

The Origins of Ethnolinguistic Diversity[†]

By STELIOS MICHALOPOULOS*

This study explores the determinants of ethnolinguistic diversity within as well as across countries, shedding light on its geographic origins. The empirical analysis conducted across countries, virtual countries, and pairs of contiguous regions establishes that geographic variability, captured by variation in regional land quality and elevation, is a fundamental determinant of contemporary linguistic diversity. The findings are consistent with the proposed hypothesis that differences in land endowments gave rise to location-specific human capital, leading to the formation of localized ethnicities. (JEL J15, J24, Z13)

Ethnicity has been widely viewed in the realm of social sciences as instrumental for the understanding of socioeconomic processes. Within economics, there has been a large and growing literature, beginning with Mauro (1995), that uses indexes of ethnolinguistic diversity either as an instrument or as an explanatory variable for various economic indicators (e.g., Easterly and Levine 1997; Alesina et al. 2003; and Banerjee and Somanathan 2007, among others). Similarly, within sociology, anthropology, political science, psychology, and history, the volume of work investigating the causes and effects of ethnicity attests to its paramount importance.¹

The goal of this study is to empirically uncover the common exogenous features that produce the observed diversity at a global scale. It does so by bringing into the foreground the role of geographic heterogeneity in separating populations leading to the formation of distinct linguistic groups. The empirical investigation, conducted at various levels of spatial aggregation, establishes that geographic variability, captured by variation in regional land quality and elevation, is a fundamental determinant of

* Department of Economics, Brown University, Robinson Hall, 64 Waterman Street, Providence, RI 02912 (e-mail: smichalo@brown.edu). Comments from three anonymous referees improved the manuscript substantially. Daron Acemoglu, Roland Benabou, Matteo Cervellati, James Fearon, Andrew Foster, Oded Galor, Ioanna Grypari, Peter Howitt, Yannis Ioannides, Masayuki Kudamatsu, Nippe Lagerlof, David Laitin, Ashley Lester, Ross Levine, Glenn Loury, Ignacio Palacios-Huerta, Elias Papaioannou, Stephen Ross, Yona Rubinstein, Francesco Trebbi, and David Weil provided valuable suggestions. I would also like to thank the participants at the 2007 NEUDC Conference, the 2007 LAMES Meetings in Bogotá, the 2007 NBER Summer Institute on Income Inequality and Growth, and the 2008 Ethnicity Conference in Budapest, as well as seminar participants at Brown University, Chicago Graduate School of Business, Collegio Carlo Alberto, Dartmouth College, EIEF, IIES, Princeton University, Stanford Graduate School of Business, Tufts University, UCL, University of Bologna, University of Copenhagen, University of Connecticut, University of Cyprus, University of Gothenburg, University of Houston, Warwick University, and Yale University for the useful discussions. Lynn Carlsson's ArcGIS expertise proved of invaluable assistance. Financial support from the Watson Institute's research project "Income Distribution Across and Within Countries" at Brown University is gratefully acknowledged.

[†] To view additional materials, visit the article page at <http://dx.doi.org/10.1257/aer.102.4.1508>.

¹ See Alesina and La Ferrara (2005) and Hale (2004) for a survey within economics and social sciences, respectively.

contemporary ethnic diversity. It also shows that the link between geography and ethnicity is particularly strong across territories whose historically indigenous populations constitute a significant fraction of today's inhabitants.

Linking ethnicity to geographic variability has implications for the large empirical literature that uses the former as an explanatory variable. Specifically, the finding that geographic heterogeneity partially shapes contemporary ethnic diversity provides a justification for treating the latter as predetermined with respect to contemporary economic policies. Geographic characteristics, however, are likely to have an independent effect on economic indicators beyond their effect on cultural diversity.

In the empirical section I employ new data on agricultural suitability at a resolution of 0.5 by 0.5 decimal degrees to construct the distribution of land quality at a regional and country level. Such disaggregated data allow for the econometric analysis to be conducted at various levels of aggregation. First, I show the importance of geography in shaping ethnic diversity across countries. Nations characterized by more diverse land and elevation attributes exhibit higher levels of linguistic diversity. This highlights the fundamental role that heterogeneous regional land endowments have played in the formation of ethnically diverse societies. The results are robust to accounting for alternative hypotheses regarding the formation of ethnolinguistic groups.

Second, to mitigate concerns related to the endogeneity of contemporary political boundaries, inherent to the literature on cross-country regressions, I arbitrarily divide the world into geographic entities, called virtual countries. Ethnic diversity, measured by the number of languages spoken in each virtual country, is systematically related to the underlying heterogeneity in land quality for agriculture. At the same time, the empirical analysis reveals that regions with more variable terrain sustain more ethnically fragmented societies. Overall, geographically diverse territories give rise to more ethnic groups. Arguably, modern states in their quest to build unitary nation-states have largely affected local languages and identities via political centralization and state-sponsored education. As such, it is crucial to account for these state-specific histories. Unlike a cross-country analysis, this is feasible in the context of virtual-country regressions, where I show that the results are robust to the inclusion of country fixed effects.

A third noteworthy feature of the empirical analysis is that it focuses on pairs of contiguous regions, by taking further advantage of information on the traditional location of ethnic groups. Pairing each 0.5-by-0.5-decimal-degrees cell with its immediate neighbors, I find that differences in land quality and elevation within dyads of adjacent regions negatively affect ethnic similarity. The latter is proxied by the percentage of common languages spoken within a regional pair. The dyadic analysis allows for the inclusion of region fixed effects neutralizing any bias induced by local, within-country unobserved heterogeneity, such as differences in regional integration along the process of nation building. The evidence demonstrates that (i) local differences in land endowments systematically increase regional ethnic diversity; and (ii) the spatial arrangement of a heterogeneous geography matters in determining the degree of overall cultural heterogeneity.

Historically, major population movements have been reshuffling the distribution of ethnicities across as well as within countries. In the last 500 years, in particular, several regions have experienced dramatic changes in their linguistic

endowments via conquests, slavery, migrations, and colonization. In the absence of estimates on historical ethnic diversity, the impact of these events is hard to quantify. Nevertheless, to the extent that geographic variability increases ethnic diversity by reducing mobility among groups, eventually causing a cultural drift, one would expect geography to be less important in places where native populations have been dramatically reduced and displaced. This is shown to be the case across all levels of aggregation. Linguistic diversity no longer exhibits a systematic link with the underlying geography in virtual countries, pairs of adjacent regions, and real countries where the majority of contemporary inhabitants cannot trace their ancestry in 1500 AD to that same geographic area. This is an important finding because it shows that, unlike most countries where a large fraction of ethnic diversity may be treated as predetermined by geography, in places where recent settlers constitute the majority, ethnic diversity can no longer be treated as such.

Though the major contribution of this paper is to empirically identify the geographic origins of ethnolinguistic diversity, Section IV discusses the possible mechanisms via which geographic heterogeneity may operate on the formation of ethnolinguistic groups. It suggests that differences in land endowments across regions gave rise to location-specific human capital, diminishing population mobility and leading to the formation of localized ethnicities. A prediction that follows this view is that groups found in multiple separate territories should display similarities in their subsistence pattern. Consistent with this prediction, I show that within Africa there is a strong correlation of subsistence practices across nonadjacent partitions of the same language group.

The rest of the paper is organized as follows. Section I relates the empirical findings to the literature in economics as well as anthropology, linguistics, ecology, and sociology. Section II presents the data. Section III constitutes the main part of the empirical analysis. This is conducted in a (i) cross-country, (ii) cross-virtual country, and (iii) cross-pair of adjacent regions framework. It includes the robustness checks and concludes by showing how a significant presence of recent immigrants affects the link between geographic and ethnic diversity. In Section IV I describe the possible mechanisms by which geographic variability may lead to linguistic differentiation and I provide evidence consistent with the specific human capital hypothesis. Section V summarizes the key findings and concludes.

I. Related Literature

Within economics, Ahlerup and Olsson (forthcoming) is the only other paper that investigates the roots of ethnic diversity at a global scale. The authors provide a theory where ethnic groups emerge endogenously over time among peripheral populations in response to an insufficient supply of public goods. Using data on the duration of human settlements since prehistoric times, they show that countries where modern humans settled earlier sustain higher ethnic diversity today. In my empirical analysis migratory distance from Addis Ababa, Ethiopia, which systematically predicts early human settlements and is shown by Ashraf and Galor (forthcoming) to be a strong predictor of genetic diversity across countries, enters with the expected sign; i.e., countries with a large migratory distance from East Africa sustain fewer ethnic groups. To understand the quantitative importance of this channel,

note that variation in geography and migratory distance from East Africa have comparable effects on linguistic diversity across countries.

The findings of the current study provide evidence bridging the two opposing strands of thought regarding the formation of ethnic identity. On the one hand, establishing that deep geographic determinants explain a significant fraction of the observed linguistic diversity is consistent with the primordial view qualifying ethnic groups as deeply rooted, clearly drawn entities (Geertz 1967). On the other hand, showing that geography alone cannot account for all the variation in contemporary ethnic diversity, and in particular showing that there is no link between geographic and ethnic diversity in those places where the historically indigenous populations today constitute a minority, provides evidence in favor of the constructivist or instrumentalist school of thought. This view highlights the contingent and situational character of ethnicity with modern states' policies being a significant determinant of the observed diversity (Barth 1969).

Outside economics, studies in the fields of linguistics, anthropology, and sociology have examined the relationship between the environment and cultural diversity. For example, Mace and Pagel (1995) use historical maps of native populations in North America at the time of contact by Europeans and show that more diverse habitats sustained more native groups. Also, Nettle (1998, 1999) looks at the global distribution of languages and finds that countries characterized by low rainfall and short growing seasons sustain fewer languages.

The link between variable land endowments and ethnic diversity established here has a striking parallel to the relationship between biodiversity and variation within species. Darwin's observations that ecologically diverse places would bring about and sustain variation within finches is of particular relevance.² Along the same lines, this study shows that geographic heterogeneity across regions fosters ethnic diversity.

Other studies have shown the relationship between species diversity and linguistic diversity. For example, Harmon (1996) notes that countries with larger endemism in vertebrate and flowering plant species also sustain higher linguistic diversity. Along the same lines, Moore et al. (2002) show that vertebrate species diversity and cultural diversity have similar spatial distribution within sub-Saharan Africa, both increasing in rainfall and net primary productivity, and Sutherland (2003) shows that countries with high linguistic diversity also have high bird and mammal diversity (see Maffi 2005 for a thorough literature review). The consistent finding in the literature regarding the negative relationship between absolute latitude and linguistic diversity has been linked to the very strong correlation between latitude and both temperature and climatic variability. According to Nettle (1998), where climate is variable, populations are forced to use wider ecological niches, homogenizing them linguistically. Also, regions farther from the equator have lower temperatures, thus lower net primary productivity, and are also subject to lower ultraviolet radiation.

By analyzing the origins of ethnic diversity, this paper belongs to an emerging strand of literature within economics that examines the deep-rooted determinants

²Darwin (2006) observed that a certain ecological niche was giving rise to an optimal shape of the finches' beaks.

of economic performance. Starting with Diamond (1997), who highlights the crucial role of geography in affecting long-run development via the differential timing of the transition to agriculture, economists are becoming increasingly interested in uncovering (pre)historic forces that have shaped contemporary income levels. Galor and Moav (2002) and Galor and Michalopoulos (2012), for example, argue that the Neolithic Revolution triggered an evolutionary process that affected comparative development. Comin, Easterly, and Gong (2010) finds that very old history of technology adoption is a significant determinant of today's economic outcomes. Others are investigating the role of genetics, including Spolaore and Wacziarg (2009), which shows the effect of genetic distance on the pairwise income differences between countries, and the recent study by Ashraf and Galor (forthcoming) that documents a nonmonotonic effect of genetic diversity on comparative development. This paper adds to this literature by showing that geographic diversity is an important determinant of linguistic diversity, a societal attribute that has been extensively found to correlate with various measures of economic performance.

II. Empirical Section

A. *The Data Sources*

The study constructs and uses a variety of geographic indicators. For the cross-country and cross-virtual country analysis, standard geographic measures like elevation, temperature, and precipitation are derived using the Geographically Based Economic Data (2006) database. For the dyadic regressions, alternative datasets are used in order to match the resolution of the land quality dataset.

The global data on land quality for agriculture were assembled by Ramankutty et al. (2002) to investigate the effect of future climate change on contemporary agricultural suitability. This dataset provides information on land quality at a resolution of 0.5 by 0.5 decimal degrees. In total, there are 64,004 observations.

Each observation takes a value between 0 and 1 and represents the probability that a particular grid cell may be cultivated. In order to construct this index, the authors first empirically estimate the probability density function of the percentage of croplands around 1990 with respect to climate and soil characteristics. They then combine the derived probability with data on climate and soil quality to predict regional suitability for agriculture at the resolution of 0.5 degrees latitude by 0.5 degrees longitude worldwide. The climatic characteristics are based on mean-monthly climate conditions for the 1961–1990 period and capture (i) temperature, (ii) precipitation, and (iii) potential sunshine hours. All the climatic conditions monotonically, though weakly, increase the suitability of land for agriculture. Regarding the soil suitability, the traits considered are a measure of the total organic content (carbon density) and the nutrient availability (soil pH). The relationship of these indexes with agricultural suitability is nonmonotonic. Low and high values of pH limit cultivation potential, since these values signal that soils are too acidic or too alkaline, respectively. In the online Appendix, I present details on the data sources and the exact formulas used in the construction of the land quality index.

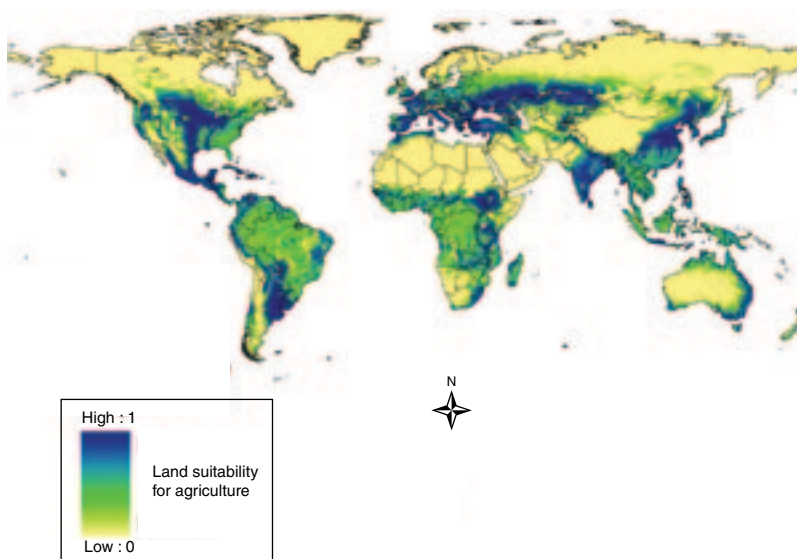


FIGURE 1. LAND QUALITY ACROSS COUNTRIES

This detailed dataset provides an accurate description of the global distribution of land quality for agriculture. Figure 1 shows the worldwide distribution of land quality. Using these raw global data, I construct the distribution of land quality at the desired level of aggregation.

With respect to the cross-country, cross-virtual country, and cross-pair of adjacent regions analysis, ethnic diversity is constructed using information on the location of linguistic groups. In the case of virtual- and real-country regressions, the number of languages within each geographic unit provides a measure of the overall ethnolinguistic diversity. In the adjacent region analysis, an index of ethnic similarity is constructed by calculating the percentage of common languages; that is, the number of common languages over the total number of languages spoken within a pair of adjacent regions. Data on the location of linguistic groups' homelands are obtained from the World Language Mapping System (WLMS) (2006) database. This dataset covers most of the world and is accurate for the years between 1990 and 1995. Languages are based on the 15th edition of the *Ethnologue* (Lewis 2005) database. To identify which languages are spoken within each unit of analysis, I use the information on the location of language polygons. Each of these polygons delineates a traditional linguistic homeland; populations away from their homelands (e.g., in cities, refugee populations, etc.) are not mapped. Linguistic groups of unknown location, widespread languages,³ and extinct languages are not mapped and thus not considered in the empirical analysis. The only exception for not mapping widespread languages is the case of the English language, which is mapped for the United States. Note that the *Ethnologue* database also records the population of a language group. This information is available only at the country

³ According to the WLMS (2006), widespread languages are national or regional trade languages that cannot be properly mapped as polygons since they overlap a large number of other language areas.

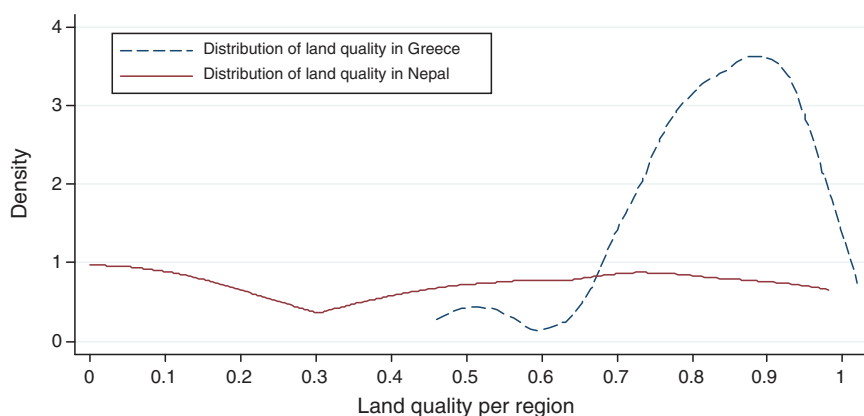


FIGURE 2. KERNEL DENSITY OF LAND QUALITY IN GREECE AND NEPAL

Note: All density estimates presented are weighted by the Epanechnikov kernel.

level, however, and is listed for widely varying census years, so it cannot be used as the basis for constructing a fractionalization measure at the virtual country level.

B. *The Properties of Geographic Variability*

The distribution of land quality varies considerably across regions and countries. For example, Figure 2 plots the distribution of regional land quality for Greece and Nepal. On the one hand, in Greece the quality of land is concentrated around high values with an average quality of 0.81, and a variation of 0.12. On the other hand, land quality in Nepal averages 0.45 and differs significantly across regions with a variation of 0.36, featuring an almost uniform distribution across all levels of land quality. Similarly, Nepal exhibits a much larger variation in altitudes compared to Greece.

The variation in land quality within the respective unit of analysis and the standard deviation of elevation are the statistics used to capture the degree of geographic heterogeneity. These measures proxy for the frictions that geography exerts on populations' interactions, with larger variance of land quality and elevation limiting mobility among groups, leading over time to linguistic differentiation. Indeed, going back to the example of Greece and Nepal, according to the Ethnologue database, there are 14 linguistic groups in Greece compared to the highly linguistically fragmented society of Nepal, with 107 languages. Note that apart from their very different geographic endowments, Nepal and Greece are similar along several dimensions. First, they have similar land mass. Second, they had comparable levels of early economic development as proxied by the population density in 1500 AD. Third, neither country had a European colonizer. Fourth, in both countries 100 percent of the current population can trace its ancestors within the same political boundaries as early as 1500 AD, and finally, Nepal is located twice as far from East Africa as Greece, if anything biasing the comparison in favor of finding more linguistic groups in Greece.

Comprehensive data on the timing of the formation of language groups are not available, with few studies documenting the evolution of specific language families.

For example, Gray and Atkinson (2003) demonstrate that Indo-European languages expanded with the spread of agriculture from Anatolia around 8000–9500 years BP (before present). The language tree they construct provides information on the timing of linguistic divergence within the Indo-European group. According to this, at 7000 years BP Greek and Armenian languages diverged. At 5000 years BP, Italic, Germanic, Celtic, and Indo-Iranian families diverged, and at 1750 years BP the Germanic languages split between West Germanic (German, Dutch, English) and North Germanic (Danish and Swedish). Similarly, according to Nurse and Philippson (2003) the spread of the Bantu languages within Africa took place between 3000 BC and 1000 AD. In general, according to Cavalli-Sforza and Cavalli-Sforza (1996), if a population with a common language is split into two groups, it takes about 1,000 to 1,500 years for the development of a mutually unintelligible language.

Using contemporary geographic data to proxy for historical variability in physical geography presents its own potential pitfalls which merit further discussion. For example, a potential concern is how representative these geographical characteristics are of the period when linguistic groups were being formed. Regarding the elevation index, despite some local natural events and human interventions at a very local scale, overall altitudes have not changed significantly since the retreat of the last Ice Age. Things are more complicated regarding the land quality index. This is because precipitation, temperature, and soil properties, which are the basis of this index, may have changed regionally over the last 5,000 years. Thus, the measure of land quality is a noisy index of what might have been the true distribution of agricultural quality in the past. On the one hand, this measurement error may be white noise, making it harder to detect a relationship between variation in land quality and linguistic heterogeneity. On the other hand, this measurement error could be systematic; the same forces that reduce ethnic diversity (centralized modern states) may also be associated with human interventions that have a homogenizing effect on the landscape, generating a spurious relationship between variability in land quality and ethnic diversity. This possibility underscores the need for the analysis to be conducted at a level of aggregation where country fixed effects can be accounted for. This is done in the virtual-country regressions whereby the introduction of country fixed effects accounts for any country-level unobserved forces that may have affected both land heterogeneity and linguistic diversity. At the same time, one might argue that such unobserved forces might vary even across regions within a country. In this respect, the inclusion of region fixed effects in the dyadic regressions neutralizes any bias induced by local, within-country, unobserved heterogeneity, allowing for a sharper identification of the causal impact of geographic heterogeneity on linguistic diversity.

It is certainly the case that humans can alter land quality via technological innovations; for example, the introduction of the heavy plow may make environments more favorable to agriculture. The issue is whether variation in land quality is affected by linguistic diversity. Although one cannot rule out entirely the possibility of reverse causality running from exogenous, group-specific subsistence practices to the characteristics of land quality, this would likely have a small effect. For example, Diamond (2005) describes several cases of cultures whose subsistence practices were not sustainable given the underlying agricultural capabilities, eventually triggering an environmental collapse tantamount to these cultures' demise. Nevertheless, to alleviate concerns related to the possible endogeneity of the soil

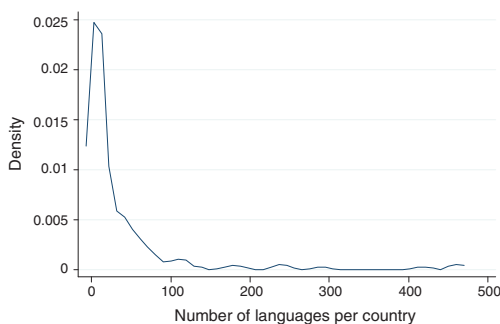


FIGURE 3A. KERNEL DENSITY OF LANGUAGES
ACROSS COUNTRIES

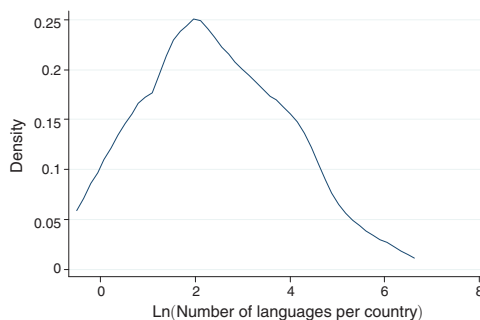


FIGURE 3B. KERNEL DENSITY OF LN(LANGUAGES)
ACROSS COUNTRIES

characteristics and to the extent that climate is less prone to human interventions, in the cross-country and cross-virtual country analysis I show that results are similar when I use variation in the climatic suitability to capture heterogeneity in agricultural endowments.

Having discussed the properties of geographic variability, I now turn to the main empirical results.

III. Evidence

A. Cross-Country Analysis

I start the empirical analysis with the investigation of the geographic determinants of contemporary linguistic diversity across countries. To maintain consistency across different levels of aggregation, I use the language data from the WLMS (2006) and derive the number of languages spoken within each country. The respective country-specific geographic measures are calculated focusing on regions with linguistic coverage according to the WLMS (2006). Note that once the geographic data are intersected with the language data, i.e., spatially clipped along the observed distribution of languages, several of the underlying cells obtain different shapes following the spatial pattern of the language coverage. All cells that overlap with a language irrespective of the magnitude of the overlap are included in the analysis. Results are similar if I discard cells with an overlap of less than 10 or 100 square kilometers.

The number of regional observations on agricultural suitability within each country ranges from a single observation for Monaco to 9,415 for Russia. The median number of cells per country is 73. To construct the measure of linguistic diversity I focus on languages with at least 1,000 speakers as recorded in the Ethnologue dataset.⁴ The resulting kernel density estimate of the distribution of linguistic groups across countries is shown in Figure 3A. Note that the distribution of the number of languages is skewed, so the natural log of languages is used in the analysis (Figure 3B). In Tables 2A and 2B below I show that results are robust to using alternative estimation techniques, indexes of linguistic diversity and measures of land quality.

⁴Results are similar if I include all linguistic groups in the construction of the dependent variable or language groups with at least 3,000 recorded speakers.

TABLE 1—MAIN SPECIFICATION FOR THE CROSS-COUNTRY ANALYSIS

Variables	Ln number of languages				
	(1)	(2)	(3)	(4)	(5)
Variation in elevation		0.310*** (0.113)	0.256*** (0.079)	0.291*** (0.089)	0.275*** (0.101)
Variation in land quality		0.340*** (0.084)	0.177*** (0.061)	0.208*** (0.058)	0.211*** (0.060)
Mean elevation		−0.249** (0.113)	−0.111 (0.106)	−0.104 (0.118)	−0.085 (0.113)
Mean land quality		−0.179** (0.069)	−0.069 (0.065)	−0.029 (0.068)	0.006 (0.064)
Absolute latitude	−0.479*** (0.070)	−0.547*** (0.061)	−0.058 (0.192)	−0.033 (0.214)	−0.131 (0.201)
Mean precipitation			0.468*** (0.086)	0.447*** (0.088)	0.479*** (0.088)
Mean temperature			0.270 (0.197)	0.385* (0.213)	0.404** (0.183)
Ln(Area)			0.517*** (0.067)	0.482*** (0.073)	0.464*** (0.074)
Distance from the sea			0.053 (0.065)	0.063 (0.062)	0.073 (0.064)
Migratory distance from East Africa			−0.281*** (0.063)	−0.518** (0.199)	−0.513** (0.218)
Ln(Population density in 1995)				−0.118 (0.087)	0.023 (0.072)
Ln(Population density in 1500)					−0.235** (0.105)
Year of independence					−0.108 (0.066)
Timing of transition to agriculture					0.134 (0.094)
Continental FE	No	No	No	No	Yes
Observations	156	156	156	156	142
R ²	0.23	0.40	0.67	0.69	0.73

Notes: Standardized beta coefficients are reported, with robust standard errors in parentheses. See online Appendix for variables' sources and definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

To make sure there are enough regional observations per country, only those with at least ten cells of 0.5 by 0.5 decimal degrees with information on land quality and language coverage are included. This limits the sample size to 156 countries. Descriptive statistics and the raw correlations are presented in Tables 1A and 1B in the online Appendix.

For the cross-country regressions, the following specification is adopted:

$$\begin{aligned}
 (1) \quad \ln(\text{Number of Languages}_i) = & a_0 + a_1 \text{Absolute Latitude}_i \\
 & + a_2 \text{Variation in Elevation}_i \\
 & + a_3 \text{Variation in Land Quality}_i + \alpha_4 \mathbf{X}_i + \eta_i,
 \end{aligned}$$

TABLE 2A—ROBUSTNESS CHECKS FOR THE CROSS-COUNTRY ANALYSIS

Variables	Negative binomial Number of languages	OLS Log number of languages		
	(1)	(2)	(3)	(4)
Variation in elevation	1.313*** (0.395)		1.045** (0.473)	1.309*** (0.445)
Variation in land quality	3.252*** (0.952)			
Dispersion of elevation		0.429*** (0.130)		
Dispersion of land quality		1.315*** (0.399)		
Variation in climatic suitability			2.505*** (0.749)	
Mean climatic suitability			0.661* (0.349)	
Variation in soil suitability				3.785*** (1.324)
Mean soil suitability				0.653 (0.474)
Continental FE	Yes	Yes	Yes	Yes
Observations	142	142	142	142
R^2	.	0.73	0.73	0.73
Log pseudolikelihood	−536.365	.	.	.

Notes: Nonstandardized coefficients reported, with robust standard errors in parentheses. All specifications include the same controls as those of column 5 in Table 1. Column 1 is estimated using a negative binomial and the dependent variable is the number of languages. Columns 2–4 use as dependent variable the log number of languages. Column 2 uses the dispersion in elevation and land quality to capture geographic variability. Columns 3 and 4 use the climatic and soil components of land quality, respectively.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

where \mathbf{X}_i is a vector of other geographic and political controls for country i .

Given that distance from the equator has been found to be an important predictor of ethnic diversity, in the first column of Table 1 I include it as the only regressor. As expected, it enters negatively and is precisely estimated. Absolute latitude alone explains 23 percent of the variation in contemporary linguistic diversity across countries, with those farther from the equator displaying consistently fewer languages. In column 2 the measures of geographic variability are introduced and enter highly significant with the expected sign. Countries with more diverse soil and climatic characteristics as well as more variable terrain display higher linguistic diversity. Introducing geographic variability significantly increases the explanatory power of the model.

To facilitate comparison of the quantitative effect across different specifications and across regressors, I report standardized coefficients. A one-standard-deviation increase in the variation of elevation and a similar increase in the variation of land quality augments linguistic diversity by 0.31 and 0.34 standard deviations, increasing the log number of languages by 0.52 and 0.47, respectively. Likewise, a one-standard-deviation increase in absolute latitude increases the log number of languages by 0.84. Average land quality and average elevation are negative and statistically significant; however, they become insignificant once additional geographic controls are introduced.

TABLE 2B—LINGUISTIC FRACTIONALIZATION ACROSS COUNTRIES

Variables	ELF (1)	ELF (2)	ELF (3)	ELF3 (4)	ELF5 (5)	ELF7 (6)	ELF9 (7)
Variation in elevation		−0.111 (0.124)	0.363** (0.142)	0.356** (0.169)	0.472*** (0.160)	0.426*** (0.149)	0.413*** (0.156)
Variation in climatic suitability		0.294*** (0.094)	0.231*** (0.084)	0.291*** (0.103)	0.293*** (0.103)	0.215** (0.086)	0.156* (0.089)
Mean elevation		0.093 (0.127)	−0.301** (0.148)	−0.352** (0.171)	−0.475*** (0.169)	−0.462*** (0.166)	−0.367** (0.167)
Mean climatic suitability		0.053 (0.083)	0.218** (0.108)	−0.141 (0.128)	−0.062 (0.121)	−0.213** (0.108)	−0.024 (0.110)
Absolute latitude	−0.369*** (0.080)	−0.434*** (0.081)	−0.397 (0.331)	−0.116 (0.358)	−0.185 (0.326)	−0.064 (0.295)	−0.124 (0.311)
Mean precipitation			0.180 (0.151)	0.455*** (0.174)	0.404** (0.167)	0.487*** (0.142)	0.375*** (0.140)
Mean temperature			−0.030 (0.266)	0.248 (0.296)	0.181 (0.281)	0.316 (0.274)	0.302 (0.280)
Ln(area)			0.030 (0.125)	−0.247* (0.146)	−0.186 (0.153)	−0.174 (0.132)	−0.015 (0.130)
Distance from the sea			0.281*** (0.086)	0.452*** (0.118)	0.414*** (0.109)	0.326*** (0.098)	0.229** (0.093)
Migratory distance from East Africa			−0.122 (0.256)	−0.535* (0.289)	−0.280 (0.296)	−0.359 (0.287)	−0.540* (0.287)
Ln(population density in 1995)			−0.022 (0.103)	−0.093 (0.141)	0.006 (0.141)	0.007 (0.137)	−0.090 (0.132)
Ln(population density in 1500)			−0.268** (0.123)	−0.239* (0.144)	−0.214 (0.150)	−0.211 (0.135)	−0.166 (0.137)
Year of independence			0.146 (0.096)	0.058 (0.122)	0.111 (0.118)	0.061 (0.108)	0.046 (0.104)
Timing of transition to agriculture			−0.080 (0.131)	0.154 (0.168)	0.196 (0.155)	0.338** (0.135)	0.155 (0.135)
Continental FE	No	No	Yes	Yes	Yes	Yes	Yes
Observations	143	143	143	143	143	143	143
R ²	0.14	0.20	0.53	0.32	0.35	0.44	0.48

Notes: Standardized beta coefficients reported, with robust standard errors in parentheses. See online Appendix for variables' sources and definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

In the **third column** of Table 1, other geographic characteristics are accounted for. Consistent with Nettle (1998), average precipitation enters positively and is highly significant, whereas average temperature is insignificant. Smaller countries located at a greater migratory distance from Addis Ababa sustain fewer linguistic groups. Note that by including average temperature in the regression, absolute latitude becomes insignificant. This is because distance from the equator is very highly correlated with average temperature, as shown in online Appendix Table 1B. Not surprisingly, controlling for these additional geographic characteristics decreases the magnitude of the coefficients on variation in land quality and variation in elevation; however, their effects remain precisely estimated. The standardized coefficients suggest that the effects of variation in elevation and migratory distance from East Africa are comparable. The distance to the nearest coastline, though insignificant, increases

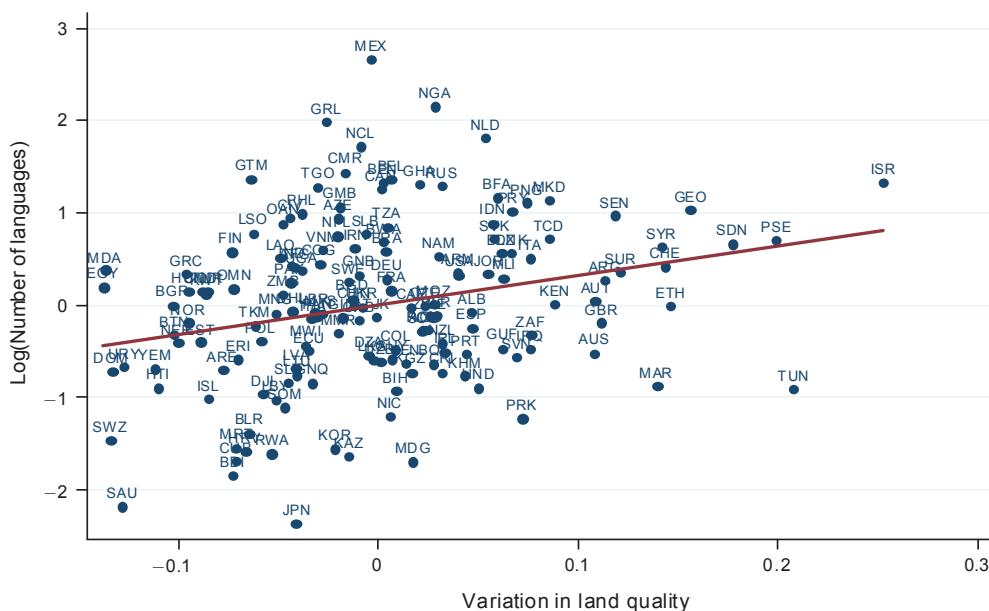


FIGURE 4. ETHNOLINGUISTIC DIVERSITY AND VARIATION IN LAND QUALITY

Note: Conditional on geography, population density, and migratory distance from East Africa and Continental FE.

diversity weakly. This is consistent with the view that areas that are increasingly isolated from the sea have been experiencing limited population mixing and thus should, on average, display higher ethnolinguistic fractionalization. It should be noted, however, that mean distance from the coast also captures the vulnerability of different areas to both the incidence and the intensity of invasion and colonization. Thus, the coefficient should be interpreted cautiously.

In [column 4](#) continental fixed effects are included.⁵ In this regression I also add the log population density as of 1995 to ensure that the results are not driven by differential population density across countries.⁶ The partial scatter plots of the variation in land quality and the variation in elevation against the log number of languages from [column 4](#) are presented in Figures 4 and 5 respectively. In [column 5](#) of Table 1, additional controls that may be correlated both with geographic factors and ethnic diversity are added. To capture variation in historical contingencies across countries the population density in 1500 AD and the country's year of independence are added. The former enters negatively and is statistically significant. This finding provides evidence that conditional on geographic characteristics, contemporary ethnic diversity may have been influenced by a country's historical levels of development as represented by the population density in 1500 AD. The year when each country gained its independence enters insignificantly. Finally, the timing of the transition

⁵ Specifically, dummies for countries in the Americas, Africa, Europe, and East Asia and the Pacific are included.

⁶ One has to be careful in interpreting the coefficient on current population density as the latter may be an outcome of ethnic diversity itself.

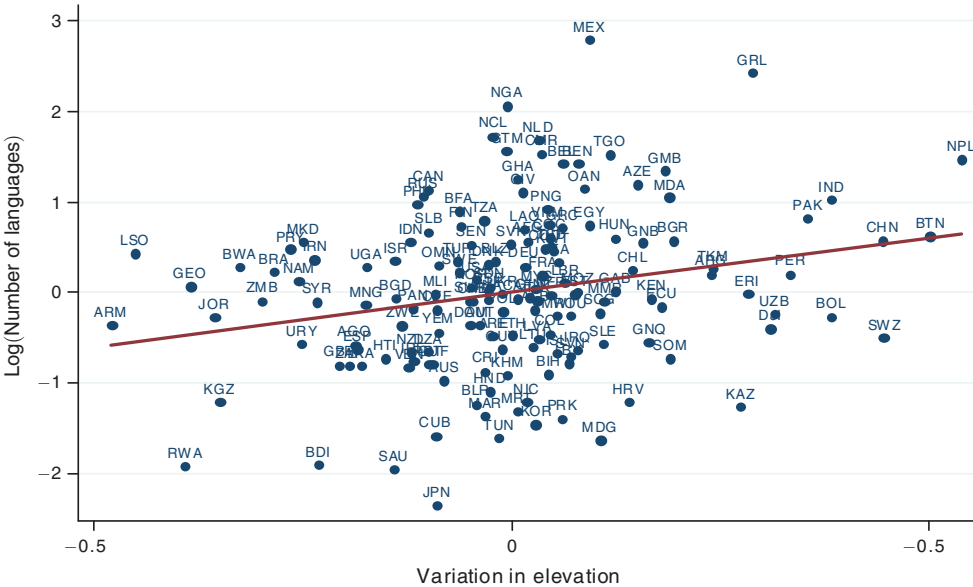


FIGURE 5. ETHNOLINGUISTIC DIVERSITY AND VARIATION IN ELEVATION

Note: Conditional on geography, population density, and migratory distance from East Africa and Continental FE.

to agriculture across countries, which might affect both the suitability of land for agriculture and ethnic diversity, is not significant.

Table 2A presents a series of robustness checks. Using the count of languages as the dependent variable, column 1 presents the estimates on geographic variability using the negative binomial model. (The Poisson model is not appropriate because of overdispersion in the number of languages across countries.) In column 2 of Table 2A, geographic diversity is proxied using the dispersion in land quality and the dispersion on elevation within a country. In the last two columns, I experiment with alternative indexes of land quality. In column 3, I use the climatic component of the land quality index. Likewise, mean land quality is proxied by the mean climatic suitability for agriculture, whereas variation in land quality is constructed using the variation in the climatic suitability across regions within a country. Similarly, column 4 uses the soil-specific component to derive the statistics of interest. In both cases variation in either climatic or soil suitability for agriculture along with a more variable terrain systematically increase linguistic diversity across countries.

Table 2B reports results using as a dependent variable various measures of linguistic fractionalization and employs variation in climatic suitability to capture heterogeneity in agricultural endowments. In this case the geographical statistics are constructed using information across all cells within each country. In columns 1–3 the dependent variable is a widely used measure of ethnolinguistic fractionalization, ELF, based on data from a Soviet ethnographic source, Atlas Narodov Mira (1964), and augmented by Fearon and Laitin (2003). In column 1, I introduce distance from the equator, which enters negatively and highly significantly. In column 2, I add the measures of geographic variability. Variation in land quality is positive

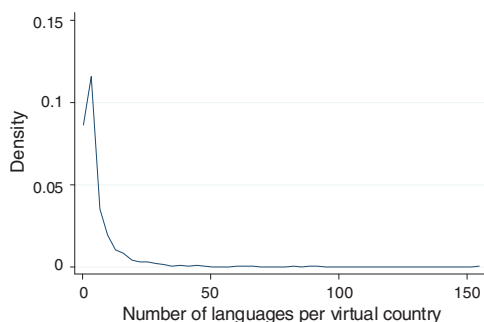


FIGURE 6A. KERNEL DENSITY OF LANGUAGES
ACROSS VIRTUAL COUNTRIES

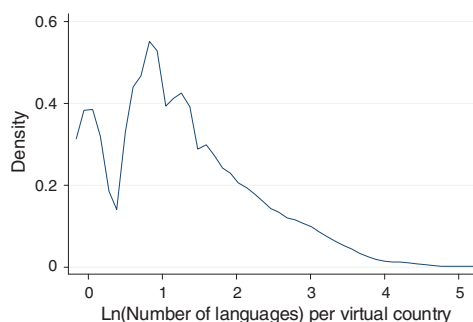


FIGURE 6B. KERNEL DENSITY OF LN(LANGUAGES)
ACROSS VIRTUAL COUNTRIES

and significant; however, the variation in elevation is insignificant. This is mainly driven by continental differences since Africa, which is the most ethnically fractionalized continent, also features a much less variable topography compared to the rest of the world. In column 3 when I include continental fixed effects and additional geographical features, variation in elevation regains its economic and statistical significance. In the rest of the columns of Table 2B I employ measures of linguistic fractionalization constructed by Desmet, Ortuno-Ortín, and Wacziarg (2011). The authors use information on language trees from the Ethnologue dataset to produce estimates of ethnolinguistic fractionalization at different levels of linguistic aggregation depending on how finely or coarsely groups are defined. Columns 4–7 use fractionalization indexes based on progressively finer classifications of linguistic groups to investigate the role of geographic heterogeneity at various levels of linguistic aggregation. Across all specifications, variation in elevation and variation in climatic suitability for agriculture are systematic determinants of contemporary linguistic fractionalization. Similarly, mean precipitation and distance from the sea coast systematically increase linguistic fractionalization. Migratory distance from East Africa and absolute latitude, on the other hand, enter with the expected negative sign; however, they are less precisely estimated.

The findings uncover the fundamental role that geographic endowments play in the formation of ethnically diverse countries. Nevertheless, the endogeneity of contemporary political boundaries and the fact that modern states, in their quest to build unitary nation-states, have largely shaped local languages, call for the investigation to be conducted at finer levels of aggregation where such country-specific characteristics may be properly accounted for. This is the task pursued below.

B. Cross-Virtual Country Analysis

This section focuses on virtual countries. It does so in order to investigate whether the relationship between geography and ethnic diversity holds true at an arbitrary level of aggregation. The virtual countries are constructed in the following way: I generate a global grid of 2.5 by 2.5 decimal degrees that extends from -180 to 180 degrees longitude and from 85 degrees latitude to -65 degrees latitude. This global grid is intersected with the territories that are covered linguistically by the WLMS (2006)

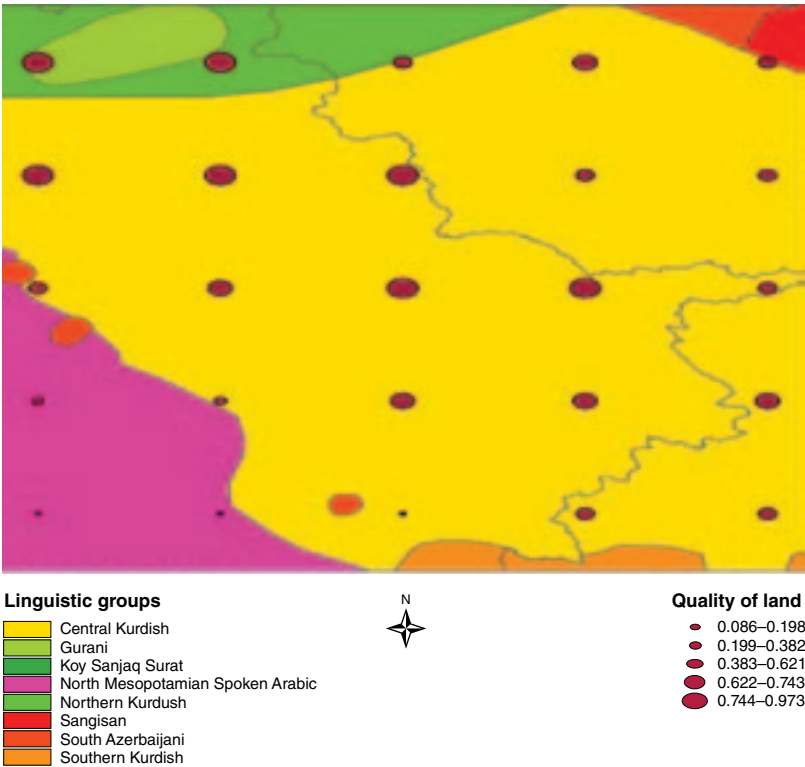


FIGURE 7. EXAMPLE OF A VIRTUAL COUNTRY

database. As a result, each and every part of a virtual country that remains after the spatial intersection has complete linguistic coverage and it is across these territories that geographic and population statistics for each virtual country are constructed. For example, in order to derive the area under water for a virtual country, I focus on the regions where a language is spoken and across these regions I sum up the areas of all water bodies found there. To identify water bodies, I use the “Inland Water Area Features” dataset from Global Mapping International, which offers comprehensive global coverage of all rivers and lakes. Out of the 64,004 cells in the land quality dataset, 18,941 contain no information on languages and are dropped from the analysis. This is mostly due to the incomplete mapping of regions in the Americas and Australia (see Map 1 in the online Appendix, illustrating the resulting virtual countries).⁷

For the construction of the linguistic diversity index, I consider languages with at least 1,000 speakers as recorded in the Ethnologue dataset. The results remain robust whether one includes all languages or focuses only on linguistic groups with at least 3,000 speakers within a country. In the regression analysis, virtual countries of at least 3,000 inhabitants are included. The distribution of the number of

⁷ Similar to the cross-country analysis, partial geographic cells may arise after the intersection with the linguistic maps. Excluding geographic cells with less than 10 or 100 square kilometers of linguistic coverage delivers similar results. Moreover, column 1 in Table 5B shows that focusing on virtual countries with complete linguistic information on each of the 25 intact underlying cells delivers, if anything, stronger results.

TABLE 3—SELECTION INTO LANGUAGE MAPPING

	Regions in virtual countries with language coverage (1)	Regions in virtual countries without language coverage (2)	Standard error (3)
Mean elevation	0.6794	0.6581	(0.0150)
Mean land quality	0.3403	0.3390	(0.0030)
Mean precipitation	0.0729	0.0736	(0.0004)*
Mean temperature	13.2809	13.3542	(0.0780)
Observations	1,206	1,206	

Notes: Standard errors in parentheses clustered at the country level. See online Appendix for variables' sources and definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

languages spoken across virtual countries is skewed so, instead of the levels, the natural log of languages is used in the analysis (see Figures 6A and 6B). Table 5A shows that results are robust to using alternative estimation techniques and different population cutoffs for virtual countries.

Similar to the cross-country analysis, I focus on virtual countries with at least ten cells of 0.5 by 0.5 decimal degrees with information on land quality. The resulting sample size is 1,663 observations with a mean of 22 regional land quality observations per virtual country. Descriptive statistics and the pairwise correlations are presented in Tables 2A and 2B in the online Appendix. The median virtual country has three languages spoken, with the most linguistically fragmented virtual country located in the western part of Cameroon.

Figure 7 shows one example of a virtual country. The circles, which are the centroids of the original 0.5 by 0.5 cells, represent the regional land quality for agriculture. The differently colored polygons represent the locations of the linguistic groups. The virtual country of Figure 7 falls between two real countries with the squiggly line delineating the current borders between Iran on the east and Iraq on the west. There are, in total, eight languages spoken in this area.⁸ It is characterized by large variation in elevation equal to 0.56, and a significant variation in land quality equal to 0.26, ranging from places that are totally inhospitable to agriculture to areas where the climate and the soil conditions are highly conducive to farming.

Excluding regions without linguistic coverage raises the question of whether the linguistically mapped territories reported in WLMS (2006) are systematically different from places for which there is no linguistic coverage. To address this concern, I do the following: from the 1,663 virtual countries there are 1,206 that do not have complete language coverage. In order to determine whether there is selection into mapping, I calculate for each virtual country the geographic statistics for the regions without linguistic coverage and compare them to the respective statistics of the regions with language information. As shown in Table 3 there

⁸Namely, these are Central Kurdish, Gurani, Koy Sanjaq Surat, North Mesopotamian Spoken Arabic, Sangisari, South Azerbaijani, Southern Kurdish, and Northern Kurdish. Languages' traditional homelands may overlap. For example, in this particular grid, regions where Gurani is spoken also have Northern Kurdish speakers.

are no statistically significant differences between linguistically mapped and non-mapped territories with respect to mean land quality, mean elevation, and mean temperature. The only statistically significant difference (at the ten percent level) is found for average precipitation. Regions without language coverage receive slightly higher rainfall of 0.71 millimeters per month. Overall, these findings suggest that places with language coverage do not differ significantly from the non-mapped regions in their geographic endowments, so focusing on the former does not cause a selection bias in the estimation. To further illustrate that selection into mapping is not driving the results, in column 1 of Table 5B I focus only on the 452 virtual countries for which there is complete linguistic coverage in each of the 25 underlying grid cells.

For the cross–virtual country regressions the following specification is adopted:

$$(2) \quad \ln(\text{Number of Languages}_i) = \beta_0 + \beta_1 \text{Absolute Latitude}_i \\ + \beta_2 \text{Variation in Elevation}_i \\ + \beta_3 \text{Variation in Land Quality}_i + \beta_4 \mathbf{X}_i + \xi_i,$$

where \mathbf{X}_i is a vector of other geographic traits of virtual country i .

The analysis in Table 4 is presented in a fashion similar to the cross-country case starting with absolute latitude as the only regressor.⁹ As expected, it enters negatively and is highly significant. In the second column, the measures of geographic variability are introduced.

Because I report standardized coefficients, one can compare directly the relative magnitudes of the variables of interest. A one-standard-deviation increase in the variation of elevation and a similar increase in the variation of land quality augment linguistic diversity by 0.12 and 0.14 standard deviations, adding 0.12 and 0.13 log number of languages, respectively. These economically important findings reveal the geographic origins of contemporary ethnolinguistic diversity. The effect of geographic variability has half the effect of distance from the equator; however, as soon as country fixed effects are introduced, distance from the equator becomes insignificant. In the same specification I control for average land quality and average elevation but they are statistically insignificant.

In column 3 of Table 4, I introduce an array of additional geographic controls. Average precipitation is positive and highly significant whereas average temperature is insignificant. As expected, larger territories have more languages but the effect is not precisely estimated. Distance from the shoreline of an artificial country does not systematically affect linguistic diversity. The variable capturing areas of water like rivers and lakes enters positively and is statistically insignificant.¹⁰ The more

⁹The results presented here are OLS estimates with the standard errors clustered at the country level. Note that in case of virtual countries split by international boundaries, they are assigned to the country in which their centroid falls.

¹⁰Note that the bivariate relationship between water area and linguistic diversity is negative but insignificant. This obtains because water area and surface area are positively correlated and the latter is positively related to

TABLE 4—MAIN SPECIFICATION FOR THE VIRTUAL COUNTRY ANALYSIS

Variables	Log number of languages						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variation in elevation		0.124*** (0.044)	0.114*** (0.033)	0.082*** (0.030)	0.118** (0.057)	0.093** (0.043)	0.091** (0.035)
Variation in land quality		0.144** (0.058)	0.088** (0.043)	0.116*** (0.033)	0.103** (0.048)	0.173*** (0.055)	0.134** (0.052)
Mean elevation		−0.024 (0.033)	0.028 (0.053)	0.032 (0.072)	0.008 (0.154)	−0.019 (0.147)	−0.034 (0.107)
Mean land quality		0.043 (0.060)	0.042 (0.055)	0.065 (0.074)	0.262*** (0.075)	−0.026 (0.112)	−0.006 (0.098)
Absolute latitude	−0.557*** (0.054)	−0.515*** (0.066)	−0.390*** (0.134)	−0.317 (0.270)	−0.216 (0.131)	−0.353 (0.272)	−0.402 (0.335)
Mean precipitation			0.354*** (0.061)	0.191** (0.087)	0.222*** (0.081)	0.076 (0.114)	0.111 (0.124)
Mean temperature			−0.118 (0.131)	−0.140 (0.202)	−0.054 (0.173)	−0.129 (0.219)	−0.209 (0.247)
Ln(Area)			0.059 (0.055)	0.038 (0.038)	0.197*** (0.067)	−0.012 (0.042)	0.046 (0.055)
Sea distance			0.026 (0.039)	0.021 (0.042)	0.198*** (0.071)	0.008 (0.043)	−0.000 (0.036)
Water area			0.037 (0.027)	0.005 (0.024)	0.026 (0.027)	0.013 (0.037)	−0.017 (0.036)
Within-country indicator			−0.041 (0.034)	−0.041 (0.035)	−0.036 (0.057)	−0.087 (0.066)	
Number of countries			0.197*** (0.033)	0.191*** (0.038)	0.121** (0.058)	0.288*** (0.063)	
Migratory distance from East Africa			−0.284*** (0.050)	−0.087 (0.215)	1.000 (0.710)	−0.268 (0.272)	−0.234 (0.288)
Ln(Population density in 1995)				0.023 (0.053)	0.169 (0.111)	0.006 (0.067)	0.039 (0.079)
Country FE	No	No	No	Yes	Yes	Yes	Yes
Observations	1,663	1,663	1,663	1,663	536	1,127	994
R ²	0.31	0.36	0.53	0.70	0.73	0.56	0.66

Notes: Standardized beta coefficients are reported, with standard errors in parentheses clustered at the country level. Column 5 focuses on virtual countries in the tropics, column 6 on virtual countries out of the tropics, and column 7 on virtual countries belonging entirely within an existing real country. See online Appendix for variables' sources and definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

countries a virtual country falls into, the more languages it sustains. This finding has a dual interpretation. It may be suggestive of the effect of state formation on ethnic diversity and/or an artifact of modern states having drawn political borders along ethnic boundaries. Finally, migratory distance from East Africa enters negatively and is highly significant. These geographic characteristics decrease the estimated coefficients of geographic variability, which nevertheless remain economically and statistically significant. Overall, such geographic features capture 53 percent of the variation in linguistic diversity across virtual countries.

linguistic diversity. In fact, controlling for surface area in this bivariate regression the coefficient on water area is negative and precisely estimated.

Taking advantage of the arbitrarily drawn borders of these geographic units, one may control explicitly for country fixed effects. Territories falling into more than one country are assigned to the country in which their centroid falls. For example, the centroid of the virtual country in Figure 7 belongs to Iraq. This is done in all subsequent specifications. Such inclusion of powerful controls, not possible in a cross-country framework, allows me to explicitly take into account any systematic elements related to the nation-building process of current states and thus produce reliable estimates of the effect of geographic heterogeneity on ethnic diversity. Note that as soon as country fixed effects are introduced in column 4 of Table 4, both migratory distance from East Africa and distance from the equator become insignificant, but this is largely due an increase in the standard errors. In this regression I also add the log population density as of 1995, which is insignificant.

Columns 5 and 6 of Table 4 examine whether the identified effect of geographic variability is driven by any inherent differences between regions in the tropics and the rest of the climatic zones. In column 5 the sample is restricted to virtual countries in the tropics that extend from 23.5 latitude degrees south to 23.5 latitude degrees north. The estimated coefficients on both variation in land quality and variation in elevation remain stable and the effect of average land quality now becomes positive and significant. The latter is consistent with the finding of Moore et al. (2002) that cultural diversity within sub-Saharan Africa increases in net primary productivity. Also, within the tropics larger territories receiving more precipitation and those located farther inland display systematically larger linguistic diversity. On the contrary, across virtual countries out of the tropics in column 6, geographic heterogeneity is the only significant predictor of ethnic diversity. Finally, column 7 of Table 4 focuses on virtual countries that belong entirely to a single existing country. This specification allows one to investigate whether the estimated strong positive relationship between geographic variability and ethnic diversity holds true across regions belonging to a single country. According to the estimates a one-standard-deviation increase in both variation in land quality and variation in elevation increases by 0.22 the log number of languages, contributing significantly to the formation of ethnically diverse regions within countries.

Tables 5A and 5B present a series of robustness checks. For brevity I report only the estimates on geographic variability but all specifications include the same controls as in column 4 of Table 4. Column 1 of Table 5A reports the effect of geographic variability on the number of languages within a virtual country estimated by a negative binomial model. In the second column all virtual countries are included in the regression, irrespective of the total population, whereas in column 3 only those with at least 50,000 inhabitants as of 1995 are included. Finally, in the last two columns the dependent variable is constructed using alternative population thresholds for the linguistic groups. In particular, in column 4 all linguistic groups that fall within a virtual country are counted, irrespective of their population, whereas in column 5 only language groups with at least 3,000 recorded speakers are included.

Across all these alternative specifications, geographic variability remains both quantitatively and qualitatively significant, demonstrating the robustness of the findings to alternative estimation techniques and indexes of linguistic diversity.

TABLE 5A—ROBUSTNESS CHECKS FOR THE VIRTUAL COUNTRY ANALYSIS

Variables	Negative binomial Number of languages	OLS	OLS Ln number of languages		
	(1)	(2)	(3)	(4)	(5)
Variation in elevation	0.425*** (0.149)	0.383*** (0.129)	0.455*** (0.142)	0.492*** (0.126)	0.361*** (0.121)
Variation in land quality	1.074*** (0.387)	1.211*** (0.357)	1.128*** (0.363)	1.081*** (0.337)	1.108*** (0.350)
Country FE	Yes	Yes	Yes	Yes	Yes
Observations	1,663	1,888	1,324	1,709	1,651
R ²		0.71	0.73	0.69	0.71
Log-Pseudolikelihood	−3,586.497				

Notes: Nonstandardized coefficients reported, standard errors in parentheses clustered at the country level. All specifications include the same controls as those of column 4 in Table 4. Column 1 is estimated using a negative binomial and the dependent variable is the Number of Languages. The dependent variable in 2–5 is the log number of Languages. Column 2 includes all virtual countries irrespective of their population size. Column 3 includes virtual countries with at least 50,000 inhabitants. Column 4 includes in the Number of Languages all linguistic groups of a virtual country irrespective of their population. Column 5 includes in the Number of Languages groups with at least 3,000 recorded speakers. See online Appendix for variables' sources and definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

TABLE 5B—ROBUSTNESS CHECKS FOR THE VIRTUAL COUNTRY ANALYSIS

Variables	Ln number of languages				
	(1)	(2)	(3)	(4)	(5)
Variation in elevation	1.003*** (0.327)	0.360*** (0.129)		0.407*** (0.139)	0.428*** (0.135)
Variation in land quality	1.583*** (0.475)	1.194*** (0.295)			
Dispersion of elevation			0.145*** (0.050)		
Dispersion of land quality			0.403*** (0.116)		
Variation in climatic suitability				0.661** (0.321)	
Mean climatic suitability				0.532** (0.212)	
Variation in soil suitability					0.875*** (0.304)
Mean soil suitability					(0.021) (0.183)
Country FE	Yes	Yes	Yes	Yes	Yes
Observations	452	1,663	1,663	1,663	1,663
R ²	0.63	0.74	0.71	0.71	0.70

Notes: Nonstandardized coefficients reported, standard errors in parentheses clustered at the country level. All specifications include the same controls as those of column 4 in Table 4. Column 1 focuses on virtual countries with linguistic information across all 25 complete underlying cells, and column 2 adds 100 fixed effects, 1 for each percentile of the size distribution of virtual countries. Column 3 uses the dispersion in elevation and land quality, respectively. Column 4 uses the variation in climatic suitability to capture the heterogeneity in the suitability for agriculture. In this case, mean land quality is proxied by mean climatic suitability for agriculture. Column 5 uses the variation in soil suitability to capture variation in the suitability for agriculture. In this case, mean land quality is proxied by mean soil suitability for agriculture. See online Appendix for variables' sources and definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

In Table 5B I perform additional robustness checks. In column 1 I focus on virtual countries with complete linguistic coverage across all 25 underlying intact geographic cells. The coefficients on geographic diversity increase in magnitude and remain precisely estimated. In column 2 I control for the size of each virtual country in a flexible way. Specifically, I add a fixed effect for each percentile of the size distribution. Doing so, I exploit variation within states, across virtual countries of similar sizes. The results show that the estimated coefficients on geographic variability remain unaffected. In columns 3–5 I use alternative measures of geographic variability. In column 3 geographic diversity is captured by the dispersion in land quality and the dispersion of elevation within a virtual country. In columns 4 and 5 I use the climatic and soil components of land quality, respectively, to capture variation in agricultural suitability. Across these alternative indexes of geographic diversity, the main finding remains unaltered. Territories characterized by variable geographic endowments have more linguistic groups.

This section establishes that heterogeneity in land quality and elevation across virtual countries is a fundamental determinant of contemporary ethnic diversity. The fact that these results obtain at an arbitrary level of aggregation, in and out of the tropics, and after controlling for country fixed effects, brings into light the geographic origins of ethnic diversity.

C. Pairwise Analysis of Adjacent Regions

There is a large literature in education, urban and trade economics that concentrates on bordering regions to investigate the effect of various policies (Black 1999 and McCallum 1995, among others). The rationale is that focusing on adjacent regions, while accounting for observable characteristics, should neutralize any local unobservable differences that would otherwise contaminate inference. Similarly, this section investigates the effect of local geographic differences in determining the degree of linguistic similarity within pairs of adjacent regions. To implement this test, I identify the neighboring regions of each 0.5-by-0.5-degrees cell. The immediate neighbors of each cell are those directly to the north, south, east, and west, as well as those that are diagonally contiguous at a distance of 0.71 degrees (i.e., to the northwest, southwest, northeast, and southeast). In total, a single region may belong to at most eight pairs. In Figure 8 the dots of regional land qualities are the centroids of the individual regions and the arrows point to their regional neighbors. Pairs with a total area of less than 1,000 square kilometers are excluded resulting in a total of 156,570 unique dyads that constitute the units of analysis.

For the pairwise regressions of adjacent regions the following specification is adopted:

$$\begin{aligned}
 (3) \text{ Percentage of Common Languages}_{ij} = & \gamma_0 + \gamma_1 \text{Absolute Difference in Land Quality}_{ij} \\
 & + \gamma_2 \text{Absolute Difference in Elevation}_{ij} \\
 & + \gamma_3 \mathbf{X}_{ij} + \xi_{ij},
 \end{aligned}$$

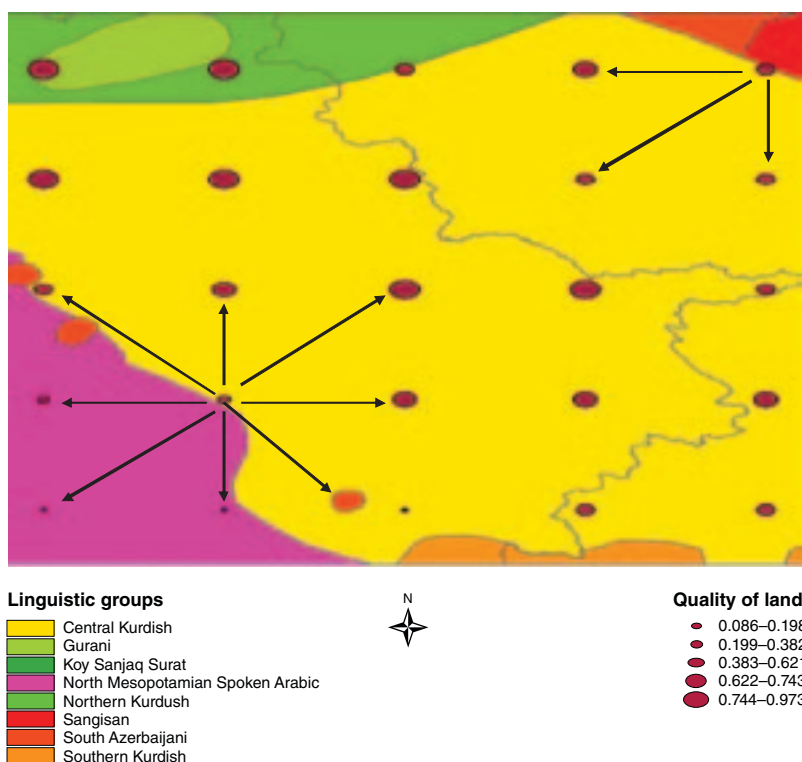


FIGURE 8. EXAMPLE OF PAIRS OF ADJACENT REGIONS

where the *percentage of common languages*_{*ij*} is the number of common languages divided by the total number of languages spoken within the regional pair *ij* capturing the degree of ethnic similarity of any two adjacent regions. The absolute difference in land quality and elevation between cells *i* and *j* provide a measure of how dissimilar are the local geographic attributes. Tables 3A and 3B in the online Appendix present the summary statistics and the correlation table. Note that the mean of the dependent variable implies that adjacent regions, by virtue of proximity, have on average 77 percent of the total number of languages in common.

The first column in Table 6 produces evidence on the role of regional geographic differences in shaping local ethnolinguistic diversity. Specifically, a one-standard-deviation increase in the difference in land quality and a similar increase in difference in elevation decreases local linguistic similarity by 3.5 percentage points, contributing to the formation of ethnically distinct neighbors. The combined estimated effect is a modest 12 percent of the dependent variable's standard deviation, however; it is quantitatively similar to the effect of physical distance within pairs. A one-standard-deviation increase in the geodesic distance (that is, approximately 14 kilometers) decreases ethnic similarity by 3.4 percentage points. The significant effect of physical proximity conditional on geographic factors is consistent with a migration mechanism where physical distance between populations leads over time to linguistic differentiation between groups.

Regional pairs located farther from the equator and with large migratory distance from East Africa are more ethnically similar, whereas those characterized by higher

TABLE 6—MAIN SPECIFICATION FOR THE PAIRWISE ANALYSIS OF ADJACENT REGIONS

Variables	Percentage of common languages				
	(1)	(2)	(3)	(4)	(5)
Difference in land quality	−0.111*** (0.032)	−0.038*** (0.012)	−0.054*** (0.018)	−0.048** (0.021)	−0.056*** (0.016)
Difference in elevation	−0.091*** (0.014)	−0.051*** (0.006)	−0.050*** (0.016)	−0.046** (0.022)	−0.053*** (0.009)
Geodesic distance within the pair	−0.244*** (0.050)	−0.303*** (0.039)	−0.382*** (0.041)	−0.199** (0.074)	−0.274*** (0.051)
Migratory distance from East Africa	0.005*** (0.002)	−0.010 (0.078)	−0.021 (0.146)	−0.040 (0.192)	0.232** (0.093)
Absolute latitude	0.005*** (0.001)	0.077*** (0.026)	0.006 (0.025)	−0.008 (0.049)	0.093** (0.042)
Mean elevation	−0.006 (0.013)	−0.006 (0.028)	0.011 (0.044)	0.040 (0.051)	0.010 (0.046)
Mean land quality	−0.004 (0.024)	−0.003 (0.014)	0.021 (0.037)	0.018 (0.061)	−0.026 (0.034)
Mean precipitation	−1.270*** (0.130)	0.089 (0.152)	−0.639 (0.661)	0.116 (0.646)	−0.004 (0.194)
Mean temperature	0.001 (0.002)	−0.002 (0.007)	−0.008 (0.007)	−0.008 (0.010)	0.004 (0.010)
Sea distance	−0.015 (0.014)	−0.138 (0.114)	−0.034 (0.120)	−0.039 (0.212)	−0.375*** (0.073)
Water area	−0.012 (0.018)	−0.007 (0.010)	−0.009 (0.012)	−0.009 (0.019)	0.004 (0.011)
Ln(population density in 1995)	−0.005 (0.005)	−0.003* (0.002)	−0.005 (0.004)	−0.000 (0.008)	0.003 (0.002)
Ln(area)	0.106*** (0.016)	0.034*** (0.010)	0.068*** (0.020)	−0.029 (0.026)	0.014 (0.012)
Within-country indicator	0.144*** (0.010)	0.155*** (0.009)	0.136*** (0.012)	0.344*** (0.015)	0.145*** (0.012)
Region FE	No	Yes	Yes	Yes	Yes
Observations	156,570	156,570	35,305	11,975	74,830
R ²	0.28	0.73	0.74	0.70	0.72

Notes: Nonstandardized coefficients reported, standard errors in parentheses clustered at the country level. Specification 3 focuses on pairs within Africa, 4 on pairs within Europe, and 5 on pairs within Asia.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

levels of precipitation have fewer languages in common. Finally, pairs that fall within a country are systematically more similar, whereas pairs more densely populated in 1995 tend to be more linguistically diverse, but the effect is insignificant at conventional levels.

The dyadic structure of the observations allows me to control for region fixed effects by including 42,644 regional dummies. This demanding specification explicitly takes into account any systematic elements related to the regional histories. As is evident from column 2, the inclusion of region fixed effects decreases the magnitude of the coefficients on pairwise differences in elevation and land quality considerably, but they remain highly statistically significant. Also, unlike the geodesic distance within the pair and distance from the equator, which remain significant, migratory distance from East Africa and average precipitation are no longer systematically related to local ethnic diversity.

The last 3 columns of Table 6 consider different continents. Column 3 focuses on pairs within Africa, whereas column 4 focuses on pairs within Europe. Comparing the two samples, it is clear that geographic variability is equally important quantitatively, whereas the effect of physical distance within dyads in Africa is twice as large as the respective magnitude within regional pairs in Europe. Additionally, dyads within countries in Africa have 13.6 percent more common languages compared to regional pairs that are partitioned by country borders. On the other hand, any two adjacent regions within Europe located in the same country have 34.4 percent more common languages compared to pairs split by borders. Finally, within Asia (column 5), more geographically distinct dyads and those located farther from the coast are more linguistically dissimilar.

These findings demonstrate the following: first, the differences in land quality and elevation between adjacent regions shape local ethnic diversity. Second, the spatial arrangement of a given heterogeneous land endowment matters in determining the degree of cultural heterogeneity; that is, regions with similar land endowments in closer proximity would result in lower ethnic diversity.

D. Recent Migrations and Ethnic Diversity

In the last 500 years, several regions have experienced dramatic changes in their ethnic and linguistic endowments because of conquests, slavery, migrations, and colonization. Although distinguishing the relative impact of these historical events on shaping contemporary ethnic diversity is beyond the scope of the current study, in this section I show that across territories where indigenous groups as of 1500 AD constitute a minority today, the current ethnic composition of the population is no longer systematically related to the underlying geography.

Two explanations may be offered for this broken link. One is that the new settlers have spent only limited time in these geographic endowments, so geography has not yet made an impact upon the formation of distinct linguistic traits. The second observation is related to the fact that these migration flows have taken place mainly over the last two centuries when geography has become less important in shaping mobility between groups. This is largely due to industrialization; that is, the declining importance of land in the production process, and the ease of communication and transportation thanks to technological advances.

Table 7 investigates whether the effect of geographic variability depends on the presence of native populations. Specifically, at every level of aggregation results are presented for territories where more than 40 percent of the current population was indigenous in these countries as of 1500 AD. These are compared to the point estimates derived for regions where *less* than 40 percent of the population can trace ancestry back to 1500 AD.¹¹ Columns 1 and 2 present the results across virtual countries. The controls are similar to those in column 4 of Table 4. Out of a total of 1,663 virtual countries 1,302 belong to countries with significant representation of indigenous people. Geographic variability in this subset of virtual countries is a powerful predictor of linguistic diversity. On the contrary, in the remaining 311 regions with

¹¹ Using any cutoff below 40 percent of indigenous population, the results are similar.

TABLE 7—RECENT MIGRATIONS AND LINGUISTIC DIVERSITY

Variables	Ln number of languages		Percentage of common languages		Ln number of languages	
	(1)	(2)	(3)	(4)	(5)	(6)
Variation in elevation	0.470*** (0.132)	−0.352** (0.168)			1.312*** (0.500)	0.5694 (2.4711)
Variation in land quality	1.220*** (0.406)	0.256 (0.361)			3.144*** (1.121)	1.465 (6.969)
Difference in land quality			−0.048*** (0.011)	−0.001 (0.008)		
Difference in elevation			−0.052*** (0.007)	−0.038 (0.023)		
Country FE	Yes	Yes	No	No	No	No
Region FE	No	No	Yes	Yes	No	No
Continental FE	No	No	No	No	Yes	Yes
Observations	1,352	311	124,522	32,048	121	21
R ²	0.71	0.56	0.74	0.69	0.72	0.97

Notes: Nonstandardized coefficients reported, standard errors clustered at the country level in columns 1, 2, 3, 4, and robust standard errors are reported in columns 5 and 6. Columns 1, 3, and 5: countries where at least 40 percent of the current population can trace ancestry to 1500 AD. Columns 2, 4, and 6: countries where less than 40 percent of the current population can trace ancestry to 1500 AD. Columns 1 and 2: virtual country sample including all controls of column 4 in Table 4. Columns 3 and 4: pairs of contiguous regions sample including all controls of column 2 in Table 6. Columns 5 and 6: real countries sample including all controls of column 5 in Table 1.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

greatly diminished indigenous populations, geographic heterogeneity is no longer systematically related to contemporary linguistic diversity. If anything, as column 2 suggests, more variable elevation leads to lower linguistic fragmentation. The same pattern holds true when focusing across pairs of adjacent regions and across countries, shown in columns 3, 4, and 5, 6, respectively.

Although geographic variability is not related to contemporary ethnic diversity in regions with significant population reshuffling in the last 500 years, variations in the intensity of colonization and slavery have been linked to the geographic conditions of the colonized countries. On the one hand, Engerman and Sokoloff (1997) argue that slavery became so predominant in certain colonies like the Caribbean or Brazil, because of the climatic and soil conditions that were well-suited for growing specific valuable crops, like sugar, that were produced most efficiently on large slave plantations. On the other hand, the limited presence of slavery in the North American mainland was due to land endowments favoring an economy based on grains and livestock, whose production required few slaves due to the limited economies of scale. Also, Acemoglu, Johnson, and Robinson (2001) argue that ecological conditions shaped the intensity of European colonization with regions characterized by unfavorable disease environments experiencing little European migration. Evidence consistent with the geographic determinants of the post-1500 migration flows is presented in Ertan and Putterman (2007). First, the authors show that sub-Saharan Africans ended up in larger numbers in places where endowments were more suitable for sugarcane production (to be used as slaves in sugarcane plantations) and less suitable for wheat cultivation.

Second, European populations were more likely to migrate in places characterized by low disease loads farther away from the equator.

Overall, the findings in Table 7 suggest that in places with large population changes over the last 500 years, the advent of new groups coupled with the replacement and displacement of the indigenous populations have severed the link between geographic variability and ethnic diversity. This is an important finding because it highlights that, unlike most countries where a significant fraction of contemporary ethnic diversity may be treated as predetermined by geography, ethnic diversity in places where recent settlers constitute the majority is neither geographically predetermined nor may be treated as exogenous. In addition to their languages, recent settlers have brought along institutions and other country-specific characteristics of their native lands. These have been shown in Putterman and Weil (2010) to affect contemporary economic performance directly.

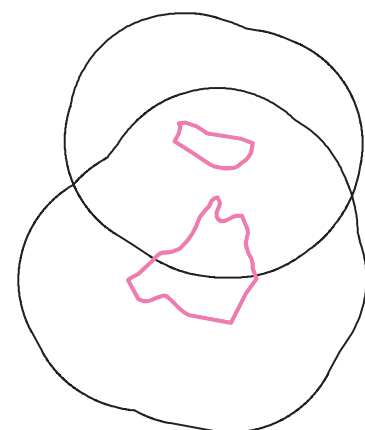
IV. Channels Linking Geography to Ethnic Diversity

In this section I discuss the possible mechanisms that may give rise to the observed relationship between geographic and ethnic diversity.

The empirical findings are consistent with several channels. First, one might argue that groups of people form an ethnic identity along a homogeneous land endowment in order to defend it against intruders and enforce property rights over it. If this is the case, places characterized by more diverse land endowments would naturally sustain more linguistic groups. Second, to the extent that homogeneous territories are easier to conquer and invasions have a homogenizing effect, then a similar empirical relationship would hold true. Third, geographic differences, by magnifying migration costs, may increase isolation between groups leading via a process of cultural drift to the formation of distinct cultural and linguistic traits (Boyd and Richerson 1985). In fact, the pairwise analysis of contiguous regions produces evidence on the role of pure migration costs by showing that the physical distance within a pair of adjacent regions decreases linguistic similarity significantly. Fourth, in a stage of development when land dominates production decisions, people working on different types of land acquired location-specific skills not easily transferable to a different natural environment. Therefore, geographic diversity reduced the mobility of people in a given area, increasing isolation and leading to the formation of distinct languages. This last mechanism highlights that ethnic groups may be thought of as bearers of location-specific human capital.¹²

Disentangling the importance of each channel is difficult. A heterogeneous geography may directly increase migration costs and/or lead groups of people to accumulate skills specific to their local environment. Nevertheless, the specific human capital mechanism generates an auxiliary prediction not borne out by other potential explanations. Specifically, to the extent that a language group is characterized by specific skills then nonadjacent partitions of the same language group would exhibit similar modes of subsistence. In an attempt to provide empirical evidence on this channel, I examine African linguistic groups.

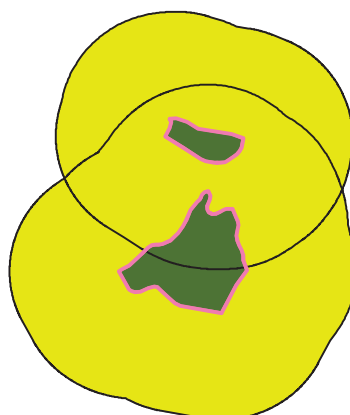
¹²Region-specific human capital should be thought of as encompassing both the technical knowledge necessary to be productive in a given region and the capacity of the immune system to adapt to the local disease vectors.



Nonadjacent homelands of a language group: the case of Silt'e in Ethiopia

 Homelands of Silt'e
 Buffer zones around the homelands of Silt'e

FIGURE 9A



Pastoral intensity within and around Silt'e





 Homelands of Silt'e
 Buffer zones around the homelands of Silt'e
 Pastoralism dominant
 Agriculture dominant

FIGURE 9B

Figure 9A maps the linguistic homeland of the Silt'e. This group is located in Ethiopia and, according to the WLMS (2006), its traditional location extends over two nonadjacent regions. To obtain a proxy for the dominant subsistence activity across linguistic partitions, I use data on the actual allocation of land between pasture and farming and within farming among the different crops in 1992 AD. Specifically, I use information at the grid level (0.5 by 0.5 decimal degrees) on how land is allocated between pasture and agriculture to identify the dominant activity within each partition. For example, the northern part of Silt'e in Figure 9B has 61 percent of its land under some form of cultivation compared to 38 percent used for pasture. Hence, it is classified as an agricultural community. Similarly, the southern partition of Silt'e uses most land for farming. Naturally, one may argue that both partitions being farmers is not a manifestation of common human capital within the group, but rather an overall characteristic of this part of Ethiopia. Therefore, I generate for each partition a buffer zone of 0.5 decimal degrees radius (see Figure 9A) and calculate the dominant land use in these neighboring regions. Figure 9B shows that in the case of Silt'e the neighboring regions of both partitions are predominantly pastoral. For example, the regions found in the buffer zone of the northern partition allocate, on average, 50 percent of the land towards pasture, compared to 39 percent towards agriculture.

To explore the correlation structure of the subsistence activities within groups located in multiple territories, I focus on African linguistic groups that, according to the WLMS (2006), have homelands that span over two noncontiguous regions.¹³ In

¹³To capture significant partitions, I exclude those with less than 100 square kilometers. Results are similar if I include all partitions irrespective of size and/or groups that are partitioned in more than two nonadjacent territories.

total, there are 209 groups with 2 partitions each. For the cross-language partition analysis, the following specification is adopted:¹⁴

$$(4) \quad \textit{Specialization}_{i,g} = \delta_0 + \delta_1 \textit{Buffer Specialization}_{i,g} + \delta_2 \textit{Specialization}_{j,g} \\ + \delta_3 \textit{Land Quality}_{i,g} + \phi_{i,g},$$

where $\textit{Specialization}_{i,g}$ is the dominant activity in partition i of group g ; $\textit{Buffer Specialization}_{i,g}$ is the primary activity in the regions within a radius of 0.5 decimal degrees around partition i of group g , and $\textit{Specialization}_{j,g}$ captures the dominant activity in partition j that belongs to the same ethnic group g as partition i . I consider three types of activities: first, whether pasture is dominant; second, whether maize is the most common crop when agriculture is present; and third, whether sorghum is the most cultivated crop. I focus on these two crops because they are the most widespread in Africa.

In columns 1 and 2 of Table 8 the dependent variable is an indicator that equals 1 if partition i is predominantly pastoral. Column 1 shows that if the neighboring regions of a partition are pastoral, this increases by 75 percent the likelihood that the partition itself is pastoral. Also, partitions with higher suitability for agriculture are more likely to be farmers. In column 2 I control for whether partition j of the same linguistic group g is pastoral. Conditional on the specialization pattern of the surrounding regions of partition i , if partition j is pastoral, this increases significantly the likelihood that i is also a pastoral community.

Similar is the pattern when I look at specific crops. Columns 3 and 4 focus on whether maize is the most cultivated crop, and columns 5 and 6 on sorghum. In the case of maize, column 4 reveals that if partition j has maize as its dominant crop, this increases by 54 percent the probability that maize will also be the most cultivated crop in partition i . Similarly, column 6 shows that conditional on the subsistence pattern of the neighboring regions, if sorghum is the crop with the largest share of land under cultivation in partition j , this increases by 37 percent the probability that sorghum will also be the dominant crop in partition i .

Overall, the uncovered correlation in the subsistence practices across nonadjacent partitions of the same linguistic group is supportive of the hypothesis that African ethnic groups are bearers of specific skills. Although the findings highlight that the human capital mechanism is a relevant dimension for understanding language group formation within Africa, they do not shed light on the relative importance of other channels, a task left for future research.

V. Concluding Remarks

This study examines the geographic origins of ethnic diversity. I construct the distribution of land quality and elevation across regions and countries and show that geographic variability systematically gives rise to linguistic diversity. I examine both cross-virtual country and cross-country specifications. The former is of particular

¹⁴The results presented here are probit maximum likelihood estimates with the standard errors clustered at the ethnicity level.

TABLE 8—SPECIALIZATION PATTERN ACROSS NONCONTIGUOUS PARTITIONS OF THE SAME LANGUAGE GROUP

Variables	Pasture		Maize		Sorghum	
	(1)	(2)	(3)	(4)	(5)	(6)
Pasture across buffer regions	0.749*** (0.094)	0.420*** (0.137)				
Pasture in the nonadjacent partition of the same group		0.307*** (0.161)				
Maize across buffer regions			0.945*** (0.018)	0.881*** (0.050)		
Maize in the nonadjacent partition of the same group				0.540*** (0.144)		
Sorghum across buffer regions					0.926*** (0.023)	0.853*** (0.059)
Sorghum in the nonadjacent partition of the same group						0.367*** (0.135)
Mean land quality	-0.102** (0.039)	-0.059** (0.028)	0.064 (0.206)	0.055 (0.182)	0.154 (0.155)	0.120 (0.149)
Observations	418	418	372	372	372	372
Log pseudolikelihood	-40.581	-30.356	-54.667	-43.563	-65.098	-57.339

Notes: The unit of analysis is a partition of a language group. Standard errors are in parentheses clustered at the language group level. All columns are estimated by maximum-likelihood probit models. The coefficients report the change in the probability of the dependent variable induced by a change in the respective regressor. In columns 1 and 2 the dependent variable is an indicator that takes the value 1 if pasture dominates land use in the partition. In columns 3 and 4 the dependent variable is an indicator that takes the value 1 if maize is the dominant crop in the partition. In columns 5 and 6 the dependent variable is an indicator that takes the value 1 if sorghum is the dominant crop in the partition. See online Appendix for variables' definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

significance since the relationship between geographic and ethnic diversity holds true at an arbitrary level of aggregation, explicitly avoiding the endogeneity of current countries' borders and after controlling for country fixed effects. These results are corroborated by examining how local differences in land quality and elevation shape the degree of ethnic similarity within pairs of adjacent regions. Accounting for region-specific effects, contiguous cells sharing similar land features are ethnically more homogeneous compared to pairs characterized by different land endowments. Overall, the importance of the distribution of land quality and elevation in determining ethnic diversity is a recurrent finding across different levels of aggregation and remains robust to alternative specifications and indexes of geographic and linguistic heterogeneity.

The empirical evidence may be used to explain the pattern of technology diffusion within and across countries as well as across ethnic groups. Technology would diffuse more quickly over places characterized by homogeneous geographic endowments, whereas in relatively heterogeneous places—which, according to the evidence, are also more ethnically diverse—the diffusion would be less rapid, leading to the emergence of inequality across countries as well as ethnic groups (Diamond 1997).

Furthermore, this research suggests that differences in regional land endowments gave rise to location-specific human capital, diminishing population mobility and leading to the formation of localized ethnicities. On the contrary, homogeneous land

endowments facilitated population mixing, resulting eventually in the formation of a common ethnolinguistic identity. Viewing languages as agents of specific human capital implies that speakers of the same language, found in separate territories, should be observed to undertake similar activities. Consistent with the hypothesis, I show that within Africa the subsistence patterns across noncontiguous partitions of the same language group are systematically correlated.

REFERENCES

- Acemoglu, Daron, Simon Johnson, and James A. Robinson.** 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review* 91 (5): 1369–401.
- Ahlerup, Pelle, and Ola Olsson.** Forthcoming. "The Roots of Ethnic Diversity." *Journal of Economic Growth*.
- Alesina, Alberto, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg.** 2003. "Fractionalization." *Journal of Economic Growth* 8 (2): 155–94.
- Alesina, Alberto, and Eliana La Ferrara.** 2005. "Ethnic Diversity and Economic Performance." *Journal of Economic Literature* 43 (3): 762–800.
- Ashraf, Quamrul, and Oded Galor.** Forthcoming. "Human Genetic Diversity and Comparative Economic Development." *American Economic Review*.
- Atlas Narodov Mira.** 1964. Moscow: Miklukho-Maklai Ethnological Institute at the Department of Geodesy and Cartography of the State Geological Committee of the Soviet Union.
- Banerjee, Abhijit, and Rohini Somanathan.** 2007. "The Political Economy of Public Goods: Some Evidence from India." *Journal of Development Economics* 82 (2): 287–314.
- Barth, Fredrik.** 1969. *Ethnic Groups and Boundaries: The Social Organization of Culture Difference*. Boston: Little, Brown.
- Black, Sandra E.** 1999. "Do Better Schools Matter? Parental Valuation of Elementary Education." *Quarterly Journal of Economics* 114 (2): 577–99.
- Boyd, Robert, and Peter J. Richerson.** 1985. *Culture and the Evolutionary Process*. Chicago: University of Chicago Press.
- Cavalli-Sforza, Luigi Luca, and Francesco Cavalli-Sforza.** 1996. *The Great Human Diasporas: The History of Diversity and Evolution*. New York: Perseus Books.
- Comin, Diego, William Easterly, and Erick Gong.** 2010. "Was the Wealth of Nations Determined in 1000 BC?" *American Economic Journal: Macroeconomics* 2 (3): 65–97.
- Darwin, Charles.** 2006. *The Voyage of the Beagle*. New York: Black Dog & Leventhal Publishers, (Orig. pub. 1839).
- Desmet, Klaus, Ignacio Ortuño-Ortín, and Romain Wacziarg.** Forthcoming. "The Political Economy of Ethnolinguistic Cleavages." *Journal of Development Economics*.
- Diamond, Jared.** 1997. *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W. W. Norton & Co.
- Diamond, Jared.** 2005. *Collapse: How Societies Choose to Fail or Succeed*. New York: Viking Penguin.
- Easterly, William, and Ross Levine.** 1997. "Africa's Growth Tragedy: Policies and Ethnic Divisions." *Quarterly Journal of Economics* 112 (4): 1203–50.
- Engerman, Stanley L., and Kenneth L. Sokoloff.** 1997. "Factor Endowments, Institutions, and Differential Paths of Growth among New World Economies: A View from Economic Historians of the United States." In *How Latin America Fell Behind: Essays on the Economic Histories of Brazil and Mexico, 1800–1914*, edited by Stephen Haber, 260–304. Stanford, CA: Stanford University Press.
- Ertan, Arhan S., and Louis Putterman.** 2007. "Determinants and Economic Consequences of Colonization: A Global Analysis." Unpublished.
- Fearon, James D., and David D. Laitin.** 2003. "Ethnicity, Insurgency, and Civil War." *American Political Science Review* 97 (1): 75–90.
- Galor, Oded, and Stelios Michalopoulos.** 2012. "Evolution and the Growth Process: Natural Selection of Entrepreneurial Traits." *Journal of Economic Theory*, 147 (2): 759–80.
- Galor, Oded, and Omer Moav.** 2002. "Natural Selection and the Origin of Economic Growth." *Quarterly Journal of Economics* 117 (4): 1133–91.
- Geographically Based Economic Data.** 2006. "Geographically Based Economic Data." <http://gecon.yale.edu>.
- Geertz, Clifford.** 1967. *Old Societies and New States: The Quest for Modernity in Asia and Africa*. New York: Free Press.

- Gray, Russell D., and Quentin D. Atkinson.** 2003. "Language-Tree Divergence Times Support the Anatolian Theory of Indo-European Origin." *Nature* 426: 435–39.
- Hale, Henry E.** 2004. "Explaining Ethnicity." *Comparative Political Studies* 37 (4): 458–85.
- Harmon, David.** 1996. "Losing Species, Losing Languages: Connections Between Biological and Linguistic Diversity." *Southwest Journal of Linguistics* 15: 89–108.
- Lewis, M. Paul, ed.** 2005. *Ethnologue: Languages of the World*. 15th ed. Dallas: SIL International.
- Mace, Ruth, and Mark Pagel.** 1995. "A Latitudinal Gradient in the Density of Human Languages in North America." *Proceedings of the Royal Society: Biological Sciences* 261 (1360): 117–21.
- Maffi, Luisa.** 2005. "Linguistic, Cultural and Biological Diversity." *Annual Review of Anthropology* 34 (1): 599–617.
- Mauro, Paolo.** 1995. "Corruption and Growth." *Quarterly Journal of Economics* 110 (3): 681–712.
- McCallum, John.** 1995. "National Borders Matter: Canada-US Regional Trade Patterns." *American Economic Review* 85 (3): 615–23.
- Michalopoulos, Stelios.** 2012. "The Origins of Ethnolinguistic Diversity: Dataset." *American Economic Review*. <http://dx.doi.org/10.1257/aer.102.4.1508>.
- Moore, Joslin L., Lisa Manne, Thomas Brooks, Neil D. Burgess, Robert Davies, Carsten Rahbek, Paul Williams, and Andrew Balmford.** 2002. "The Distribution of Cultural and Biological Diversity in Africa." *Proceedings of the Royal Society: Biological Sciences* 269 (1501): 1645–53.
- Nettle, Daniel.** 1998. "Explaining Global Patterns of Language Diversity." *Journal of Anthropological Archaeology* 17 (4): 354–74.
- Nettle, Daniel.** 1999. *Linguistic Diversity*. Oxford: Oxford University Press.
- Nurse, Derek, and Gérard Philippson.** 2003. *The Bantu Languages*. London: Routledge.
- Putterman, Louis, and David N. Weil.** 2010. "Post-1500 Population Flows and the Long-Run Determinants of Economic Growth and Inequality." *Quarterly Journal of Economics* 125 (4): 1627–82.
- Ramankutty, Navin, Jonathan A. Foley, John Norman, and Kevin McSweeney.** 2002. "The Global Distribution of Cultivable Lands: Current Patterns and Sensitivity to Possible Climate Change." *Global Ecology and Biogeography* 11 (5): 377–92.
- Spolaore, Enrico, and Romain Wacziarg.** 2009. "The Diffusion of Development." *Quarterly Journal of Economics* 124 (2): 469–529.
- Sutherland, William J.** 2003. "Parallel Extinction Risk and Global Distribution of Languages and Species." *Nature* 423: 276–79.
- World Language Mapping System (WLMS).** 2006. *World Language Mapping System, Version 3.2*. <http://www.gmi.org/wlms/>.

This article has been cited by:

1. Anirban Mitra, Sarmistha Pal. 2022. Ethnic Diversity, Social Norms and Elite Capture: Theory and Evidence from Indonesia. *Economica* **114**. . [[Crossref](#)]
2. Andrew Dickens. 2022. Understanding Ethnolinguistic Differences: The Roles of Geography and Trade. *The Economic Journal* **132**:643, 953-980. [[Crossref](#)]
3. Martin Fiszbein. 2022. Agricultural Diversity, Structural Change, and Long-Run Development: Evidence from the United States. *American Economic Journal: Macroeconomics* **14**:2, 1-43. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
4. Saqib Amin, Waqas Mehmood, Arshian Sharif. 2022. Blessing or curse: The role of diversity matters in stimulating or relegating environmental sustainability—a global perspective via renewable and non-renewable energy. *Renewable Energy* **189**, 927-937. [[Crossref](#)]
5. Erasmo Papagni. 2022. Long-term barriers to global fertility convergence. *Journal of Population Economics* **8**. . [[Crossref](#)]
6. Rajesh Ramachandran, Christopher Rauh. 2022. The Imperium of the Colonial Tongue? Evidence on Language Policy Preferences in Zambia. *Journal of African Economies* **9**. . [[Crossref](#)]
7. SCOTT F ABRAMSON, DAVID B. CARTER, LUWEI YING. 2022. Historical Border Changes, State Building, and Contemporary Trust in Europe. *American Political Science Review* **20**, 1-21. [[Crossref](#)]
8. Junbing Zhu, Theocharis N. Grigoriadis. 2022. Chinese dialects, culture & economic performance. *China Economic Review* **65**, 101783. [[Crossref](#)]
9. Giuliana Pardelli, Alexander Kustov. 2022. WHEN COETHNICITY FAILS. *World Politics* **5**, 1-36. [[Crossref](#)]
10. YANNICK I. PENGL, PHILIP ROESSLER, VALERIA RUEDA. 2022. Cash Crops, Print Technologies, and the Politicization of Ethnicity in Africa. *American Political Science Review* **116**:1, 181-199. [[Crossref](#)]
11. Saqib Amin, Mujahid Ameen Khan, Waqas Mehmood. 2022. Probing Environmental Sustainability Through the Diversity-Pollution Nexus—a Global Perspective via PM2.5 and NO2. *Water, Air, & Soil Pollution* **233**:2. . [[Crossref](#)]
12. Mariko Nakagawa, Shonosuke Sugawara. 2021. Linguistic distance and economic development: A cross-country analysis. *Review of Development Economics* **20**. . [[Crossref](#)]
13. Zhongfei Chen, Ming Jin, Athanasios Andrikopoulos, Youwei Li. 2021. Cultural diversity and borrowers' behavior: evidence from peer-to-peer lending. *The European Journal of Finance* **16**, 1-25. [[Crossref](#)]
14. Eva M. Buitrago, M. Ángeles Caraballo. 2021. Measuring social diversity in economic literature: An overview for cross-country studies. *Journal of Economic Surveys* **84**. . [[Crossref](#)]
15. Arthur Blouin. 2021. Axis-orientation and knowledge transmission: evidence from the Bantu expansion. *Journal of Economic Growth* **26**:4, 359-384. [[Crossref](#)]
16. Areendam Chanda, Bulent Unel. 2021. Do attitudes toward risk taking affect entrepreneurship? Evidence from second-generation Americans. *Journal of Economic Growth* **26**:4, 385-413. [[Crossref](#)]
17. Trung V. Vu. 2021. Do genetically fragmented societies respond less to global warming? Diversity and climate change policies. *Energy Economics* **104**, 105652. [[Crossref](#)]
18. Matthew J. Baker. 2021. Foundations of the Age-Area Hypothesis. *Humanities and Social Sciences Communications* **8**:1. . [[Crossref](#)]

19. GUOQIANG HU, JASON ZEZHONG XIAO, YUHAN ZHEN. 2021. The Effect of Dialect Sharing on Corporate Cash Holdings in China. *Abacus* **12**. . [[Crossref](#)]
20. Trung V. Vu. 2021. Are genetic traits associated with riots? The political legacy of prehistorically determined genetic diversity*. *Kyklos* **74**:4, 567-595. [[Crossref](#)]
21. Susan Ou, Heyu Xiong. 2021. Mass persuasion and the ideological origins of the Chinese Cultural Revolution. *Journal of Development Economics* **153**, 102732. [[Crossref](#)]
22. Carl-Johan Dalgaard, Jakob B. Madsen, Holger Strulik. 2021. Physiological constraints and the transition to growth: implications for comparative development. *Journal of Economic Growth* **26**:3, 241-289. [[Crossref](#)]
23. Yonatan Dinku, Dereje Regasa. 2021. Ethnic Diversity and Local Economies. *South African Journal of Economics* **89**:3, 348-367. [[Crossref](#)]
24. Saqib Amin, Nawaz Ahmad, Asim Iqbal, Ghulam Mustafa. 2021. Asymmetric analysis of environment, ethnic diversity, and international trade nexus: empirical evidence from Pakistan. *Environment, Development and Sustainability* **23**:8, 12527-12549. [[Crossref](#)]
25. Per G. Fredriksson, Aatishya Mohanty. 2021. Sunlight and Culture. *Journal of Economic Behavior & Organization* **188**, 757-782. [[Crossref](#)]
26. Roland Hodler, Michele Valsecchi, Alberto Vesperoni. 2021. Ethnic geography: Measurement and evidence. *Journal of Public Economics* **200**, 104446. [[Crossref](#)]
27. José G. Montalvo, Marta Reynal-Querol. 2021. Ethnic Diversity and Growth: Revisiting the Evidence. *The Review of Economics and Statistics* **103**:3, 521-532. [[Crossref](#)]
28. Debasis Bandyopadhyay, Xueli Tang. 2021. Children's learning environment and growth-promoting income redistribution. *Macroeconomic Dynamics* **2**, 1-45. [[Crossref](#)]
29. Johannes C Bugge, Ruben Durante. 2021. Climate Risk, Cooperation and the Co-Evolution of Culture and Institutions. *The Economic Journal* **131**:637, 1947-1987. [[Crossref](#)]
30. Andrew John, Onur Özgür. 2021. Linguistic Diversity in the very Long Run. *The Economic Journal* **131**:635, 1186-1214. [[Crossref](#)]
31. Sami Dakhli, Boubacar Diallo, Akram Temimi. 2021. Financial inclusion and ethnic development: Evidence from satellite light density at night. *Journal of Behavioral and Experimental Finance* **29**, 100455. [[Crossref](#)]
32. James Fenske, Namrata Kala. 2021. Linguistic Distance and Market Integration in India. *The Journal of Economic History* **81**:1, 1-39. [[Crossref](#)]
33. Nicolas Berman, Mathieu Couttenier, Raphael Soubeyran. 2021. Fertile Ground for Conflict. *Journal of the European Economic Association* **19**:1, 82-127. [[Crossref](#)]
34. James B. Ang, Per G. Fredriksson. 2021. Does an early start help or hurt? Statehood, institutions and modern climate change policies. *Energy Economics* **94**, 105075. [[Crossref](#)]
35. Yishu Fu, Chunbo Liu, Zhenjiang Qin. 2021. Does CEO-chairman dialect similarity affect stock price informativeness for Chinese listed firms?. *The North American Journal of Economics and Finance* **55**, 101313. [[Crossref](#)]
36. Sara Lowes. Ethnographic and field data in historical economics 147-177. [[Crossref](#)]
37. Nathan Nunn. History as evolution 41-91. [[Crossref](#)]
38. Gu Zhihui, Wei Sun, Frank Zhou. 2021. The Cultural Roots of Economic Expropriation. *SSRN Electronic Journal* **56**. . [[Crossref](#)]
39. Paul Minard. 2020. Is China's regional inequality ethnic inequality?. *Letters in Spatial and Resource Sciences* **13**:3, 297-314. [[Crossref](#)]

40. Lamar Pierce, Jason A. Snyder. 2020. Historical Origins of Firm Ownership Structure: The Persistent Effects of the African Slave Trade. *Academy of Management Journal* **63**:6, 1687-1713. [[Crossref](#)]
41. Sandra Achten, Christian Lessmann. 2020. Spatial inequality, geography and economic activity. *World Development* **136**, 105114. [[Crossref](#)]
42. Harry Pickard. 2020. Explaining fiscal decentralization and the role of ethnic Diversity. *Scottish Journal of Political Economy* **67**:5, 469-485. [[Crossref](#)]
43. Victor Court. 2020. A reassessment of the Great Divergence debate: towards a reconciliation of apparently distinct determinants. *European Review of Economic History* **24**:4, 633-674. [[Crossref](#)]
44. T. Ryan Johnson, Dietrich Vollrath. 2020. The Role of Land in Temperate and Tropical Agriculture. *Economica* **87**:348, 901-937. [[Crossref](#)]
45. Nawaz Ahmad, Saqib Amin. 2020. Does ethnic polarization stimulate or relegate trade and environmental performance? A global perspective. *Environment, Development and Sustainability* **22**:7, 6513-6536. [[Crossref](#)]
46. Janet I. Lewis. How Insurgency Begins **41**, . [[Crossref](#)]
47. Gerard Roland. 2020. The deep historical roots of modern culture: A comparative perspective. *Journal of Comparative Economics* **48**:3, 483-508. [[Crossref](#)]
48. James B. Ang. 2020. Early state institutions and the persistence of linguistic diversity. *European Journal of Political Economy* **64**, 101914. [[Crossref](#)]
49. Christopher Linebarger, Alex Braithwaite. 2020. Do Walls Work? The Effectiveness of Border Barriers in Containing the Cross-Border Spread of Violent Militancy. *International Studies Quarterly* **64**:3, 487-498. [[Crossref](#)]
50. Emilio Depetris-Chauvin, Ömer Özak. 2020. The origins of the division of labor in pre-industrial times. *Journal of Economic Growth* **25**:3, 297-340. [[Crossref](#)]
51. Scott L. Fulford, Ivan Petkov, Fabio Schiantarelli. 2020. Does it matter where you came from? Ancestry composition and economic performance of US counties, 1850–2010. *Journal of Economic Growth* **25**:3, 341-380. [[Crossref](#)]
52. Carl-Johan Dalgaard, Anne Sofie B. Knudsen, Pablo Selaya. 2020. The bounty of the sea and long-run development. *Journal of Economic Growth* **25**:3, 259-295. [[Crossref](#)]
53. Christian Dippel, Avner Greif, Daniel Trefler. 2020. Outside Options, Coercion, and Wages: Removing the Sugar Coating. *The Economic Journal* **130**:630, 1678-1714. [[Crossref](#)]
54. Shuhei Kitamura, Nils-Petter Lagerlöf. 2020. Geography and State Fragmentation. *Journal of the European Economic Association* **18**:4, 1726-1769. [[Crossref](#)]
55. Georg Hirte, Christian Lessmann, André Seidel. 2020. International trade, geographic heterogeneity and interregional inequality. *European Economic Review* **127**, 103427. [[Crossref](#)]
56. Matthieu Clement, Lucie Piaser. 2020. Ethnic Diversity, Local Redistribution and Income Inequality: An Empirical Analysis Applied to Mexican Municipalities. *The Journal of Development Studies* **9**, 1-21. [[Crossref](#)]
57. Daron Acemoglu, Leopoldo Fergusson, Simon Johnson. 2020. Population and Conflict. *The Review of Economic Studies* **87**:4, 1565-1604. [[Crossref](#)]
58. Victor Ginsburgh, Shlomo Weber. 2020. The Economics of Language. *Journal of Economic Literature* **58**:2, 348-404. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
59. John Gerring, Wouter Veenendaal. Population and Politics **79**, . [[Crossref](#)]
60. Mario F Carillo. 2020. Agricultural Policy and Long-Run Development: Evidence from Mussolini's Battle for Grain*. *The Economic Journal* **7**, . [[Crossref](#)]

61. Richard Bluhm, Kaj Thomsson. 2020. Holding on? Ethnic divisions, political institutions and the duration of economic declines. *Journal of Development Economics* **144**, 102457. [[Crossref](#)]
62. ALI T. AHMED, DAVID STASAVAGE. 2020. Origins of Early Democracy. *American Political Science Review* **114**:2, 502-518. [[Crossref](#)]
63. Vasiliki Fouka, Alain Schläpfer. 2020. Agricultural Returns to Labour and the Origins of Work Ethics. *The Economic Journal* **130**:628, 1081-1113. [[Crossref](#)]
64. Palitha Konara. 2020. The role of language connectedness in reducing home bias in trade, investment, information, and people flows. *Research in International Business and Finance* **52**, 101180. [[Crossref](#)]
65. Stelios Michalopoulos, Elias Papaioannou. 2020. Historical Legacies and African Development. *Journal of Economic Literature* **58**:1, 53-128. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
66. Cemal Eren Arbatli, Quamrul H. Ashraf, Oded Galor, Marc Klemp. 2020. Diversity and Conflict. *Econometrica* **88**:2, 727-797. [[Crossref](#)]
67. Hans Tino Ayamena Mpenya, Francis Menjo Baye, Boniface Ngah Epo. Mapping Out Non-monetary Dimensions of Well-Being by Ethnicity in Rural Cameroon 341-367. [[Crossref](#)]
68. Nils B. Weidmann, Kristian Skrede Gleditsch. Geodaten und deren Analyse in der Politikwissenschaft 419-438. [[Crossref](#)]
69. Kristian Skrede Gleditsch, Nils B. Weidmann. From Hand-Counting to GIS: Richardson in the Information Age 73-85. [[Crossref](#)]
70. Sefa Awaworyi Churchill, Maria Rebecca Valenzuela. 2019. Determinants of firm performance: does ethnic diversity matter?. *Empirical Economics* **57**:6, 2079-2105. [[Crossref](#)]
71. Olivier Sterck. 2019. BEYOND THE STARS. *Journal of Economic Surveys* **33**:5, 1409-1436. [[Crossref](#)]
72. John Gerring, Carl Henrik Knutsen. 2019. Polity Size and the Institutionalization of Leadership Succession. *Studies in Comparative International Development* **54**:4, 451-472. [[Crossref](#)]
73. Mahsa Akbari, Duman Bahrami-Rad, Erik O. Kimbrough. 2019. Kinship, fractionalization and corruption. *Journal of Economic Behavior & Organization* **166**, 493-528. [[Crossref](#)]
74. David B. Carter, Andrew C. Shaver, Austin L. Wright. 2019. Places to Hide: Terrain, Ethnicity, and Civil Conflict. *The Journal of Politics* **81**:4, 1446-1465. [[Crossref](#)]
75. Shaun Larcom. 2019. Linking precolonial institutions with ethnic fractionalisation: what are we measuring?. *Journal of Institutional Economics* **15**:5, 811-826. [[Crossref](#)]
76. Mark Gradstein, Moshe Justman. 2019. Cultural interaction and economic development: An overview. *European Journal of Political Economy* **59**, 243-251. [[Crossref](#)]
77. Belinda Archibong. 2019. Explaining divergence in the long-term effects of precolonial centralization on access to public infrastructure services in Nigeria. *World Development* **121**, 123-140. [[Crossref](#)]
78. Stelios Michalopoulos, Louis Putterman, David N Weil. 2019. The Influence of Ancestral Lifeways on Individual Economic Outcomes in Sub-Saharan Africa. *Journal of the European Economic Association* **17**:4, 1186-1231. [[Crossref](#)]
79. Alain Cohn, Michel André Maréchal, David Tannenbaum, Christian Lukas Zünd. 2019. Civic honesty around the globe. *Science* **365**:6448, 70-73. [[Crossref](#)]
80. Vittorio Daniele, Antonio Di Ruggiero. 2019. The Roots of Global Inequality: The Role of Biogeography and Genetic Diversity. *The Journal of Development Studies* **55**:7, 1584-1602. [[Crossref](#)]
81. Dong Wook Lee, Melissa Rogers. 2019. Measuring Geographic Distribution for Political Research. *Political Analysis* **27**:3, 263-280. [[Crossref](#)]
82. Yi-ting Wang, Kiril Kolev. 2019. Ethnic Group Inequality, Partisan Networks, and Political Clientelism. *Political Research Quarterly* **72**:2, 329-341. [[Crossref](#)]

83. Saqib Amin. 2019. The endless nexus between ethnic diversity, social exclusion and institutional quality of Pakistan. *International Journal of Sociology and Social Policy* 39:3/4, 182-200. [[Crossref](#)]
84. Marcus J. Hamilton, Briggs Buchanan, Robert S. Walker. 2019. Spatiotemporal diversification of projectile point types in western North America over 13,000 years. *Journal of Archaeological Science: Reports* 24, 486-495. [[Crossref](#)]
85. Wenlong Bian, Yang Ji, Hao Zhang. 2019. Does dialect similarity add value to banks? Evidence from China. *Journal of Banking & Finance* 101, 226-241. [[Crossref](#)]
86. Sefa Awaworyi Churchill, Ahmed Salim Nuhu, Karely Lopez. 2019. Persistence of gender inequality: the role of ethnic divisions. *Applied Economics* 51:8, 781-796. [[Crossref](#)]
87. Metin M. Coşgel, Jungbin Hwang, Thomas J. Miceli, Sadullah Yıldırım. 2019. Religiosity: Identifying the effect of pluralism. *Journal of Economic Behavior & Organization* 158, 219-235. [[Crossref](#)]
88. J. ANDREW HARRIS, DANIEL N. POSNER. 2019. (Under What Conditions) Do Politicians Reward Their Supporters? Evidence from Kenya's Constituencies Development Fund. *American Political Science Review* 113:1, 123-139. [[Crossref](#)]
89. Sefa Awaworyi Churchill, Emmanuel Laryea. 2019. Crime and Ethnic Diversity: Cross-Country Evidence. *Crime & Delinquency* 65:2, 239-269. [[Crossref](#)]
90. Elliott Green. 2019. Industrialization and ethnic change in the modern world. *Ethnic and Racial Studies* 42:2, 178-197. [[Crossref](#)]
91. Sefa Awaworyi Churchill, Kris Ivanovski, Mita Bhattacharya. 2019. The role of ethnic diversity in sustainable environmental growth: new evidence across different income regions. *Applied Economics* 51:4, 398-408. [[Crossref](#)]
92. Sjoerd Beugelsdijk, Mariko J. Klasing, Petros Milionis. 2019. Value Diversity and Regional Economic Development. *The Scandinavian Journal of Economics* 121:1, 153-181. [[Crossref](#)]
93. Olivier Sterck. 2019. On the Measurement of Importance. *SSRN Electronic Journal* . [[Crossref](#)]
94. Apoorv Gupta, Jacopo Ponticelli, Andrea Tesei. 2019. Technology Adoption and Access to Credit Via Mobile Phones. *SSRN Electronic Journal* . [[Crossref](#)]
95. Stelios Michalopoulos, Alireza Naghavi, Giovanni Prarolo. 2018. Trade and Geography in the Spread of Islam. *The Economic Journal* 128:616, 3210-3241. [[Crossref](#)]
96. Terhi Honkola, Kalle Ruokolainen, Kaj J. J. Syrjänen, Unni-Päivä Leino, Ilpo Tammi, Niklas Wahlberg, Outi Vesakoski. 2018. Evolution within a language: environmental differences contribute to divergence of dialect groups. *BMC Evolutionary Biology* 18:1. . [[Crossref](#)]
97. James B. Ang, Satyendra Kumar Gupta. 2018. Agricultural yield and conflict. *Journal of Environmental Economics and Management* 92, 397-417. [[Crossref](#)]
98. Armin Falk, Johannes Hermle. 2018. Relationship of gender differences in preferences to economic development and gender equality. *Science* 362:6412. . [[Crossref](#)]
99. Per G. Fredriksson, Jim R. Wollscheid. 2018. Legal origins and environmental policies: evidence from OECD and developing countries. *Letters in Spatial and Resource Sciences* 11:3, 369-375. [[Crossref](#)]
100. Federico Tadei. 2018. The Long-Term Effects of Extractive Institutions: Evidence from Trade Policies in Colonial French Africa. *Economic History of Developing Regions* 33:3, 183-208. [[Crossref](#)]
101. Sefa Awaworyi Churchill, Vinod Mishra. 2018. The impact of ethnic diversity on microenterprise start-ups. *Applied Economics* 50:40, 4328-4342. [[Crossref](#)]
102. Stelios Michalopoulos, Elias Papaioannou. 2018. Spatial Patterns of Development: A Meso Approach. *Annual Review of Economics* 10:1, 383-410. [[Crossref](#)]

103. Francesco Amodio, Giorgio Chiovelli. 2018. Ethnicity and Violence During Democratic Transitions: Evidence from South Africa. *Journal of the European Economic Association* 16:4, 1234-1280. [[Crossref](#)]
104. Carla Canelas, Rachel M. Gisselquist. 2018. Horizontal inequality as an outcome. *Oxford Development Studies* 46:3, 305-324. [[Crossref](#)]
105. Boris Gershman, Diego Rivera. 2018. Subnational diversity in Sub-Saharan Africa: Insights from a new dataset. *Journal of Development Economics* 133, 231-263. [[Crossref](#)]
106. Masayuki Kudamatsu. 2018. GIS for Credible Identification Strategies in Economics Research. *CESifo Economic Studies* 64:2, 327-338. [[Crossref](#)]
107. Erkan Gören. 2018. Consequences of Linguistic Distance for Economic Growth. *Oxford Bulletin of Economics and Statistics* 80:3, 625-658. [[Crossref](#)]
108. Jakob B. Madsen, Minoo Farhadi. 2018. International Technology Spillovers and Growth over the Past 142 Years: The Role of Genetic Proximity. *Economica* 85:338, 329-359. [[Crossref](#)]
109. John Gerring, Michael Hoffman, Dominic Zarecki. 2018. The Diverse Effects of Diversity on Democracy. *British Journal of Political Science* 48:2, 283-314. [[Crossref](#)]
110. Oana Borcan, Ola Olsson, Louis Putterman. 2018. State history and economic development: evidence from six millennia. *Journal of Economic Growth* 23:1, 1-40. [[Crossref](#)]
111. Joan Ricart-Huguet, Elliott Green. 2018. Taking it Personally: the Effect of Ethnic Attachment on Preferences for Regionalism. *Studies in Comparative International Development* 53:1, 67-89. [[Crossref](#)]
112. Brad Sievers, R. Urbatsch. 2018. Endogenous borders and access to the sea. *Political Geography* 63, 43-53. [[Crossref](#)]
113. Paola Giuliano, Nathan Nunn. 2018. Ancestral Characteristics of Modern Populations. *Economic History of Developing Regions* 33:1, 1-17. [[Crossref](#)]
114. Nils B. Weidmann, Kristian Skrede Gleditsch. Geodaten und deren Analyse in der Politikwissenschaft 1-20. [[Crossref](#)]
115. Glenn Abastillas. You Are What You Tweet: A Divergence in Code-Switching Practices in Cebuano and English Speakers in Philippines 77-97. [[Crossref](#)]
116. Philip Roessler, David Ohls. 2018. Self-Enforcing Power Sharing in Weak States. *International Organization* 72:2, 423-454. [[Crossref](#)]
117. Jennifer M. Larson, Janet I. Lewis. 2018. Rumors, Kinship Networks, and Rebel Group Formation. *International Organization* 72:4, 871-903. [[Crossref](#)]
118. Lamar Pierce, Jason A. Snyder. 2018. The Historical Slave Trade and Firm Access to Finance in Africa. *The Review of Financial Studies* 31:1, 142-174. [[Crossref](#)]
119. Oded mname Galor, mer mname zak, Assaf mname Sarid. 2018. Geographical Origins of Language Structures. *SSRN Electronic Journal* . [[Crossref](#)]
120. Boubacar Diallo, Qi Zhang. 2018. Financial Inclusion and Development: Evidence from Satellite Light Density at Night. *SSRN Electronic Journal* . [[Crossref](#)]
121. Cemal Eren Arbatli, Quamrul H. Ashraf, Oded Galor, Marc Klemp. 2018. Diversity and Conflict. *SSRN Electronic Journal* . [[Crossref](#)]
122. Daniel OtooPeralias. 2018. No Land without a Lord: Lordships, State Capacity, and Economic Development. *SSRN Electronic Journal* . [[Crossref](#)]
123. Muse Gadisa Demie. 2018. Cereals and Gender Roles: A Historical Perspective. *SSRN Electronic Journal* . [[Crossref](#)]
124. James Ang, Per G. Fredriksson, Satyendra Kumar Gupta. 2018. Agricultural Suitability and Colonization Choices. *SSRN Electronic Journal* . [[Crossref](#)]

125. John Gerring, Tore Wig, Andreas Forr Tollefsen, Brendan Apfeld. 2018. Harbors and Democracy. *SSRN Electronic Journal* . [[Crossref](#)]
126. Beatriz Manotas Hidalgo, Fidel Perez Sebastian, Miguel Campo-Bescós. 2018. Reexamining the Role of Income Shocks and Ethnic Cleavages on Social Conflict in Africa at the Cell Level. *SSRN Electronic Journal* . [[Crossref](#)]
127. Timothy MacNeill, David Wozniak. 2018. Diversity Effects for Altruistic Behavior: Evidence from the Field and International Data. *SSRN Electronic Journal* . [[Crossref](#)]
128. Oded Galor, Ömer Özak, Assaf Sarid. 2018. Geographical Roots of the Coevolution of Cultural and Linguistic Traits. *SSRN Electronic Journal* . [[Crossref](#)]
129. John Gerring, Brendan Apfeld. 2018. Global Democracy for Europeans: A Demographic Story. *SSRN Electronic Journal* . [[Crossref](#)]
130. Kacou Yves Thierry Kacou. 2018. Artificial Statehood and Financial Development: A Cross-Country Analysis. *SSRN Electronic Journal* . [[Crossref](#)]
131. Emilio Depetris-Chauvin, mer zak. 2018. The Origins of the Division of Labor in Pre-Modern Times. *SSRN Electronic Journal* . [[Crossref](#)]
132. Sefa Awaworyi Churchill, Janet Exornam Ocloo, Diana Siawor-Robertson. 2017. Ethnic Diversity and Health Outcomes. *Social Indicators Research* **134**:3, 1077-1112. [[Crossref](#)]
133. Ahmed Skali. 2017. Moralizing gods and armed conflict. *Journal of Economic Psychology* **63**, 184-198. [[Crossref](#)]
134. Yu Sasaki. 2017. Publishing Nations: Technology Acquisition and Language Standardization for European Ethnic Groups. *The Journal of Economic History* **77**:4, 1007-1047. [[Crossref](#)]
135. Klaus Desmet, Ignacio Ortuno-Ortín, Romain Wacziarg. 2017. Culture, Ethnicity, and Diversity. *American Economic Review* **107**:9, 2479-2513. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
136. Thomas Barnebeck Andersen, Jeanet Bentzen, Carl-Johan Dalgaard, Paul Sharp. 2017. Pre-Reformation Roots of the Protestant Ethic. *The Economic Journal* **127**:604, 1756-1793. [[Crossref](#)]
137. P. Owen. 2017. Evaluating Ingenious Instruments for Fundamental Determinants of Long-Run Economic Growth and Development. *Econometrics* **5**:3, 38. [[Crossref](#)]
138. Pelle Ahlerup, Thushyanthan Baskaran, Arne Bigsten. 2017. Regional development and national identity in sub-Saharan Africa. *Journal of Comparative Economics* **45**:3, 622-643. [[Crossref](#)]
139. Max Schaub. 2017. Second-order ethnic diversity: The spatial pattern of diversity, competition and cooperation in Africa. *Political Geography* **59**, 103-116. [[Crossref](#)]
140. Arcangelo Dimico. 2017. Size Matters: The Effect of the Size of Ethnic Groups on Development. *Oxford Bulletin of Economics and Statistics* **79**:3, 291-318. [[Crossref](#)]
141. Jennifer M. Larson, Janet I. Lewis. 2017. Ethnic Networks. *American Journal of Political Science* **61**:2, 350-364. [[Crossref](#)]
142. Sarah Carmichael, Auke Rijpma. 2017. Blood is Thicker Than Water. *Cross-Cultural Research* **51**:2, 142-171. [[Crossref](#)]
143. Sefa Awaworyi Churchill. 2017. Fractionalization, entrepreneurship, and the institutional environment for entrepreneurship. *Small Business Economics* **48**:3, 577-597. [[Crossref](#)]
144. James R. Brown, J. Anthony Cookson, Rawley Z. Heimer. 2017. Law and Finance Matter: Lessons from Externally Imposed Courts. *The Review of Financial Studies* **30**:3, 1019-1051. [[Crossref](#)]
145. Sefa Awaworyi Churchill. 2017. Microfinance and Ethnic Diversity. *Economic Record* **93**:300, 112-141. [[Crossref](#)]
146. Christian Lessmann, André Seidel. 2017. Regional inequality, convergence, and its determinants – A view from outer space. *European Economic Review* **92**, 110-132. [[Crossref](#)]

147. Paul Collier. 2017. The Institutional and Psychological Foundations of Natural Resource Policies. *The Journal of Development Studies* 53:2, 217-228. [[Crossref](#)]
148. Daniel Oto-Peralías, Diego Romero-Ávila. Views Linking Colonialism with Institutions 13-26. [[Crossref](#)]
149. Evan S. Lieberman, Prerna Singh. 2017. Census Enumeration and Group Conflict. *World Politics* 69:1, 1-53. [[Crossref](#)]
150. Oded Galor, mer zak, Assaf Sarid. 2017. Geographical Origins and Economic Consequences of Language Structures. *SSRN Electronic Journal* . [[Crossref](#)]
151. Emilio Depetris-Chauvin, mer zak. 2017. The Origins and Long-Run Consequences of the Division of Labor. *SSRN Electronic Journal* . [[Crossref](#)]
152. Areendam Chanda, Dachao Ruan. 2017. Early Urbanization and the Persistence of Regional Disparities within Countries. *SSRN Electronic Journal* . [[Crossref](#)]
153. Ruixue Jia, Torsten Persson. 2017. Individual vs. Social Motives in Identity Choice: Theory and Evidence from China. *SSRN Electronic Journal* . [[Crossref](#)]
154. Francesco D'Acunto. 2017. From Financial History to History & Finance. *SSRN Electronic Journal* . [[Crossref](#)]
155. Anastasia Litina. 2016. Natural land productivity, cooperation and comparative development. *Journal of Economic Growth* 21:4, 351-408. [[Crossref](#)]
156. William F. Maloney, Felipe Valencia Caicedo. 2016. The Persistence of (Subnational) Fortune. *The Economic Journal* 126:598, 2363-2401. [[Crossref](#)]
157. Lewis S. Davis, Claudia R. Williamson. 2016. Culture and the regulation of entry. *Journal of Comparative Economics* 44:4, 1055-1083. [[Crossref](#)]
158. Amanda Lea Robinson. 2016. Internal Borders: Ethnic-Based Market Segmentation in Malawi. *World Development* 87, 371-384. [[Crossref](#)]
159. Takuma Kunieda, Keisuke Okada, Akihisa Shibata. 2016. Corruption, Financial Development and Economic Growth: Theory and Evidence From an Instrumental Variable Approach With Human Genetic Diversity. *Economic Notes* 45:3, 353-392. [[Crossref](#)]
160. Samuel Bazzi, Arya Gaduh, Alexander D. Rothenberg, Maisy Wong. 2016. Skill Transferability, Migration, and Development: Evidence from Population Resettlement in Indonesia. *American Economic Review* 106:9, 2658-2698. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
161. Carmine Guerriero. 2016. A novel dataset on legal traditions, their determinants, and their economic role in 155 transplants. *Data in Brief* 8, 394-398. [[Crossref](#)]
162. Prerna Singh, Matthias vom Hau. 2016. Ethnicity in Time. *Comparative Political Studies* 49:10, 1303-1340. [[Crossref](#)]
163. Hillel David Soifer. 2016. Regionalism, Ethnic Diversity, and Variation in Public Good Provision by National States. *Comparative Political Studies* 49:10, 1341-1371. [[Crossref](#)]
164. Andreas Wimmer. 2016. Is Diversity Detrimental? Ethnic Fractionalization, Public Goods Provision, and the Historical Legacies of Stateness. *Comparative Political Studies* 49:11, 1407-1445. [[Crossref](#)]
165. Sjoerd Beugelsdijk, Mariko J. Klasing. 2016. Diversity and trust: The role of shared values. *Journal of Comparative Economics* 44:3, 522-540. [[Crossref](#)]
166. Lewis Davis. 2016. Individual Responsibility and Economic Development: Evidence from Rainfall Data*. *Kyklos* 69:3, 426-470. [[Crossref](#)]
167. Stelios Michalopoulos, Elias Papaioannou. 2016. The Long-Run Effects of the Scramble for Africa. *American Economic Review* 106:7, 1802-1848. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]

168. Paola Giuliano. 2016. Review of Cultural Evolution: Society, Technology, Language, and Religion Edited by Peter J. Richerson and Morten H. Christiansen. *Journal of Economic Literature* 54:2, 522-533. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
169. Alberto Alesina, Johann Harnoss, Hillel Rapoport. 2016. Birthplace diversity and economic prosperity. *Journal of Economic Growth* 21:2, 101-138. [[Crossref](#)]
170. Michael Bleaney, Arcangelo Dimico. 2016. State history, historical legitimacy and modern ethnic diversity. *European Journal of Political Economy* 43, 159-170. [[Crossref](#)]
171. Jeanet Sinding Bentzen, Nicolai Kaarsen, Asger Moll Wingender. 2016. IRRIGATION AND AUTOCRACY. *Journal of the European Economic Association* 91. . [[Crossref](#)]
172. Carmine Guerriero. 2016. Endogenous legal traditions. *International Review of Law and Economics* 46, 49-69. [[Crossref](#)]
173. Carmine Guerriero. 2016. Endogenous legal traditions and economic outcomes. *Journal of Comparative Economics* 44:2, 416-433. [[Crossref](#)]
174. Boris Gershman. 2016. Witchcraft beliefs and the erosion of social capital: Evidence from Sub-Saharan Africa and beyond. *Journal of Development Economics* 120, 182-208. [[Crossref](#)]
175. Stelios Michalopoulos, Alireza Naghavi, Giovanni Prarolo. 2016. Islam, inequality and pre-industrial comparative development. *Journal of Development Economics* 120, 86-98. [[Crossref](#)]
176. Carmine Guerriero. 2016. Endogenous Property Rights. *The Journal of Law and Economics* 59:2, 313-358. [[Crossref](#)]
177. Sefa Awaworyi Churchill, Davidson Okai, Alberto Posso. 2016. Internet Use and Ethnic Heterogeneity in a Cross-Section of Countries. *Economic Papers: A journal of applied economics and policy* 35:1, 59-72. [[Crossref](#)]
178. Lindsey Norgrove, Stefan Hauser. 2016. Biophysical criteria used by farmers for fallow selection in West and Central Africa. *Ecological Indicators* 61, 141-147. [[Crossref](#)]
179. S. Larcom, T. van Gevelt, A. Zabala. 2016. Precolonial institutions and deforestation in Africa. *Land Use Policy* 51, 150-161. [[Crossref](#)]
180. Brandon de la Cuesta, Leonard Wantchekon. Is Language Destiny? The Origins and Consequences of Ethnolinguistic Diversity in Sub-Saharan Africa 513-537. [[Crossref](#)]
181. Andrew John. Dynamic Models of Language Evolution: The Economic Perspective 101-120. [[Crossref](#)]
182. Victor Ginsburgh, Shlomo Weber. Linguistic Distances and Ethnolinguistic Fractionalization and Disenfranchisement Indices 137-173. [[Crossref](#)]
183. Lisa Blaydes, Christopher Paik. 2016. The Impact of Holy Land Crusades on State Formation: War Mobilization, Trade Integration, and Political Development in Medieval Europe. *International Organization* 70:3, 551-586. [[Crossref](#)]
184. Emilio Depetris-Chauvin, mer zak. 2016. Population Diversity, Division of Labor and Comparative Development. *SSRN Electronic Journal* . [[Crossref](#)]
185. Adewole Musiliu Adeolu. 2016. Middle Class and Economic Development in Nigeria: Evidence from Micro Data. *SSRN Electronic Journal* . [[Crossref](#)]
186. Eoin F. McGuirk. 2016. Public Goods and the Salience of Local Ethnic Diversity: The Case of Teacher Absenteeism in Africa. *SSRN Electronic Journal* . [[Crossref](#)]
187. Jennifer Larson, Janet I. Lewis. 2016. Ethnic Networks. *SSRN Electronic Journal* . [[Crossref](#)]
188. Boris Gershman. 2016. Subnational Diversity in Sub-Saharan Africa: Insights from a New Dataset. *SSRN Electronic Journal* . [[Crossref](#)]

189. Simplice A. Asongu. 2016. Tribalism and Government Effectiveness. *SSRN Electronic Journal* . [\[Crossref\]](#)
190. Paolo Buonanno, Giovanni Prarolo, Paolo Vanin. 2016. Organized crime and electoral outcomes. Evidence from Sicily at the turn of the XXI century. *European Journal of Political Economy* **41**, 61-74. [\[Crossref\]](#)
191. Anneli Kaasa. 2015. Culture, religion and social capital: evidence from European regions. *International Journal of Sociology and Social Policy* **35**:11/12, 772-794. [\[Crossref\]](#)
192. James B. Ang. 2015. What Drives the Historical Formation and Persistent Development of Territorial States?. *The Scandinavian Journal of Economics* **117**:4, 1134-1175. [\[Crossref\]](#)
193. C. Justin Cook. 2015. The Natural Selection of Infectious Disease Resistance and Its Effect on Contemporary Health. *Review of Economics and Statistics* **97**:4, 742-757. [\[Crossref\]](#)
194. Nicolas Berman, Mathieu Couttenier. 2015. External Shocks, Internal Shots: The Geography of Civil Conflicts. *Review of Economics and Statistics* **97**:4, 758-776. [\[Crossref\]](#)
195. Cong Wang, Bodo Steiner. 2015. Can Ethno-Linguistic Diversity Explain Cross-Country Differences in Social Capital?: A Global Perspective. *Economic Record* **91**:294, 338-366. [\[Crossref\]](#)
196. Kyle L. Marquardt, Yoshiko M. Herrera. 2015. Ethnicity as a Variable: An Assessment of Measures and Data Sets of Ethnicity and Related Identities*. *Social Science Quarterly* **96**:3, 689-716. [\[Crossref\]](#)
197. Pablo Jimenez-Ayora, Mehmet Ali Ulubaşoğlu. 2015. What underlies weak states? The role of terrain ruggedness. *European Journal of Political Economy* **39**, 167-183. [\[Crossref\]](#)
198. Go Kotera, Nobuhiro Mizuno, Keisuke Okada, Sovannroeun Samreth. 2015. Ethnic diversity, democracy, and health: Theory and evidence. *Research in Economics* **69**:3, 353-376. [\[Crossref\]](#)
199. Paolo Buonanno, Ruben Durante, Giovanni Prarolo, Paolo Vanin. 2015. Poor Institutions, Rich Mines: Resource Curse in the Origins of the Sicilian Mafia. *The Economic Journal* **125**:586, F175-F202. [\[Crossref\]](#)
200. Alfred Lameli, Volker Nitsch, Jens Südekum, Nikolaus Wolf. 2015. Same Same But Different: Dialects and Trade. *German Economic Review* **16**:3, 290-306. [\[Crossref\]](#)
201. Ewout Frankema. 2015. The Biogeographic Roots of World Inequality: Animals, Disease, and Human Settlement Patterns in Africa and the Americas Before 1492. *World Development* **70**, 274-285. [\[Crossref\]](#)
202. S. Bauernschuster, O. Falck. 2015. Culture, spatial diffusion of ideas and their long-lasting imprints--evidence from Froebel's kindergarten movement. *Journal of Economic Geography* **15**:3, 601-630. [\[Crossref\]](#)
203. Carl-Johan Dalgaard, Holger Strulik. 2015. The physiological foundations of the wealth of nations. *Journal of Economic Growth* **20**:1, 37-73. [\[Crossref\]](#)
204. Cristina Moya, Robert Boyd. 2015. Different Selection Pressures Give Rise to Distinct Ethnic Phenomena. *Human Nature* **26**:1, 1-27. [\[Crossref\]](#)
205. John Gerring, Strom C. Thacker, Yuan Lu, Wei Huang. 2015. Does Diversity Impair Human Development? A Multi-Level Test of the Diversity Debit Hypothesis. *World Development* **66**, 166-188. [\[Crossref\]](#)
206. Andreas Wimmer. 2015. Nation Building. A Long-Term Perspective and Global Analysis. *European Sociological Review* **31**:1, 30-47. [\[Crossref\]](#)
207. Stelios Michalopoulos, Elias Papaioannou. 2015. On the Ethnic Origins of African Development: Chiefs and Precolonial Political Centralization. *Academy of Management Perspectives* **29**:1, 32-71. [\[Crossref\]](#)

208. Eric Kaufmann. 2015. Land, history or modernization? Explaining ethnic fractionalization. *Ethnic and Racial Studies* **38**:2, 193-210. [[Crossref](#)]
209. James Fenske, Namrata Kala. 2015. Climate and the slave trade. *Journal of Development Economics* **112**, 19-32. [[Crossref](#)]
210. Richard Bluhm, Kaj Thomsson. 2015. Ethnic Divisions, Political Institutions and the Duration of Declines - A Political Economy Theory of Delayed Recovery. *SSRN Electronic Journal* . [[Crossref](#)]
211. Boris Gershman. 2015. Witchcraft Beliefs and the Erosion of Trust: Evidence from Sub-Saharan Africa and Beyond. *SSRN Electronic Journal* . [[Crossref](#)]
212. Eric Weese, Masayoshi Hayashi, Masashi Nishikawa. 2015. Inefficiency and Self-Determination: Simulation-Based Evidence from Meiji Japan. *SSRN Electronic Journal* . [[Crossref](#)]
213. Emilio Depetris-Chauvin, mer zak. 2015. Population Diversity, Division of Labor and the Emergence of Trade and State. *SSRN Electronic Journal* . [[Crossref](#)]
214. Emilio Depetris-Chauvin. 2015. State History and Contemporary Conflict: Evidence from Sub-Saharan Africa. *SSRN Electronic Journal* . [[Crossref](#)]
215. Sefa Awaworyi Churchill, Ahmed Salim Nuhu. 2015. Ethnic Diversity and Educational Attainment. *SSRN Electronic Journal* . [[Crossref](#)]
216. C. Justin Cook. 2014. The role of lactase persistence in precolonial development. *Journal of Economic Growth* **19**:4, 369-406. [[Crossref](#)]
217. Mesbah J. Motamed, Raymond J. G. M. Florax, William A. Masters. 2014. Agriculture, transportation and the timing of urbanization: Global analysis at the grid cell level. *Journal of Economic Growth* **19**:3, 339-368. [[Crossref](#)]
218. Nicola Gennaioli, Rafael La Porta, Florencio Lopez De Silanes, Andrei Shleifer. 2014. Growth in regions. *Journal of Economic Growth* **19**:3, 259-309. [[Crossref](#)]
219. James Fenske. 2014. ECOLOGY, TRADE, AND STATES IN PRE-COLONIAL AFRICA. *Journal of the European Economic Association* **12**:3, 612-640. [[Crossref](#)]
220. TIMOTHY BESLEY, MARTA REYNAL-QUEROL. 2014. The Legacy of Historical Conflict: Evidence from Africa. *American Political Science Review* **108**:2, 319-336. [[Crossref](#)]
221. Gregory P. Casey, Ann L. Owen. 2014. Inequality and Fractionalization. *World Development* **56**, 32-50. [[Crossref](#)]
222. Jenny C. Aker, Michael W. Klein, Stephen A. O'Connell, Muzhe Yang. 2014. Borders, ethnicity and trade. *Journal of Development Economics* **107**, 1-16. [[Crossref](#)]
223. Stefan Bauernschuster, Oliver Falck, Stephan Heblich, Jens Suedekum, Alfred Lameli. 2014. Why are educated and risk-loving persons more mobile across regions?. *Journal of Economic Behavior & Organization* **98**, 56-69. [[Crossref](#)]
224. Stelios Michalopoulos, Elias Papaioannou. 2014. National Institutions and Subnational Development in Africa *. *The Quarterly Journal of Economics* **129**:1, 151-213. [[Crossref](#)]
225. Nathan Nunn. Historical Development 347-402. [[Crossref](#)]
226. Divya Balasubramaniam, Santanu Chatterjee, David B. Mustard. 2014. Got Water? Social Divisions and Access to Public Goods in Rural India. *Economica* **81**:321, 140-160. [[Crossref](#)]
227. Elliott D. Green. 2014. The Political Economy of Urbanization in Modern Botswana. *SSRN Electronic Journal* . [[Crossref](#)]
228. Carmine Guerriero. 2014. Endogenous Legal Traditions. *SSRN Electronic Journal* . [[Crossref](#)]
229. Paolo Buonanno, Giovanni Prarolo, Paolo Vanin. 2014. Organized Crime and Electoral Outcomes in Sicily. *SSRN Electronic Journal* . [[Crossref](#)]

230. Fabian Wahl. 2014. Why it Matters What People Think: Beliefs, Legal Origins and the Deep Roots of Trust. *SSRN Electronic Journal* . [[Crossref](#)]
231. Stelios Michalopoulos, Alireza Naghavi, Giovanni Prarolo. 2014. Islam, Inequality and Pre-Industrial Comparative Development. *SSRN Electronic Journal* . [[Crossref](#)]
232. James R. Brown, J. Anthony Cookson, Rawley Heimer. 2014. Credit Markets and Economic Activity: Evidence from Exogenous Variation in Legal Institutions. *SSRN Electronic Journal* . [[Crossref](#)]
233. James Fenske. 2013. Does Land Abundance Explain African Institutions?. *The Economic Journal* **123**:573, 1363-1390. [[Crossref](#)]
234. Philipp Ager, Markus Brückner. 2013. Cultural diversity and economic growth: Evidence from the US during the age of mass migration. *European Economic Review* **64**, 76-97. [[Crossref](#)]
235. Carl-Johan Dalgaard, Holger Strulik. 2013. The history augmented Solow model. *European Economic Review* **63**, 134-149. [[Crossref](#)]
236. Cong Wang. 2013. Can institutions explain cross country differences in innovative activity?. *Journal of Macroeconomics* **37**, 128-145. [[Crossref](#)]
237. Cristina Moya. 2013. Evolved priors for ethnolinguistic categorization: A case study from the Quechua-Aymara boundary in the Peruvian Altiplano. *Evolution and Human Behavior* **34**:4, 265-272. [[Crossref](#)]
238. Christopher Paik, Tsering Wangyal Shawa. 2013. Altitude and adaptation: A study of geography and ethnic division. *Applied Geography* **40**, 212-221. [[Crossref](#)]
239. Elliott Green. 2013. Explaining African ethnic diversity. *International Political Science Review* **34**:3, 235-253. [[Crossref](#)]
240. Quamrul Ashraf, Oded Galor. 2013. Genetic Diversity and the Origins of Cultural Fragmentation. *American Economic Review* **103**:3, 528-533. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
241. Quamrul Ashraf, Oded Galor. 2013. The “Out of Africa” Hypothesis, Human Genetic Diversity, and Comparative Economic Development. *American Economic Review* **103**:1, 1-46. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
242. Quamrul Ashraf, Oded Galor. 2013. Genetic Diversity and the Origins of Cultural Fragmentation. *SSRN Electronic Journal* . [[Crossref](#)]
243. Patrick Doupe. 2013. Village Level Institutional Change and Ethnic Majorities: Evidence from Decentralising Indonesia. *SSRN Electronic Journal* . [[Crossref](#)]
244. Carl-Johan Lars Dalgaard, Holger Strulik. 2013. The History Augmented Solow Model. *SSRN Electronic Journal* . [[Crossref](#)]
245. Giuseppe Dari-Mattiacci, Carmine Guerriero. 2013. Endogenous Property Rights. *SSRN Electronic Journal* . [[Crossref](#)]
246. Sjoerd Beugelsdijk, Mariko J. Klasing. 2013. Cultural Diversity. *SSRN Electronic Journal* . [[Crossref](#)]
247. Joram Mayshar, Omer Moav, Zvika Neeman. 2013. Geography, Transparency and Institutions. *SSRN Electronic Journal* . [[Crossref](#)]
248. Emma Aisbett, Patrick Doupe, Luca Tacconi. 2013. Disequilibrium Adjustment and the Rate of Tropical Deforestation. *SSRN Electronic Journal* . [[Crossref](#)]
249. David D. Laitin, Joachim Moortgat, Amanda Lea Robinson. 2012. Geographic axes and the persistence of cultural diversity. *Proceedings of the National Academy of Sciences* **109**:26, 10263-10268. [[Crossref](#)]
250. Kristian Skrede Gleditsch, Nils B. Weidmann. 2012. Richardson in the Information Age: Geographic Information Systems and Spatial Data in International Studies. *Annual Review of Political Science* **15**:1, 461-481. [[Crossref](#)]

251. Divya Balasubramaniam, Santanu Chatterjee, David B. Mustard. 2012. Got Water? Social Divisions and Access to Public Goods in Rural India. *SSRN Electronic Journal* . [[Crossref](#)]
252. Carmine Guerriero. 2012. Endogenous Legal Traditions. *SSRN Electronic Journal* . [[Crossref](#)]
253. Alberto F. Alesina, Stelios Michalopoulos, Elias Papaioannou. 2012. Ethnic Inequality. *SSRN Electronic Journal* . [[Crossref](#)]
254. Lamar Pierce, Jason Snyder. 2012. Trust and Finance: Evidence from the African Slave Trade. *SSRN Electronic Journal* . [[Crossref](#)]
255. Quamrul Ashraf, Oded Galor. 2011. The 'Out of Africa' Hypothesis, Human Genetic Diversity, and Comparative Economic Development. *SSRN Electronic Journal* . [[Crossref](#)]
256. Quamrul Ashraf, Oded Galor. 2011. Cultural Diversity, Geographical Isolation, and the Origin of the Wealth of Nations. *SSRN Electronic Journal* . [[Crossref](#)]
257. Carmine Guerriero. 2009. Democracy, Judicial Attitudes and Heterogeneity: The Civil Versus Common Law Tradition. *SSRN Electronic Journal* . [[Crossref](#)]