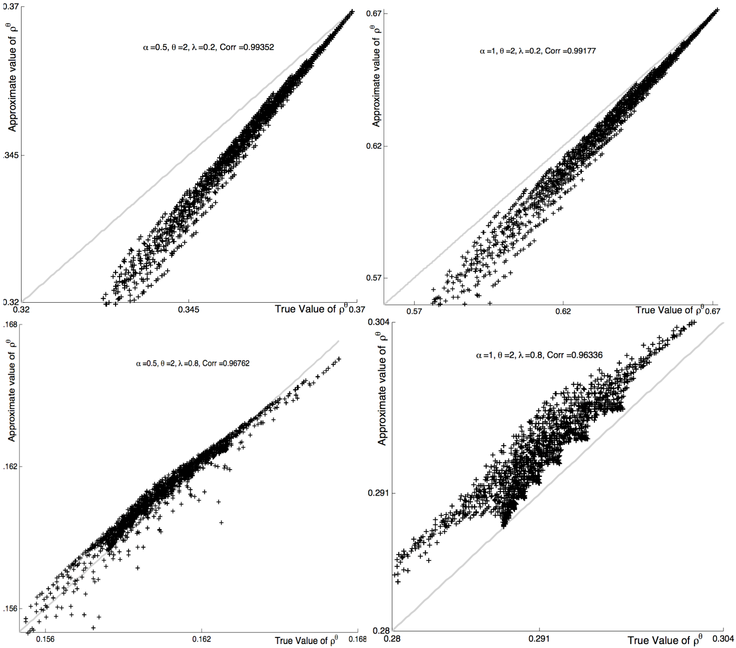
Contests + Quadratic Costs + Large Population, λ various:



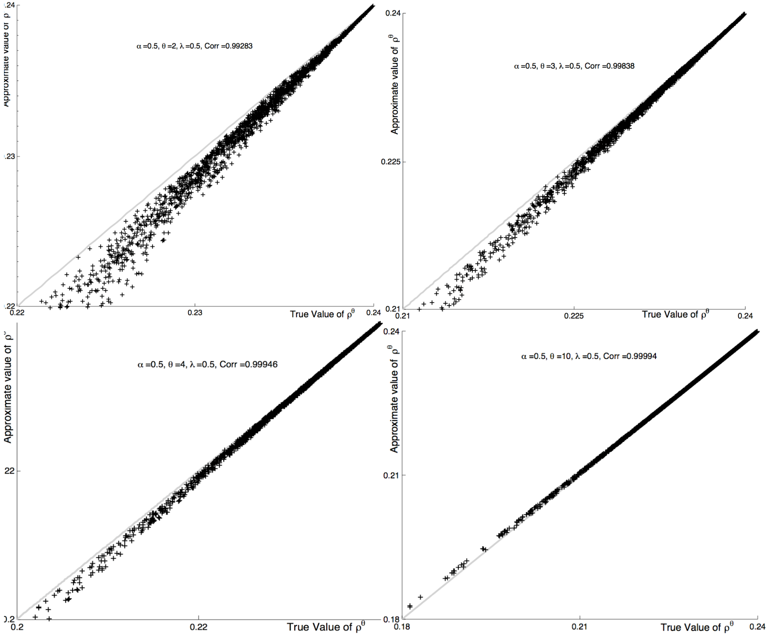
Distances + Quadratic Costs + Large Population, λ various:



Small Populations, λ various:



Nonquadratic Costs + Large Population, λ various:



Empirical Investigation

- Recall:
  - Approximation Theorem . R “approximately” solves

$$\frac{Rc'(R)}{\pi + \mu} = \lambda P + (1 - \lambda)F,$$

where

- $\lambda \equiv \pi/(\pi + \mu)$ is relative publicness of the prize.
- P is squared polarization: $\sum_i \sum_j n_i^2 n_j d_{ij}$
- F is fractionalization: $\sum_i n_i(1 - n_i)$.

Empirical Investigation

(Esteban, Mayoral and Ray *AER* 2012, *Science* 2012)

- 138 countries over 1960–2008 (pooled cross-section).
- Prio25: 25+ battle deaths in the year. [Baseline]
- Priocw: Prio25 + total exceeding 1000 battle-related deaths.
- Prio1000: 1,000+ battle-related deaths in the year.
- Prioint: weighted combination of above.
- Isc: Continuous index, Banks (2008), weighted average of 8 different manifestations of coflict.

Groups

- Fearon database: “culturally distinct” groups in 160 countries.
  - based on ethnolinguistic criteria.
- *Ethnologue*: information on linguistic groups.
  - 6,912 living languages + group sizes.

Preferences and Distances

- We use linguistic distances on language trees.
  - E.g., all Indo-European languages in common subtree.
  - Spanish and Basque diverge at the first branch; Spanish and Catalan share first 7 nodes. Max: 15 steps of branching.
- Similarity $s_{ij} = \frac{\text{common branches}}{\text{maximal branches down that subtree}}$.
- Distance $\kappa_{ij} = 1 - s_{ij}^{\delta}$, for some $\delta \in (0, 1]$.
  - Baseline $\delta = 0.05$ as in Desmet et al (2009).

Additional Variables and Controls

- Among the controls:
  - Population
  - GDP per capita
  - Dependence on oil
  - Mountainous terrain
  - Democracy
  - Governance, civil rights
- Also:
  - Indices of publicness and privateness of the prize
  - Estimates of group concern from *World Values Survey*

- Want to estimate

$$\rho c'(\rho)_{it} = X_{1ti}\beta_1 + X_{2it}\beta_2 + \varepsilon_{it}$$

  - X_{1it} distributional indices.
  - X_{2it} controls (including lagged conflict)
- With binary outcomes, latent variable model:

$$P(\text{Prio}x_{it} = 1|Z_{it}) = P(\rho c'(\rho) > W^*|Z_{it}) = H(Z_{it}\beta - W^*)$$

  - where $Z_{it} = (X_{1i}, X_{2it})$
- Baseline: uses max likelihood logit (results identical for probit).
  - p-values use robust standard errors adjusted for clustering.

Baseline with Prio25, Fearon groupings

Var	[1]	[2]	[3]	[4]	[5]	[6]
P	*** 6.07 (0.002)	*** 6.90 (0.000)	*** 6.96 (0.001)	*** 7.38 (0.001)	*** 7.39 (0.001)	*** 6.50 (0.004)
F	*** 1.86 (0.000)	** 1.13 (0.029)	** 1.09 (0.042)	** 1.30 (0.012)	** 1.30 (0.012)	** 1.25 (0.020)
Pop	** 0.19 (0.014)	** 0.23 (0.012)	** 0.22 (0.012)	0.13 (0.141)	0.13 (0.141)	0.14 (0.131)
Gdppc	-	***- 0.40 (0.001)	***- 0.41 (0.002)	***- 0.47 (0.001)	***- 0.47 (0.001)	**- 0.38 (0.011)
oil/diam	-	-	0.06 (0.777)	0.04 (0.858)	0.04 (0.870)	- 0.10 (0.643)
Mount	-	-	-	0.01 (0.134)	0.01 (0.136)	0.01 (0.145)
Ncont	-	-	-	** 0.84 (0.019)	** 0.85 (0.018)	*** 0.90 (0.011)
Democ	-	-	-	-	- 0.02 (0.944)	0.02 (0.944)
Excons	-	-	-	-	-	- 0.13 (0.741)
Autocr	-	-	-	-	-	0.14 (0.609)
Rights	-	-	-	-	-	0.17 (0.614)
civlib	-	-	-	-	-	0.16 (0.666)
Lag	*** 2.91 (0.000)	*** 2.81 (0.000)	*** 2.80 (0.000)	*** 2.73 (0.000)	*** 2.73 (0.000)	*** 2.79 (0.000)

- $P(20 \to 80)$, Prio25 13% $\to$ 29%.
- $F(20 \to 80)$, Prio25 12% $\to$ 25%.

Robustness Checks

- Alternative definitions of conflict
- Alternative definition of groups: *Ethnologue*
- Binary versus language-based distances
- Conflict onset
- Region and time effects
- Other ways of estimating the baseline model

- Different definitions of conflict, Fearon groupings

Variable	Prio25	Priocw	Prio1000	Prioint	Isc
P	*** 7.39 (0.001)	*** 6.76 (0.007)	*** 10.47 (0.001)	*** 6.50 (0.000)	*** 25.90 (0.003)
F	** 1.30 (0.012)	** 1.39 (0.034)	* 1.11 (0.086)	*** 1.30 (0.006)	2.27 (0.187)
Gdp	***- 0.47 (0.001)	*- 0.35 (0.066)	***- 0.63 (0.000)	***- 0.40 (0.002)	***- 1.70 (0.001)
Pop	0.13 (0.141)	* 0.19 (0.056)	0.13 (0.215)	0.10 (0.166)	*** 1.11 (0.000)
Oil/diam	0.04 (0.870)	0.06 (0.825)	- 0.03 (0.927)	- 0.04 (0.816)	- 0.57 (0.463)
Mount	0.01 (0.136)	** 0.01 (0.034)	0.01 (0.323)	0.00 (0.282)	** 0.04 (0.022)
Ncont	** 0.85 (0.018)	0.62 (0.128)	* 0.78 (0.052)	* 0.55 (0.069)	*** 4.38 (0.004)
Democ	- 0.02 (0.944)	- 0.09 (0.790)	- 0.41 (0.230)	- 0.03 (0.909)	0.06 (0.944)
Lag	*** 2.73 (0.000)	*** 3.74 (0.000)	*** 2.78 (0.000)	*** 2.00 (0.000)	*** 0.50 (0.000)

- $P(20 \rightarrow 80)$, Prio25 13%–29%, Priocw 7%–17%, Prio1000 3%–10%.

Different definitions of conflict, *Ethnologue* groupings

Variable	Prio25	Priocw	Prio1000	Prioint	ISC
P	*** 8.26 (0.001)	*** 8.17 (0.005)	** 10.10 (0.016)	*** 7.28 (0.001)	*** 27.04 (0.008)
F	0.64 (0.130)	0.75 (0.167)	0.51 (0.341)	0.52 (0.185)	- 0.58 (0.685)
Gdp	***- 0.51 (0.000)	**- 0.39 (0.022)	***- 0.63 (0.000)	***- 0.45 (0.000)	***- 2.03 (0.000)
Pop	* 0.15 (0.100)	** 0.24 (0.020)	0.15 (0.198)	0.12 (0.118)	*** 1.20 (0.000)
Oil/diam	0.15 (0.472)	0.21 (0.484)	0.10 (0.758)	0.08 (0.660)	- 0.06 (0.943)
Mount	* 0.01 (0.058)	** 0.01 (0.015)	0.01 (0.247)	* 0.01 (0.099)	** 0.04 (0.013)
Ncont	** 0.72 (0.034)	0.49 (0.210)	0.50 (0.194)	0.44 (0.136)	*** 4.12 (0.006)
Democ	0.03 (0.906)	0.00 (0.993)	- 0.32 (0.350)	0.03 (0.898)	0.02 (0.979)
Lag	*** 2.73 (0.000)	*** 3.75 (0.000)	*** 2.83 (0.000)	*** 2.01 (0.000)	*** 0.50 (0.000)

- Binary variables don’t work well with *Ethnologue*.

Onset vs incidence, Fearon and *Ethnologue* groupings

Variable	onset2	onset5	onset8	onset2	onset5	onset8
P	*** 7.85 (0.000)	*** 7.41 (0.000)	*** 7.26 (0.000)	*** 8.83 (0.000)	*** 8.84 (0.000)	*** 8.71 (0.000)
F	* 0.94 (0.050)	0.72 (0.139)	0.62 (0.204)	0.39 (0.336)	0.20 (0.602)	0.15 (0.702)
Gdp	***- 0.60 (0.000)	***- 0.65 (0.000)	***- 0.68 (0.000)	***- 0.64 (0.000)	***- 0.70 (0.000)	***- 0.73 (0.000)
Pop	0.01 (0.863)	0.03 (0.711)	0.03 (0.748)	0.06 (0.493)	0.05 (0.588)	0.05 (0.619)
Oil/diam	** 0.54 (0.016)	** 0.46 (0.022)	** 0.47 (0.025)	*** 0.64 (0.004)	*** 0.56 (0.005)	*** 0.57 (0.007)
Mount	0.00 (0.527)	0.00 (0.619)	0.00 (0.620)	0.00 (0.295)	0.00 (0.410)	0.00 (0.424)
Ncont	*** 0.74 (0.005)	** 0.66 (0.010)	0.42 (0.104)	** 0.66 (0.012)	** 0.63 (0.017)	0.40 (0.120)
Democ	- 0.06 (0.816)	0.06 (0.808)	0.08 (0.766)	- 0.02 (0.936)	0.09 (0.716)	0.10 (0.704)
Lag	0.32 (0.164)	- 0.08 (0.740)	- 0.08 (0.751)	0.29 (0.214)	- 0.13 (0.618)	- 0.13 (0.622)
	Fearon	Fearon	Fearon	Eth	Eth	Eth

Region and time effects, Fearon groupings

Variable	reg.dum.	no Afr	no Asia	no L.Am.	trend	interac.
P	*** 6.64 (0.002)	** 5.36 (0.034)	*** 7.24 (0.001)	*** 9.56 (0.001)	*** 7.39 (0.001)	*** 7.19 (0.001)
F	*** 2.03 (0.001)	*** 2.74 (0.001)	** 1.28 (0.030)	*** 1.49 (0.009)	** 1.33 (0.012)	*** 1.76 (0.001)
Gdp	***- 0.72 (0.000)	***- 0.69 (0.000)	**- 0.39 (0.024)	***- 0.45 (0.006)	***- 0.49 (0.001)	***- 0.60 (0.000)
Pop	0.05 (0.635)	0.09 (0.388)	0.06 (0.596)	* 0.17 (0.087)	0.14 (0.125)	0.06 (0.543)
oil/diam	0.12 (0.562)	0.14 (0.630)	0.10 (0.656)	0.10 (0.687)	0.05 (0.824)	0.15 (0.476)
Mount	0.00 (0.331)	- 0.00 (0.512)	0.01 (0.114)	** 0.01 (0.038)	0.01 (0.109)	0.01 (0.212)
Ncont	** 0.87 (0.018)	* 0.75 (0.064)	** 0.83 (0.039)	0.62 (0.134)	** 0.82 (0.025)	** 0.77 (0.040)
Democ	0.08 (0.761)	- 0.03 (0.932)	- 0.23 (0.389)	0.10 (0.716)	0.08 (0.750)	0.13 (0.621)
Lag	*** 2.68 (0.000)	*** 2.83 (0.000)	*** 2.69 (0.000)	*** 2.92 (0.000)	*** 2.79 (0.000)	*** 2.74 (0.000)

Other estimation methods, Fearon groupings.

Variable	Logit	OLog(CS)	Logit(Y)	RELog	OLS	RC
P	*** 7.39 (0.001)	*** 11.84 (0.003)	** 4.68 (0.015)	*** 7.13 (0.000)	*** 0.86 (0.004)	*** 0.95 (0.001)
F	** 1.30 (0.012)	*** 2.92 (0.001)	*** 1.32 (0.003)	*** 1.27 (0.005)	** 0.13 (0.025)	*** 0.16 (0.008)
Gdp	*** - 0.47 (0.001)	*** - 0.77 (0.001)	** - 0.29 (0.036)	*** - 0.46 (0.000)	*** - 0.05 (0.000)	*** - 0.06 (0.000)
Pop	0.13 (0.141)	0.03 (0.858)	0.14 (0.123)	** 0.14 (0.090)	** 0.02 (0.020)	** 0.02 (0.032)
oil/diam	0.04 (0.870)	** 0.94 (0.028)	0.29 (0.280)	0.04 (0.850)	0.00 (0.847)	0.01 (0.682)
Mount	0.01 (0.136)	0.01 (0.102)	0.00 (0.510)	0.01 (0.185)	0.00 (0.101)	0.00 (0.179)
Ncont	** 0.85 (0.018)	*** 1.51 (0.007)	* 0.62 (0.052)	*** 0.83 (0.002)	** 0.09 (0.019)	*** 0.10 (0.006)
Democ	- 0.02 (0.944)	- 0.48 (0.212)	- 0.09 (0.690)	- 0.02 (0.941)	0.01 (0.788)	0.01 (0.585)
Lag	*** 2.73 (0.000)	-	*** 4.69 (0.000)	*** 2.69 (0.000)	*** 0.54 (0.000)	*** 0.45 (0.000)

Inter-Country Variations in Publicness and Cohesion

$$\text{conflict per-capita} \simeq \lambda P + (1-\lambda)F,$$

- Relax assumption that λ same across countries.
- Privateness: natural resources; use per-capita oil reserves (oilresv).
- Publicness: control while in power (pub), average of
  - Autocracy (Polity IV)
  - Absence of political rights (Freedom House)
  - Absence of civil liberties (Freedom House)
- $\Lambda \equiv (\text{PUB*gdp})/(\text{PUB*gdp} + \text{OILRESV})$.

Country-specific public good shares

Variable	Prio25	Prioint	ISC
P	- 3.31 (0.424)	- 1.93 (0.538)	- 9.21 (0.561)
F	0.73 (0.209)	0.75 (0.157)	- 2.27 (0.249)
$P\Lambda$	*** 17.38 (0.001)	*** 13.53 (0.001)	*** 60.23 (0.005)
$F(1-\Lambda)$	*** 2.53 (0.003)	*** 1.92 (0.003)	*** 11.87 (0.000)
Gdp	***- 0.62 (0.000)	***- 0.50 (0.000)	***- 2.36 (0.000)
Pop	0.10 (0.267)	0.09 (0.243)	*** 0.99 (0.000)
Lag	*** 2.62 (0.000)	*** 1.93 (0.000)	*** 0.47 (0.000)

A Summary

A fundamental question in political economy:

- do unequal societies have “horizontal conflicts,” demarcated by ethnicity?
- this is strongly indicated by ethnographic research
- Yet ethnic fractionalization shows little or no correlation with conflict

- **In this lecture we approach the problem from a conceptual perspective**:

- We axiomatize a measure of polarization
- We argue it is different from fractionalization
- We argue that *both* polarization and fractionalization should enter the conflict equation.

A Summary

- An implication of the theory:
  - polarization-conflict nexus related to public prize
  - fractionalization-conflict nexus related to private prize
- This finding seems to find some support in the data.
- Other predictions: interaction effects on shocks that affect rents and opportunity costs.