

## EC9AA TERM 3: LECTURES ON ECONOMIC INEQUALITY

Debraj Ray, University of Warwick, Summer 2022

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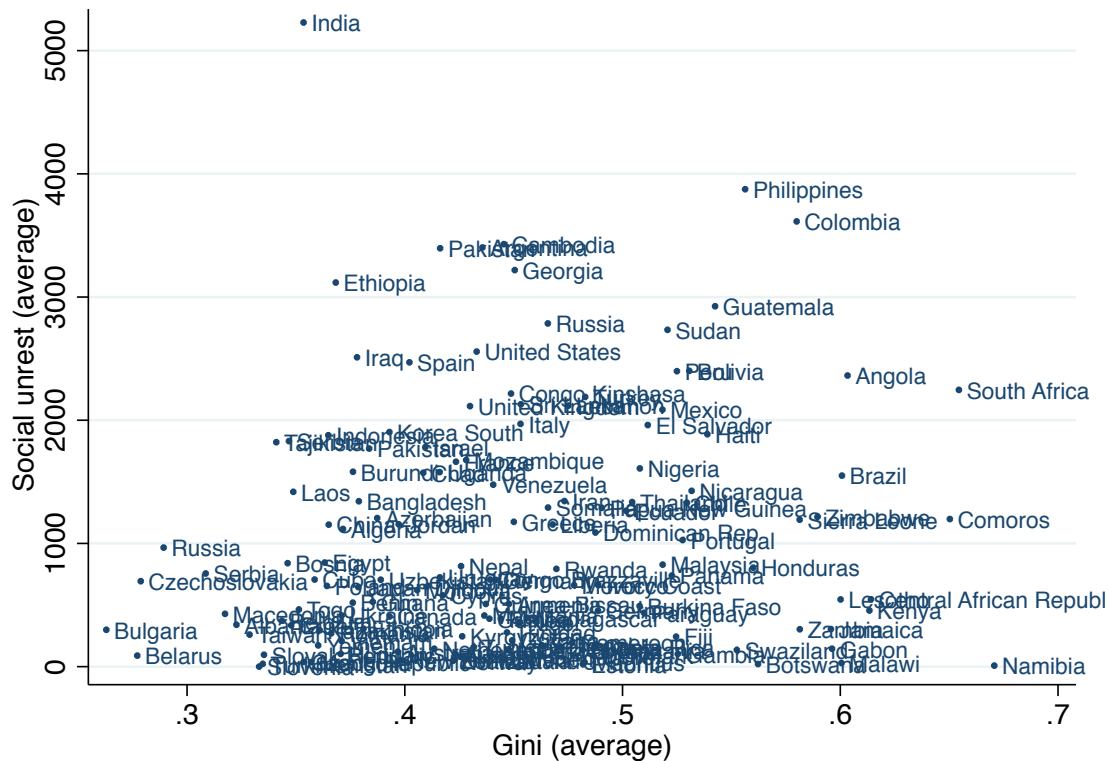
- **Slides 6:** Aspirations and Cross-Group Violence

## BACK TO INEQUALITY AND CONFLICT

(from Esteban-Mayoral-Ray, in prep.)

- Cross National Time Series dataset on 170 countries, 1960–2005.
- *Social Unrest*: Weighted conflict measure based on assassinations, strikes, guerrilla warfare, government crises, purges, riots, revolutions, and anti-government demonstrations.

## THE NON-MONOTONIC RELATIONSHIP BETWEEN INEQUALITY AND CONFLICT



Social Unrest, 1960–2005				
	[1]	[2]	[3]	[4]
GINI	-1369* (0.066)	0.223 (0.849)	***10363 (0.005)	*11.981 (0.068)
GINI <sup>2</sup>			***-12181 (0.003)	*-12.372 (0.067)
GDP	3.710 (0.982)	-0.422 (0.262)	65.731 (0.701)	-0.341 (0.365)
POP	532.583 (0.162)	0.669 (0.375)	556.606 (0.134)	0.699 (0.340)
DEMOC [POLITY2]	-8.127 (0.415)	-0.012 (0.385)	-10.019 (0.312)	-0.013 (0.336)
LAG	***0.420 (0.000)	***0.000 (0.000)	***0.416 (0.000)	***0.000 (0.000)
C	-4481 (0.407)	2.101 (0.850)	-8024 (0.150)	-1.784 (0.871)
Estimation	OLS	Neg. Bin	OLS	Neg. Bin

2

## COEFFICIENT MAGNITUDE

- 1st → 25th Gini %-tile:

social unrest ↑ 34%

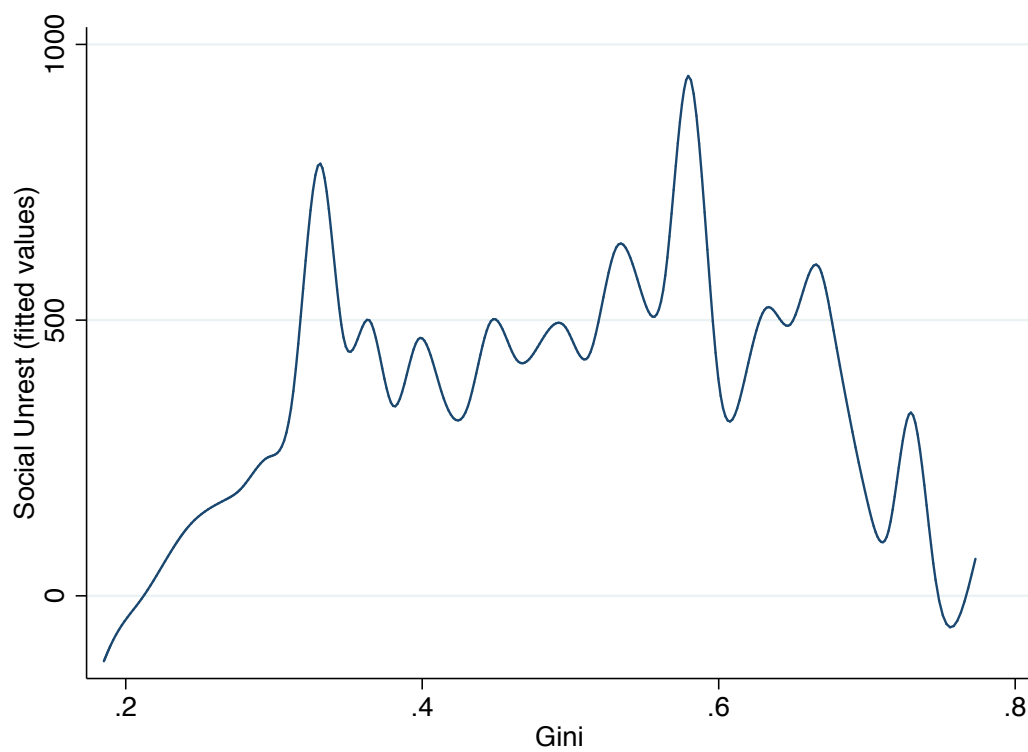
- 75th → 99th Gini %-tile:

social unrest ↓ 72%

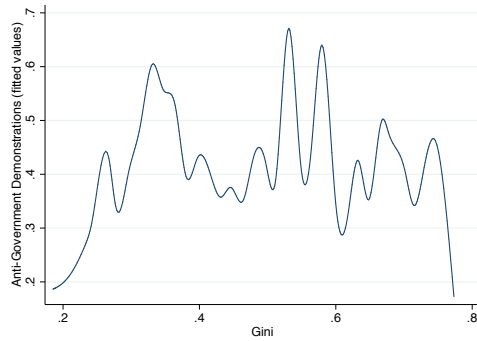
### Components of Social Unrest, 1960–2005

	[1] Guerrilla	[2] Riots	[3] Revolutions	[4] Demos
GINI	**2.992 (0.022)	**8.602 (0.014)	1.456 (0.141)	*7.336 (0.093)
GINI <sup>2</sup>	**−3.759 (0.010)	**−8.234 (0.013)	*−1.822 (0.097)	*−7.971 (0.062)
GDP	−0.036 (0.543)	−0.012 (0.951)	−0.006 (0.904)	0.239 (0.292)
POP	−0.129 (0.360)	0.610 (0.125)	0.087 (0.387)	***1.114 (0.001)
DEMOC [POLITY2]	−0.004 (0.384)	−0.006 (0.515)	−0.002 (0.447)	***−0.043 (0.002)
Lag	✓	✓	✓	✓
C	1.618 (0.399)	−6.942 (0.279)	−1.275 (0.384)	**−9.647 (0.041)
Country FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
R <sup>2</sup>	0.296	0.405	0.341	0.365
Obs	3360	3360	3358	3274

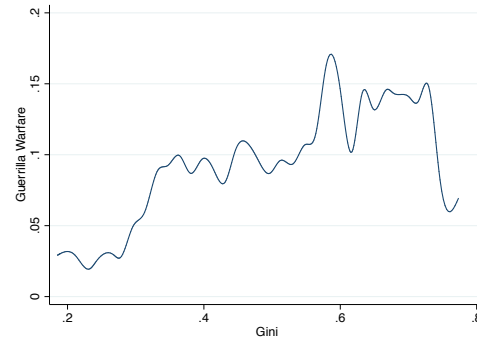
### SOCIAL UNREST



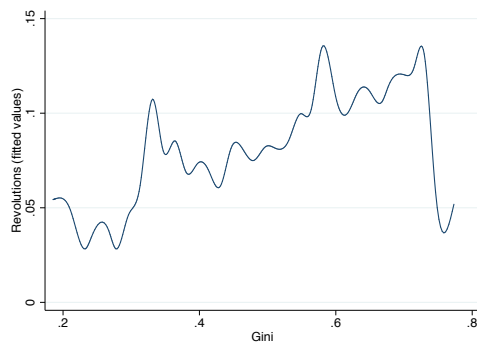
### DEMONSTRATIONS



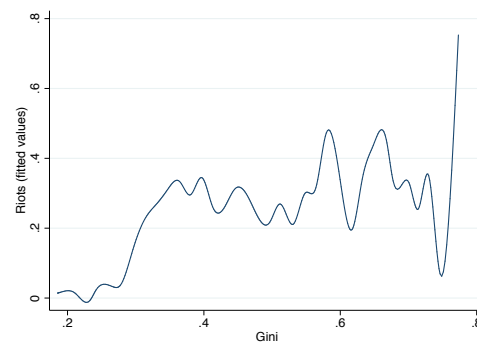
### GUERRILLA WARFARE



### REVOLUTIONS



### RIOTS



## WHY INEQUALITY HAS COMPLEX EFFECTS ON CONFLICT

- **The Grabbing and Opportunity Cost Effects** Dube-Vargas 2013, Mitra-Ray 2014
  - An increase in rival income increases violence directed against rival group.
  - An increase in own income reduces violence directed against rival group.
- **Who Attacks? The Ambiguity of Inequality** Mitra-Ray 2014, 2019
  - A deprived group can catch up, resulting in attacks *on* them.

## WHY INEQUALITY HAS COMPLEX EFFECTS ON CONFLICT

- **Orthogonal Responses to Inequality** Genicot-Ray 2020
  - High inequality  $\Rightarrow$  shift to secondary goals (e.g. religious dominance)
- **Motive Versus Means** Esteban-Ray 2008, 2011, Huber-Mayoral 2014
  - The class marker is a two-edged sword:
    - it breeds resentment, but harder for the poor to revolt
- **Within- vs Cross-Group** ethnic division  $\Rightarrow$  perverse synergy of money and labor

## SIMILARITY AND DIFFERENCE

- There are many ways of approaching these phenomena:
  - None in itself fully satisfactory.
  - My focus: the failure of **aspirations**.

## ASPIRATIONS

### The Indian General Elections of 2014

“[The previous term is one] in which growth accelerated, Indians started saving and investing more, foreign investment came rushing in, [and] poverty declined sharply ... [But] growth can also unleash powerful aspirations as well as frustrations, and political parties who can tap into these emotions reap the benefits.”

Ghatak-Ghosh-Kotwal, Economic and Political Weekly, April 19, 2014.

▪ “The French found their position all the more intolerable as it became better.”

de Tocqueville, 1856

### Hirschman's Tunnel



### Social basis for individual preferences:

- Absurd to think about inequality, unrest, conflict, etc. without this.
- The lives of others are on display (on an accelerating treadmill)
- Unclear if such exposure to the lives of others leads to betterment or to despair.

## ASPIRATIONS

- Multidimensional **reference point**:

$$\mathbf{a} = \Psi(\mathbf{y}, F),$$

$\mathbf{y}$  = personal outcomes

$F$  = social distribution of outcomes.

- **Payoffs**:  $\mathbf{a}$  serves as anchor for payoff function:

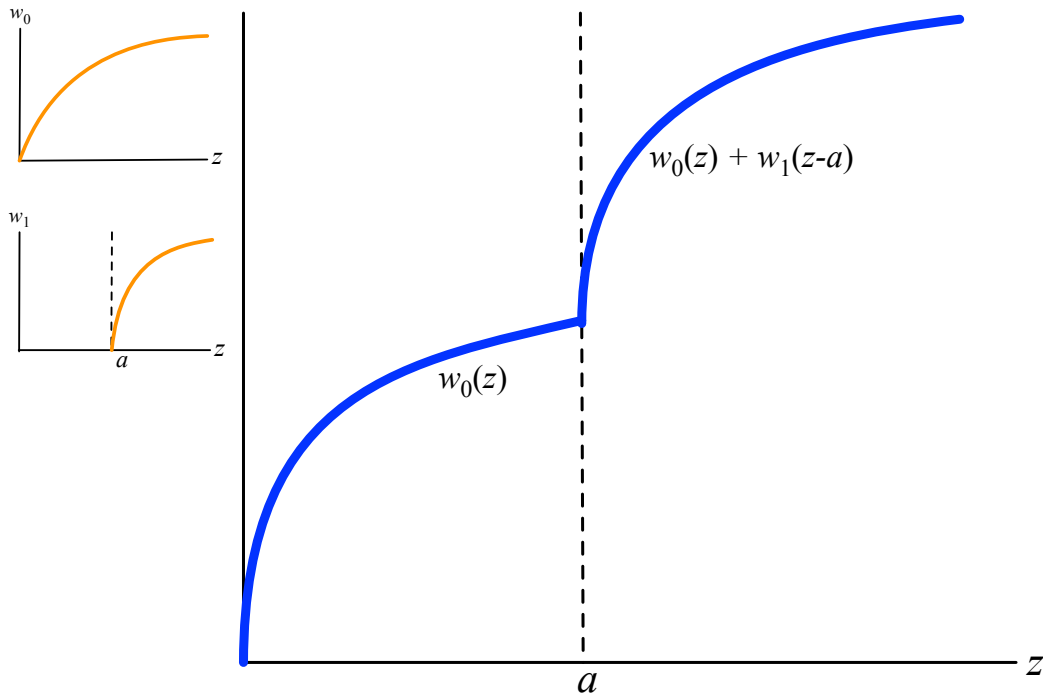
$$u(\mathbf{c}) + w_0(\mathbf{z}) + w_1(\mathbf{e}),$$

- where  $\mathbf{z}$  is future outcome and  $e_k = \max\{z_k - a_k, 0\}$ .
- **2-way**: aspirations  $\longrightarrow$  outcomes  $\longrightarrow$  aspirations.



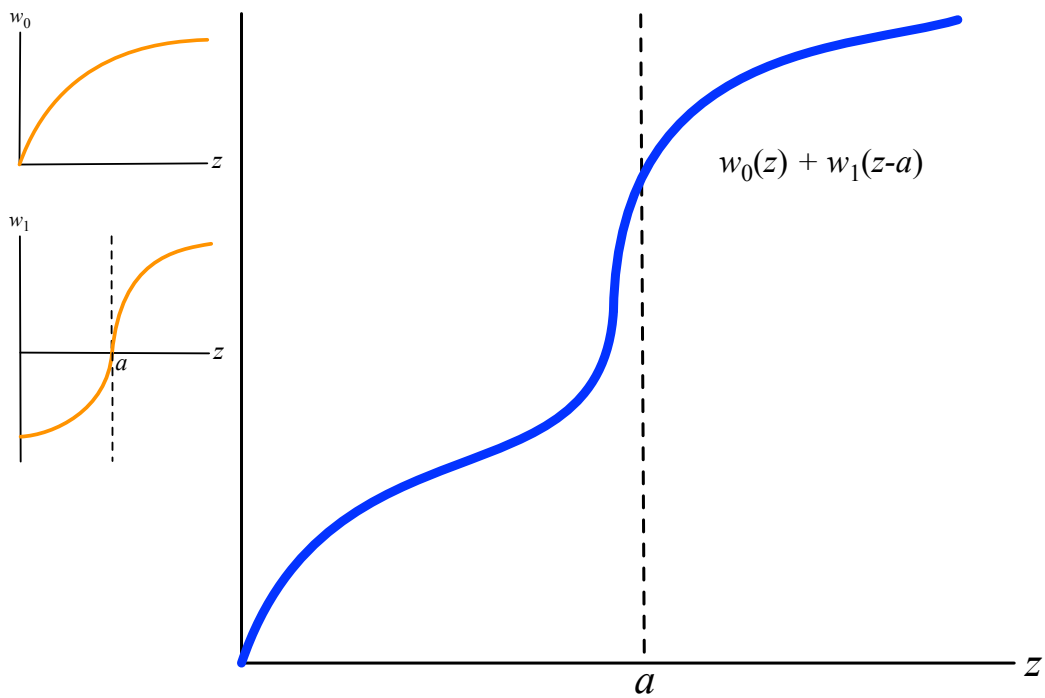
## ASPIRATIONS AS MILESTONES

A single-dimensional illustration:



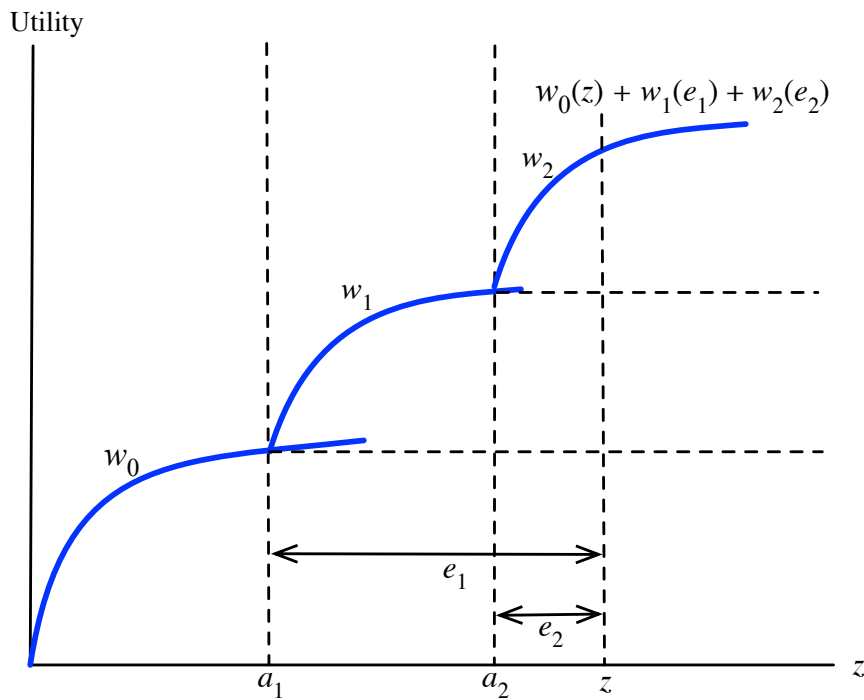
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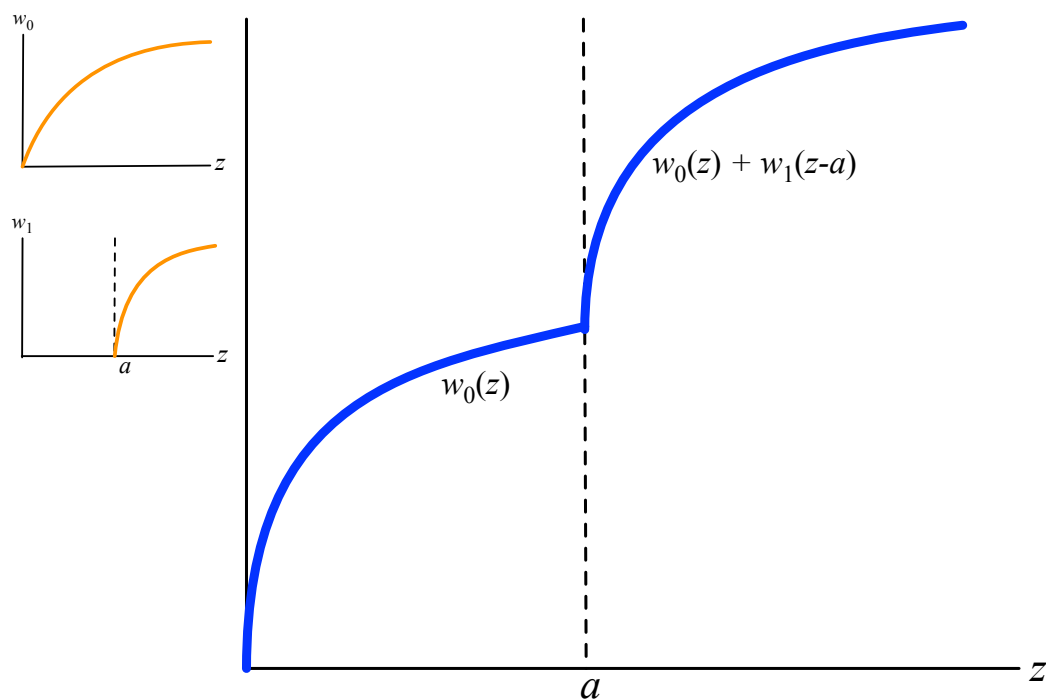
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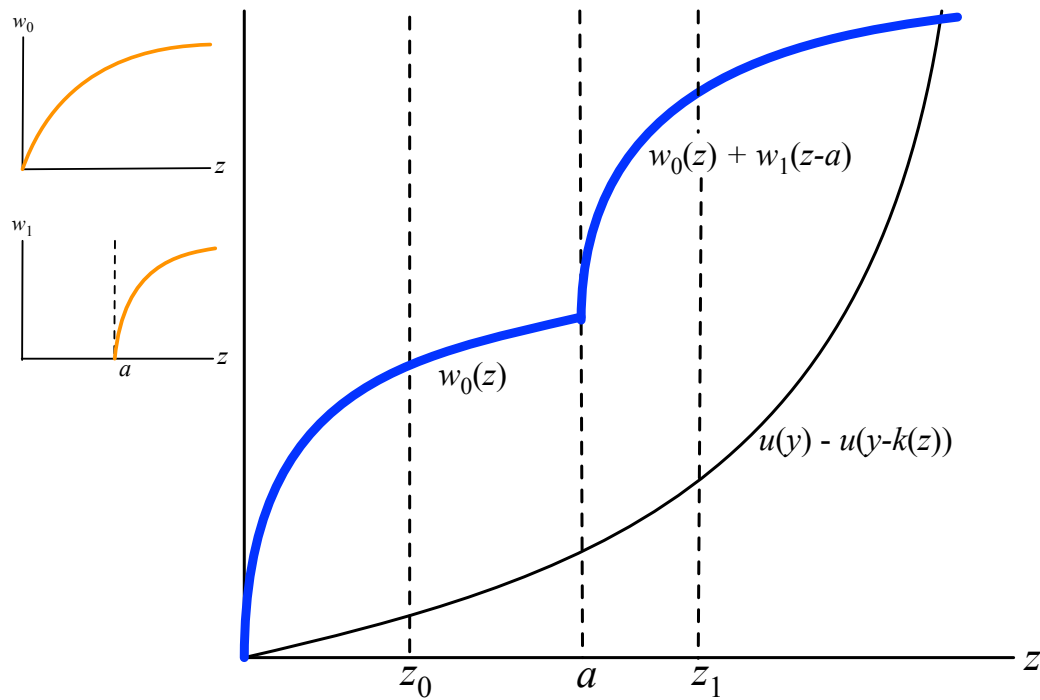
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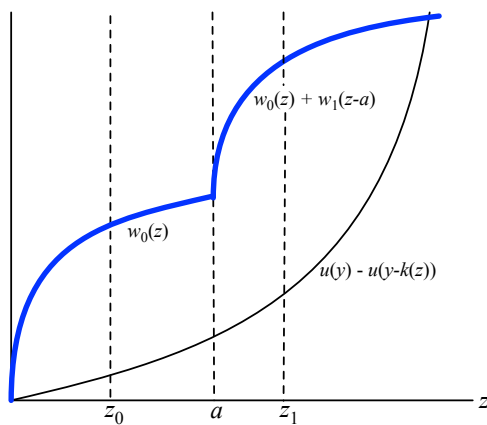
## ASPIRATIONS AS MILESTONES

: A single-dimensional illustration



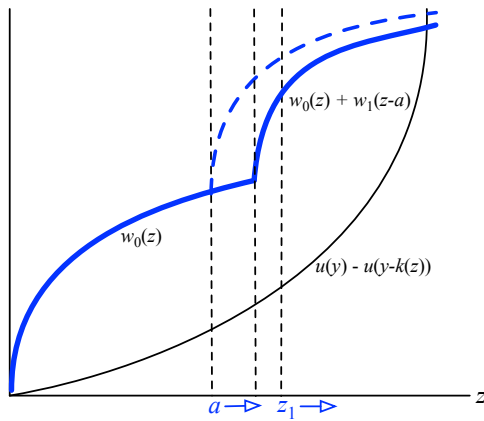
## ASPIRATIONS, INSPIRATION AND FRUSTRATION

■ The milestone nature of aspirations generates sudden tip-overs.



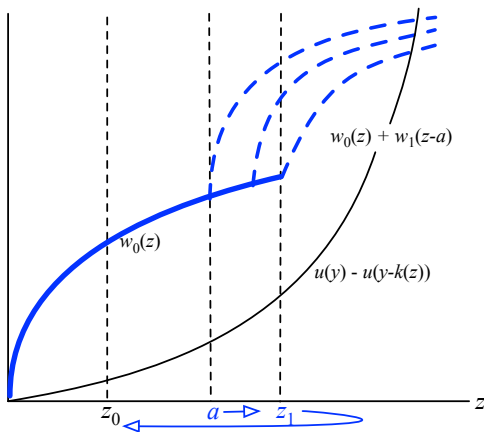
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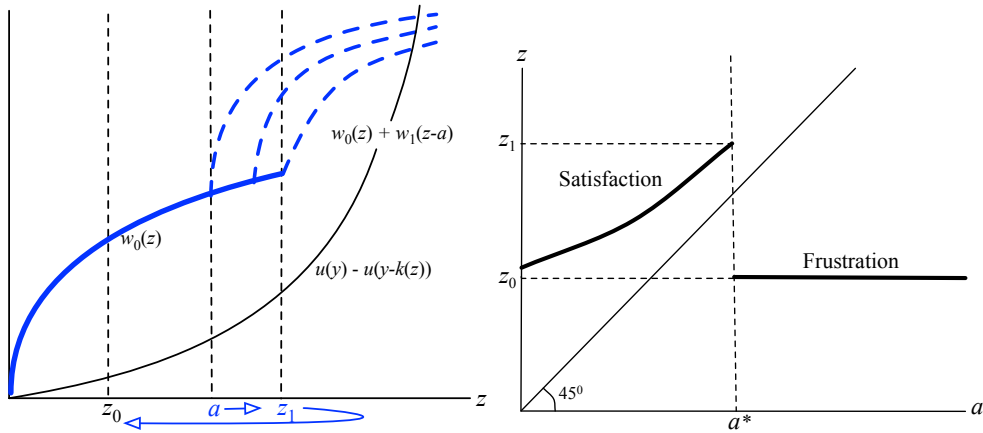
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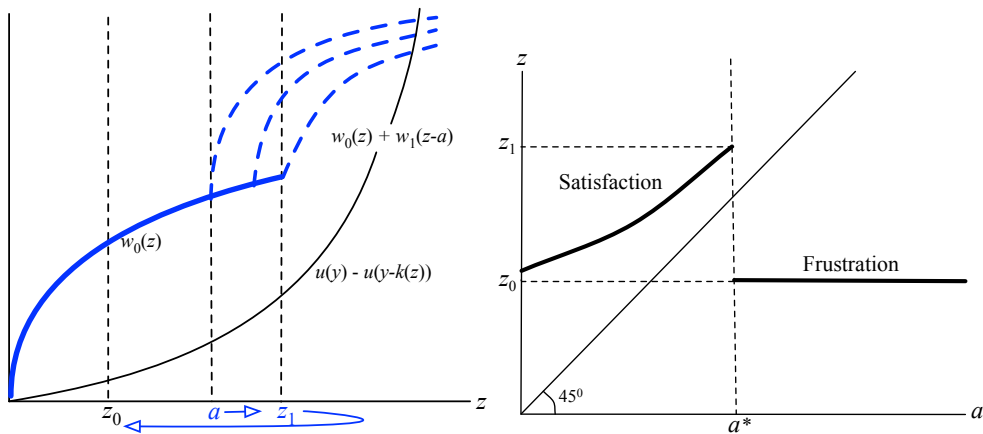
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## ASPIRATIONS, INSPIRATION AND FRUSTRATION

- The milestone nature of aspirations generates sudden tip-overs.



- **Proposition.** For every wealth  $w$ , there is a threshold  $a(w)$  below which aspirations are met, and above which frustrated. When met, investment grows with aspirations. But once frustrated, investment jump *discontinuously* downward and thereafter remain insensitive to or decline with aspirations.

- More generally, aspirations are **multidimensional**.
  - **[individual]**: income, health, education, housing
  - **[collective]**: public goods, power, religious/cultural/ethnic dominance.
- ... and a research program can be built around this framework:
  - **poverty traps** (Appadurai 2004, Dalton et al 2016, Ray 1998, 2006)
  - **growth and inequality** (Bogliacino and Ortoleva 2016, Genicot and Ray 2017)
  - **socio-economic mobility** (Esteban et al 2016)
  - **risk-taking** (Bondi and Ray, in prep.)
  - **doubling-down in the face of bad shocks** (Genicot and Ray 2020)
  - **“appropriate goal-setting”** (Schwenkenberg 2010, Kearney 2016, Besley 2017, Goux 2017)
  - **violent conflict** (Mitra and Ray 2014, Genicot and Ray 2020)

## ON ASPIRATIONS AND CONFLICT

1. Are aspirations determined by our social surroundings, or can we control them?
2. Can we use frustrated aspirations to understand discontent in societies that exhibit rapid changes in per-capita income?
3. **If uneven growth leads to social unrest via the channel of frustrated aspirations, do we expect those frustrations to be directed against those that benefit the most from growth, or against a third party?**
4. Are political leaders who are unable (or unwilling) to control high and rising economic inequality, able to create “second-best” release valves by directing animosities in “orthogonal directions”?

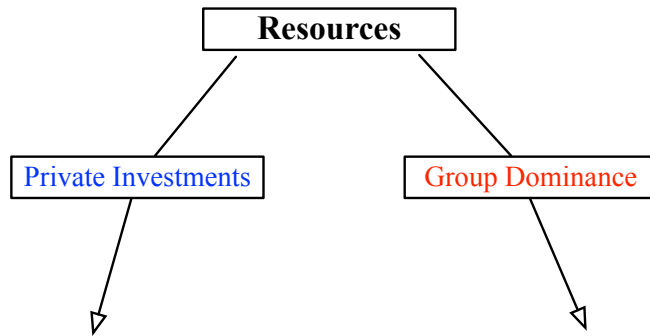
## ORTHOGONAL RESPONSES TO INEQUALITY

- Frustrated aspirations and discontent with growing inequality:
  - Are frustrations directed at beneficiaries, or against third parties?
  - Are political leaders who are unable (or unwilling) to control high and rising economic inequality, able to create “second-best” release valves by directing animosities in “orthogonal directions”?

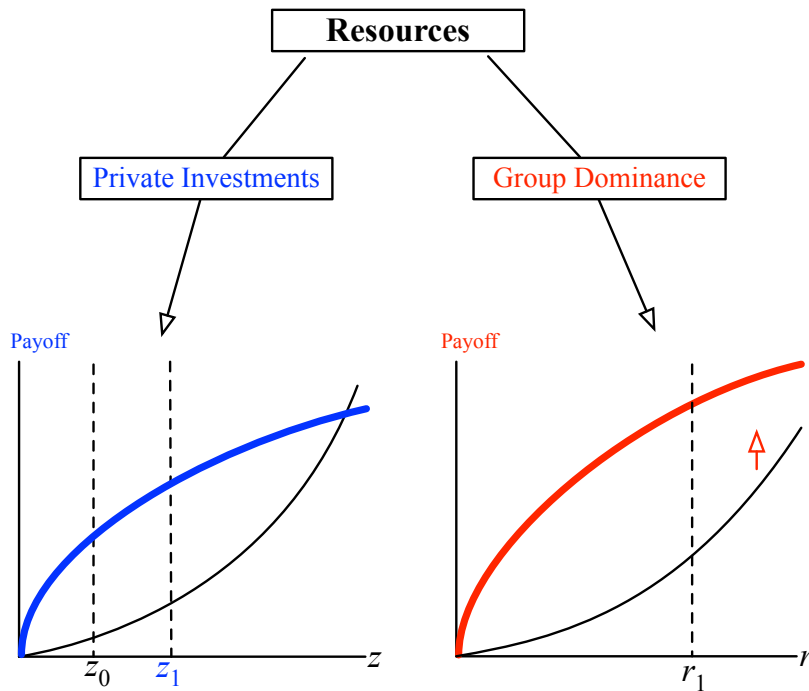
## ORTHOGONAL RESPONSES TO INEQUALITY

- Two-dimensional aspirations:
  - 1: **economic** investments, typically private.
  - 2: **cultural/religious/nationalistic** investments, often group-based.

## ORTHOGONAL RESPONSES TO INEQUALITY

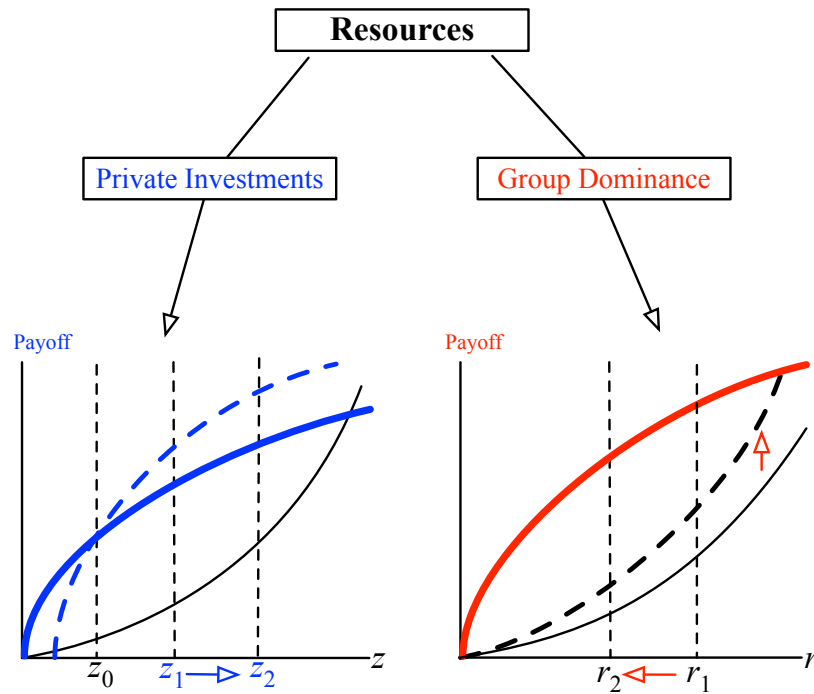


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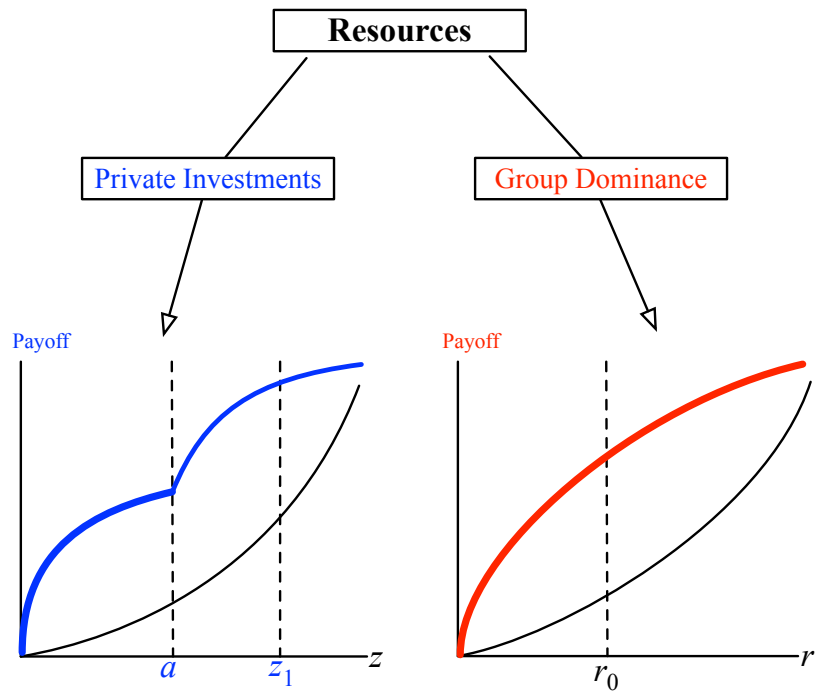




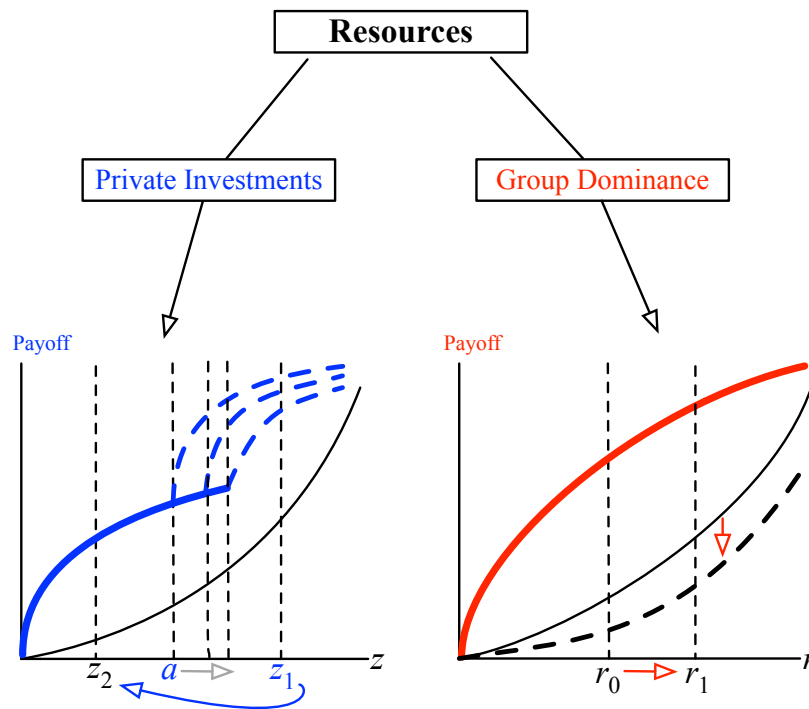
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### Proposition 1

Over the income cross-section, dominance investments initially fall, dropping discontinuously as aspirations switch from failure to success; then rise again.

With high economic inequality, *aggregate* dominance investments rise.

## DISCUSSION

- Why does the aspirations-based model deliver this prediction?
  - In a “concave setting,” an increase in inequality must increase the marginal return to investment, thereby unambiguously *reducing the orthogonal response*.
  - Here, private investment *drops*. The freed-up resources are then deployed “sideways,” towards another, relatively reachable objective.
- Is inequality unambiguous in its effects?
  - No. To some degree, higher inequality will spur more investment of the economic kind. But it must then pass through a phase of “orthogonal collective action.”
  - With extremely high inequality, conflict could fall again owing to income effects.

## AN ILLUSTRATION: HINDU-MUSLIM VIOLENCE

- Recurrent episodes of violence
  - Partition era of the 1940s, and earlier
  - Continuing through the second half of the twentieth century.
- Indian history, and the relative size of Hindu population, suggest:
  - Religion is a highly salient cleavage
  - Hindu groups generally dominant in propagating conflict
- Does economics (or income comparisons) have anything to do with this?

## SOME ETHNOGRAPHIC LITERATURE

- Thakore (1993) on Bombay riots [[land](#)]
- Das (2000) on Calcutta riots [[land](#)]
- Rajgopal (1987), Khan (1992) on Bhiwandi and Meerut riots [[textiles](#)]
- Engineer (1994), Khan (1991) on Jabbalpur, Kanpur, Moradabad [[bidis](#), [brassware](#)]
- Upadhyaya (1992) on Varanasi riots [[sari dealers](#)]
- Wilkinson (2004) on Varanasi [[wholesale silk](#)]
- Field et al (2009) on Ahmedabad [[housing](#)]

### ■ Hindu-Muslim income ratios (NSS exp data):

State	Exp.								
		1983			1987-8			1993-4	
	H/M	Min	Max	H/M	Min	Max	H/M	Min	Max
AP	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
MP	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
UP	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

## SOME ETHNOGRAPHIC LITERATURE

- Bombay riots [[land](#)] (Thakore 1993)
- Calcutta riots [[land](#)] (Das 2000)
- Bhiwandi and Meerut riots [[textiles](#)] (Rajgopal 1987, Khan 1992)
- Jabbalpur, Kanpur, Moradabad riots [[bidis](#), [brassware](#)] (Engineer 1994, Khan 1991)
- Varanasi riots [[sari dealers](#)] (Upadhyaya 1992)
- Varanasi riots [[wholesale silk](#)] (Wilkinson 2004)
- Ahmedabad [[housing](#)] (Field et al 2009)

### ■ Example: Engineer (1987) on Meerut riots:

“If [religious zeal] is coupled with economic prosperity, as has happened in Meerut, it has a multiplying effect on the Hindu psyche. The ferocity with which business establishments have been destroyed in Meerut bears testimony to this observation. Entire rows of shops belonging to Muslims ... were reduced to ashes.”

### ■ And yet...

#### ■ Wilkinson (2004):

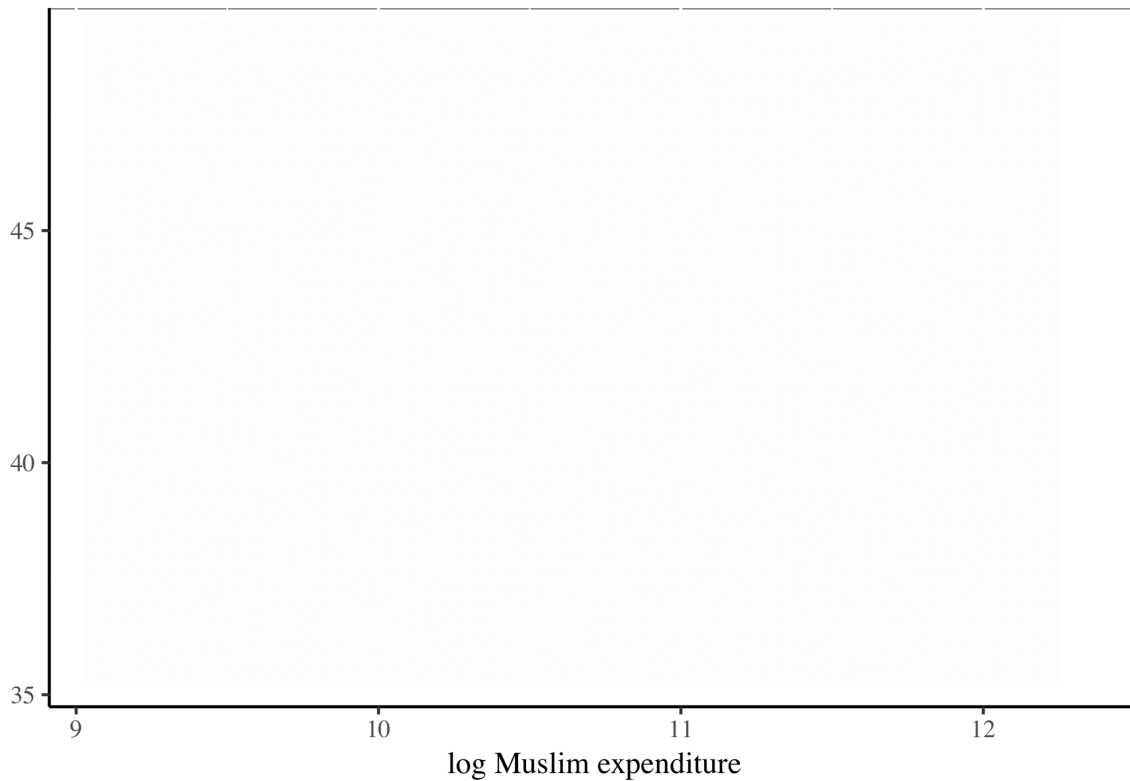
“Despite the disparate impact of riots on Hindus and Muslims, however, little hard evidence suggests that Hindu merchants and financial interests are fomenting anti-Muslim riots for economic gain...”

#### ■ Horowitz (2001, p. 211):

“The role that commercial competition is said to play is said to be a covert, behind-the-scenes role, which makes proof or disproof very difficult.”

## DATA

- **Conflict data.** Varshney-Wilkinson (TOI 1950-1995)
  - our extension (TOI 1996-2000).
  - extension by Iyer et al (TOI 2001-2010)
- **Income data.** NSS consumer expenditure data.
  - Rounds 38 (1983), 43 (1987-8), 50 (1993-94), 55 (1999-2000), 61 (2004-2005).
- **Controls:**
  - Various sources, in particular Reports of the Election Commission of India.
- **Five-period panel** at the regional level; 55 regions.
  - Poisson, negative binomial, OLS.





■ Casualties, 5-Year Average Starting Just After

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

■ Muslim exp  $\uparrow$  1%  $\Rightarrow$  Cas  $\uparrow$  3-5%.

Hindu exp  $\uparrow$  1%  $\Rightarrow$  Cas  $\downarrow$  -7- -3%.

## VARIATIONS

- Other measures of conflict (number of riots, killed)
- Three-period, five-period panel
- Urban alone, Ahmedabad included or excluded, BJP seatshare
- The use of Hindu-Muslim expenditure *ratios*.
- Examination of the lag structure.
- Political controls
- Endogeneity (instrument H-M exp ratio by national returns to occupations)
- Ruling out other interpretations; e.g., funding.
- Different regression specifications





## VARYING LAGS

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

## ENDOGENEITY

- **Reverse causation?** Anecdotal evidence on who suffers:
  - [Wilkinson 2004] 1985–1987: Muslims were 12% of the population, but suffered
    - 60% of the 443 deaths
    - 45% of the 2667 injuries
    - 73% of the estimated property damage
- **Omitted Variables?**
  - Gulf funding of conflict (via remittances)
  - Income recovery from past conflict

## ENDOGENEITY

### ■ Instrument: [Occupational Groupings](#)

- 18 broad occupational categories from the NSS: (1) Agricultural Production and Plantations, (2) Livestock Production, (3) Fishing, (4) Mining and Quarrying (Coal; Crude Petrol and Natural Gas; Metal Ore; Other), (5) Manufacture of Food Products and Inedible Oils, (6) Manufacture of Beverages, Tobacco and Tobacco products, (7) Manufacture of Textiles (Cotton; Wool, Silk, Artificial; Jute, Veg. Fibre; Textile Products), (8) Manufacture of Wood and Wooden Products, (9) Manufacture of Paper, Paper Products, Publishing, Printing and Allied Industries, (10) Manufacture of Leather, and of Leather and Fur Products, (11) Manufacture of Rubber, Plastic, Petroleum, Coal ; Chemicals and Chemical Products, (12) Manufacture of Non-Metallic Mineral Products, (13) Basic Metal and Alloy Industries, (14) Manufacture of Metal Products and Parts, except Machinery and Transport Equipments, (15) Manufacture of Machinery, Machine Tools and Parts except Electrical Machinery, (16) Manufacture of Electrical Machinery, Appliances, Apparatus and Supplies and Parts, (17) Manufacture of Transport Equipments and Parts and (18) Other Manufacturing Industries.

## ENDOGENEITY

### ■ Instrument:

- Construct average *national* returns for Hindus and Muslims in each category.
- Use NSS [national](#) expenditure averages to do this.
- Use [regional](#) employment to get H- and M-indices by region.

## IV REGRESSIONS WITH H- AND M-INDICES

	First Stage			Second Stage		
	Cas	Kill	Riot	Cas	Kill	Riot
M/H ind	***0.78 (0.001)	***0.78 (0.001)	***0.76 (0.002)			
M/H				***26.83 (0.004)	***24.97 (0.006)	***16.59 (0.010)
Pce	*-0.59 (0.079)	*-0.60 (0.082)	*-0.54 (0.089)	13.99 (0.131)	14.79 (0.115)	7.21 (0.188)
Pop	-0.16 (0.453)	-0.17 (0.445)	-0.22 (0.311)	3.81 (0.651)	1.71 (0.818)	3.40 (0.528)
RelPol	** -0.47 (0.046)	** -0.48 (0.042)	* -0.41 (0.087)	12.24 (0.174)	10.78 (0.195)	5.40 (0.348)
GiniH	***-1.29 (0.002)	***-1.28 (0.003)	***-1.37 (0.001)	1.82 (0.921)	8.22 (0.593)	1.10 (0.928)
GiniM	***2.77 (0.000)	***2.79 (0.000)	***2.77 (0.000)	** -67.18 (0.031)	** -72.74 (0.015)	** -44.73 (0.033)
BJP	Y	Y	Y	Y	Y	Y
Lit, Urb	Y	Y	Y	Y	Y	Y

## A GENERAL MALAISE?

- A counter-view:
  - Rise in Muslim income just a proxy for overall Hindu stagnation.
  - Could imply an increase in social unrest quite generally
  - Therefore not interpretable as **directed** violence.
- Test by using GOI dataset on Crime in India
  - Has data on “all riots”.
  - (Doesn’t publish data on religious violence!)

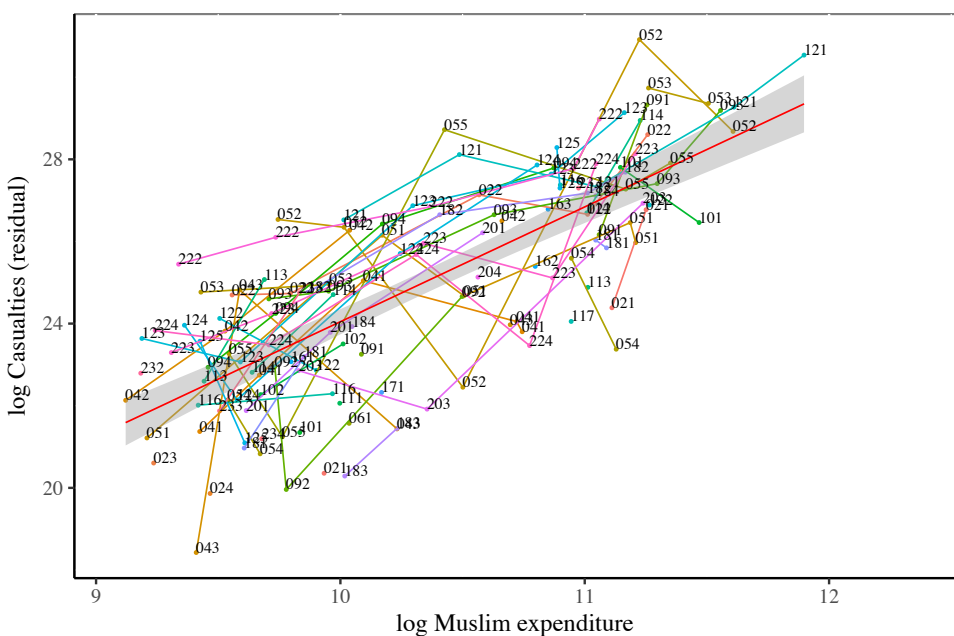
## A GENERAL MALAISE?

### Placebo using all conflict:

	[1] Poisson	[2] Poisson	[3] Neg. Bin.	[4] Neg. Bin.	[5] OLS	[6] OLS
HExp	***0.75 (0.007)		-0.53 (0.448)		0.37 (0.467)	
MExp	-0.19 (0.301)		-0.12 (0.607)		-0.12 (0.617)	
M/H		-0.23 (0.202)		-0.09 (0.702)		-0.12 (0.642)
Pce		*0.52 (0.072)		-0.68 (0.243)		0.39 (0.287)
Pop	0.06 (0.910)	0.06 (0.912)	0.50 (0.221)	0.52 (0.149)	0.73 (0.314)	0.70 (0.336)
RelPol	*-0.64 (0.051)	*-0.62 (0.056)	0.20 (0.721)	0.17 (0.744)	0.12 (0.839)	0.14 (0.815)
GiniH	** -1.63 (0.046)	*-1.56 (0.058)	0.85 (0.594)	0.84 (0.562)	0.19 (0.902)	0.14 (0.928)
GiniM	-0.74 (0.307)	-0.76 (0.293)	0.35 (0.717)	0.36 (0.671)	0.61 (0.441)	0.55 (0.495)
Lit, Urb	Y	Y	Y	Y	Y	Y

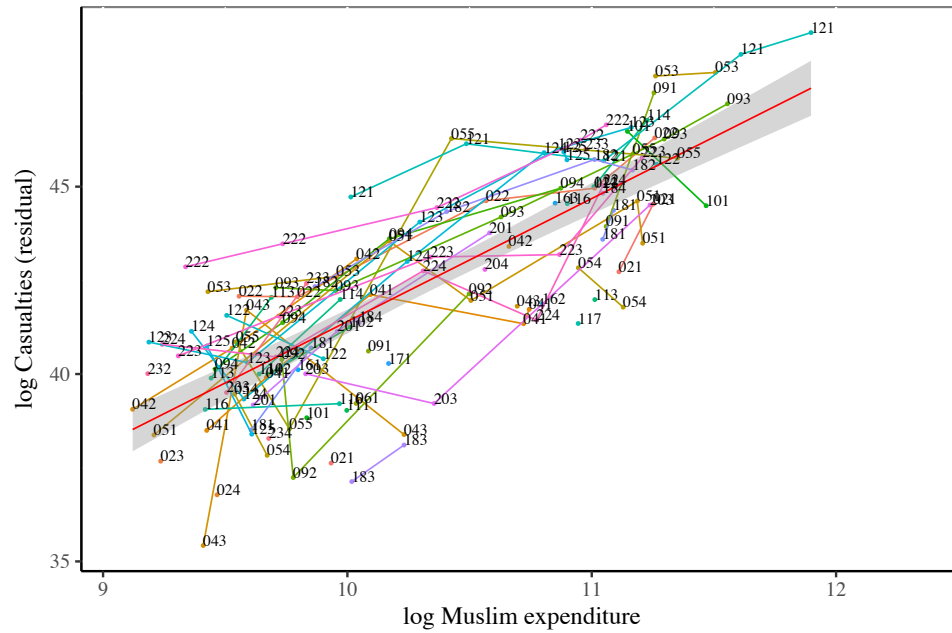
### EXTENSION TO POST-GUJARAT, WITH DATA TILL 2010

Muslim expenditure; all regions



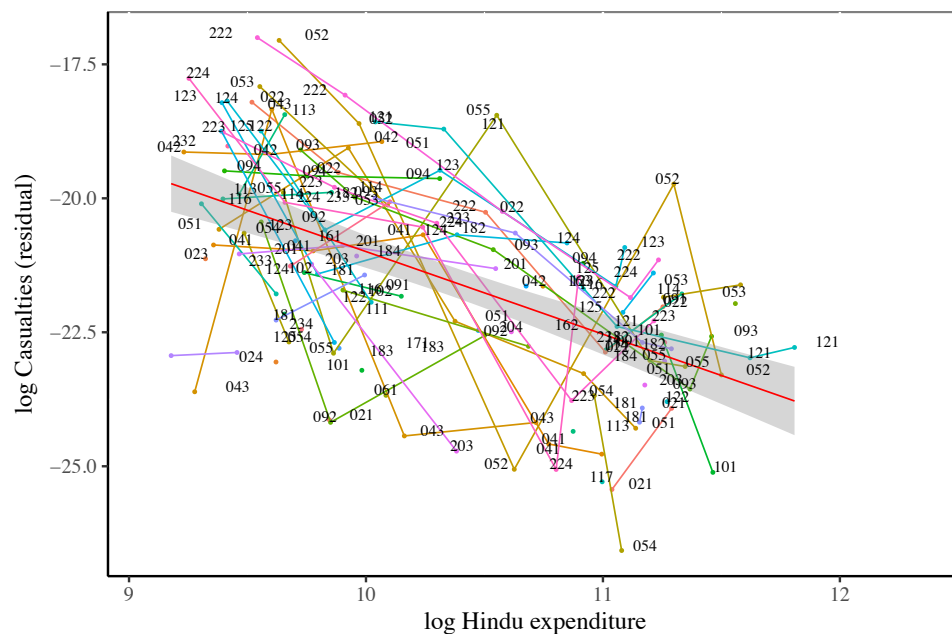
## EXTENSION TO POST-GUJARAT, WITH DATA TILL 2010

Muslim expenditure; Ahmedabad excluded



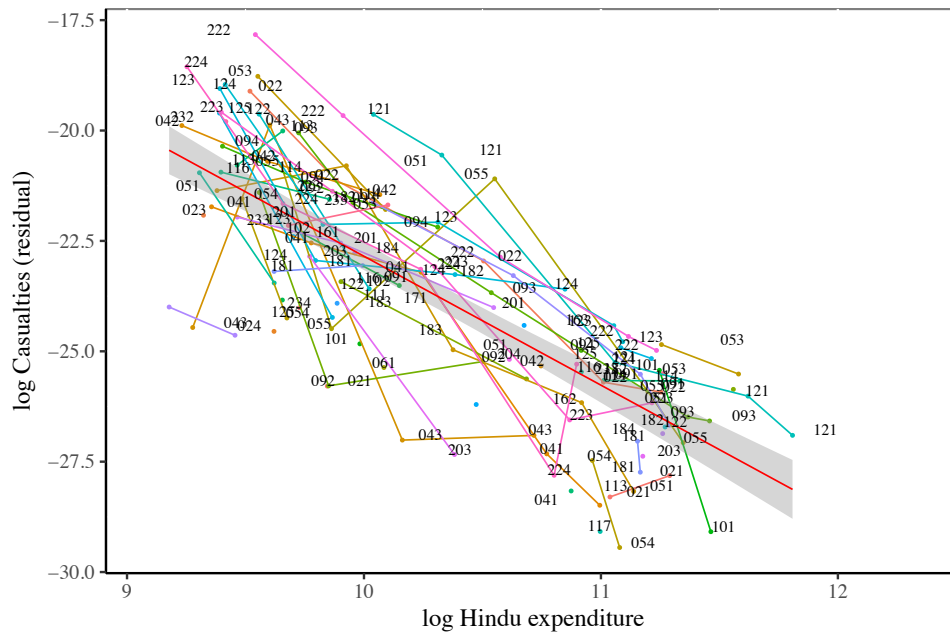
## EXTENSION TO POST-GUJARAT, WITH DATA TILL 2010

Hindu expenditure; all regions



### EXTENSION TO POST-GUJARAT, WITH DATA TILL 2010

Hindu expenditure; Ahmedabad excluded



- 5-period Poisson FE (urban hh, excluding region containing Ahmedabad)

	[1]	[2]	[3]	[4]	[5]	[6]
H pce	***-3.420 (0.007)	***-4.076 (0.003)	** -3.460 (0.015)			
M pce	**1.662 (0.027)	**1.793 (0.025)	*2.010 (0.053)			
M/H				***1.874 (0.008)	***2.097 (0.003)	**2.051 (0.019)
Average Per-Capita Exp.				** -2.266 (0.027)	** -2.772 (0.023)	-2.419 (0.139)
Pop	0.240 (0.831)	1.141 (0.294)	1.156 (0.281)	0.333 (0.768)	1.246 (0.249)	1.251 (0.241)
RelPol	**2.306 (0.038)	***3.745 (0.000)	***3.732 (0.000)	*2.122 (0.070)	***3.551 (0.000)	***3.574 (0.001)
Primary Edu.		***0.087 (0.006)	***0.087 (0.007)		***0.088 (0.005)	***0.089 (0.005)
Gini H			-2.213 (0.520)			-1.699 (0.593)
Gini M			-1.406 (0.551)			-0.317 (0.896)
BJP LS seatshare	**1.260 (0.037)	***1.637 (0.003)	***1.621 (0.003)	**1.319 (0.032)	***1.705 (0.002)	***1.710 (0.002)
Log-Likelihood	-4,875.09	-4,361.15	-4,325.55	-4,784.98	-4,259.42	-4,247.07
Number of observations	224	224	224	224	224	224