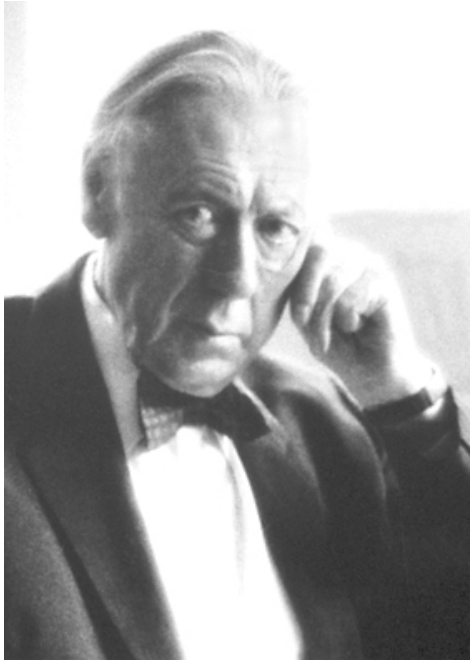
Ethnicity and Conflict

Debraj Ray, NYU

Sir Richard Stone Lecture, University of Cambridge



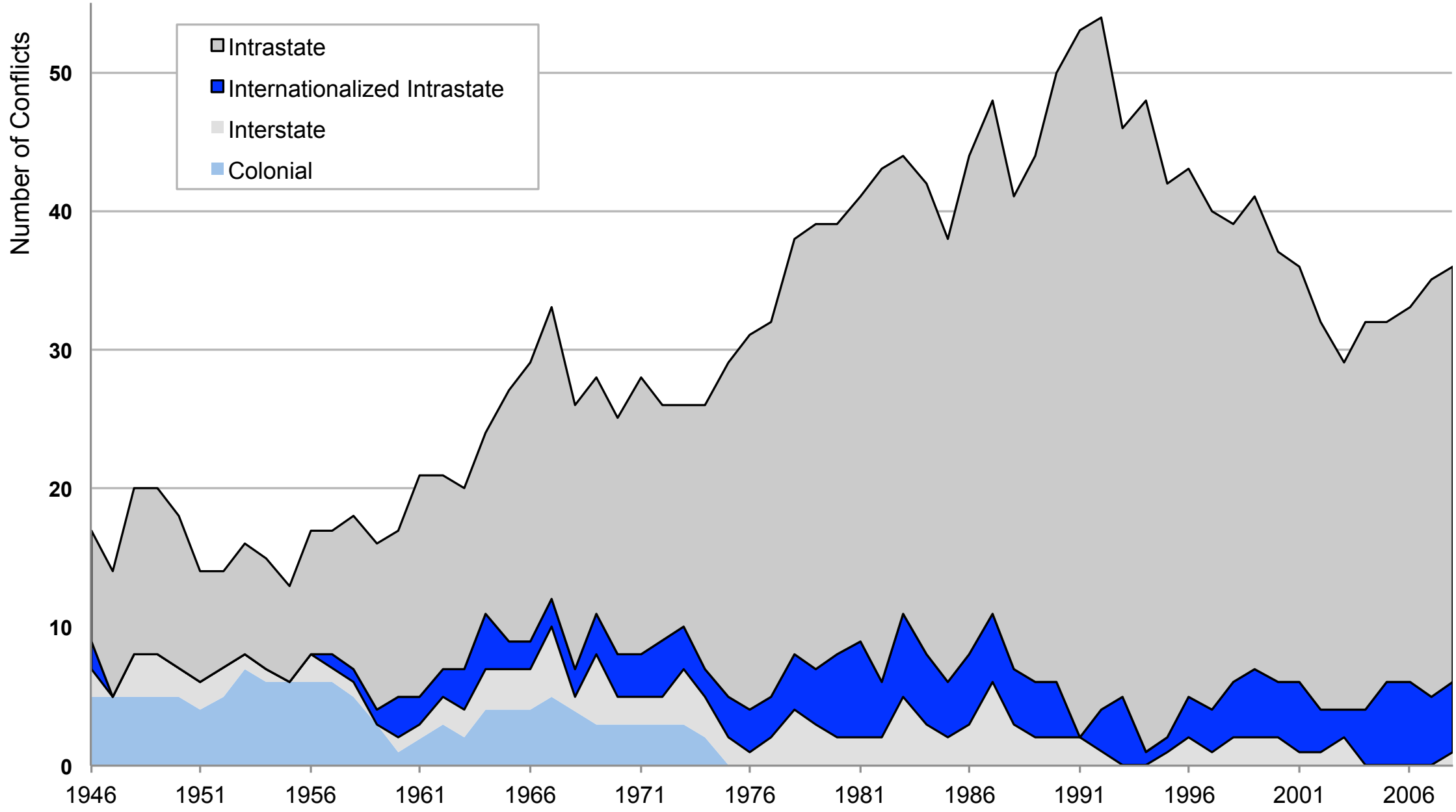
- The Nobel citation for Sir Richard Stone reads:

"for having made fundamental contributions to the development of systems of national accounts and hence greatly improved the basis for empirical economic analysis."

- My talk, by emphasizing the conceptual foundations of empirical research, will represent a small step in this direction.

The Ubiquity of Ethnic Conflict

- Fact 1: Internal social conflicts dominate inter-state conflicts.
- WWII $\rightarrow$ 22 inter-state conflicts.
  - 9 killed more than 1000. Battle deaths 3–8m.
- 240 civil conflicts.
  - Half killed more than 1000. Battle deaths 5–10m.
  - Mass assassination of up to 25m civilians.
  - Does not count displacement and disease (est. 4x violent deaths).
  - By 2010: 40m displaced.


Intrastate
Internationalized Intrastate
Interstate
Colonial
Number of Conflicts
0
10
20
30
40
50
1946
1951
1956
1961
1966
1971
1976
1981
1986
1991
1996
2001
2006

- Fact 2: The majority of internal conflicts are ethnic

  - Doyle-Sambanis (2000), Political Instability Task Force

  - 1945–1998, 100 of 700 known ethnic groups participated in rebellion against the state. Fearon (2006)

- Brubaker and Laitin (1998):

  - "...the eclipse of the left-right ideological axis."

- Horowitz (1985):

  - "In much of Asia and Africa, it is only modest hyperbole to assert that the Marxian prophecy has had an ethnic fulfillment."

Does Economic Inequality Drive Conflict?

- "The relation between inequality and rebellion is indeed a close one, and it runs both ways."

Sen (1973)

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Sen (1973)

- Early studies emphasize distribution of income or land.

  - Brockett (1992), Midlarski (1988), Muller and Seligson (1987), Muller et al. (1989), Nagel (1974)

- Lichbach survey (1989) mentions 43 papers, some "best forgotten". Evidence thoroughly mixed.

- Midlarsky (1988): "fairly typical finding of a weak, barely significant relationship between inequality and political violence . . . rarely is there a robust relationship between the two variables."

- Economic inequality and conflict.

  - Dube, Esteban, Mayoral and Ray (in progress).

Variable	prio25	prio25	prio1000	prio1000	prioint	prioint
Gini	**- 0.01	**- 0.01	0.01	**- 0.01	**- 0.02	***- 0.02
	(0.042)	(0.014)	(0.131)	(0.054)	(0.026)	(0.004)
gdp	0.05	-	- 0.03	-	0.02	-
	(0.488)		(0.533)		(0.871)	
gdpgr	-	***- 0.00	-	***- 0.00	-	***- 0.01
		(0.001)		(0.001)		(0.000)
pop	0.05	- 0.08	0.14	0.10	0.18	0.02
	(0.709)	(0.472)	(0.140)	(0.214)	(0.300)	(0.871)
oil/diam	*** 0.00	*** 0.00	0.00	0.00	** 0.00	** 0.00
	(0.037)	(0.018)	(0.112)	(0.124)	(0.022)	(0.010)
democ	0.07	* 0.11	- 0.02	- 0.06	0.05	0.06
	(0.301)	(0.093)	(0.668)	(0.283)	(0.614)	(0.525)

Why Doesn't Class Matter (That Much)?

- One of the great questions of political economy
- along with similar questions in non-conflict settings
- e.g., economic inequality and progressive policies

Why Ethnicity Matters

- 1. Noneconomic markers divide economically similar individuals.
  - The gains from conflict are immediate and direct.
- 2. Organized conflict is people + finance.
  - Within-group disparities feed the people/finance synergy.
- 3. Use of ethnic identity in *us* vs *them* equilibrium.
  - Multiple claims to surplus; society already sensitive to class.

- Esteban and Ray (2008) on ethnic salience

A Different View of Conflict

- All this leads to a very different view of social conflict.
  - It could well be economic (as in Marx), but
  - Expressed via non-economic markers: ethnicity.
- Compatible with (but far broader than) the primordialist view:
  - Huntington's *Clash of Civilizations* (1993, 1996); see also Lewis.

This Talk: Do ethnic "divisions" affect conflict?

- What's a "division"?

- Ethnic fractionalization widely used, *Atlas Narodov Mira* 1964

$$F = \sum_i n_i(1 - n_i)$$

- Collier-Hoeffler 1998, 2004, Fearon-Laitin 2003, Miguel-Satyanath-Sergenti 2004, Alesina et al 2003

- Works well for growth, public goods provision, governance . . .

- But not for conflict.

- "The empirical pattern is thus inconsistent with the common expectation that ethnic diversity is a major and direct cause of civil violence." Fearon and Laitin (2003)

A Theory that Informs an Empirical Specification

- Esteban and Ray (*AER* 2011).
- m groups engaged in conflict.
- N_i in group i, $\sum_{i=1}^{m} N_i = N$.
- Public prize: π per-capita scale [πu_{ij}]
- (religious dominance, political control, hatreds, public goods)
- Private prize μ per-capita [$\mu N / N_i = \mu / n_i$]
- Oil, diamonds, scarce land

Theory, contd.

- Individual resource contribution r at convex utility cost $c(r)$.
- (more generally $c(r, y_i)$).

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- 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/N 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).

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- Net expected payoff to an individual k in group i is

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

Contributing to Conflict (how R_i is determined)

- One extreme: individuals maximize own payoff.
- Another: individual acts (as if) to maximize group payoffs.

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- α: (i) intragroup concern or altruism (ii) group cohesion.

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- α: (i) intragroup concern or altruism (ii) group cohesion.
- Equilibrium: Every k unilaterally maximizes her extended utility.
- Theorem 1. An equilibrium exists. If $c'''(r) \geq 0$, it is unique.

The Key Parameters and Variables

- Distances: $d_{ij} \equiv u_{ii} - u_{ij}$.
- Relative Publicness $\lambda \equiv \pi/(\pi + \mu)$
- Group Cohesion: α.
- Demographics: n_i
- Behavior: contributions, or equivalently p_i

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- Distances: $d_{ij} \equiv u_{ii} - u_{ij}$.
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- Demographics: n_i
- Behavior: contributions, or equivalently p_i

- p_i related to n_i, but not the same thing

- For the approximation theorem today, I will ignore joint impact of p_i/n_i.

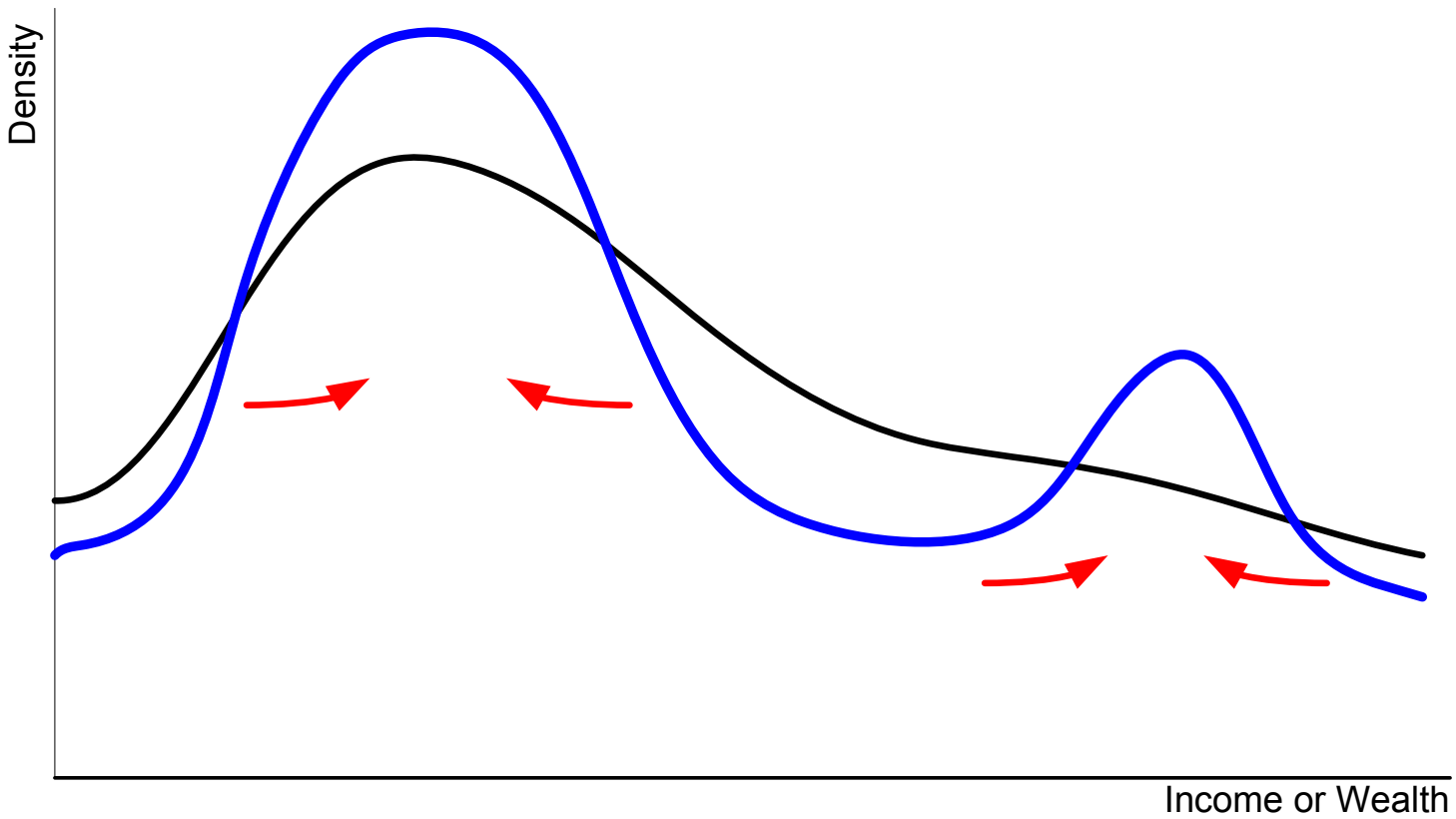
Approximation Theorem

- Theorem 2. $\rho = R/N$ "approximately" solves

$$\begin{aligned} \frac{c'(\rho)\rho}{\pi+\mu} &= \alpha\big[\lambda P + (1-\lambda)F\big] + (1-\alpha)\lambda\frac{G}{N} + \frac{\text{Constant}}{N} \\ &\simeq \alpha\big[\lambda P + (1-\lambda)F\big] \text{ for large } N. \end{aligned}$$

- $\lambda \equiv \pi/(\pi+\mu)$ is relative publicness of the prize.
- P is squared polarization: $\sum_i \sum_j n_i^2 n_j d_{ij}$ (Esteban-Ray 1994)
- F is fractionalization: $\sum_i n_i(1-n_i)$.
- G is Greenberg-Gini: $\sum_i \sum_j n_i n_j d_{ij}$.

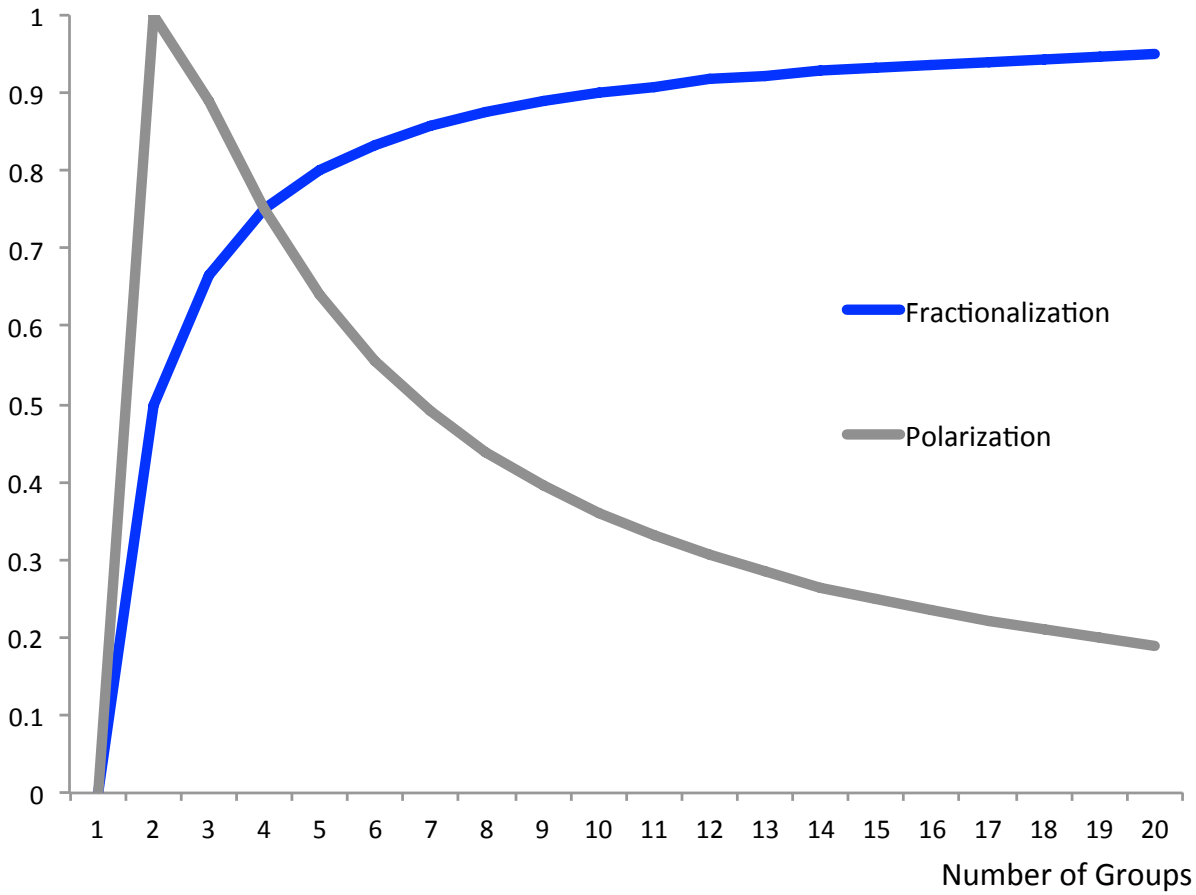
Polarization and Fractionalization



- The polarization measure (not Lorenz-consistent) captures this:

$$\text{Pol} = \sum_{i=1}^{m} \sum_{j=1}^{m} n_i^2 n_j d_{ij}.$$

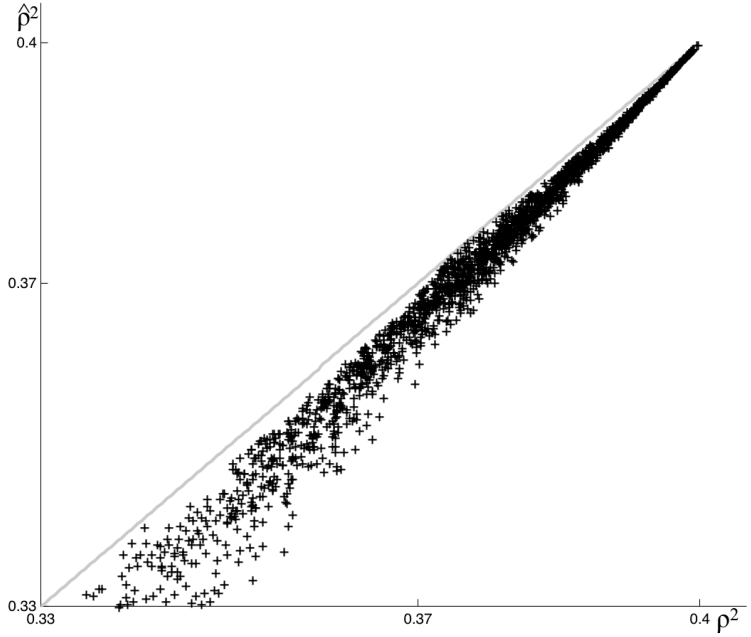
- With $n_i = 1/m$, P maxed at $m = 2$, F increases in m:



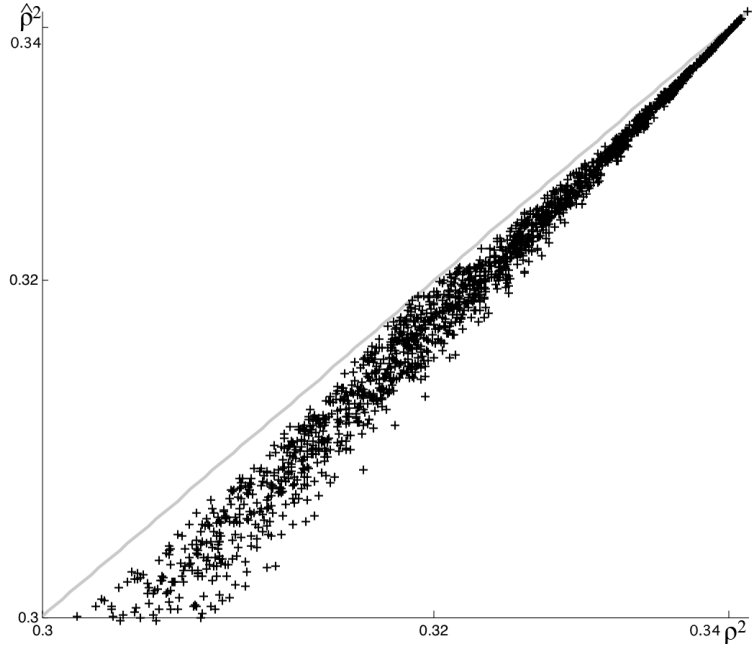
"We begin with the obvious question: why are we interested in polarization? It is our contention that the phenomenon of polarization is closely linked to the generation of tensions, to the possibilities of articulated rebellion and revolt, and to the existence of social unrest in general . . ."

How Good is Our Approximation?

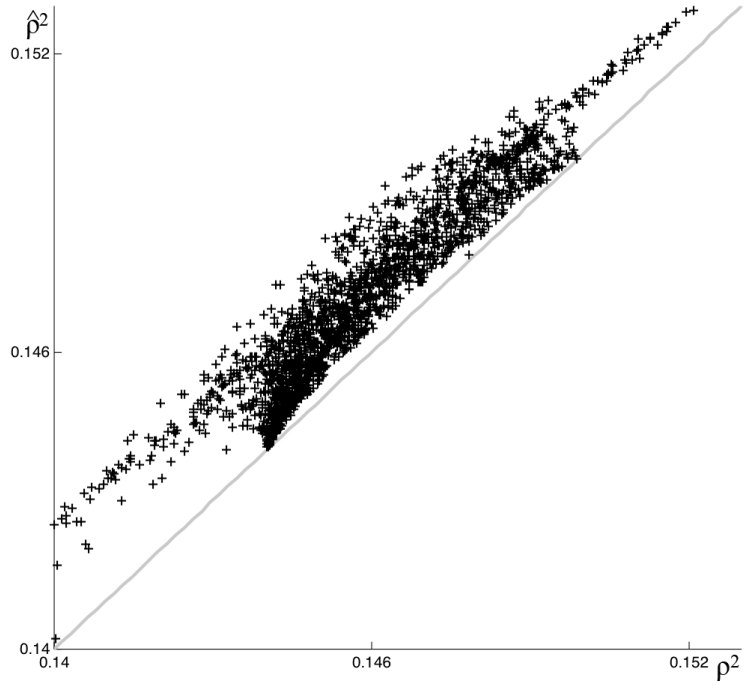
- Two groups with public prizes: exact.
- All groups the same size and symmetric losses: exact.
- Approx error $\to 0$ for high conflict.
- Numerically compute.



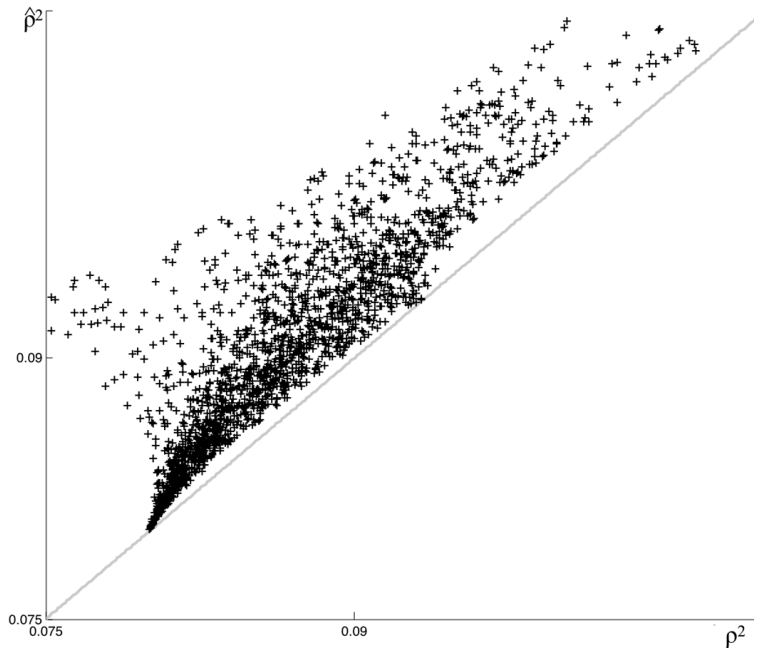
(a) $\alpha = 0.5,\ \theta = 2,\ \lambda = 0,\ \text{Corr} = 0.99$



(b) $\alpha = 0.5,\ \theta = 2,\ \lambda = 0.2,\ \text{Corr} = 0.99$

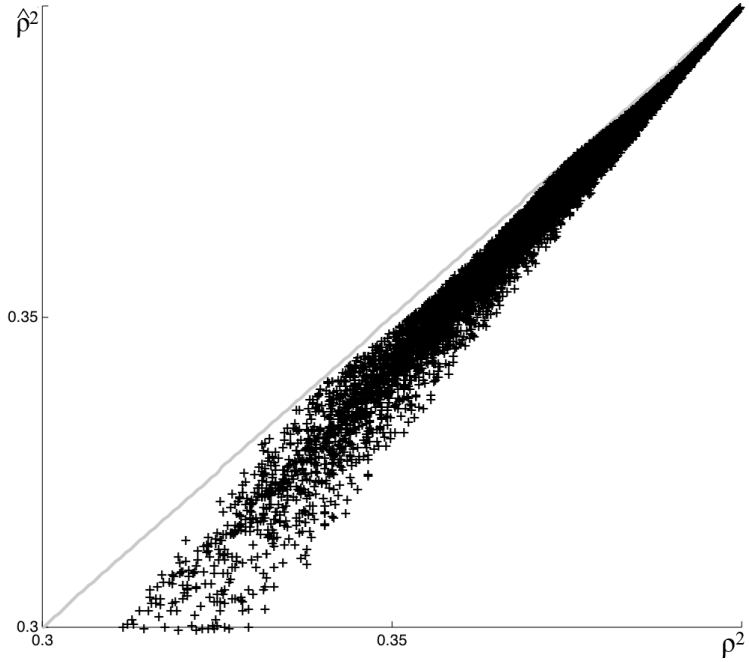


(c) $\alpha = 0.5,\ \theta = 2,\ \lambda = 0.8,\ \text{Corr} = 0.97$



(d) $\alpha = 0.5,\ \theta = 2,\ \lambda = 1,\ \text{Corr} = 0.88$

Contests



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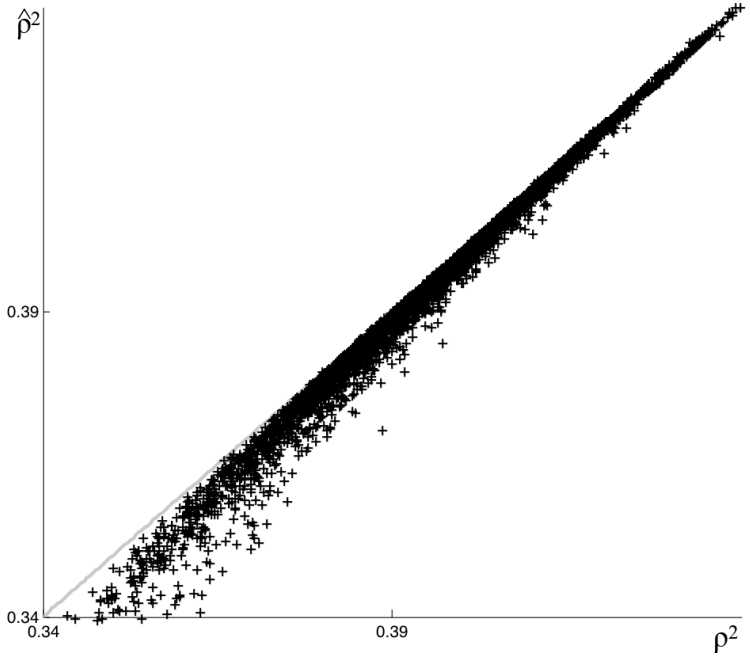

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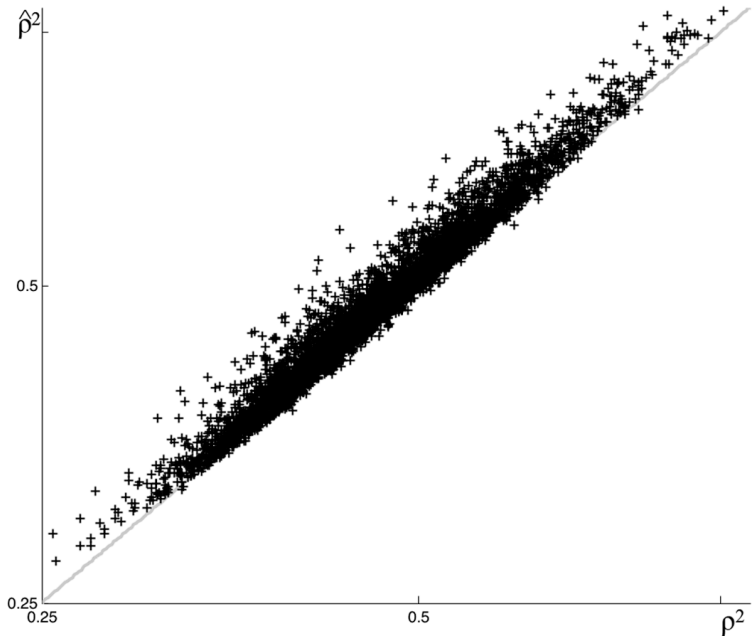

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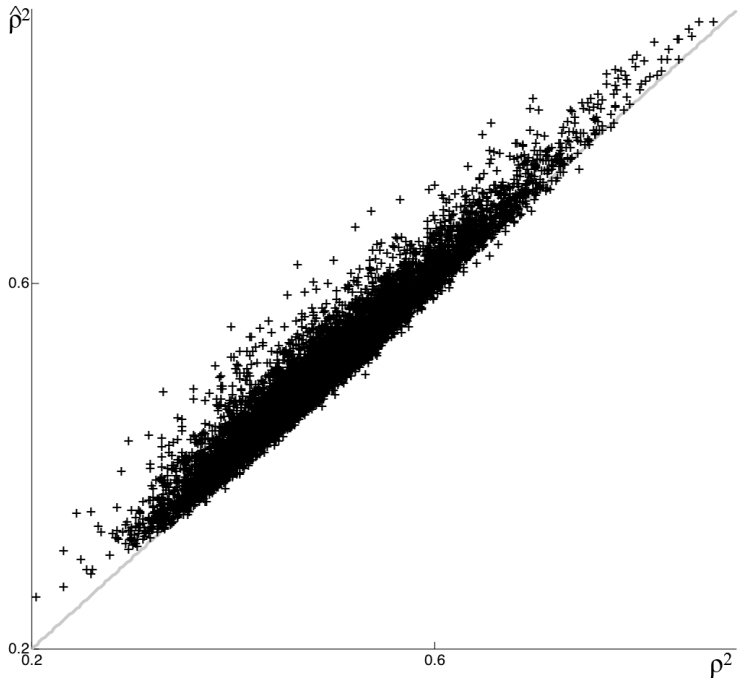
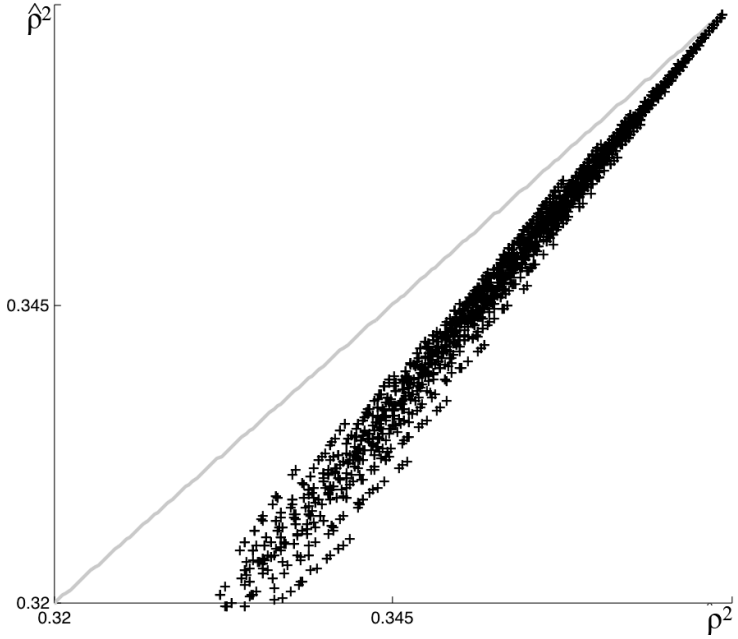


(d) $\alpha = 0.5,\ \theta = 2,\ \lambda = 1,\ \text{Corr} = 0.97$

Distances



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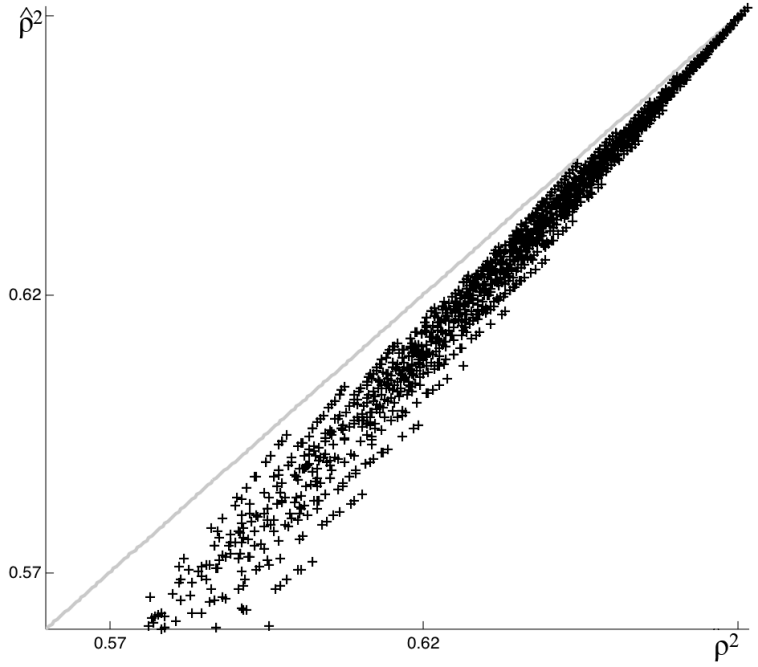
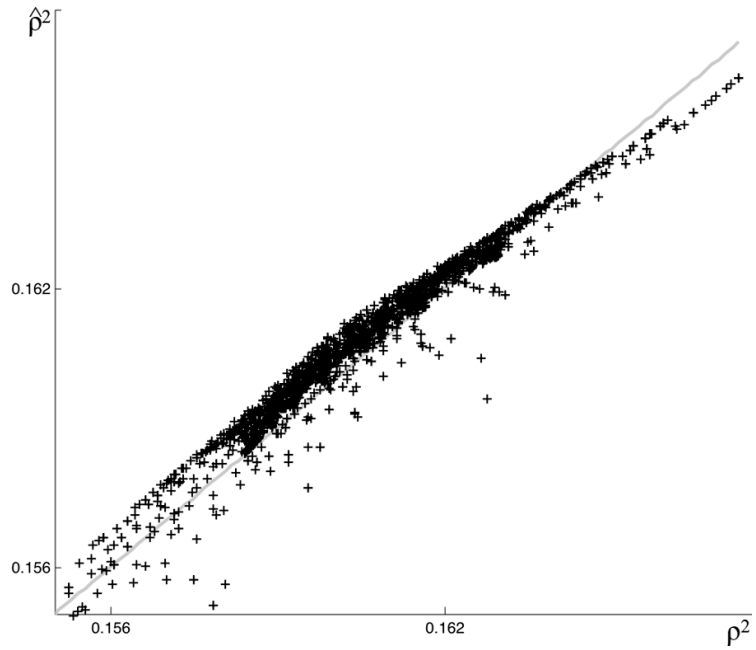
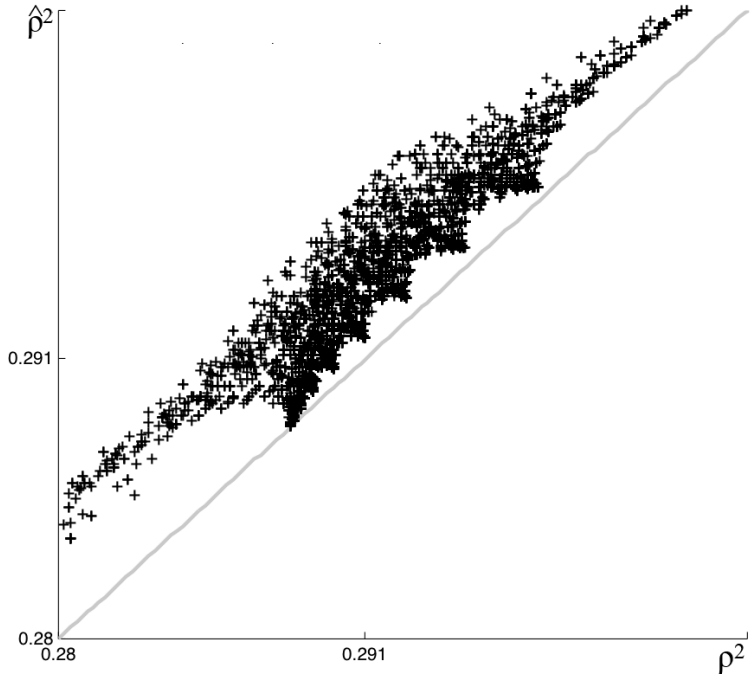


(b) $\alpha = 1,\ \theta = 2,\ \lambda = 0.2,\ \text{Corr} = 0.99$

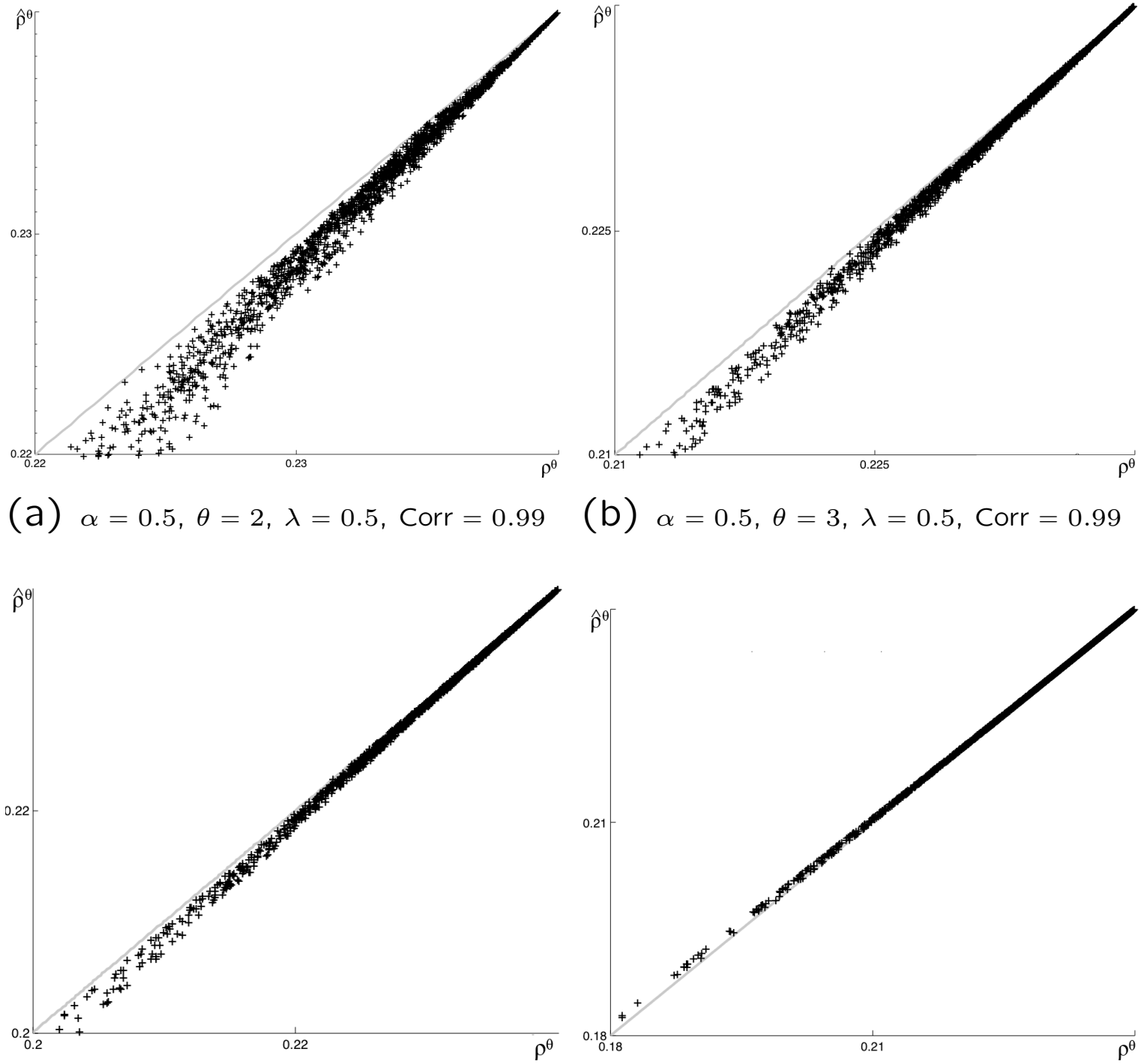


(c) $\alpha = 0.5,\ \theta = 2,\ \lambda = 0.8,\ \text{Corr} = 0.97$



(d) $\alpha = 1,\ \theta = 2,\ \lambda = 0.8,\ \text{Corr} = 0.96$

SmallPop



(a) $\alpha = 0.5,\ \theta = 2,\ \lambda = 0.5,\ \text{Corr} = 0.99$ (b) $\alpha = 0.5,\ \theta = 3,\ \lambda = 0.5,\ \text{Corr} = 0.99$

(c) $\alpha = 0.5,\ \theta = 4,\ \lambda = 0.5,\ \text{Corr} = 0.99$ (d) $\alpha = 0.5,\ \theta = 10,\ \lambda = 0.5,\ \text{Corr} = 0.99$

CostCurv

Summary: Predicted Connections

- Conflict over public goods related to polarization P.
- Conflict over private goods related to fractionalization F.
- Overall connection:

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

where

- $\lambda =$ relative importance of public prize
- α is a measure of within-group cohesion.

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.
  - *Ethnologue* 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 $s_{ij} = \dfrac{\text{common branches}}{\text{maximal branches down that subtree}}$.

- 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 [α, λ]

Var	[1]	[2]	[3]	[4]	[5]	[6]
P	*** 6.07	*** 6.90	*** 6.96	*** 7.38	*** 7.39	*** 6.50
	(0.002)	(0.000)	(0.001)	(0.001)	(0.001)	(0.004)
F	*** 1.86	** 1.13	** 1.09	** 1.30	** 1.30	** 1.25
	(0.000)	(0.029)	(0.042)	(0.012)	(0.012)	(0.020)
pop	** 0.19	** 0.23	** 0.22	0.13	0.13	0.14
	(0.014)	(0.012)	(0.012)	(0.141)	(0.141)	(0.131)
gdppc	-	***- 0.40	***- 0.41	***- 0.47	***- 0.47	**- 0.38
		(0.001)	(0.002)	(0.001)	(0.001)	(0.011)
oil/diam	-	-	0.06	0.04	0.04	- 0.10
			(0.777)	(0.858)	(0.870)	(0.643)
mount	-	-	-	0.01	0.01	0.01
				(0.134)	(0.136)	(0.145)
ncont	-	-	-	** 0.84	** 0.85	*** 0.90
				(0.019)	(0.018)	(0.011)
democ	-	-	-	-	- 0.02	0.02
					(0.944)	(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	*** 2.81	*** 2.80	*** 2.73	*** 2.73	*** 2.79
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

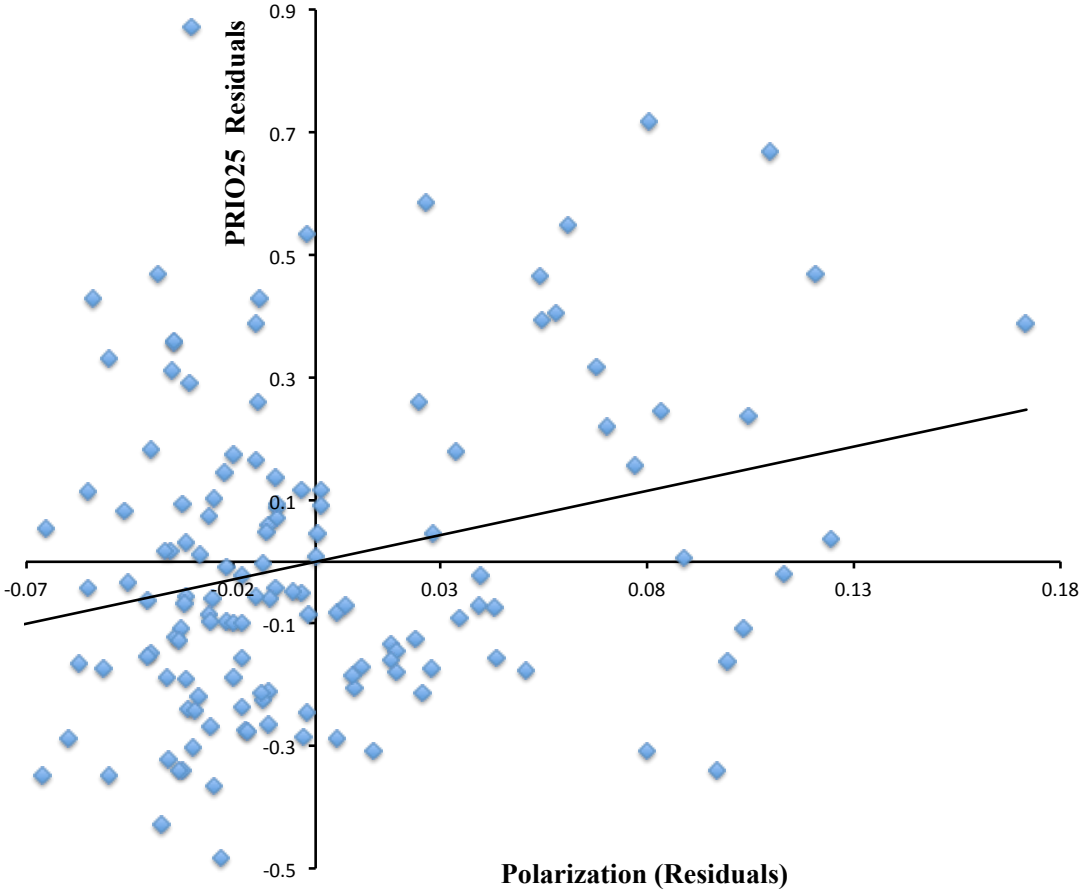
Part A: countries in 45-55 fractionalization decile, ranked by polarization.

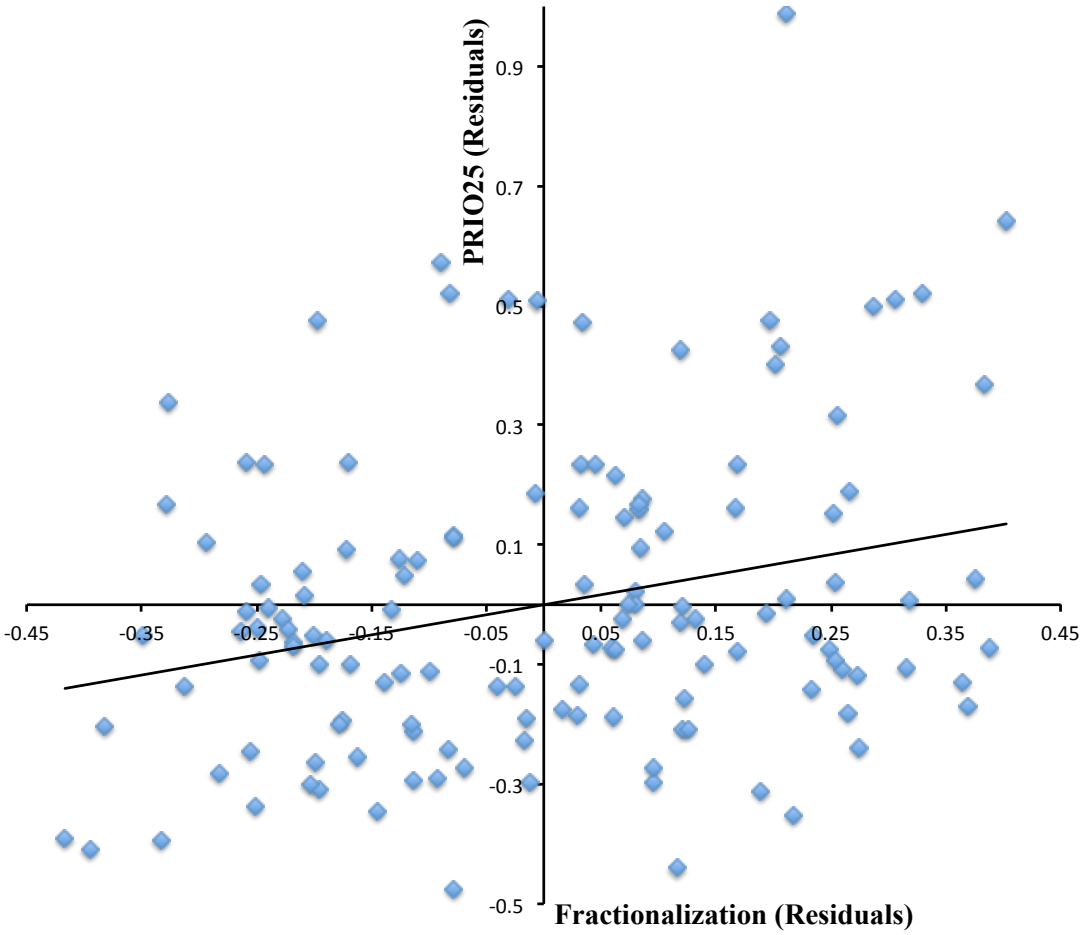
Part B: countries in 45-55 polarization decile, ranked by fractionalization.

Part A	Intensity	Years
Dom Rep	1	1
Morocco	1	15
USA	0	0
Serbia-Mont	2	2
Spain	1	5
Macedonia	1	1
Chile	1	1
Panama	1	1
Nepal	2	14
Canada	0	0
Myanmar	2	117
Kyrgystan	0	0
Sri Lanka	2	26
Estonia	0	0
Guatemala	1	30

Part B	Intensity	Years
Germany	0	0
Armenia	0	0
Austria	0	0
Taiwan	0	0
Algeria	2	22
Zimbabwe	2	9
Belgium	0	0
USA	0	0
Morocco	1	15
Serbia-Mont	2	2
Latvia	0	0
Trin-Tob	1	1
Guinea-Bissau	1	13
Sierra Leone	2	10
Mozambique	2	27

- Residual scatters.





- $P(20 \to 80)$, 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	*** 6.76	*** 10.47	*** 6.50	*** 25.90
	(0.001)	(0.007)	(0.001)	(0.000)	(0.003)
F	** 1.30	** 1.39	* 1.11	*** 1.30	2.27
	(0.012)	(0.034)	(0.086)	(0.006)	(0.187)
gdp	***- 0.47	*- 0.35	***- 0.63	***- 0.40	***- 1.70
	(0.001)	(0.066)	(0.000)	(0.002)	(0.001)
pop	0.13	* 0.19	0.13	0.10	*** 1.11
	(0.141)	(0.056)	(0.215)	(0.166)	(0.000)
oil/diam	0.04	0.06	- 0.03	- 0.04	- 0.57
	(0.870)	(0.825)	(0.927)	(0.816)	(0.463)
mount	0.01	** 0.01	0.01	0.00	** 0.04
	(0.136)	(0.034)	(0.323)	(0.282)	(0.022)
ncont	** 0.85	0.62	* 0.78	* 0.55	*** 4.38
	(0.018)	(0.128)	(0.052)	(0.069)	(0.004)
democ	- 0.02	- 0.09	- 0.41	- 0.03	0.06
	(0.944)	(0.790)	(0.230)	(0.909)	(0.944)
lag	*** 2.73	*** 3.74	*** 2.78	*** 2.00	*** 0.50
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

- $P(20 \to 80)$, prio25 13%–29%, priocw 7%–17%, prio1000 3%–10%.
- $F(20 \to 80)$, prio25 12%–25%, priocw 7%–16%, prio1000 3%–6%.

- Different definitions of conflict, *Ethnologue* groupings

Variable	prio25	priocw	prio1000	prioint	isc
P	*** 8.26	*** 8.17	** 10.10	*** 7.28	*** 27.04
	(0.001)	(0.005)	(0.016)	(0.001)	(0.008)
F	0.64	0.75	0.51	0.52	- 0.58
	(0.130)	(0.167)	(0.341)	(0.185)	(0.685)
gdp	***- 0.51	**- 0.39	***- 0.63	***- 0.45	***- 2.03
	(0.000)	(0.022)	(0.000)	(0.000)	(0.000)
pop	* 0.15	** 0.24	0.15	0.12	*** 1.20
	(0.100)	(0.020)	(0.198)	(0.118)	(0.000)
oil/diam	0.15	0.21	0.10	0.08	- 0.06
	(0.472)	(0.484)	(0.758)	(0.660)	(0.943)
mount	* 0.01	** 0.01	0.01	* 0.01	** 0.04
	(0.058)	(0.015)	(0.247)	(0.099)	(0.013)
ncont	** 0.72	0.49	0.50	0.44	*** 4.12
	(0.034)	(0.210)	(0.194)	(0.136)	(0.006)
democ	0.03	0.00	- 0.32	0.03	0.02
	(0.906)	(0.993)	(0.350)	(0.898)	(0.979)
lag	*** 2.73	*** 3.75	*** 2.83	*** 2.01	*** 0.50
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

- Binary variables don't work well with *Ethnologue*.
- Can compute pseudolikelihoods for δ as in Hansen (1996).

Onset vs incidence, Fearon and *Ethnologue* groupings

Variable	onset2	onset5	onset8	onset2	onset5	onset8
P	*** 7.85	*** 7.41	*** 7.26	*** 8.83	*** 8.84	*** 8.71
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
F	* 0.94	0.72	0.62	0.39	0.20	0.15
	(0.050)	(0.139)	(0.204)	(0.336)	(0.602)	(0.702)
gdp	***- 0.60	***- 0.65	***- 0.68	***- 0.64	***- 0.70	***- 0.73
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
pop	0.01	0.03	0.03	0.06	0.05	0.05
	(0.863)	(0.711)	(0.748)	(0.493)	(0.588)	(0.619)
oil/diam	** 0.54	** 0.46	** 0.47	*** 0.64	*** 0.56	*** 0.57
	(0.016)	(0.022)	(0.025)	(0.004)	(0.005)	(0.007)
mount	0.00	0.00	0.00	0.00	0.00	0.00
	(0.527)	(0.619)	(0.620)	(0.295)	(0.410)	(0.424)
ncont	*** 0.74	** 0.66	0.42	** 0.66	** 0.63	0.40
	(0.005)	(0.010)	(0.104)	(0.012)	(0.017)	(0.120)
democ	- 0.06	0.06	0.08	- 0.02	0.09	0.10
	(0.816)	(0.808)	(0.766)	(0.936)	(0.716)	(0.704)
lag	0.32	- 0.08	- 0.08	0.29	- 0.13	- 0.13
	(0.164)	(0.740)	(0.751)	(0.214)	(0.618)	(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	** 5.36	*** 7.24	*** 9.56	*** 7.39	*** 7.19
	(0.002)	(0.034)	(0.001)	(0.001)	(0.001)	(0.001)
F	*** 2.03	*** 2.74	** 1.28	*** 1.49	** 1.33	*** 1.76
	(0.001)	(0.001)	(0.030)	(0.009)	(0.012)	(0.001)
gdp	***- 0.72	***- 0.69	**- 0.39	***- 0.45	***- 0.49	***- 0.60
	(0.000)	(0.000)	(0.024)	(0.006)	(0.001)	(0.000)
pop	0.05	0.09	0.06	* 0.17	0.14	0.06
	(0.635)	(0.388)	(0.596)	(0.087)	(0.125)	(0.543)
oil/diam	0.12	0.14	0.10	0.10	0.05	0.15
	(0.562)	(0.630)	(0.656)	(0.687)	(0.824)	(0.476)
mount	0.00	- 0.00	0.01	** 0.01	0.01	0.01
	(0.331)	(0.512)	(0.114)	(0.038)	(0.109)	(0.212)
ncont	** 0.87	* 0.75	** 0.83	0.62	** 0.82	** 0.77
	(0.018)	(0.064)	(0.039)	(0.134)	(0.025)	(0.040)
democ	0.08	- 0.03	- 0.23	0.10	0.08	0.13
	(0.761)	(0.932)	(0.389)	(0.716)	(0.750)	(0.621)
lag	*** 2.68	*** 2.83	*** 2.69	*** 2.92	*** 2.79	*** 2.74
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

- Other estimation methods, Fearon groupings.

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

Inter-Country Variations in Publicness and Cohesion

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

- Relax assumption that λ and α 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 and group cohesion

Variable	prio25	prioint	isc	prio25	prioint	isc
P	- 3.31	- 1.93	- 9.21	- 3.01	- 1.65	- 13.04
	(0.424)	(0.538)	(0.561)	(0.478)	(0.630)	(0.584)
F	0.73	0.75	- 2.27	1.48	1.51	**- 6.65
	(0.209)	(0.157)	(0.249)	(0.131)	(0.108)	(0.047)
$P\Lambda$	*** 17.38	*** 13.53	*** 60.23			
	(0.001)	(0.001)	(0.005)			
$F(1-\Lambda)$	*** 2.53	*** 1.92	*** 11.87			
	(0.003)	(0.003)	(0.000)			
$P\Lambda A$				** 23.25	** 19.16	* 72.22
				(0.021)	(0.019)	(0.083)
$F(1-\Lambda)A$				** 4.02	*** 2.92	*** 26.03
				(0.013)	(0.003)	(0.000)
gdp	***- 0.62	***- 0.50	***- 2.36	***- 0.65	***- 0.53	***- 3.68
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.000)
pop	0.10	0.09	*** 0.99	0.08	0.09	0.33
	(0.267)	(0.243)	(0.000)	(0.622)	(0.448)	(0.565)
lag	*** 2.62	*** 1.93	*** 0.47	*** 2.40	*** 1.79	*** 0.42
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Summary

- Exclusionary conflict as important as distributive conflict, maybe more.
- Often made salient by the use of ethnicity or religion.
- Do societies with "ethnic divisions" experience more conflict?
- We develop a theory of conflict that generates an empirical test.
- Convex combination of two distributional variables predicts conflict.
- Theory appears to find strong support in the data.
- Other predictions: interaction effects on shocks that affect rents and opportunity costs.

Ethnicity, Economics, and Conflict

- Last regressions: instrumentalism trumps primordialism.
  - Can we see this in more detailed within-country studies?
  - Mitra and Ray 2013 study Hindu-Muslim conflict in India.
- Recurrent episodes of violence from the 1940s and earlier
  - Continuing through the second half of the twentieth century.
- $\sim$ 1,200 riots, 7,000 deaths, 30,000 injuries over 1950–2000.
  - Numbers may look small relative to Indian population
  - Don't capture displacement, segregation and widespread fear.

- Basic approach:
  - Religious violence can be used to appropriate economic surplus
    - direct looting or exclusion: property, jobs, rival businesses.
- Predictions:
  - Income growth for victims increases conflict.
    - More to gain from grabbing or exclusion.
  - Income growth for aggressors reduces conflict.
    - Lowers incentive to participate in confrontations.
  - Points to a strategy to identify aggressor and victim groups.

Growth: More to Grab

- Spilerman (1979), Olzak and Shanahan (1996) on US race riots [labor]
- Das (2000) on 1992–3 Bombay and Calcutta riots [land]
- Rajgopal (1987), Khan (1992) on Bhiwandi and Meerut riots [textiles]
- Engineer (1994) and Khan (1991) on Jabbalpur, Kanpur, Moradabad [*bidis*, brassware]
- Wilkinson (2004) on Varanasi [wholesale silk trade]
- André and Platteau (1998) on Rwanda [land grab]
- Sarkar (2007), Gang of Nine (2007) on Singur and Nandigram [land]
- Dube and Vargas (2013) on Colombia [oil revenues]

Growth: Diminished Incentives to Engage

- Murshed and Gates (2005) and Do and Iyer (2007) on poverty in Nepal.
- Honaker (2008) on unemployment in N. Ireland.
- Dube and Vargas (2009) on coffee shocks in Colombia.
- Kapferer (1998) and Senenayake (2004) on poverty in Sri Lanka.
- Gandhi (2003) on Dalit participation in Gujarat.
- Humphreys and Weinstein (2008) on poverty/conflict in Sierra Leone.
- See also standard interpretations of the cross-section results by Collier and Hoffler (2003), Fearon and Laitin (2003), and Miguel et al (2004).

Data

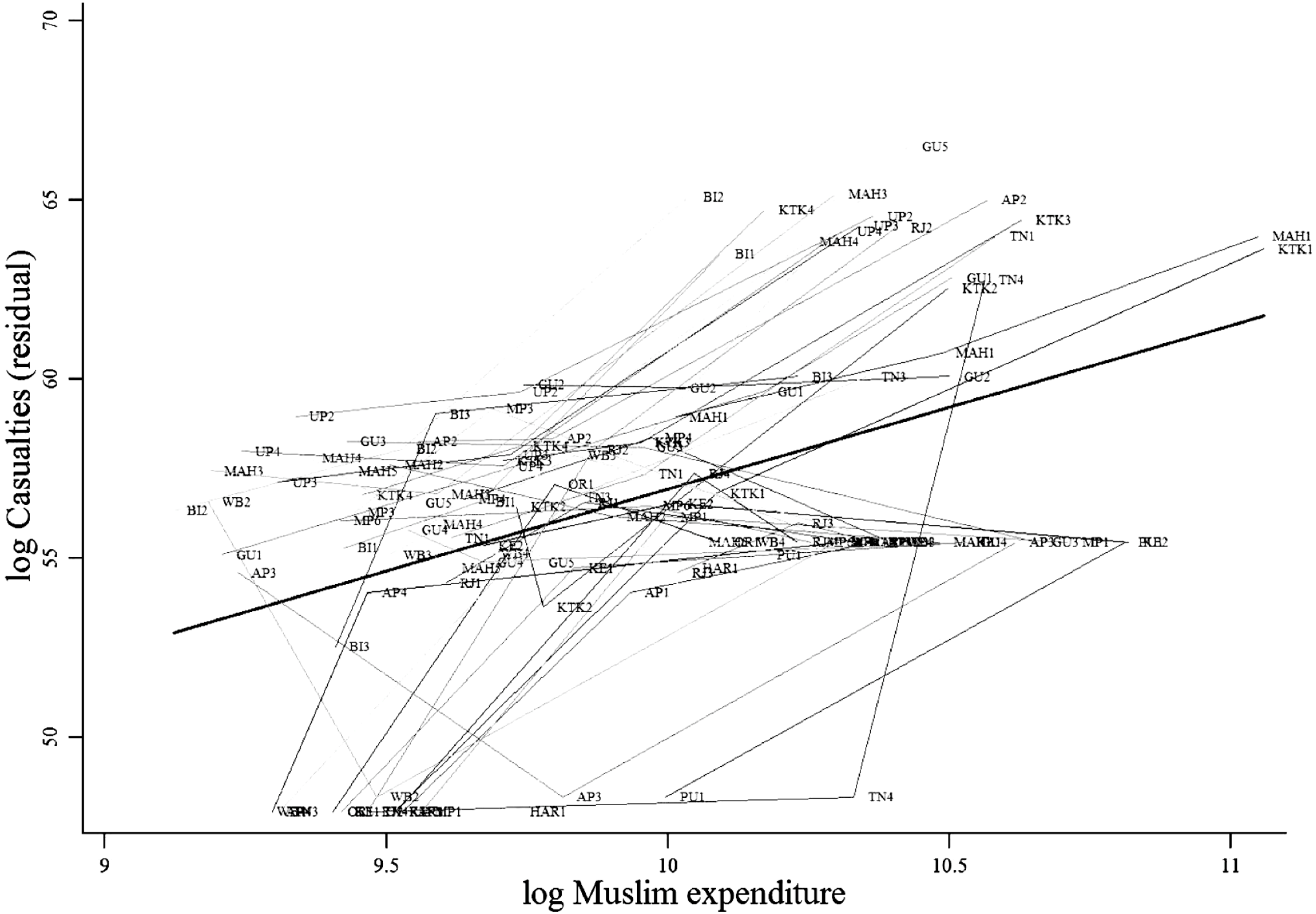
- Conflict data. Varshney-Wilkinson (TOI 1950-1995)
  - our extension (TOI 1996-2000).
- Income data. National Sample Survey Organization (NSSO) consumer expenditure data.
  - Rounds 38 (1983), 43 (1987-8) and 50 (1993-94).
- Controls. Various sources.
- Three-period panel at the regional level; 55 regions.

- Some summary statistics on riots:

State	Conflict								
	1984-88			1989-93			1994-98		
	Cas	Kill	Out	Cas	Kill	Out	Cas	Kill	Out
Andhra Pradesh	320	48	14	226	165	11	141	8	2
Bihar	62	18	4	647	485	29	187	42	6
Gujarat	1932	329	97	1928	557	75	639	2	3
Haryana	0	0	0	6	4	2	0	0	0
Karnataka	300	38	19	430	82	32	235	39	7
Kerala	17	0	2	42	5	3	0	0	0
Madhya Pradesh	139	17	8	794	174	12	22	2	1
Maharashtra	1250	333	57	2545	808	29	238	9	11
Orissa	0	0	0	62	16	6	0	0	0
Punjab	13	1	1	0	0	0	0	0	0
Rajasthan	14	0	4	302	75	15	66	6	3
Tamil Nadu	21	1	1	125	12	5	67	33	5
Uttar Pradesh	963	231	38	1055	547	48	217	50	22
West Bengal	71	19	7	148	59	12	0	0	0

- Some summary statistics on expenditure ratios:

State	Exp.								
	1983			1987-8			1993-4		
	H/M	Min	Max	H/M	Min	Max	H/M	Min	Max
Andhra Pradesh	0.99	0.96	1.09	0.99	0.92	1.17	0.99	0.84	1.16
Bihar	0.98	0.88	1.12	1.07	1.02	1.12	1.03	0.93	1.16
Gujarat	1.02	0.89	1.19	0.98	0.78	1.14	1.06	0.88	1.13
Haryana	1.2	1.07	1.53	0.96	0.85	1.05	1.60	1.39	1.93
Karnataka	0.98	0.84	1.19	1.00	0.83	1.07	1.01	0.69	1.15
Kerala	1.10	1.07	1.19	1.15	1.15	1.16	1.01	0.92	1.16
Madhya Pradesh	0.92	0.78	1.38	0.86	0.71	1.04	0.88	0.62	1.16
Maharashtra	1.04	0.97	1.25	1.04	0.74	1.29	1.12	0.87	1.42
Orissa	0.69	0.36	1.04	0.85	0.58	0.93	0.96	0.73	1.13
Punjab	0.86	0.75	1.15	1.21	1.19	1.22	1.18	1.08	1.34
Rajasthan	0.97	0.43	1.18	1.02	0.46	1.19	1.22	1.06	1.35
Tamil Nadu	1.06	0.82	1.44	0.88	0.80	0.94	0.98	0.85	1.05
Uttar Pradesh	1.12	1.01	1.23	1.11	0.95	1.54	1.08	0.93	1.31
West Bengal	1.18	1.05	1.26	1.21	1.05	1.31	1.25	1.07	1.38


log Casualties (residual)
70
65
60
55
50
log Muslim expenditure
9
9.5
10
10.5
11
GU5
BI2
KTK4
MAH3
AP2
KTK3
UP2
UP3
UP4
RJ2
TN1
MAH4
BI1
MAH1
KTK1
GU1
TN4
KTK2
MAH1
BI3
TN3
GU2
GU1
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MP3
MAH1
GU3
AP2
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MAH4
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RJ2
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TN1
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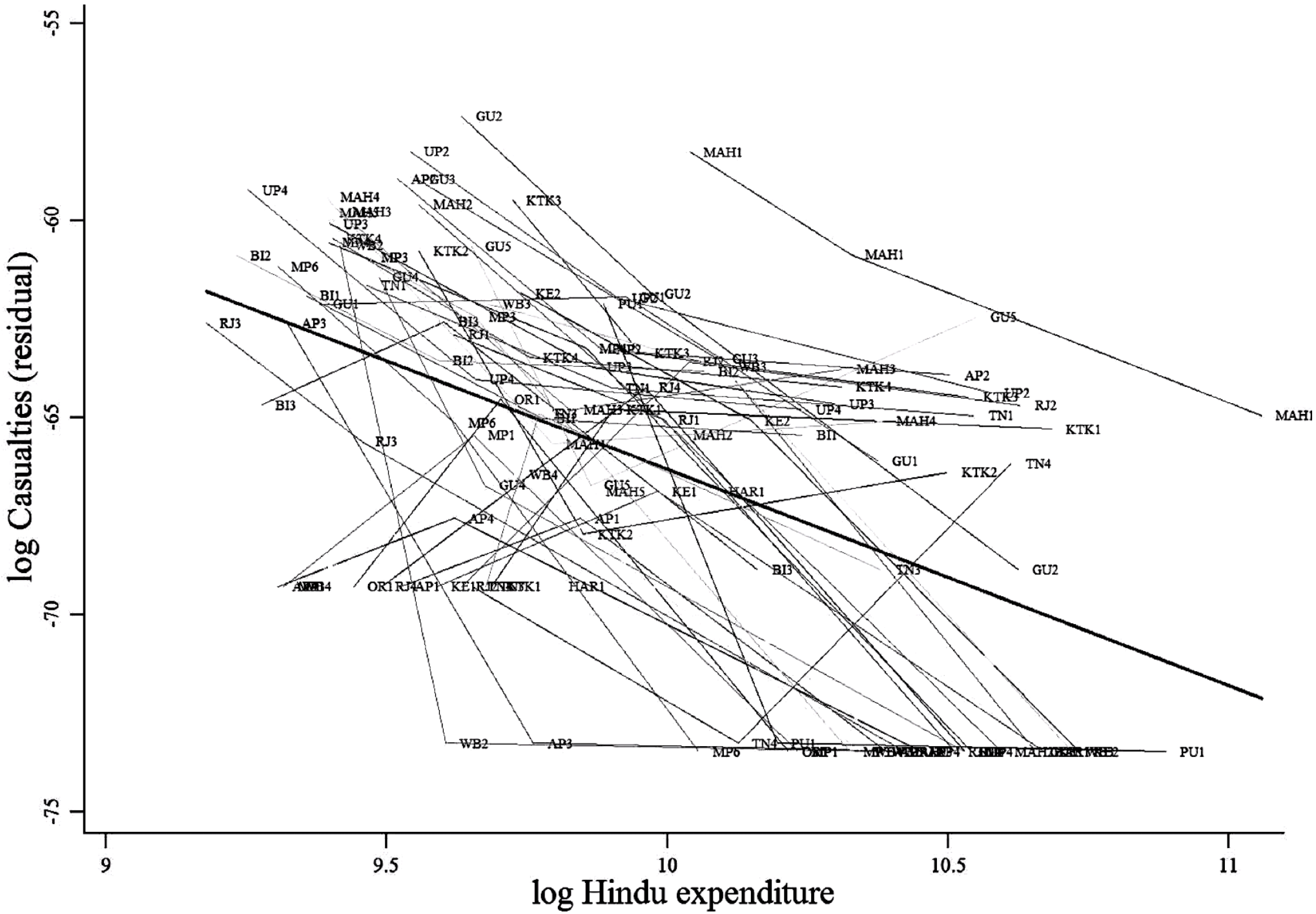
log Casualties (residual)
-55
-60
-65
-70
-75
9
9.5
10
10.5
11
log Hindu expenditure
GU2
UP2
MAH1
UP4
MAH4
KTK3
MAH2
UP3
KTK2
GU5
BI2
MP6
MP3
TN1
KE2
GU1
WB3
RJ3
AP3
BI3
RJ1
KTK4
UP1
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OR1
MP1
WB4
GU4
MAH5
KE1
HAR1
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KTK1
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MAH3
AP2
UP3
RJ2
TN4
TN3
PU1
WB2
MP6

Empirical Specification

- Baseline: We use the Poisson specification:

$$E[\,\text{Count}_{i,t}\,|\,\mathbf{X}_{it}, r_i] = r_i \exp(\mathbf{X}'_{it}\beta + \tau_t)$$

- where $\mathbf{X}$ includes
  - expenditures (as income proxies) both for Hindu and Muslim.
  - time-varying controls.
- r_i are regional dummies; τ_t are time dummies.
- Other Specifications:
  - Negative binomial to allow for mean count $\neq$ variance.

- Casualties, 5-Year Average Starting Just After

	[Poiss]	[Poiss]	[NegBin]	[NegBin]	[OLS]	[OLS]
H Exp	***-7.87	***-6.82	**-2.79	-3.31	**-9.15	*-8.46
	(0.005)	(0.003)	(0.093)	(0.131)	(0.033)	(0.085)
M Exp	***5.10	***4.67	**2.64	**3.87	***6.89	*** 9.52
	(0.000)	(0.001)	(0.040)	(0.023)	(0.006)	(0.009)
Pop	4.28	3.91	0.62	0.74	-3.87	-1.23
	(0.468)	(0.496)	(0.149)	(0.132)	(0.614)	(0.877)
RelPol	*5.55	*5.57	0.72	1.09	6.00	6.86
	(0.054)	(0.056)	(0.763)	(0.715)	(0.470)	(0.408)
Gini H		-5.426		4.121		-14.473
		(0.317)		(0.521)		(0.342)
Gini M		3.399		-5.952		-11.073
		(0.497)		(0.362)		(0.451)
Lit, Urb	Y	Y	Y	Y	Y	Y

- Mus exp $\uparrow$ 1% $\Rightarrow$ Cas $\uparrow$ 3–5%. Opp for Hindu exp.

Killed and Riot Outbreaks, 5-Year Average Starting Just After

	[Poiss]		[NegBin]		[OLS]	
	Kill	Riot	Kill	Riot	Kill	Riot
H exp	-0.07	-2.12	-2.25	*-5.37	-4.27	**-6.30
	(0.976)	(0.393)	(0.293)	(0.069)	(0.339)	(0.019)
M exp	0.85	*2.49	**3.69	**4.16	**6.42	***6.42
	(0.636)	(0.067)	(0.030)	(0.016)	(0.043)	(0.006)
Pop	*-6.03	0.26	0.83	0.30	-3.31	-0.03
	(0.071)	(0.900)	(0.170)	(0.823)	(0.549)	(0.995)
RelPol	1.31	0.26	0.10	*4.58	4.17	2.73
	(0.659)	(0.875)	(0.970)	(0.085)	(0.556)	(0.603)
Lit, Urban	Y	Y	Y	Y	Y	Y
Gini H, Gini M	Y	Y	Y	Y	Y	Y

The Use of Hindu-Muslim Expenditure Ratios

	[Poiss]			[NegBin]			[OLS]		
	Cas	Kill	Riot	Cas	Kill	Riot	Cas	Kill	Riot
M/H	***4.78	0.80	*2.44	**3.88	**3.55	**4.29	***9.36	*6.19	***6.34
	(0.000)	(0.640)	(0.089)	(0.011)	(0.014)	(0.010)	(0.010)	(0.051)	(0.006)
Pop	4.76	-5.68	0.49	0.75	0.84	0.32	-1.19	-3.32	-0.00
	(0.417)	(0.101)	(0.804)	(0.105)	(0.162)	(0.821)	(0.880)	(0.548)	(1.000)
Pce	-3.36	0.09	-0.19	0.69	1.40	-1.41	0.51	1.59	-0.25
	(0.208)	(0.971)	(0.915)	(0.671)	(0.540)	(0.471)	(0.918)	(0.703)	(0.933)
RelPol	*5.36	1.21	0.30	1.15	0.14	*4.56	6.87	4.26	2.74
	(0.061)	(0.681)	(0.856)	(0.658)	(0.961)	(0.060)	(0.405)	(0.546)	(0.600)
Lit, Urb	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ginis	Y	Y	Y	Y	Y	Y	Y	Y	Y

- Contemporaneous Relation Reflected For Different Lags

	[1] Cas-2	[2] Cas-1	[3] Cas	[4] Cas+1	[5] Cas+2	[6] Cas+3
H exp	0.98	0.10	-0.11	***-6.83	***-11.11	***-10.23
	(0.687)	(0.968)	(0.959)	(0.003)	(0.000)	(0.001)
M exp	-0.15	-0.68	*2.36	***4.67	***6.40	***8.32
	(0.915)	(0.624)	(0.085)	(0.001)	(0.000)	(0.000)
Pop	5.18	7.36	**7.84	3.90	5.47	4.48
	(0.187)	(0.117)	(0.018)	(0.507)	(0.385)	(0.410)
RelPol	-2.35	-0.87	**5.99	**5.63	**5.70	***6.40
	(0.440)	(0.786)	(0.038)	(0.038)	(0.038)	(0.008)
BJP	Y	Y	Y	Y	Y	Y
Lit, Urb	Y	Y	Y	Y	Y	Y
Ginis	Y	Y	Y	Y	Y	Y

- See paper for other variations, e.g:
  - lagged conflict as regressor, political controls, urban only.

Endogeneity

- Reverse causation? Anecdotal evidence on who suffers:
- 1985–1987 526 Hindu-Muslim incidents in 10 states.
- Muslims were 12% of the population, but suffered
  - 60% of the 443 deaths
  - 45% of the 2667 injuries
  - 73% of the estimated property damage
  - from Wilkinson (2004), who quotes the 9th and 10th *Annual Reports of the Minorities Commission* (1988 and 1989).

- [Previous regression on different lags in line with this]

- Omitted Variables? Possible concerns.
  - Gulf funding of conflict
  - Income changes driven by recovery from past conflict
- Instrument: Occupational Groupings
  - 18 broad occupational categories from the NSS.
  - Construct average returns for Hindus and Muslims in each.
  - Use NSS national expenditure averages to do this.
  - Use regional employment to get H- and M-indices by region.
  - Discussion: category breadth and the exclusion restriction.

IV regressions with H- and M- indices

	First Stage			Second Stage		
	Cas	Kill	Riot	Cas	Kill	Riot
M/H ind	***0.78	***0.78	***0.76			
	(0.001)	(0.001)	(0.002)			
M/H exp				***26.83	***24.97	***16.59
				(0.004)	(0.006)	(0.010)
Pce	*-0.59	*-0.60	*-0.54	13.99	14.79	7.21
	(0.079)	(0.082)	(0.089)	(0.131)	(0.115)	(0.188)
Pop	-0.16	-0.17	-0.22	3.81	1.71	3.40
	(0.453)	(0.445)	(0.311)	(0.651)	(0.818)	(0.528)
RelPol	**-0.47	**-0.48	*-0.41	12.24	10.78	5.40
	(0.046)	(0.042)	(0.087)	(0.174)	(0.195)	(0.348)
BJP	Y	Y	Y	Y	Y	Y
Lit, Urb	Y	Y	Y	Y	Y	Y
Ginis	Y	Y	Y	Y	Y	Y

A General Malaise?

- A counter-view:
  - Relative rise in Muslim income just a proxy for overall Hindu stagnation.
  - Could imply an increase in social unrest quite generally
  - (not just in Hindu-Muslim conflict)
  - Concomitant rise in Hindu-Muslim conflict is just a byproduct
  - Therefore not interpretable as directed violence.
- Test by using GOI dataset on Crime in India
  - Has data on "all riots".

- Effect of group incomes on all riots:

	Fixed	Rand	Fixed	Rand
H exp	**0.74	*0.61		
	(0.011)	(0.074)		
M exp	-0.184	*-0.31		
	(0.318)	(0.068)		
M/H			-0.23	-0.34
			(0.219)	(0.104)
Pop	0.06	-0.17	0.06	-0.16
	(0.912)	(0.746)	(0.913)	(0.732)
Avg. Exp.			*0.51	0.23
			(0.082)	(0.566)
BJP	Y	Y	Y	Y
Lit, Urb	Y	Y	Y	Y
Ginis, Pol	Y	Y	Y	Y
Curr Conflict		Y		Y

A Tentative Conclusion

- On the whole, the evidence suggests that Hindu groups have been the aggressor in Hindu-Muslim violence in India.

- Reiterate: such a conclusion must rest on empirics+theory and cannot be derived from the empirics alone.

- At the same time, the theory does not arise from a vacuum. (Many case studies.)

- No reason to argue that a particular religious group is intrinsically more predisposed to violence.

- Yet particular histories condition subsequent events.

- In another culture, with a different history and a different demography, the outcomes may well have been very different.