

# Language Policy and Human Development

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# Research Questions

- Does the “choice” of an official language (i.e. the language of the Constitution and/or Organic Laws) – measured as a function of the average distance between the official and indigenous languages – affect human welfare?
- Controlling for “writing tradition”, does the degree of ethnic diversity influence that choice?
- If so, then language choice is a mechanism through which ethnic diversity lowers human welfare.

# ADOL: Our Independent Variable

## average distance to official language

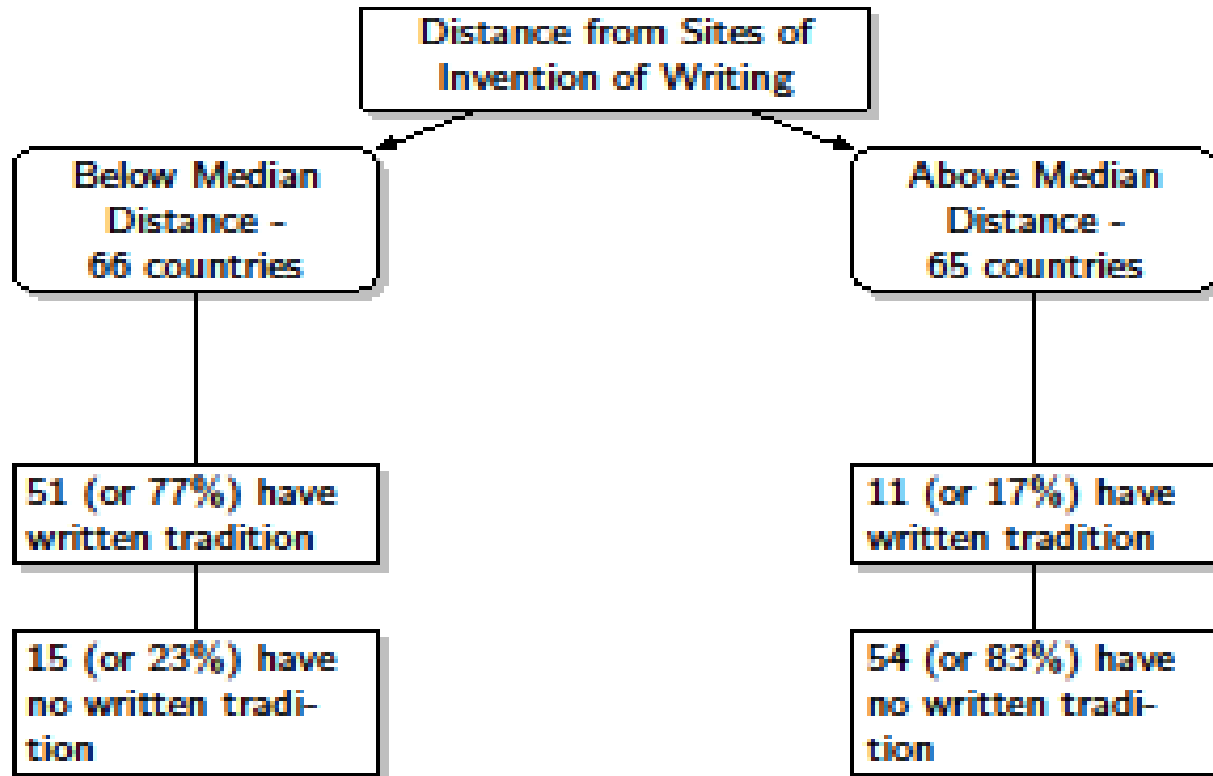
- Ethnologue dataset of language trees
  - Creation of variable “langfam” -- a distance measure between official language and each indigenous language:

$$d_{ij} = 1 - \left( \frac{\# \text{ of common nodes between } i \text{ and } j}{\frac{1}{2}(\# \text{ of nodes for language } i + \# \text{ of nodes for language } j)} \right)^\lambda, \quad (1)$$

- Average distance = langfam averaged across all language groups in the country based on population:

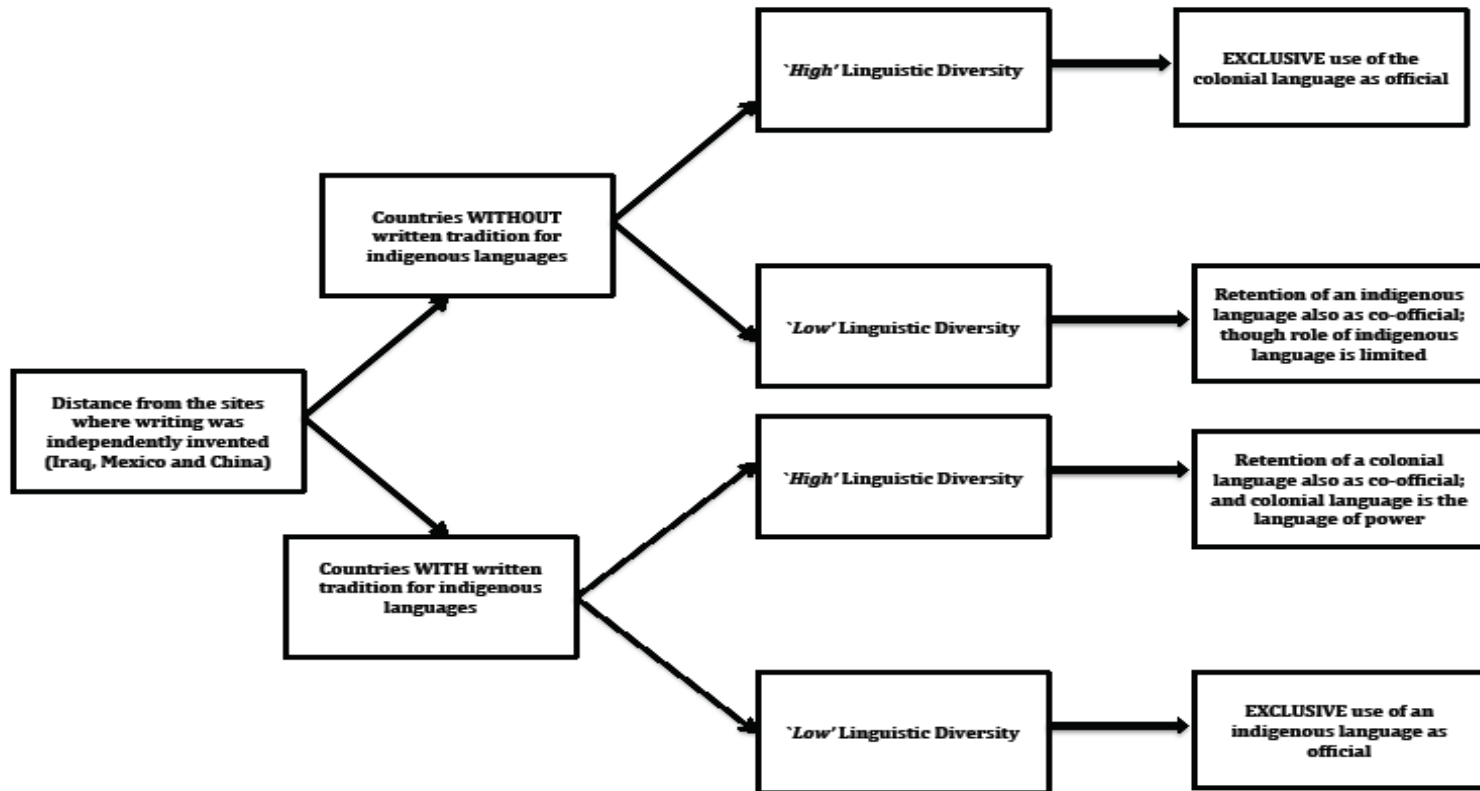
$$D_i = \sum_{j=1}^n P_{ij} d_{jo}, \quad (2)$$

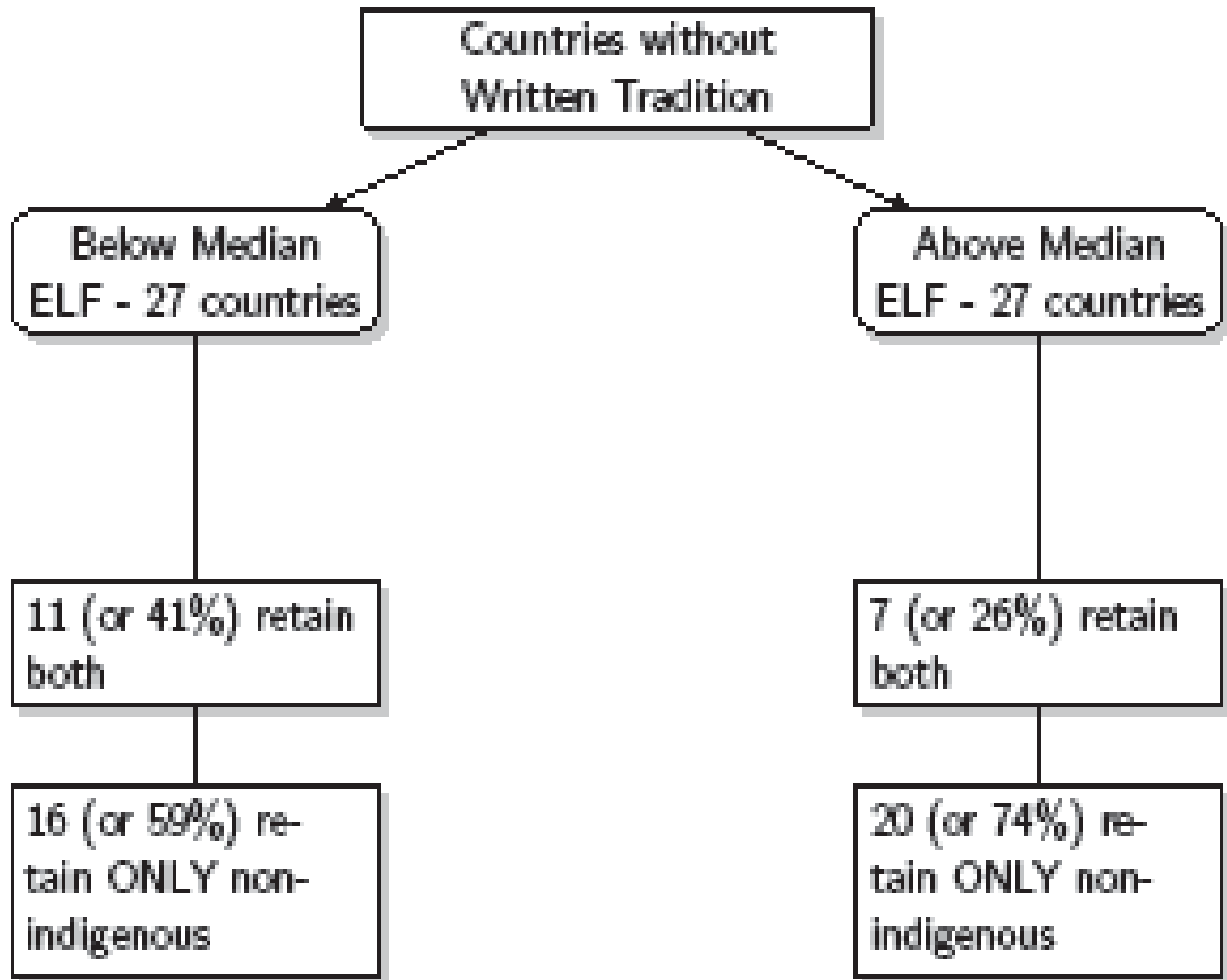
# Writing Tradition: Diamond's Hypothesis

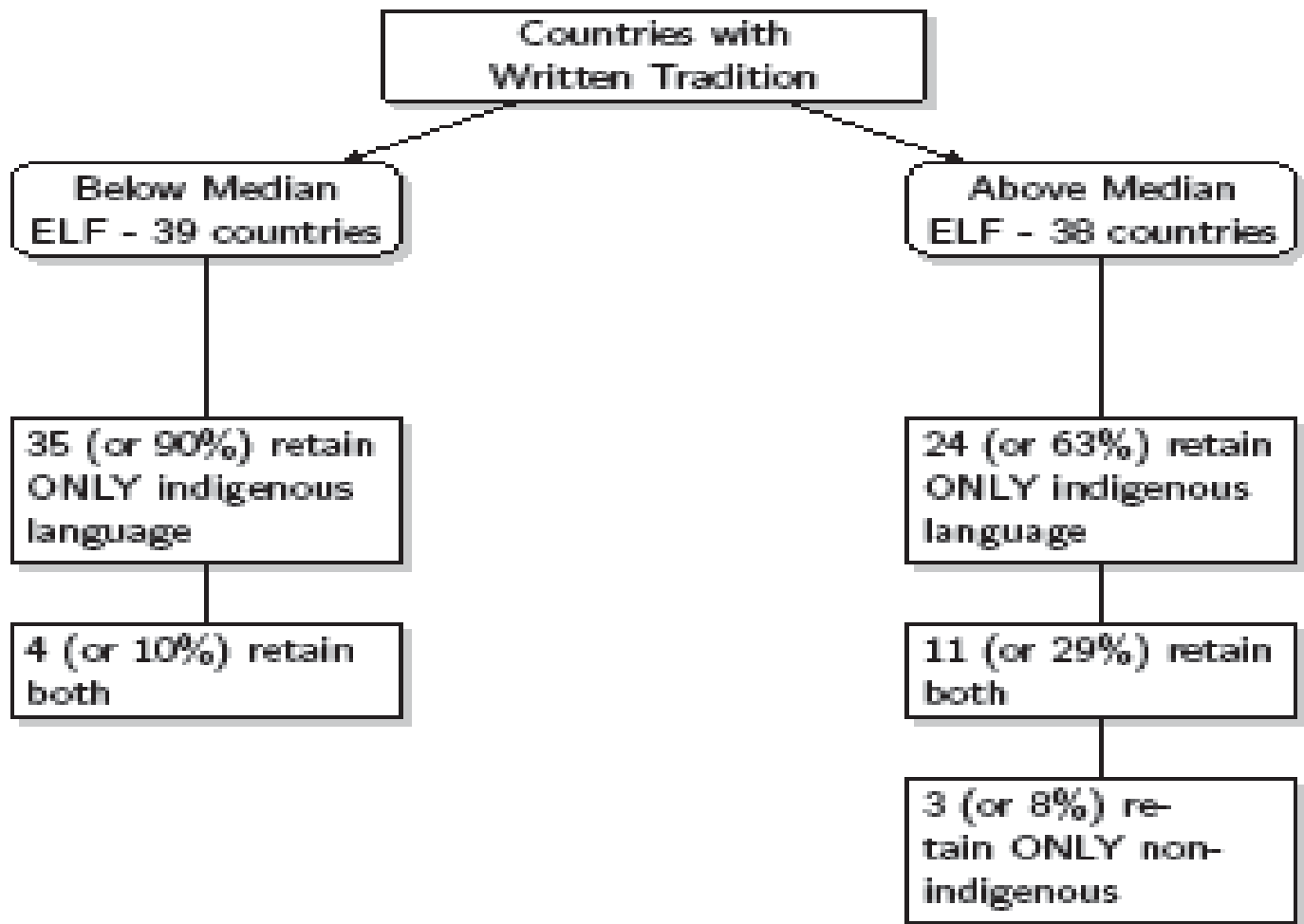


In regression with dummy for existence of a written script, the log of minimum distance from sites of invention of writing, along with a variety of geographic controls and region dummies (n=103), is significant at  $<.01$ , with an  $r^2$  of .69.

# Writing Tradition, ADOL, and ELF







# Linguistic Fractionalization and Language Choice

	ELF	Observations	R-square
	Sample with Writing Tradition: Retained any non-indigenous language as official		
All countries with written tradition	.32* (.17)	60	.724
Restricted to Asian countries	.58** (.27)	36	.785
	Sample without Writing Tradition: Retained only colonial language		
All countries without written tradition	.68*** (.21)	54	.565
Restricted to Sub-Saharan countries	1.08*** (.18)	32	.755

All specifications have region dummies, colonial origin, biogeography, genetic diversity, genetic diversity squared, and log population density (1500)



Hypothesis: Written Tradition + ELF → Language  
Choice → ADOL → Human Capital

# Why Should ELF Influence Language Choice?

- The larger the plurality group (lowering ELF) in the country, choosing their language as official lowers ADOL, making language policy efficient
- The larger the set of effective minority groups (raising ELF) introduces intra-group status concerns, making an inefficient language policy (with higher ADOL) more likely.
- Thus, High ELF → High ADOL → Inefficient language policy → Lower literacy

# Average Distance and Language Competence:

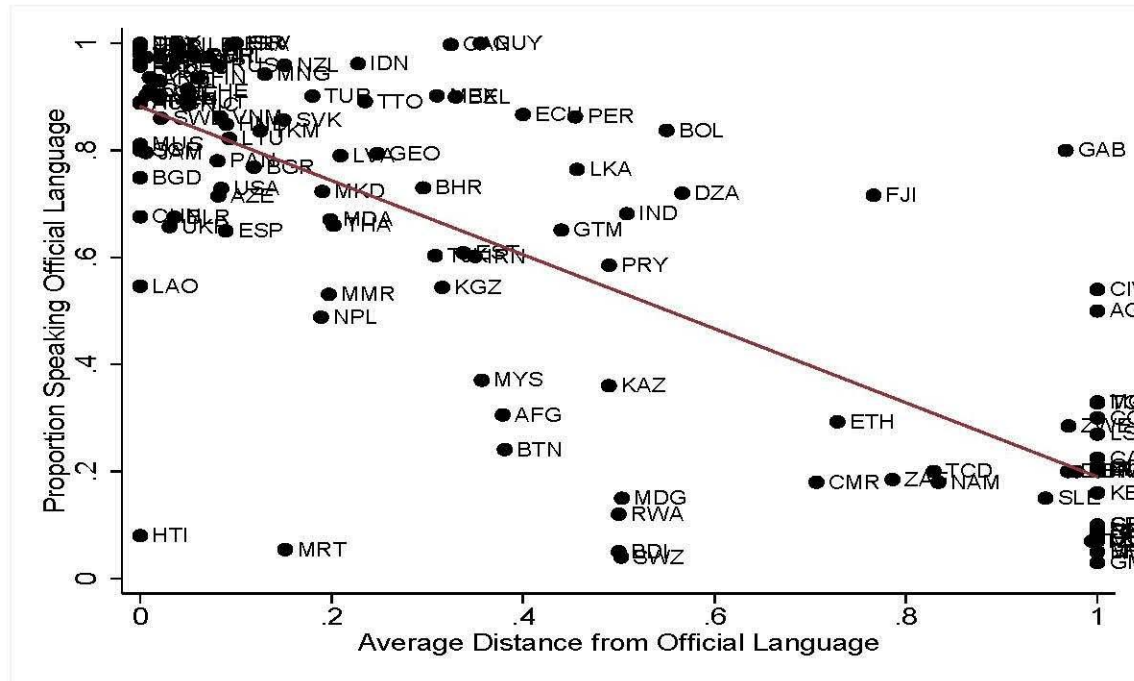
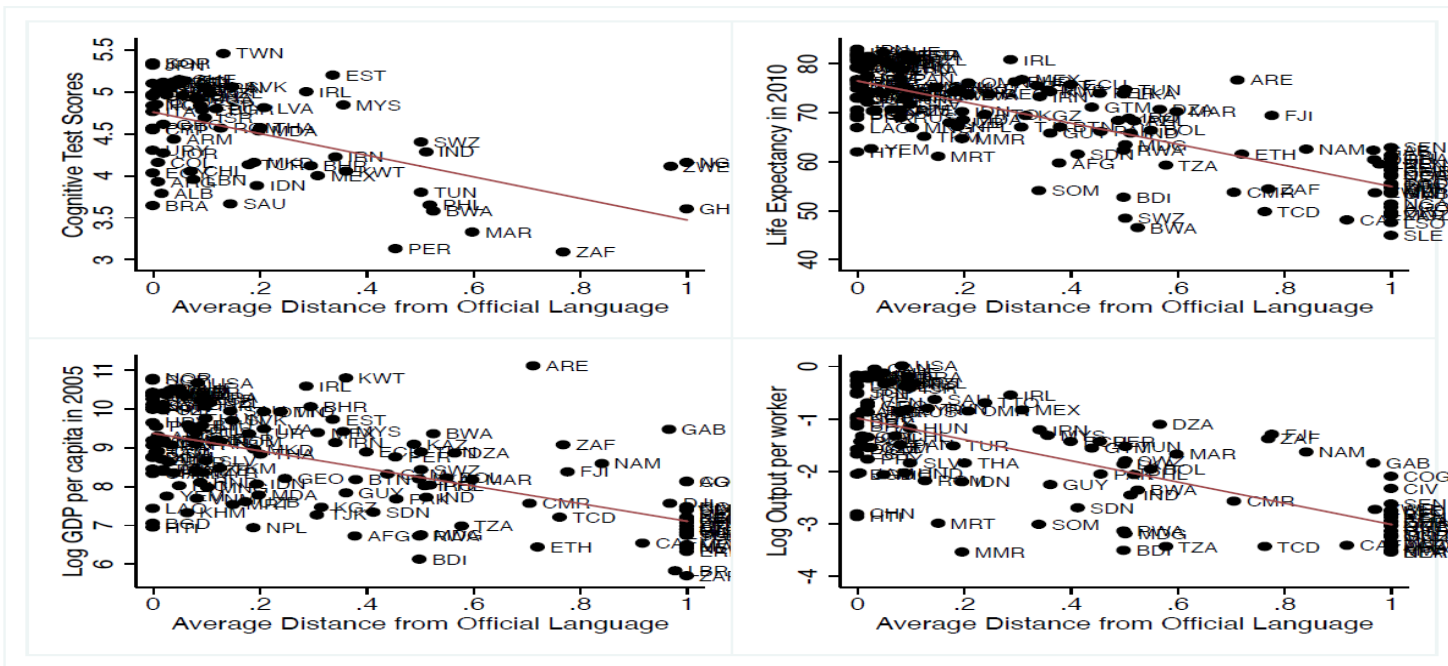


Fig. 2: Proportion speaking official language and average distance from official language

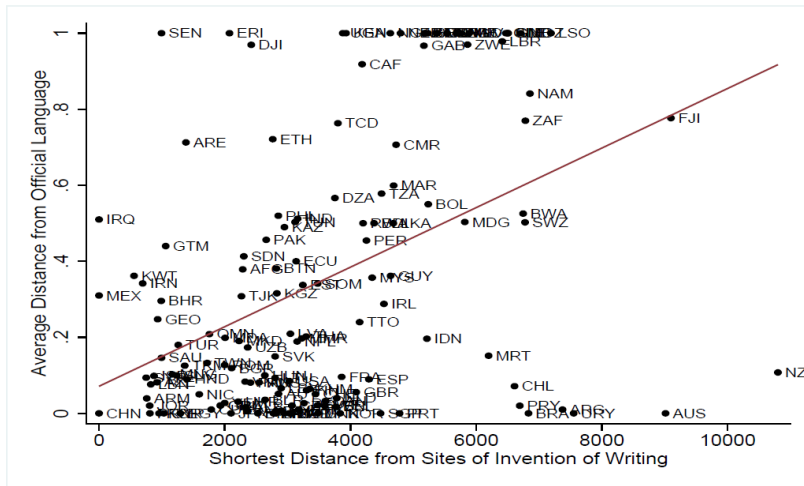
# ADOL and Four Human Development Variables



# Relationship Between Language Distance and zHDI Holds with Multiple Regressions

- Controls:
  - Institutional Quality (Political Risk Service)
  - ELF
  - GDP in 1950 (Maddison)
  - Average Years of Schooling in 1995
  - Geography (temperature; soil quality; minerals)
  - Colony, legal origin and regional dummies
  - Religion (Catholic and Muslim shares)
  - Number of armed conflicts
- Results:
  - Average distance explains ~55% of cross-country variation in zHDI, and remains statistically significant for each continent
  - Holds up to the Oster (2013) test to reject omitted variable bias

# Instrumental Variable Results



- First Stage
  - Distance from writing invention predicts ADOL (see chart to left)
- Second Stage
  - That part of ADOL predicted by distance of writing invention predicts values on zHDI

# Test through study of Mechanisms

- Dependent Variable: human welfare
- Independent variable: average access to official language
- Cost for any individual to obtain human capital depends on ability, language distance, and exposure to official language – **assuming that low distance and high exposure reduce costs** – the two channels influencing outcomes.
- Human welfare increases the greater the average exposure of individuals and the lower the average distance.

# Test of 1<sup>st</sup> Mechanism: Exposure to Official Language

- Implication to Investigate: whether exposure to official language enhances educational outcomes
- Data: SACMEQ education monitoring consortium
  - 12 African countries
  - 40,000 students from 2,000 primary schools
  - Standardized math and reading scores
  - IV: how much English is spoken at home
    - 23% report never; 55% report sometimes; 21% report often
  - Wide range of control variables: SES; parental education and income; classroom fixed effects; infrastructure at school...
  - No need to control for language distance, as it is presumed to be 1 for all students (and therefore need to drop countries with significant European presence).



# Results from Official Language Exposure

- 60% of students do not reach minimum reading level
  - downside of an educational medium that most teachers have not mastered
- Econometric Specification:

$$S_{ij} = C_0 + C_j + \delta_0 * English\_Home_{ij} + \delta_1 * X_{ij} + \epsilon_{ij}, \quad (23)$$

- Exposure to English at home predicts success on reading by  $\frac{1}{4}$  a s.d. and math by  $\frac{1}{5}$  a s.d.
- We don't know what leads parents to use more English at home (could be travel abroad), but its importance is clear

# Test of 2<sup>nd</sup> Mechanism: Direct Effect of Distance

- Implication to investigate: high distance from official language lowers human capital
- Data: Indian National Family Health Survey
  - Native language of respondent
  - State of residence (with its official language)
  - Range of SES variables
  - DV: Literacy, Education Level, and Job Status
- Estimation Strategies
  - Compare native (non-migrants) w/ non-native speakers (migrants) of the official language in each state
  - Compare native w/ non-native speakers, all of whom were born in the state
  - Compare non-native speakers who were born in the state but with different non-native languages (and therefore different distance from official language of the state)

# Illustrative results from Language Distance

- Specification 1: Moving from a Hindi-speaking state to a state with a Dravidian language reduces years of schooling by 1.26 years.
- Specification 2: Moving from a language distance of .29 to 1 reduces the probability of being literate by 4% and holding a white collar job by 3%.
- Specification 3: Same results as in 2, but with reduced sample size, so significance levels drop.

# Does ELF influence Language Choice?

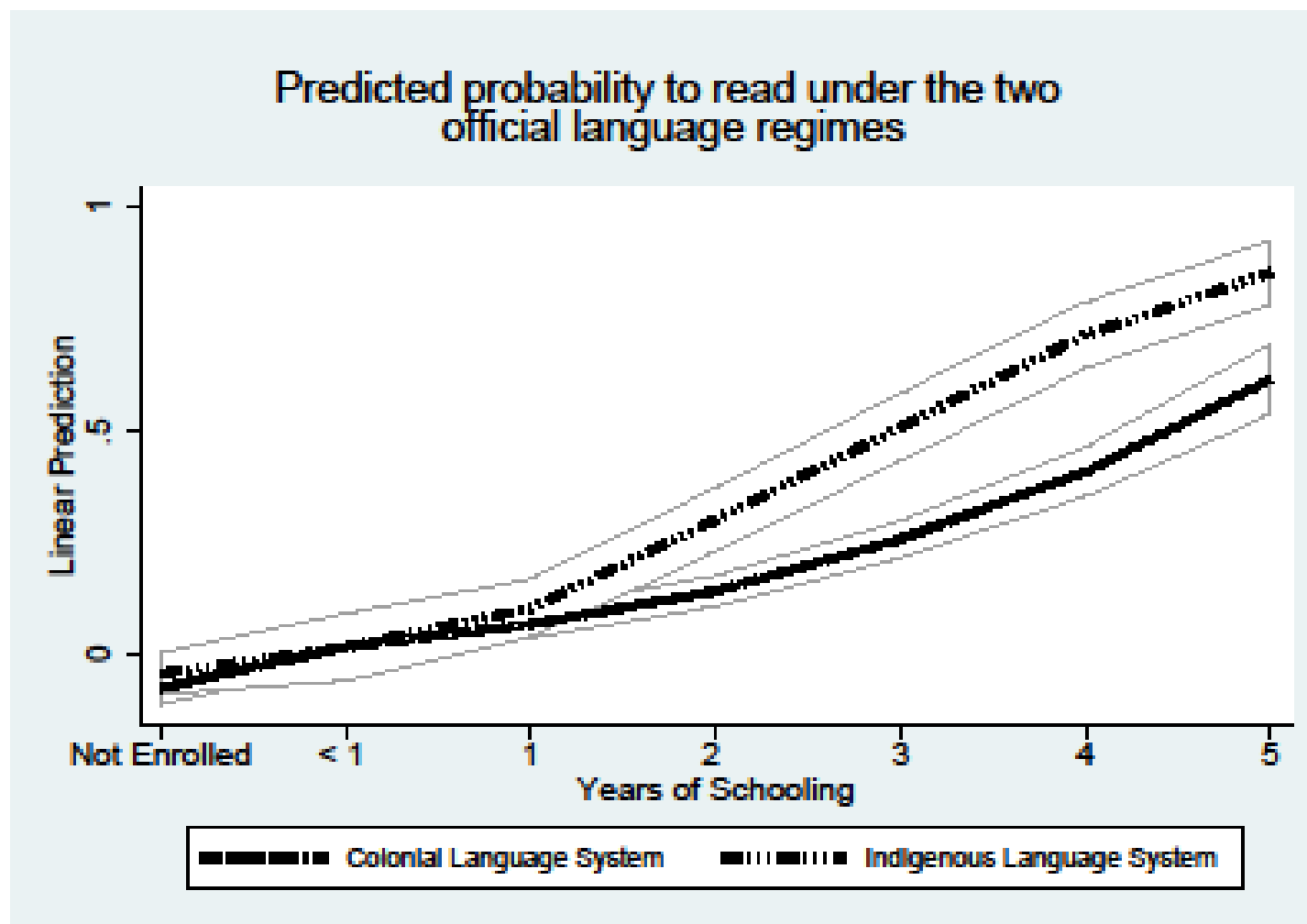
Evidence in our new paper

- Out of the 47 sub-Saharan African states only two states (Eritrea and Ethiopia) had a written script for an indigenous language before the arrival of the Christian missionaries, as compared to 18 out of 19 South and East Asian polities that received independence post World War II.
- Does AWOL mediate the relationship of ELF to Growth through official language policies?
- If so, we have a mechanism accounting for “Africa’s Growth Tragedy”
- This is the question that our new paper (after Laitin/Ramachandran 2016) asks.

In our new paper, we control for writing tradition and examine the implications of ELF on the set of African countries without a writing tradition.

Future work will be a comparable study of a somewhat different specification of the dependent variable for post-colonial states with a writing tradition

# Estimating Effects of Language Choice on Literacy (Africa Sample)



LPM with double clustered SE (country and cohort); Controls: HH index \* Years of schooling; ELF; years of schooling; see paper for a plethora of other controls.

# ADOL as Mechanism Accounting for ELF's Role in Africa's Growth Tragedy

	Log GDP/cap	Log GDP/cap	Log GDP/cap	Log GDP/cap
ELF	-.0093** (0.0040)	-.0039 (0.0043)	0.012** (0.0046)	0.012 (0.0041)
ADOL			-2.34*** (0.39)	-2.09*** (0.38)
Partitioned		-0.013*** (0.0043)		-0.0065** (0.0028)
Fractal		3.50 (5.82)		3.40 (3.82)

Sample: 71 countries from Alesina (2011)

# Conclusions

- Empirical Results:
  - For countries without a writing tradition: High ELF → Retention of colonial languages (High ADOL) → Low Human Capital
- Policy Implication
  - We recommend continued experimentation (as performed in Cameroon) on the returns of early education in Africa through indigenous media along with an international language to supplement in later years, as in the small European states (Norway, Netherlands)