Does Ethnic Fractionalization Matter for Development?

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October 20, 2015

Introduction

Ethnic diversity has been tied to economic growth and other outcomes.

- Growth - Easterly and Levine (1997), Alesina et al. (2003)
- Public Goods - Alesina et al. (2003); Miguel and Gugerty (2005); Alesina, Baqir, and Easterly (1999), LLSV (1999)
- Conflict? - Fearon and Laitin (2003); Esteban, Mayoral, and Ray (2012)

Typically measured as fractionalization:

$$FRAC = 1 - \sum_i \left(\frac{Population\ of\ Group\ i}{Population} \right)^2$$
$$= Prob(ij\ different\ ethnicities)$$

Large Effects?

> *The direct and indirect effects of ethnic diversity on growth are economically large. Ethnic diversity alone explains between one-fourth and two-fifths of the East Asia - Africa growth differential and may fully account for some extreme country cases. — Easterly and Levine (QJE 1997)*

Later work has replicated this result (Alesina et al. 2003).

Literature at the micro-level shows ethnic favoritism and politics (Burgess et al. 2013, Marx et al. 2014, Hjort 2014)

This Paper

Innovations:

- First credible cross-country instrument for fractionalization
- Uses modern literature to identify key omitted variables
- Illustrative model of coalition formation in which ethnic politics arise endogenously but ethnic diversity has ambiguous macro-level effects

Demonstrates that existing literature is poorly identified

Null effect plausible; some point estimates are zero

Micro-level evidence of ethnic favoritism does not imply macro-level harms from ethnic diversity

Identification

$$Y = \alpha + \beta \times FRAC + u$$

$$FRAC = \gamma + \delta \times Z + \xi$$

$$Cov(\xi, u) \neq 0, Cov(Z, u) = 0$$

What could be in ξ?

- Geographic Variables (Michalopoulos 2012)
- Slave Trade (Nunn 2008)
- State Building $\Rightarrow$ Nation Building (Weber 1976; Weese 2011)

Geographic Controls

	(1)	(2)	(3)
FRAC	-0.0314***	-0.0197*	-0.0164*
	(0.00485)	(0.00816)	(0.00661)
ABS LATITUDE		0.0000132	-0.000335
		(0.0000927)	(0.000337)
DIST COAST		-0.00000349	-0.00000773
		(0.00000447)	(0.00000401)
AFRICA		-0.00889*	-0.00466
		(0.00393)	(0.00486)
Observations	6161	4910	4910
R^2	0.008	0.010	0.017
Additional Controls	NO	NO	YES

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Slave Trade Controls

	(1)	(2)	(3)	(4)	(5)
FRAC	-0.0314***	-0.0255***	-0.0432**	-0.0197	-0.0231
	(0.00485)	(0.00703)	(0.0138)	(0.0304)	(0.0314)
RUGGEDNESS		-0.000519			-0.00863
		(0.00144)			(0.00491)
RUGGED*AFRICA		-0.000800			
		(0.00270)			
AFRICA		-0.00706			
		(0.00569)			
SLAVE INTENSITY				-0.00276	-0.00505
				(0.00318)	(0.00401)
Constant	0.0320***	0.0325***	0.0354**	0.0318**	0.0520***
	(0.00242)	(0.00350)	(0.0104)	(0.0103)	(0.0133)
Observations	6140	6140	1927	1927	1927
R^2	0.008	0.009	0.010	0.008	0.006

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Identifying Assumption

Natural experiment with African borders, drawn by European colonizers.

> *We have been engaged in drawing lines upon maps where no white man's foot has ever trod. — Lord Salisbury (British Prime Minister)*

Exploited by other papers: Miguel and Gugerty (2005), Michalopoulos and Papaioannou (QJE 2013, ECMA 2013, 2015)

Constructing the Instrument

$$Y_j = \alpha + \beta \times FRAC_j + u_j$$

$$FRAC_j = \gamma + \delta \times Z_j + \xi_j$$

$$SHARE_{ij}^2 = X_j\theta + v_{ij}$$

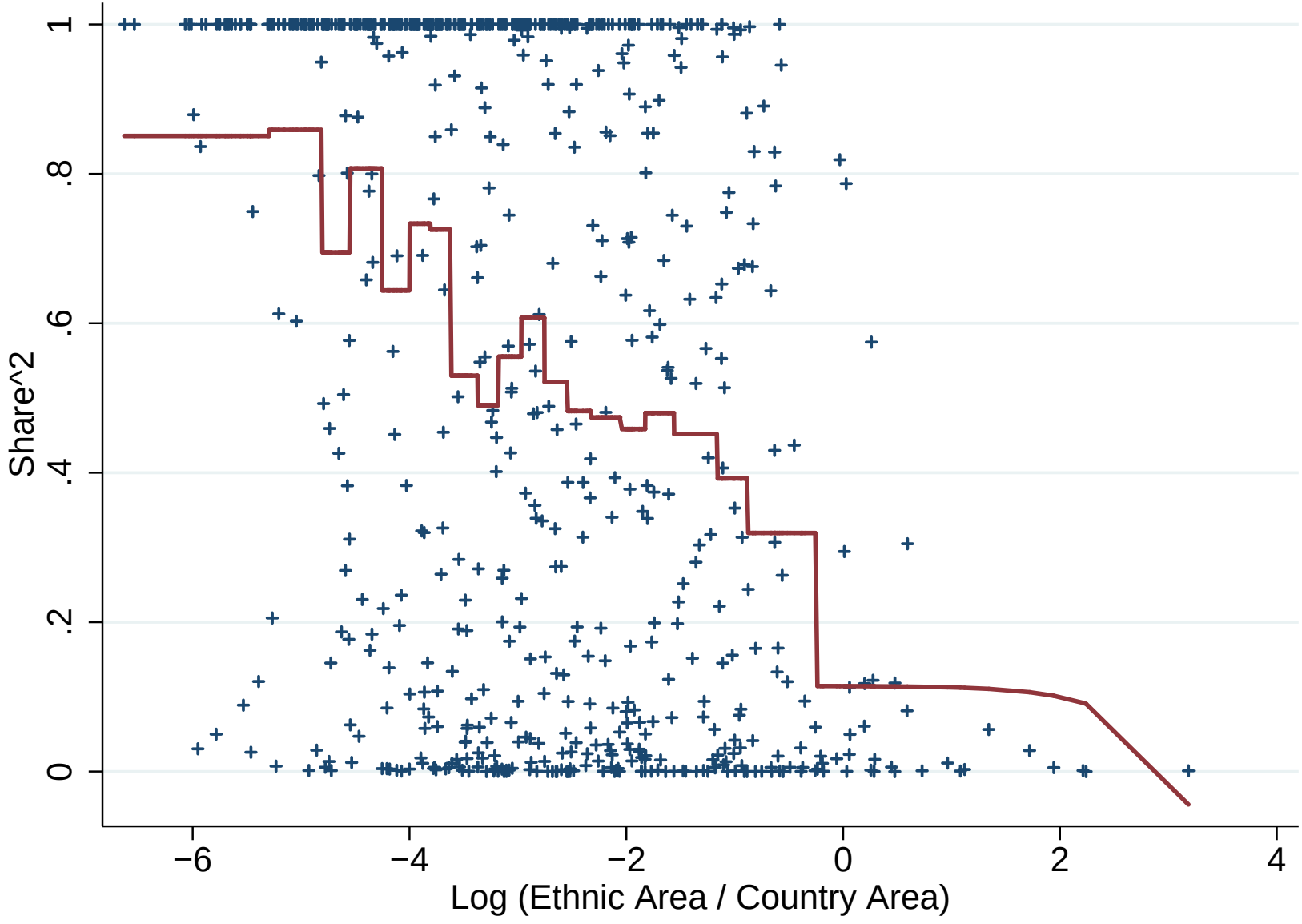
$$Cov(\xi_j, u_j) \neq 0, Cov(Z_j, u_j) = 0$$

Identifying Assumption: $Cov(u_j, v_{ij}) = 0$

$$\widehat{AREA\ FRAC}_j = 1 - \sum_{i \in j} (\widehat{SHARE}_{ij}^2 \times \frac{AREA_i^2}{AREA_j^2})$$

$$Z_j = AREA\ FRAC_j - \widehat{AREA\ FRAC}_j$$

"Zeroth Stage"



IV Regression

	(1)	(2)	(3)	(4)
FRAC	-0.0446**	-0.0353*	-0.0189	-0.00101
	(0.0144)	(0.0144)	(0.0174)	(0.0120)
ABS LATITUDE		0.000605		0.000727
		(0.000419)		(0.000514)
AFRICA - NORTH		0.00500		0.0171
		(0.0121)		(0.0147)
AFRICA - SOUTH		0.00600		0.0119
		(0.00811)		(0.0102)
AFRICA - EAST		0.00483		0.00771
		(0.00618)		(0.00693)
AFRICA - CENTRAL		0.0132		0.0108
		(0.00672)		(0.00727)
Constant	0.0364**	0.0174	0.0188	-0.00974
	(0.0109)	(0.0121)	(0.0123)	(0.0118)
Observations	1517	1517	1517	1517
R^2	0.008	0.011	0.005	0.008
FirstStageF			22.63	30.44

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Empirical Results

Robustness:

- Measurement Error
- Controlling for Initial Income
- Other Outcomes

Summary:

- OLS with controls reduces coefficient substantially
- IV point estimate of zero; reject exogeneity
- **Strong evidence that previous estimates are biased**
- *But, standard errors are large*

Game-Theoretic Model

Overview of Model:

- Agents form political coalitions to loot (rent-seeking)
- Larger groups are more successful but split prize among more people
- Cost of inter-ethnic communication
- Looting is costly, can choose to not loot

Results:

- Form ethnic coalitions
- Increasing diversity has ambiguous effects on looting

Set Up of Game

Continuum of agents, with finite number of ethnic groups.

Form political groups to loot, payoff $\frac{\theta}{N_i} F(N_i)$ (F right cont.)

Pay inter-ethnic communication cost $\bar{\delta}_i$

Can choose not to loot and get payoff 1

Social cost of looting $\frac{\beta}{N_{total}} \sum_j \frac{\theta}{N_j} F(N_j)$, $\beta > 1$

Look at Coalition-Proof Nash Equilibria (Bernheim et al. 1987)

Ethnic Competition

Theorem

In equilibrium, for any given individual who wishes to join a political group, there will be a political group that includes some of her co-ethnics that she weakly prefers over any political group that includes none of her co-ethnics.

Theorem

If all looters are playing a strict best response, looting groups will be composed of one or more whole ethnic groups.

Ethnic favoritism occurs in every equilibrium (regardless of macro-level effects).

Effects of Diversity with Large Communication Costs

Theorem

If inter-ethnic communication is prohibitively costly, and a particular ethnic group is composed either entirely of looters or entirely of non-looters, then splitting that ethnic group will weakly decrease looting and weakly increase the sum of expected payoffs across agents.

Theorem

If inter-ethnic communication is prohibitively costly, and a particular ethnic group has both looters and non-looters, then splitting that ethnic group may increase looting and decrease the sum of expected payoffs across agents.

Ethnic diversity has ambiguous, heterogeneous effects if inter-ethnic communication costs are large.

Effects of Diversity with Small Communication Costs

Theorem

Let F be continuous. As the inter-ethnic communication cost between two groups approaches some value δ, the associated equilibria approach allowed equilibria under communication cost δ. In other words, the set of equilibria is upper hemicontinuous in inter-ethnic communication cost.

Corollary

If inter-ethnic communication is sufficiently cheap, and there is the same level of looting in all possible equilibria in the counterfactual country where all agents have the same ethnicity, then splitting will have approximately no effect on the level of looting or the sum of expected payoffs across agents.

Ethnic diversity has no effect if inter-ethnic communication costs are small.

Conclusion

Existing literature overstates the true causal effect.

True effect may be zero.

Hard to estimate true effect precisely.

Micro evidence of ethnic favoritism does not imply macro-level harms from diversity.