

# Group Conflict: the effects and the origin

## Lecture No. 14

### Idea:

- One of the most influential views of our time attributes a large part of the failure of development in the post-WWII period to “group conflicts”
- Very broadly: efficient policies do not get adopted when there are differences between beneficiary groups:
  - castes, ethnic, linguistic, religious groups, etc.
- Related but different literature focuses on “class conflicts”
  - The defining feature of groups - income



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## Road map of the lecture

- The effects of group conflicts
  - Different channels
    - Differences in preferences or not?
- Origins of group conflicts
  - Politics
  - Economics

## Channels:

### Violence:

- Diversity leads to violent conflicts—destructive (Easterly-Levine)

### Tastes:

- People with different tastes find it difficult to compromise on some public good (Alesina, Baqir, Easterly)

### Public action:

- People of different groups do not like to mix, so they participate less in social activities (Alesina-La Ferrara)

### Valuation of public goods:

## Evidence: Easterly and Levine (QJE 1997)

### “Africa’s Growth Tragedy” E&L

- The standard cross-country growth regressions with ethnic fractionalization as an additional regressor.
- Ethnic fractionalization measured as the probability that two people from the same country are not from the same group.
- The results:
  - Significant negative effect
  - Going from 0 fractionalization to 100% fractionalization reduces growth by about 1.5-2 percentage points after controlling for period dummies and dummies for Sub-Saharan Africa, Latin America
  - The main variation both in growth and in ELF is between SSA and the rest of the world

# Interpretation of E&L

Obvious problems:

- Omitted variables
  - Other kinds of group conflict
    - In Rwanda the colonial administration privileged one group against the other for political reasons and as a result they started to see themselves as distinct entities, while before they saw themselves as more or less interchangeable. So the ethnic fractionalization variable may be picking up inequality in the distribution of economic opportunities.
  - A country with poor roads may have more diversity because there is less inter-marriages., etc.
  - Introverts do not need roads and do not care if there is ethnic fractionalization because they do not socialize.
- Reverse causality
  - Economic or policy success could attract immigrants and increase diversity
  - The index is from the early 1960s, unless, there is persistence both in incomes and ETHNIC, there is no reverse causality
- Another big x-country regression: corruption on ELF (Mauro 1995)

## Evidence: Alesina, Baqir and Easterly (QJE 1999)

“Public Goods and Ethnic Divisions” ABE

- Study the same issue in the within-country context, using US cities, metropolitan areas, counties as their sample.
- They regress spending on various public goods on ethnic diversity and controls.
- The results:
  - The share of spending on sewerage/trash pickup, education, welfare, fire protection and roads goes down with diversity but spending on health and police goes up.
  - The most diverse places will spend of the order of 6-7% less on roads.

The same problems:

- Are we sure that this is not income inequality?
- How do we know that it is not taste for diversity and for public goods rather than conflict between tastes?
- How do we know, there is no reverse causality?

Thus, there is a need to test for the channels directly, this is what the literature is focusing on now...

## Channel: Public action and participation

- Alesina and La Ferrara:
  - “Participation In Heterogeneous Communities” QJE 2000
  - “Who Trusts Others?” JPubE 2002
- People of different groups do not like to mix, so they participate less in social activities and trust representatives of the other groups less
  - Participation in social activities and trust are lower in more unequal and racially or ethnically fragmented communities
    - Harder to focus on the good equilibria of the folk theorem
  - The effect is stronger for those who declare that they dislike racial mixing
    - This is an attempt to take care of the alternative story of Tiebout sorting
    - Yet, it is not clear what is different in tastes for sewage and why there is so much social interaction needed to fix it...

## Channel: Valuation of public goods

“Community Composition and Collective Action: Analyzing Initial Mail Response to the 2000 Census” by Jacob Vigdor (REStat 2004)

- People are more altruistic towards people of their own group
- They value public goods more if they are consumed by people from their own group compared to if they are consumed by representatives of other groups
- Evidence: completing and returning the 2000 US Census questionnaire is significantly less frequent in heterogeneous counties
  - Individuals who undertake this action secure \$5,000 in Federal grants for their community over a ten year period (advertised by CB)
  - A very good way to get rid of the main alternative explanation of differences in “tastes” for the levels of PG and heterogeneity (Tiebout sorting), since no collective action needed
  - Yet, evidence could be explained not only by “valuations” but also by ABE, and AL story (with more heterogeneous communities – governments may be less efficient because of the conflict, can steel more)

## Channel: Social Sanctions

### “Ethnic Diversity, Social Sanctions, and Public Goods in Kenya” Miguel and Gugerty JPubE 2005

- People have more leverage on people from their own group. Social sanctions are imposed more effectively within groups than between them.
- No need to assume different tastes for PG in different groups...
- Kenya: ethnically diverse country, where politics has played on and reinforced the sense of ethnic belonging
- How does the extent of heterogeneity around a school or a well affect local fundraising for the school and maintenance of the well?
- Can it be explained by differences in social sanctions?

## Participation and Sanctions

- Two ways to participate in schools
  - School fees
  - “Harambee”: fundraising meetings where parents make public contribution for the school
    - Very important social institution in Kenya
- Sanctions
  - School committee apply pressure on delinquent parents
  - Children sent home for fees

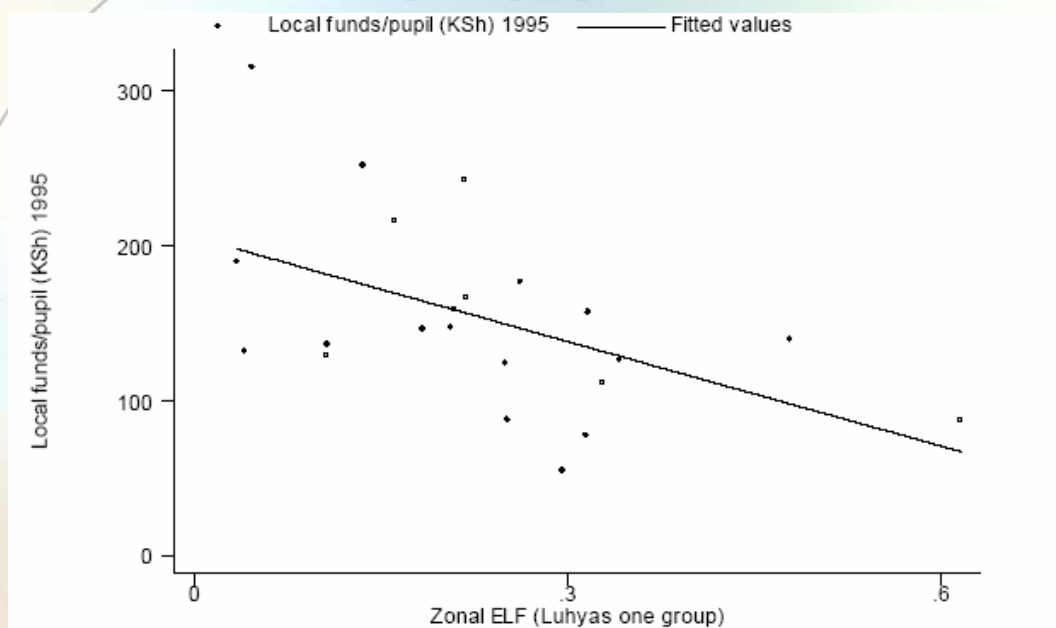
## Data

- A pupil survey collected in the schools as part of an assistance program for the school
- Heterogeneity (2 measures)
  - ELF among children who are in all primary schools within 5 km of the school (or well)
  - ELF in the school zone
- Contribution
  - Total
  - School fees
  - Harambees
- Outcomes
  - State of the well
  - Resources of the school
- Sanctions
  - minutes of school committee: number of item referring to sanctions

## Identification

- Composition of pupils in a school is potentially endogenous, for example, if good school attract pupils from further away
  - M&G argue that residential pattern is exogenous (fixed a long time ago, people do not move because there is no land market)
  - use heterogeneity among pupils who live in the zone of the school (a well) as an IV for pupil heterogeneity
- Remaining potential problems:
  - What if number of schools in a zone is endogenous?
  - Could heterogeneity be endogenous too?

# Funds per pupil and ELF



- Heterogeneity leads to less resources for the school, less repair of the wells

Table 5: Ethnic Diversity and Local Primary School Funding

Explanatory variable	Dependent variable								
	School ELF across tribes (1) OLS	Total local primary school funds collected per pupil in 1995 (Kenyan Shillings)							
	(1) OLS	(2) OLS	(3) OLS	(4) IV-2sls	(5) OLS	(6) OLS	(7) OLS	(8) Spatial OLS	(9) Spatial OLS
<i>Ethnic diversity measures</i>	1st stage								
Zonal ELF across tribes	0.86*** (0.07)		-185.7** (77.9)		-145.2*** (49.6)	-143.6* (82.1)			
School ELF across tribes		-32.9 (64.0)		-216.4** (88.4)					
1 – (Proportion largest ethnic group in zone)							-162.9** (66.6)		
ELF across tribes for all schools within 5 km								-174.0** (76.3)	-174.0** (80.8)
<i>Zonal controls</i>	Going from total homogeneity to average heterogeneity is associated to a reduction of 20% in the funds available to the school								
Proportion fathers with formal employment					189.5 (165.1)	-220.6* (120.5)	184.6 (170.9)		142.8 (167.3)
Proportion of pupils with a latrine at home					-431.6*** (139.9)	-286.3 (228.0)	-429.8*** (150.3)		-466.9 (250.2)
Proportion livestock ownership					120.1 (136.9)	186.2 (130.4)	110.6 (148.3)		116.9 (117.7)
Proportion cultivates cash crop					35.7 (61.4)	22.2 (106.9)	27.8 (62.4)		85.2 (78.4)
Proportion Teso pupils							67.9 (181.4)		
<i>Geographic division indicators</i>	No	No	No	No	No	Yes	No	No	No
Root MSE	0.14	99.8	96.7	105.5	95.0	93.0	95.4	97.1	95.0
R <sup>2</sup>	0.40	0.00	0.06	-	0.14	0.25	0.12	0.06	0.09
Number of schools	84	84	84	84	84	84	84	84	84
Mean dep. variable	0.20	152.6	152.6	152.6	152.6	152.6	152.6	152.6	152.6

Table 7: Other Primary School Outcomes

Dependent variable	Coefficient estimate on zonal residential ELF across tribes (OLS)	Coefficient estimate on ELF across tribes among schools within 5 km (Spatial OLS)	Number of schools	Mean dependent variable
<i>Panel A: Local school funding</i>				
Harambee donations collected per pupil, 1995 (Kenyan Shillings)	-157.1** (61.6)	-182.1** (68.5)	84	44.8
School fees collected per pupil, 1995 (Kenyan Shillings)	11.9 (35.2)	8.1 (64.6)	84	107.8
<i>Panel B: School facilities, inputs</i>				
Desks per pupil, 1996	-0.20** (0.08)	-0.31*** (0.08)	84	0.21
Pupil latrines per pupil, 1996	-0.007 (0.009)	-0.007 (0.013)	84	0.016
Classrooms per pupil, 1996	-0.016 (0.016)	-0.023* (0.013)	84	0.030
School-owned textbooks per pupil, 1996	-0.17 (0.13)	-0.27 (0.17)	84	0.34
Private texts (at home) per pupil, 1996	-0.03 (0.07)	-0.10 (0.09)	84	0.07
Number of other primary schools within 5km	-10.2*** (3.5)	-12.2*** (3.7)	84	14.5
<i>Panel C: Test scores</i>				
Average school score on 1996 NGO exams, grades 3-8 (in standard deviations)	0.10 (0.52)	0.11 (0.52)	84	0.05
Socioeconomic controls (zonal averages)	Yes	Yes		

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Table 8: School committee records and field officer observations

Dependent variable	Coefficient estimate on zonal residential ELF across tribes (OLS)	Coefficient estimate on ELF across tribes among schools within 5 km (Spatial OLS)	Number of schools	Mean dependent variable
<i>Panel A: School Committee Records</i>				
School committee record items regarding sanctions or verbal pressure, 1997	-3.7** (1.6)	-4.2* (2.3)	84	3.2
School committee record items regarding administrative activities, 1997	5.7 (6.1)	6.2 (10.3)	84	18.9
Parent school meetings, 1997	-1.6 (1.1)	-1.3 (1.6)	84	3.4
<i>Panel B: Field Officer Observations</i>				
Parent cooperation from 0 to 1 (reported by field officers), 1998	-0.77*** (0.26)	-0.84** (0.35)	84	0.49
Teacher motivation from 0 to 1 (reported by field officers), 1998	-0.39** (0.17)	-0.49* (0.29)	84	0.54
Socioeconomic controls (zonal averages)	Yes	Yes		

- Sanction more frequent in homogenous communities
  - There is no difference in non-sanction items

# Interpretation

- M&G: it is sanction that matters, not tastes.

Potential problems with that:

- Perhaps, committee is more reluctant to impose sanctions if the tastes are different (sanctions are less legitimate): not a definitive test of “sanctions” against “tastes”.
- Also it could be that sanctions are not recorded in heterogeneous communities

# Channel: Project Returns

- “Can good projects succeed in bad communities?” by Asim Khwaja
- Is it possible to design collective projects that are likely to be successful even in groups with low social capital?
  - Channel linking social heterogeneity (can also be inequality) to maintenance is the ability to appropriate the returns on the project
    - Contributions are costly to verify, so they do not open “rights” to use the project.
    - The claim on the returns on the project depends on social heterogeneity
    - The returns of the project depend on how much corruption there is (complexity, leader and leader quality, community participation, NGO or government).
- Maintenance of infrastructure projects (irrigation and roads) in a poor and remote region of Pakistan (Baltistan)
  - Results suggest that projects are not bound to fail in “bad” communities. Inequality and heterogeneity makes collective action more difficult, but this can be compensated by “good” project’s features

# Where do group conflicts come from?

## Origins of group conflict

- So far, we considered the consequence of group heterogeneity on public good provision and economic performance taking as given:
  - group identity
  - the intensity with which people feel about their group identity
- Chose groups in a specific way:
  - No-one regresses heterogeneity in the haircuts or the type of car people own as a potential determinants of low public action
    - Basques and Catalans feel strongly about their identity (on the Spanish side, in particular)
    - Bretons and Provençals much less
    - While ethnic genetic make-up is given, ethnic belonging is constructed. Need to think about where this is coming from.

# Origin 1: Policy

## “Tribes or Nation” by Ted Miguel (2003)

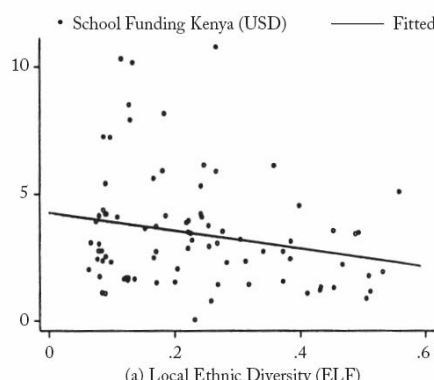
- Observes that Kenya and Tanzania are close, share similar ethnic make-up and geographic conditions and got an arbitrary boundary after independence
- However, Kenya and TZ leaders followed very different policies after independence, especially with regards to ethnic groups
  - Kenya: Kenyatta favored the dominant Kikuyu group, and then Moi favored small groups from the Rift Valley
    - Both played ethnic groups against each other to conserve power.
    - Moi was responsible for ethnic clashes before the 1992 and 1997 elections
  - Tanzania: Nyerere followed a “pan-africanist” nation building policy, along with centralized economic policy. Swahili was promoted. Nation building - high in agenda

# Exogenous boarder

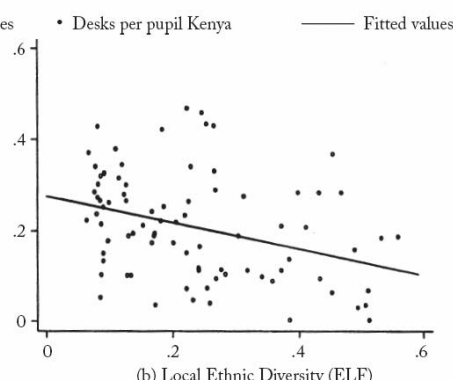


# Hypothesis

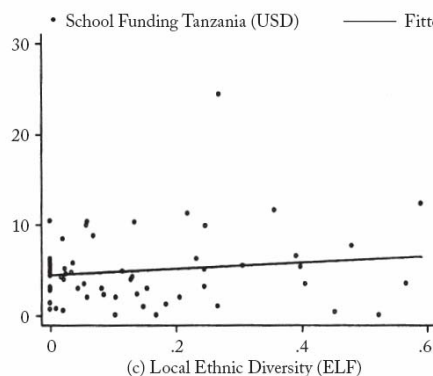
- If nation building policies matter, ethnic diversity should have less of a damaging impact in TZ
- Collect very similar data (schools and wells) to that used in the MG paper, in Meatu district, right across the border, similar ethnic composition and diversity, but slightly poorer
- Expect that when running the same regression as in MG (same identification strategy based on residential settlement), the results would be significantly different
- In practice, run a regression of public goods on ethnic diversity in the zone/village and ethnic diversity interacted with Kenya dummy



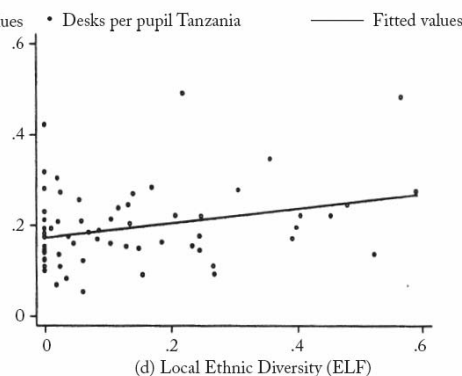
Busia, Kenya: total local primary school funds per pupil (2001 U.S. dollars) in 1995 versus local ethnolinguistic fractionalization



Busia, Kenya: desks per primary school pupil in 1996 versus local ethnolinguistic fractionalization



Meatu, Tanzania: total local school funds per pupil (2001 U.S. dollars) per year in 1997–2002 versus village ethnolinguistic



Meatu, Tanzania: desks per primary school pupil in 2001 versus village ethnolinguistic fractionalization

## Formal results and interpretation

- Effect of diversity in TZ is insignificant, interaction negative in 4 specifications out of 5, and significant only in one (however, coefficients are jointly significantly negative everywhere).
- Other social capital measures: community group membership (Alesina - La Ferrara style) is negative and significant
  - Interpretation is not obvious: only 2 data points
  - Lots of differences between these countries, other than just the ethnic policy
    - E.g., socialist economic policy and centralization in TZ – till recently
    - *Thus, the Kenya-Tanzania comparison provides suggestive evidence that serious nation-building reforms can successfully bridge social divisions and affect important economic outcomes, like public goods provision*

## Origin 2: Economics

- Post September 11, question of whether poverty lead people to extremism has been hotly debated...
- A lot of x-country regressions i.e., Collier and Hoeffler (2000) and Fearon and Laitin (2003)
  - These papers find positive correlation between poverty and inequality and ethnic conflict. [Opportunity cost of time argument.]
  - Usual Problems:
    - Reverse causality and Omitted variables
- Krueger and Maleckova (2002) “Education, Poverty, Political Violence, and Terrorism” use micro data to make the opposite point:
  - Use a sample of 129 Hezbollah militants dead in actions (killed in encounters, suicide bombers, etc...). Biographies are recorded in the newspapers. This sample is compared with a sample of Lebanese of the same age.

	<i>All of Lebanon:</i>				<i>Heavily Shiite Regions:</i>	
	<u>Unweighted Estimates</u>		<u>Weighted Estimates</u>		<u>Weighted Estimates</u>	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-4.886 (0.365)	-5.910 (0.391)	-5.965 (0.230)	-6.991 (0.255)	-4.658 (0.232)	-5.009 (0.261)
Attended Secondary School or Higher (1=yes)	0.281 (0.191)	0.171 (0.193)	0.281 (0.159)	0.170 (0.164)	0.220 (0.159)	0.279 (0.167)
Poverty (1=yes)	-0.335 (0.221)	-0.167 (0.223)	-0.335 (0.158)	-0.167 (0.162)	-0.467 (0.159)	-0.500 (0.166)
Age	-0.083 (0.015)	-0.083 (0.015)	-0.083 (0.008)	-0.083 (0.008)	-0.083 (0.008)	-0.082 (0.008)
Beirut (1=yes)	---	2.199 (0.219)	---	2.200 (0.209)	---	0.168 (0.222)
South Lebanon (1=yes)	---	2.187 (0.232)	---	2.187 (0.221)	---	1.091 (0.221)
Pseudo R-Square	0.020	0.091	0.018	0.080	0.021	0.033
Sample Size	120,925	120,925	120,925	120,925	34,826	34,826

Notes: Sample pools together observations on 129 deceased Hezbollah fighters and the general Lebanese population from 1996 PHS. Weights used in columns (3) and (4) are the relative share of Hezbollah militants in the population to their share in the sample and relative share of PHS respondents in the sample to their share in the population. Weight is 0.273 for Hezbollah sample and .093 for PHS sample.

- Hezbollah militants are not poorer than the rest of the population. If anything they are better educated.

## Problems of interpretation

- Sample selection (fighters who died)
- Richer people may be more likely to become militants, but the popular basis for extreme action may be among poor
- K&M, however, show that support for terrorism also seem to increase with education:

<u>Question</u>		<u>Illiterate</u>	<u>Elementary</u>	<u>Middle</u>	<u>Secondary</u>	<u>Post-Secondary</u>
Q18. Concerning armed attacks against Israeli targets, I....	Support or Strongly Support	72.2%	80.5%	82.1%	86.1%	81.5%
	Oppose or Strongly Oppose	25.9%	17.5%	15.3%	12.0%	13.9%
	No Opinion	1.9%	2.0%	2.6%	1.9%	4.6%

- Paxson's comment on the paper: Lebanon and Palestine situation very specific, since it is already a conflict with camps clearly marked out
  - Northern Ireland in 1968. Support for terrorism negatively correlated with education and income for protestants.
  - Results are not necessarily incompatible: civil war is not the same thing as terrorism

# Improving on the x-country regressions

- Miguel, Satyanath, Sergenti (JPE 2004)  
“Economic Shocks and Civil Conflict: An Instrumental Variables Approach ”
- IV for GDP growth in the African context Use rainfall data (obtained from satellite data) each year
- Rainfall (t)-(t-1) is correlated with GDP growth (t)-(t-1) since vegetation depends on rainfall
- African economies largely depend on Agriculture
- Use growth in rainfall as instrument for GDP

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TABLE 2  
RAINFALL AND ECONOMIC GROWTH (First-Stage)  
Dependent Variable: Economic Growth Rate,  $t$

EXPLANATORY VARIABLE	ORDINARY LEAST SQUARES				
	(1)	(2)	(3)	(4)	(5)
Growth in rainfall, $t$	.055*** (.016)	.053*** (.017)	.049*** (.017)	.049*** (.018)	.053*** (.018)
Growth in rainfall, $t - 1$	.034** (.013)	.032** (.014)	.028** (.014)	.028* (.014)	.037** (.015)
Growth in rainfall, $t + 1$				.001 (.019)	
Growth in terms of trade, $t$					-.002 (.023)
Log(GDP per capita), 1979		-.011 (.007)			
Democracy (Polity IV), $t - 1$		.0000 (.0007)			
Ethnolinguistic fractionalization		.006 (.044)			
Religious fractionalization		.045 (.044)			
Oil-exporting country		.007 (.019)			
Log(mountainous)		.001 (.005)			
Log(national population), $t - 1$		-.009 (.009)			
Country fixed effects	no	no	yes	yes	yes
Country-specific time trends	no	yes	yes	yes	yes
$R^2$	.02	.08	.13	.13	.16
Root mean square error	.07	.07	.07	.07	.06
Observations	743	743	743	743	661

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EXPLANATORY VARIABLE	DEPENDENT VARIABLE: Civil Conflict $\geq 25$ Deaths						
	Probit (1)	OLS (2)	OLS (3)	OLS (4)	IV-2SLS (5)	IV-2SLS (6)	IV-2SLS (7)
Economic growth rate, $t$	-.37 (.26)	-.33 (.26)	-.21 (.20)	-.21 (.16)	-.41 (1.48)	-1.13 (1.40)	-1.48* (.82)
Economic growth rate, $t-1$	-.14 (.23)	-.08 (.24)	.01 (.20)	.07 (.16)	-2.25** (1.07)	-2.55** (1.10)	-.77 (.70)
Log(GDP per capita), 1979	-.067 (.061)	-.041 (.050)	.085 (.084)		.053 (.098)		
Democracy (Polity IV), $t-1$	.001 (.005)	.001 (.005)	.003 (.006)		.004 (.006)		
Ethnolinguistic fractionalization	.24 (.26)	.23 (.27)	.51 (.40)		.51 (.39)		
Religious fractionalization	-.29 (.26)	-.24 (.24)	.10 (.42)		.22 (.44)		
Oil-exporting country	.02 (.21)	.05 (.21)	-.16 (.20)		-.10 (.22)		
Log(mountainous)	.077** (.041)	.076* (.039)	.057 (.060)		.060 (.058)		
Log(national population), $t-1$	.080 (.051)	.068 (.051)	.182* (.086)		.159* (.093)		
Country fixed effects	no	no	no	yes	no	yes	yes
Country-specific time trends	no	no	yes	yes	yes	yes	yes
$R^2$	...	.13	.53	.71	...	...	...
Root mean square error	...	.42	.31	.25	.36	.32	.24
Observations	743	743	743	743	743	743	743

## Potential problems

- Group conflict does not have an effect on rainfall (**no reverse causality**), but...
- Harsh conditions may make policing of conflicts more difficult (**omitted variable**)
- Perhaps, people get into a better mood or do not want to go out when it is raining => both mean less violence... (**direct effect**)

## Improving on the individual-level regressions

- Do shocks to individual or household incomes lead to:
  - Stronger identification with a (potentially radical) group
  - Propensity to justify the religious violence?
- “Poverty and Witch Killing” by Ted Miguel (2005 RES)
  - Use extreme rainfall data to instrument for negative income shocks

## Witch Killing in Tanzania

- Witchcraft beliefs are held widely in SSA
- Most witches are elderly women, though recently children have been also called witches
- Usually killed by their own relatives
- Village level data in 71 villages
  - Retrospective data on calamities (including floods or droughts)
  - Any murder in the village in the past 10 years (and type of murder)
  - Satellite rainfall data (same as before)
- About 1 witch murder per village every 10 years, and the same number of non-lethal attacks

Table 3: Extreme Rainfall and Village Calamities

Explanatory variable	Dependent variable:				
	Annual per capita consumption expenditures (USD)			Famine	Human disease epidemic
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)
Extreme rainfall (drought or flood)	-50.7** (24.8)	-50.1* (26.6)		0.47*** (0.07)	-0.03 (0.04)
Human disease epidemic		4.4 (25.7)		0.04 (0.05)	
Drought			-38.5* (21.3)		
Flood			-74.9 (48.4)		
Average years of education	1.7 (13.0)	1.8 (13.4)	0.0 (12.9)		
Proportion Sukuma ethnic group	-12.0 (63.5)	-12.1 (64.8)	-14.5 (65.3)		
Proportion households grow cash crops	-2.7 (56.2)	-2.9 (56.3)	3.7 (56.2)		
Households per village / 1000	0.07 (0.07)	0.07 (0.07)	0.07 (0.07)		
Proportion practice traditional religions	17.2 (52.5)	17.4 (53.4)	22.7 (52.4)		
Women's community groups per household	2116 (2492)	2083 (2465)	2333 (2571)		
Geographic division fixed effects	Yes	Yes	Yes	No	No
Village fixed effects (67 villages)	No	No	No	Yes	Yes
R <sup>2</sup>	0.14	0.14	0.15	0.26	0.06
Root MSE	81.4	82.1	81.8	0.34	0.37
Mean of dependent variable	196.8	196.8	196.8	0.18	0.15
Number of observations	67	67	67	736	736

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## Reduced form

Table 4: Extreme Rainfall and Witch Murders

Explanatory variable	Dependent variable: Witch murders				
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)
Extreme rainfall (drought or flood)	0.085** (0.042)	0.076** (0.037)	0.098 (0.059)	0.085** (0.042)	0.056 (0.038)
Extreme rainfall, previous year			-0.000 (0.042)		
Extreme rainfall, current year and previous year			-0.032 (0.080)		
Human disease epidemic				-0.006 (0.036)	
Village fixed effects (67 villages)	Yes	No	Yes	Yes	Yes
Socioeconomic controls, and geographic division fixed effects	No	Yes	No	No	No
Year fixed effects (11 years)	No	No	No	No	Yes
R <sup>2</sup>	0.15	0.05	0.16	0.15	0.19
Root MSE	0.32	0.32	0.31	0.32	0.31
Mean of dependent variable	0.09	0.09	0.09	0.09	0.09
Number of observations	736	736	736	736	736

# Other crimes

Table 5: Extreme Rainfall and Violent Crime

Dependent variable	Coefficient estimate on Extreme rainfall (drought or flood)	R <sup>2</sup>
<u>Panel A: Witch Murders and Attacks</u>		
1) Witch murders	0.085** (0.042)	0.15
2) Witch murders per 1000 households	0.173* (0.094)	0.16
3) Witch murders and attacks	0.144* (0.082)	0.11
4) Witch murders and attacks per 1000 households	0.206 (0.162)	0.11
<u>Panel B: Non-witch Murders</u>		
5) Non-witch murders	-0.001 (0.036)	0.11
6) Non-witch murders per 1000 households	-0.01 (0.08)	0.14
<u>Panel C: Total Murders</u>		
7) Total murders	0.100 (0.068)	0.13
8) Total murders per 1000 households	0.125 (0.124)	0.12

# Interpretation

- Author's interpretation: "Das Gupta-Ray Convex nutrition-productivity relationship": as income declines, it is efficient to sacrifice some unproductive members of the household
- Alternative interpretation: Witches cause bad weather, and witch killing solves the problem. Because weather is mean reverting, we do not know what is the right model
- Separating the two interpretations is difficult:
  - Many equilibria in models where learning is difficult—so the fact that there is no witch killing in reaction to epidemics is not sufficient

## Religious intensity in Indonesia

- Daniel L. Chen 2005 “Club Goods and Group Identity: Evidence from Islamic Resurgence During the Indonesian Financial Crisis”
- Does economic insecurity lead to greater intensity of religious feelings (which can then translate in more support for religious violence)? (another paper by Chen)
- Indonesian crisis: August 1998
- Price of rice went up significantly, government salary went down a lot in real terms: instruments for the impact of the crisis
- First stage: Change in consumption (pre-post crisis) related to wetland ownership, government employment

## Impact on religious intensity

- Measure:
  - Participation to Koran Study group
  - Islamic schools attendance
- Koran study and Islamic schools increased more slowly for wetland owners, faster for government workers
- At the same time, no effect on other social activities and secular school attendance
- This seems to be limited to group that lost less (or more) during the crisis (as opposed to your social group)
- May be limited to the time of the crisis

# Interpretation

- Opportunity cost of time: Not likely
  - Other activities do not go up
  - Labor supplies go up more for people more affected by the crisis
- Religious group as “ex-post social insurance” – people contribute time and money and get compensation if and when in need:
  - Effect is reduced when credit is available
  - People who participate claim being less credit constrained after the crisis
  - Standard deviation of village change in consumption is lower than predicted in places with more places of worship