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Revisiting Easterly and Levine (1997): Replication and Extension

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Revisiting Easterly and Levine (1997): Replication and Extension[1]

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Abstract

We replicate and extend the findings from Easterly and Levine (1997) arguing that ethnolinguistic fractionalization is negatively associated with several development indicators. We re-estimate the authors' original regressions and control for several determinants of development which are correlated with ethnolinguistic fractionalization: a country's level of partitioning (proportion of the population who belong to ethnic groups split by borders), its colonial history (whether it was formerly a colony) and regional effects (whether it is located in Africa or Latin America). In contrast with Easterly and Levine (1997), we find no evidence that ethnolinguistic fractionalization is associated with any of the development indicators. Rather, for each development indicator where, in comparison with Easterly and Levine (1997), ethnolinguistic fractionalization loses its statistical significance, we find that one of our control variables is statistically significant and takes the expected sign given the correlation between ethnolinguistic fractionalization and the control variable. Our results therefore raise the possibility that the original estimates from Easterly and Levine (1997) suffer from omitted variable bias in that they misattribute the effect of partitioning, colonial history and regional effects to the level of ethnolinguistic fractionalization.

Keywords: Economic development, public policy, ethnic diversity.

JEL codes: J15, J18, Z13.

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1 Introduction

Easterly and Levine (1997; henceforth EL (1997)) present cross-country evidence suggesting that ethnic diversity indirectly harms economic growth by increasing the likelihood of adopting poor quality policies and under-providing public goods. In particular, EL (1997) show that ethnolinguistic fractionalization (the probability that two randomly selected individuals in a given country belong to different ethnolinguistic groups; for further details, see Appendix 7.1) is negatively associated with the level of education, financial sector development and level of infrastructure, and is positively associated with a country's black market exchange rate premium. These findings are widely accepted among economists and political scientists.[3] As a result, it is now the norm to control for a measure of ethnic fractionalization in regressions examining cross-country differences in economic success (Alesina et al., 2003). In this article, we question this premise and test whether the findings from EL (1997) are robust to controlling for several other determinants of economic success which are correlated with the level of ethnolinguistic fractionalization.

We are not the first to test the robustness of the results from EL (1997). Researchers who have conducted robustness tests to date have typically adopted one of two approaches, either controlling for additional variables or constructing alternative measures of ethnic diversity and then replicating the original analyses from EL (1997). Easterly (2001) adopts the former approach and controls for the quality of institutions. He finds that high quality institutions largely offset the negative impact of ethnolinguistic fractionalization on growth and each policy variable. Bluedorn (2001) controls for the level of democracy and obtains comparable results: high levels of democracy partially offset the negative effect of fractionalization on growth. Two studies adopt the latter approach and construct alternative

[3] Easterly and Levine (1997) is one of the most cited economics papers. Repec: 1,137 citations (top 1%). Google Scholar: 5,373 citations.

measures of ethnic diversity. Alesina et al. (2003) create three measures of ethnic diversity based on (1) language, (2) religion and (3) racial and linguistic characteristics. The authors replicate the growth and policy regressions from EL (1997) for each measure and largely confirm the results from EL (1997). They find that their language-based and racial-based measures of ethnic diversity are negatively associated with growth and policy quality. Posner (2004) constructs an alternative measure of ethnic diversity based solely on ethnic groups which engage in political competition. Focusing on the sub-sample of African countries, he replicates the EL (1997) policy regressions for both the original measure of ethnolinguistic fractionalization and the alternative measure. He finds no evidence that the original measure is negatively associated with any development indicator but finds that the alternative measure is negatively associated with the black market premium and fiscal surplus.

In this paper, we adopt the former approach but control for variables which are not accounted for in the previous analyses and which are both correlated with ethnolinguistic fractionalization and economic development. In particular, we re-estimate the original regressions from EL (1997) and control for a country's level of partitioning (proportion of the population who belong to ethnic groups split by borders),[4] its colonial history (whether it was formerly a colony) and regional effects (whether it is located in Africa or Latin America). Given that recent analyses show that these variables affect economic development (Michalopoulos and Papaioannou 2011, 2016; Ciccone and Jarociński, 2010) and that ethnolinguistic fractionalization loses its association with the level of GDP per capita once these variables are controlled for (Alesina et al., 2011), it is possible that the results from EL (1997) suffer from omitted variable bias in that they misattribute the effects of these variables to the level of ethnolinguistic fractionalization. To investigate this possibility, we extend the original regressions from EL (1997) to include these controls and estimate the effect of

[4] See Figure 1 for an explanation of the difference between ethnolinguistic fractionalization and partitioning.

ethnolinguistic fractionalization on each development indicator over two time horizons. As a first check, we re-estimate the regressions from EL (1997) using the original dataset, which covers the period 1960 to 1989. Next, we extend the original dataset to include observations from the past two decades – 1990 to 2009 – and re-estimate the same regressions.

In contrast to EL (1997), we find no evidence that fractionalization is related to any of the development indicators. Across all robustness checks, we fail to find evidence that ethnolinguistic fractionalization has a statistically significant effect on the level of education, financial sector development, level of infrastructure or the black market exchange rate premium. Rather, for each development indicator where, in comparison with EL (1997), ethnolinguistic fractionalization loses its statistical significance, we find that one of our control variables is statistically significant and takes the expected sign given the correlation between ethnolinguistic fractionalization and the control variable. Our results therefore raise the possibility that the original estimates from EL (1997) suffer from omitted variable bias in that they misattribute the effect of partitioning, colonial history and regional effects to the level of ethnolinguistic fractionalization.

The remainder of the paper is organized as follows. Section 2 discusses the data. Section 3 and Section 4 present the empirical strategy and the results respectively. Section 5 concludes.

2 Data

2.1.Original sample period from EL (1997): 1960 – 1989

Our first set of robustness checks covers three decades – 1960s, 1970s, 1980s – and rely on three sources of data. We draw on EL (1997) for data on ethnolinguistic fractionalization and for each of the six development indicators: schooling, political stability, financial depth, fiscal stance, black market premium and infrastructure. For data on the level of partitioning and colonial history, we rely on Alesina et al. (2011) and Nunn and Puga (2012) respectively.

Variable definitions and the corresponding sources are provided in Table 1, while Table 2 provides correlation coefficients.

2.2 Extended sample period: 1960 – 2009

For the second set of robustness checks, we extend our dataset to include observations from the 1990s and 2000s for each development indicator except the level of assassinations.[5] The exact methodology for extending the dataset depends upon data availability (see Table 3 for details). Where possible, we draw on updated versions of the same variable definitions and sources listed in EL (1997). If the updated dataset does not cover the entire timeframe – 1960 to 2009 – we splice the original series from EL (1997) with the updated series. For example, given that Barro and Lee (2013) only provide schooling data for the period 1970 to 2010, our schooling variable draws on EL (1997) for the 1960 observations and Barro and Lee (2013) for the observations for the period 1970 to 2009.[6]

Where it is not possible to find updated versions of the source from EL (1997), we replace the original series with the comparable series. We test the comparability by examining the correlation between the new series and the original series for the period for which we have observations for both series. For each of the affected series, the correlation is positive and highly significant: financial depth (ρ=0.92, p<0.000), black market premium (ρ=0.59, p<0.000) and infrastructure (ρ=0.98, p<0.000). Figures 2 through 4 in the Appendix plot the original and new series for the common period for which we have observations for both series. Note that in the case of the black market premium we are only able to obtain data until 1999. Also, in the case of fiscal stance, we are unable to find an updated series which covers a large number of the countries from EL (1997). We therefore splice all observations

[5] We were unable to obtain assassinations data for a large panel of countries.

[6] Burgess et al. (2015) perform similar splicing when examining the relationship between ethnolinguistic fractionalization and economic growth. The authors splice the economic growth data from EL (1997) for the decades 1960s, 1970s and 1980s with Penn World Table growth data for the decades 1990s and 2000s (see Table 6 in their paper).

from the original series – 1960 to 1989 – with a comparable series for the final two decades (ρ=0.75, p<0.000). Variable definitions and the corresponding sources are provided in Table 3, while Table 4 provides correlation coefficients.

3 Empirical Strategy

To estimate the relationship between ethnolinguistic fractionalization and each development indicator, we specify the following model, where *i* denotes the country and *t* represents the corresponding decadal value.[7]

$$development_{it} = \alpha_i + fractionalization_i + partitioning_i + colonial_i + africa_i + latinca_i + u_{it} \quad (1)$$

We face several constraints when estimating equation (1). Ideally we would employ fixed-effects estimation in order to control for any unobserved country characteristics which could affect each development indicator and which might be correlated with the regressors. However, given that each of our regressors are time-invariant, we are unable to conduct fixed-effects estimation or any of the other panel estimation strategies which rely upon time-varying regressors (e.g., Hausman-Taylor (Hausman and Taylor 1981), GMM (Hansen 1982) or Mundlak (Mundlak 1978)). Further, it is likely that the level of each development indicator depends on its level in previous years and therefore our estimation strategy must allow for errors to be serially correlated across time for each country. Given these constraints, we resort to estimating equation (1) using random-effects estimation. That is, we suppose that the error term contains a time-invariant and country-specific component which is uncorrelated with our regressors, and estimate equation (1) using the feasible generalized least squares (FGLS) estimator.

In addition to satisfying the constraints we face, our choice of using random-effects

[7] Note that our equation (1) differs from the model in EL (1997) in that it controls partitioning, colonial history and regional dummy variables. EL (1997) simply regress each development indicator on the level of ethnolinguistic fractionalization and a constant.

estimation is supported on several grounds. First, simulation evidence suggests that random-effects estimation produces superior estimates than fixed effects estimations in panels with few observations per unit of observation (Clark and Linzer 2015).[8] This is the case with our panel data where there are a maximum of five observations per country (one for each decade). Second, it aligns with the rationale in EL (1997) for originally using seemingly unrelated regression (SUR) in that it allows for serially correlated random country effects. Third, given the structure of our panel data, namely a large number of countries and small number of observations per country, random-effects estimation is more appropriate than SUR (where the asymptotic properties are derived on the basis of small *N* and large *T*). Fourth, we re-estimate the original regression specifications from EL (1997) and find almost identical results using our alternative estimation strategy (see Table 5). Finally, by accounting for serially correlated random country effects, our estimation strategy is likely to be more efficient than other researchers' approaches to replicating the analysis in EL, which rely on the pooled OLS estimator (e.g., Posner 2004; Knutsen 2010), seemingly unrelated regressions (e.g., Alesina et al. 2003; Campos and Kuzeyev 2007) or taking the average coefficient from multiple cross-sectional regressions (e.g., Easterly 2001).

4 Results

In the following results section, we only present the results for the full model specification for each robustness check. The results for the simpler specifications are presented in Tables 8 to 18 in Appendix 7.3.4 and 7.3.5.

4.1 Original sample period from EL (1997): 1960 – 1989

[8] Clark and Linzer (2015) also show that random-effects estimation performs no worse than fixed effects estimation even in the case of extreme correlations between the regressors and the unit effects.

Table 6 presents the results for the period 1960 to 1989, with the dependent variable varying by column: in column (1) it is schooling, in column (2) assassinations, in column (3) financial depth, in column (4) black market premium, in column (5) fiscal surplus, and in column (6) telephones per worker. Both partitioning and fractionalization are insignificant for each development indicator (columns 1 – 6). The statistical significance of colonial history and the regional indicator variables vary by development indicator. In comparison with former colonies, non-colonies tend to have lower black market premiums (column 4), larger fiscal surpluses (column 5) and more telephones per worker (column 6). Sub-Saharan African countries typically have lower levels of schooling (column 1), less developed financial systems (column 3), larger fiscal surpluses (column 5) and less telephones per worker (column 6). Countries in Latin America and the Caribbean also tend to have less developed financial systems (column 3).

The results in Table 6 suggest that fractionalization is not related to each development indicator and that the results from EL (1997) suffer from omitted variable bias. In comparison with EL (1997), ethnolinguistic fractionalization loses its significance for four development indicators: schooling, financial depth, black market premium and the number of telephones per worker. In each case where it loses its significance, we find that at least one of our control variables is statistically significant and takes the expected sign given the correlation between ethnolinguistic fractionalization and the control variable.[9] For example, whereas EL (1997) estimate that ethnolinguistic fractionalization has a negative effect on schooling, we find that the Sub-Saharan Africa dummy, which is positively correlated with fractionalization (ρ=0.58, $p<0.000$), is significant for schooling and the estimated coefficient is negative. Similarly, whereas EL (1997) find that ethnolinguistic fractionalization has a positive effect on the

[9] The variance inflator factor values in Table 6 suggest that the loss of significance for ethnolinguistic fractionalization is not simply the result of high levels of collinearity between ethnolinguistic fractionalization and the other regressors. In each column the variance inflation factor corresponding to ethnolinguistic fractionalization is below 5.

black market premium, we find that the colonial history dummy variable, which is negatively correlated with fractionalization (ρ=-0.33, p<0.000), is a determinant of the black market premium and the estimated coefficient is negative.

4.2 Extended sample period: 1960 – 2009

Table 7 lists the results for the period 1960 to 2009, with the dependent variable varying by column as in Table 6.[10] Similar to Table 6, we find that fractionalization is statistically insignificant for each development indicator (columns 1 – 5). We find several changes in the statistical significance of colonial history and regional dummies in comparison with Table 6. Colonial history becomes a determinant of schooling (column 1), is no longer a determinant of the black market premium (column 3) or fiscal surplus (column 4), but retains a similar effect on telephones per worker (column 5). The Sub-Saharan Africa dummy loses its significance for financial depth (column 2) and fiscal surplus (column 4) but retains a similar effect on schooling (column 1) and telephones per worker (column 5). The estimated effect of Latin America and Caribbean on financial depth (column 2) remains largely unchanged. We also find evidence that partitioning is a determinant of fiscal surplus (column 4) and telephones per worker (column 5). Whilst the magnitude of the estimated effect on fiscal surplus is insignificant, the estimated size of the effect on telephones per worker is economically significant and is of a similar magnitude to the estimate in Table 6. A 1-point increase in the level of partitioning is associated with a 0.9% fall in the number of telephones per worker.

Whilst not all of the results for the period 1960 to 1989 are robust over the period 1960 to 2009, the results do suggest that fractionalization is not related to each development

[10] Note that we drop assassinations for this section of analysis due to a lack of data for a large number of countries.

indicator and that the results from EL (1997) suffer from omitted variable bias. For three of the four variables which EL (1997) find are adversely impacted by fractionalization – schooling, financial depth, telephone per worker – we find that variables which are correlated with ethnolinguistic fractionalization are significant and the estimated coefficients take the expected sign given the correlation between fractionalization and the variable.[11]

5 Conclusions

In this paper, we test the robustness of the findings from EL (1997) that ethnolinguistic fractionalization is associated with several development indicators – schooling, financial depth, black market premium and infrastructure – by re-estimating the original regressions and controlling for several determinants of development which are correlated with ethnolinguistic fractionalization. In particular, we re-estimate the original regressions from EL and control for a country's level of partitioning (proportion of the population who belong to ethnic groups split by borders), its colonial history (whether it was formerly a colony) and regional effects (whether it is located in Africa or Latin America).

In contrast to EL (1997), we find no evidence that ethnolinguistic fractionalization is associated with any of the development indicators. Rather, for each development indicator where, in comparison with EL (1997), ethnolinguistic fractionalization loses its statistical significance, we find that at least one of our control variables is statistically significant and takes the expected sign given the correlation between ethnolinguistic fractionalization and the control variable. Our results therefore raise the possibility that the original estimates from EL suffer from omitted variable bias in that they misattribute the effect of partitioning, colonial history and regional effects to the level of ethnolinguistic fractionalization.

[11] Similar to Table 6, the relatively low variance inflation factor values in Table 7 corresponding to ethnolinguistic fractionalization suggest that the loss of significance is not simply driven by multicollinearity.

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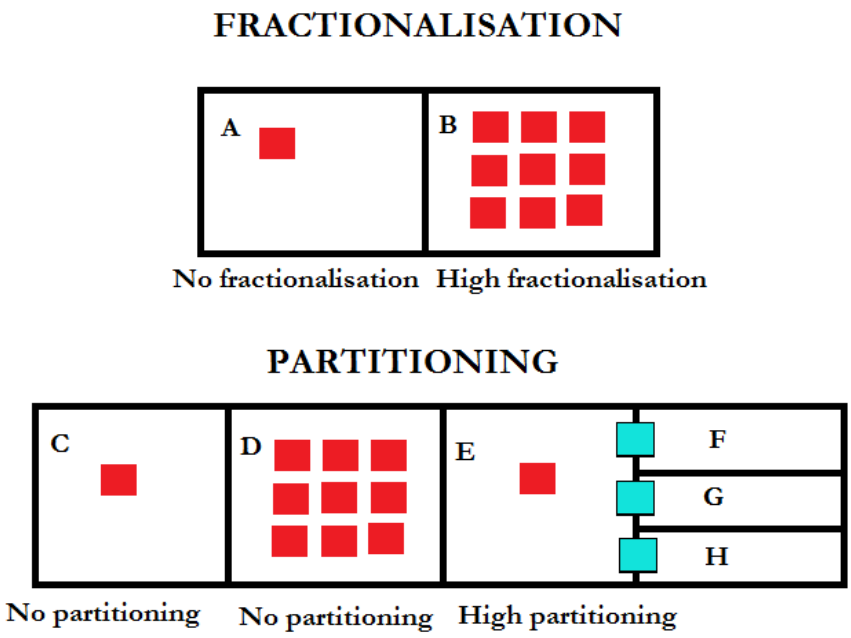
7 Appendix

7.1 Comparing fractionalization and partitioning

Figure 1 plots the distribution of ethnolinguistic groups in 8 fictitious countries labelled A to H. The original homeland for ethnolinguistic groups are denoted by the red squares, where each area is assumed to have the same population evenly distributed across the area. The borders are represented by the black lines and are assumed to equally split the partitioned groups (represented by the blue squares) on either side.

Figure 1



In the example above, country A has only one ethnolinguistic group and therefore no fractionalization. Country B has nine different ethnolinguistic groups and therefore a high level of ethnolinguistic fractionalization.[12] Countries C and D above do not contain any

[12] Assuming each ethnolinguistic group has the same population, the probability two randomly selected individuals belong to different ethnolinguistic groups is given by $1 - \frac{1}{no.of\ ethnolinguistic\ groups}$, which is equal to 0.89 for country B. Strictly speaking, the index of fractionalization is defined by $1 - \sum_i^I n_i^2$, where n_i is the fraction of the population pertaining to group *i* and *I* is the total number of ethnolinguistic groups (Weil, 2013, p.438).

partitioned groups and so have no partitioning. Country E has a high level of partitioning: of its four groups, three are split across the borders with neighboring countries F, G and H. Country F also has a high level of partitioning: its only resident group is partitioned by the border with E. (Similarly, countries G and H have high levels of partitioning).

7.2 Data

7.2.1 Data (1960 – 1989)

Table 1: Variable Definitions & Sources (1960 – 1989)

Development indicator	*Variable*	*Definition*	*Source*
Education	Schooling	Log of 1+ average years of school attainment, beginning of each decade.	Barro and Lee (1993) (as cited in EL (1997))
Political instability	Assassinations	Number of assassinations per thousand persons, decade average.	Banks (1994) (as cited in EL (1997))
Financial sector development	Financial depth	Ratio of liquid liabilities of the financial system to GDP, decade average.	King and Levine (1993) (as cited in EL (1997))
Trade distortions	Black market premium	Log of 1+ black market exchange rate premium, decade average.	World Bank WDR (1991) & Pick's Currency Yearbook (as cited in EL (1997))
Fiscal stance	Surplus	Ratio of central government surplus (+) to GDP, decade average	IMF International Financial Statistics Line 80) (as cited in EL)
Infrastructure	Telephones per worker	Log of telephones per 1000 workers, decade average.	Canning & Fay (1993) (as cited in EL (1997))
	Fractionalization	Probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups.	Atlas Naradov Mira (1964) (as cited in EL (1997))
	Partitioning	Proportion of a country's population which belong to ethnic groups split by borders.	Alesina et al. (2011)
	Colonial history	Dummy variable which takes a value of 1 if a country has never been a colony and 0 otherwise.	Nunn and Puga (2012)
	Africa	Dummy variable which takes a value of 1 if a country is located in Sub-Saharan Africa and 0 otherwise.	EL (1997)
	Latinca	Dummy variable which takes a value of 1 if a country is located in Latin America or the Caribbean and 0 otherwise.	EL (1997)

Table 2: Correlation Matrix (1960 – 1989)

	Schooling	Assassinations	Financial depth	Black market premium	Fiscal surplus	Telephones per worker	Fractionalization	Partitioning	Colonial history	Africa
Assassinations	-0.013									
	[0.835]									
Financial depth	0.486	0.013								
	[0.000]	[0.817]								
Black market premium	-0.232	0.091	-0.169							
	[0.000]	[0.107]	[0.003]							
Fiscal surplus	0.041	-0.172	-0.173	-0.228						
	[0.558]	[0.009]	[0.008]	[0.000]						
Telephones per worker	0.858	-0.007	0.627	-0.343	0.006					
	[0.000]	[0.901]	[0.000]	[0.000]	[0.926]					
Fractionalization	-0.426	-0.019	-0.321	0.206	-0.087	-0.506				
	[0.000]	[0.741]	[0.000]	[0.000]	[0.189]	[0.000]				
Partitioning	-0.415	-0.026	-0.235	0.038	-0.028	-0.478	0.486			
	[0.000]	[0.694]	[0.000]	[0.542]	[0.711]	[0.000]	[0.000]			
Colonial history	0.342	-0.115	0.430	-0.129	0.152	0.463	-0.328	-0.238		
	[0.000]	[0.038]	[0.000]	[0.015]	[0.015]	[0.000]	[0.000]	[0.000]		
Africa	-0.516	-0.119	-0.421	0.052	-0.002	-0.609	0.576	0.550	-0.326	
	[0.000]	[0.032]	[0.000]	[0.329]	[0.973]	[0.000]	[0.000]	[0.000]	[0.000]	
Latin America &	0.077	0.282	-0.173	-0.012	-0.032	0.064	-0.266	-0.264	-0.162	-0.360
Caribbean	[0.182]	[0.000]	[0.002]	[0.817]	[0.613]	[0.264]	[0.000]	[0.000]	[0.000]	[0.000]

Notes: *p*-values corresponding to correlations presented in [] brackets.

7.2.2 Data (1960 – 2009)

Table 3: Variable Definitions & Sources (1960 – 2009)

Development indicator	*Name*	*Definition*	*Source*	*Correlation*
Education	Schooling	Same as EL (1997)	Splice 1960s observations from EL (1997) with updated series from Barro and Lee (2013) for 1970-2000.	Correlation is $\rho=0.97$ ($p<0.000$) for common period (1970 – 1989) for which we have observations for both series.
Financial sector development	Financial depth	Change definition from Phase 1 to broad money as a percentage of GDP, decade average.	World Bank. Series code FM.LBL.BMNY.GD.ZS. http://databank.worldbank.org/	Correlation is $\rho=0.92$ ($p<0.000$) for common period (1960 – 1989) where we have observations for both series.
Trade distortions	Black market premium	Same as EL (1997)	Easterly (2001). Note that we are only able to obtain data until 1999.	Correlation is $\rho=0.59$ ($p<0.000$) for common period (1960 – 1989) where we have observations for both series.
Fiscal stance	Surplus	Change definition from Phase 1 to cash surplus/deficit as a percentage of GDP, decade average.	Splice EL (1997) observations for 1960-1980 with World Bank observations for 1990s and 2000s. Series code: GC.BAL.CASH.GD.ZS http://databank.worldbank.org/	Correlation is $\rho=0.75$ ($p<0.000$) for common period (1970 – 1989) where we have observations for both series.
Infrastructure	Telephones per worker	Same definition as EL (1997)	Authors' calculations using telephone data provided by ITU and population data provided by UN.	Correlation is $\rho=0.98$ ($p<0.000$) for common period 1960s, 1970s and 1980s where we have observations for both series.

Table 4: Correlation Matrix (1960 – 2009)

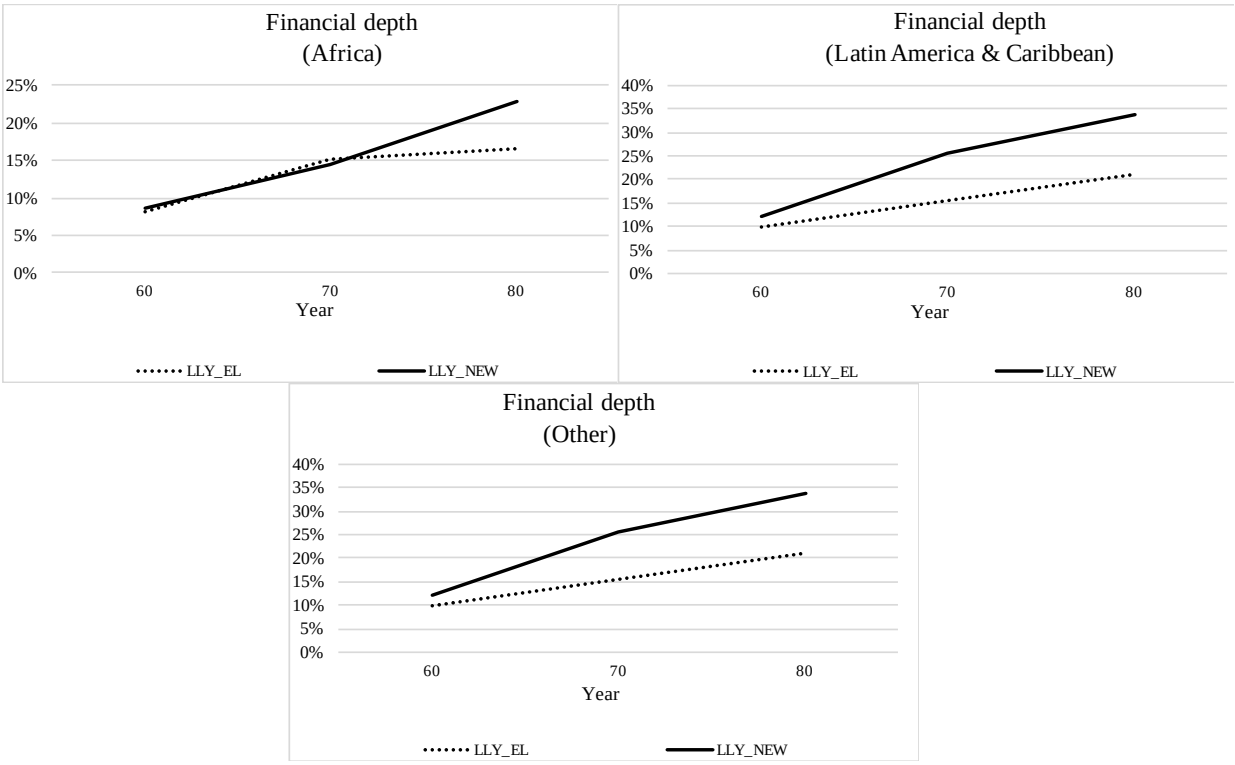
	Schooling	Financial depth	Black market premium	Fiscal surplus	Telephones per worker	Fractionalization	Partitioning	Colonial history	Africa
Financial depth	0.114								
	[0.016]								
Black market premium	-0.066	-0.002							
	[0.183]	[0.967]							
Fiscal surplus	-0.174	-0.020	0.024						
	[0.000]	[0.692]	[0.672						
Telephones per worker	0.665	0.072	-0.100	-0.175					
	[0.000]	[0.103]	[0.036]	[0.000]					
Fractionalization	-0.375	0.014	0.046	0.079	-0.403				
	[0.000]	[0.772]	[0.363]	[0.118]	[0.000]				
Partitioning	-0.395	-0.027	-0.020	0.031	-0.306	0.486			
	[0.000]	[0.607]	[0.704]	[0.578]	[0.000]	[0.000]			
Colonial history	0.327	0.019	-0.017	-0.116	0.485	-0.328	-0.238		
	[0.000]	[0.650]	[0.709]	[0.013]	[0.000]	[0.000]	[0.000]		
Africa	-0.463	-0.015	0.011	0.110	-0.410	0.576	0.550	-0.322	
	[0.000]	[0.722]	[0.814]	[0.018]	[0.000]	[0.000]	[0.000]	[0.000]	
Latin America &	0.088	-0.032	0.035	0.040	-0.039	-0.266	-0.264	-0.162	-0.360
Caribbean	[0.035]	[0.460]	[0.446]	[0.391]	[0.303]	[0.000]	[0.000]	[0.000]	[0.000]

Notes: *p*-values corresponding to correlations presented in [] brackets.

7.2.3 Charting comparable data series

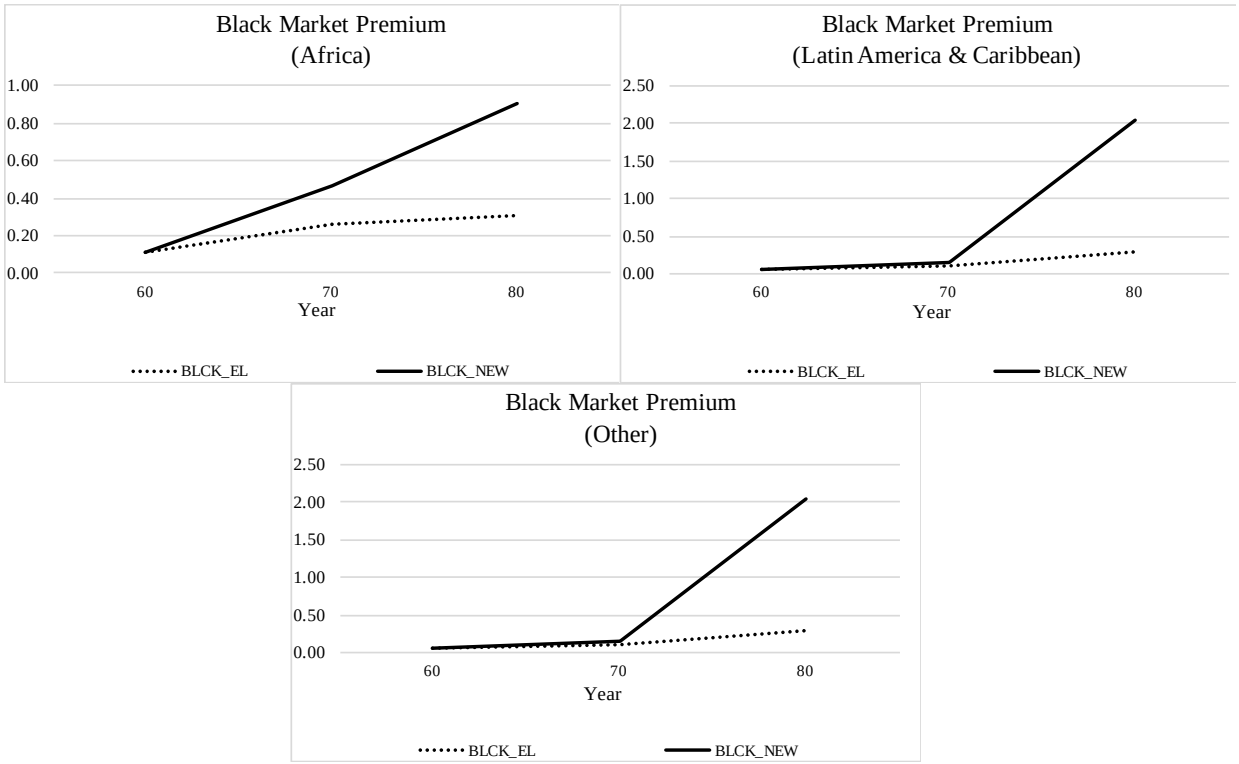
Where it is not possible to find an updated version of the source from EL (1997) for the period 1990 to 2009, we replace the original development indicator series with a comparable series. This occurs for 3 of the development indicators: financial depth, black market premium and infrastructure. Figures 2 through 4 below plot the original series from EL and the new series for the period for which we have observations for both series. For the sake of brevity, we only plot continental averages.

Figure 2: Comparing Financial Depth Series



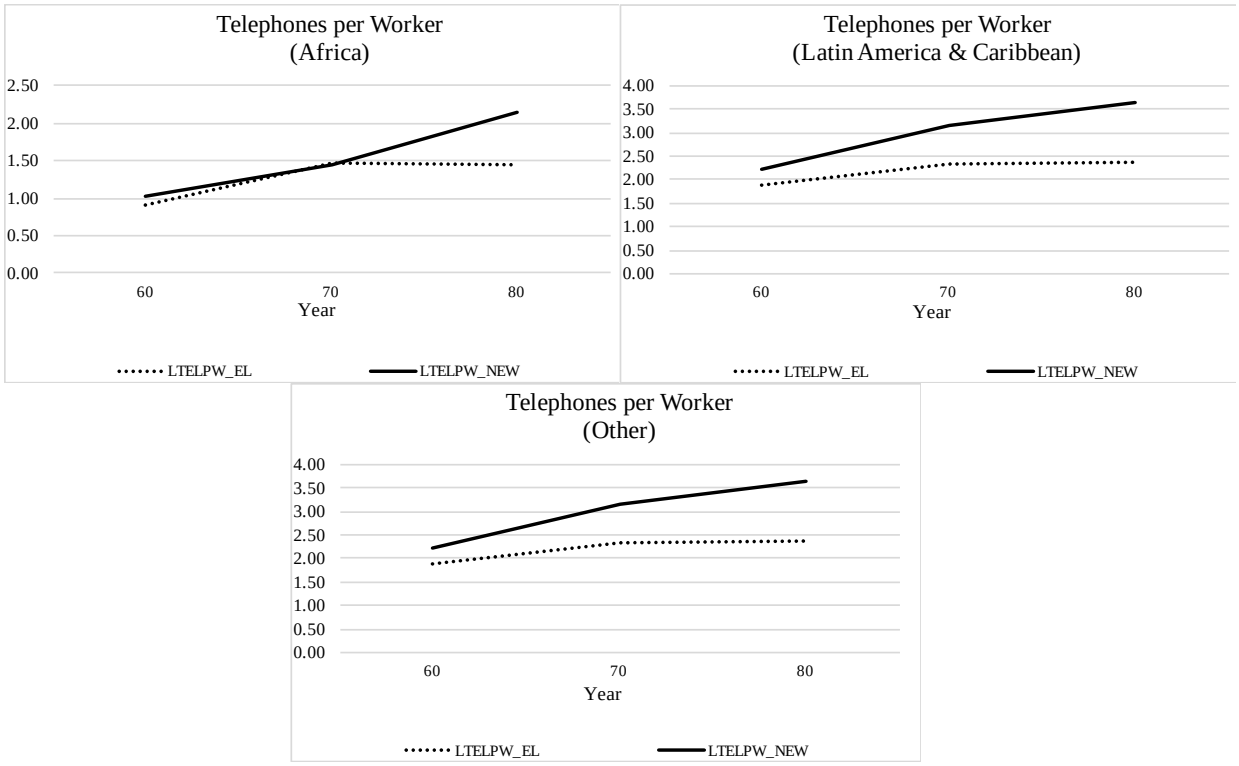
Notes: Each chart plots the simple continent average of financial depth for each of the three decades. The chart in the top left-hand corner plots the data for countries in Sub-Saharan Africa. The chart in the top right-hand corner plots the data for countries Latin America and the Caribbean. The bottom chart plots the data for all other countries. The dotted black line represents the original series from EL and the thick black line represents the new series, which is used in the analysis. See Table 1 and Table 3 for the corresponding data sources.

Figure 3: Comparing Black Marker Premium Series



Notes: Each chart plots the simple continent average of the black market premium for each of the three decades. The chart in the top left-hand corner plots the data for countries in Sub-Saharan Africa. The chart in the top right-hand corner plots the data for countries Latin America and the Caribbean. The bottom chart plots the data for all other countries. The dotted black line represents the original series from EL and the thick black line represents the new series, which is used in the analysis. See Table 1 and Table 3 for the corresponding data sources.

Figure 4: Comparing Telephones Per Worker Series



Notes: Each chart plots the simple continent average number of telephones per worker for each of the three decades. The chart in the top left-hand corner plots the data for countries in Sub-Saharan Africa. The chart in the top right-hand corner plots the data for countries Latin America and the Caribbean. The bottom chart plots the data for all other countries. The dotted black line represents the original series from EL and the thick black line represents the new series, which is used in the analysis. See Table 1 and Table 3 for the corresponding data sources.

7.3. Results

7.3.1 Comparing EL (1997) results using SUR against our results using random-effects estimation

Whilst EL (1997) estimate the effect of ethnolinguistic fractionalization on each development indicator using seeming unrelated regression (SUR), we re-estimate the original regression specifications from EL using random-effects estimation and obtain almost identical results using our alternative estimation strategy. Table 5 below presents the results. Panel A lists the SUR results from EL (1997) and Panel B presents our random-effects results. For each of the 6 development indicators we obtain estimated coefficients of similar magnitude and statistical significance.

Table 5 – Comparing El (1997) Sur Results Against Our Random-Effects Results

	Dependent variable					
	(1) Schooling	(2) Assassinations	(3) Financial depth	(4) Black market premium	(5) Fiscal surplus	(6) Telephones per worker
			Panel A: EL (1997) SUR			
Fractionalization	-0.991*** [-6.21]	0.000 [0.07]	-0.266*** [-3.67]	0.252*** [3.39]	-0.013 [-1.37]	-3.067*** [-7.17]
Observations	83;85;91	98;105;105	94;100;103	97;107;106	55; 87; 82	95;103; 82
R-squared	0.08;0.09; 0.10	-0.01;-0.06; -0.02	0.09;0.06; -0.02	0.05;0.08; -0.04	-0.14;-0.02 ;-0.13	0.21;0.23;0.04
			Panel B: Random-Effects			
Fractionalization	-0.853*** (0.180)	0.000 (0.000)	-0.291*** (0.077)	0.241*** (0.080)	-0.012 (0.011)	-3.236*** (0.509)
Observations	265	314	300	316	227	293
Number of countries	93	107	104	109	93	107
Overall *R*-squared	0.181	0.000	0.103	0.043	0.008	0.000

Notes: This table reports seemingly unrelated regression (SUR) and random-effects estimates associating ethnolinguistic fractionalization and multiple development indicators over three decades: 1960s, 1970s and 1980s. The dependent variable for each column is as follows: (1) log of 1 + average years of educational attainment, (2) number of assassinations per thousand persons, (3) ratio of liquid liability of the financial system to GDP, (4) log of 1 + black market exchange rate premium, (5) ratio of central government surplus/deficit to GDP and (6) log of telephones per 1,000 workers. Each development indicator is regressed on ethnolinguistic fractionalization (the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups) and a constant. Panel A reports the SUR results from EL (1997). The corresponding t-statistics are reported in square brackets. Panel B reports the random-effects results from the present paper. Standard errors clustered at the country dimension are reported in parentheses..

7.3.2 Summary regression table (1960 – 1989)

Table 6 – Ethnolinugistic Fractionalization And Development: 1960 - 1989

	Dependent variable					
	(1) Schooling	(2) Assassinations	(3) Financial depth	(4) Black market premium	(5) Fiscal surplus	(6) Telephones per worker
Fractionalization	0.000	0.000	0.000	0.000	-0.000	-0.001
	(0.002)	(0.000)	(0.001)	(0.001)	(0.000)	(0.007)
	{4.17}	{3.79}	{3.70}	{3.90}	{3.48}	{3.93}
Partitioning	-0.002	0.000	0.000	0.000	0.000	-0.009
	(0.002)	(0.000)	(0.001)	(0.001)	(0.000)	(0.006)
	{2.57}	{2.73}	{2.74}	{2.80}	{2.58}	{2.83}
Colonial history	0.301	0.000	0.091	-0.186***	0.025*	1.102**
	(0.201)	(0.000)	(0.081)	(0.058)	(0.014)	(0.491)
	{1.16}	{1.14}	{1.14}	{1.14}	{1.13}	{1.15}
Sub-Saharan Africa	-0.667***	0.000	-0.300***	0.046	0.022*	-2.156***
	(0.195)	(0.000)	(0.067)	(0.084)	(0.012)	(0.520)
	{2.96}	{3.39}	{3.29}	{3.53}	{2.44}	{3.56}
Latin America & Caribbean	-0.029	0.000**	-0.260***	0.062	0.012	-0.508
	(0.190)	(0.000)	(0.049)	(0.083)	(0.016)	(0.421)
	{1.31}	{1.25}	{1.24}	{1.24}	{1.30}	{1.15}
Observations	194	234	221	234	169	222
Number of countries	68	79	77	80	69	80
Overall *R*-squared	0.440	0.127	0.398	0.095	0.064	0.559

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and multiple development indicators over three decades: 1960s, 1970s and 1980s. The dependent variable for each column is as follows: (1) log of 1 + average years of educational attainment, (2) number of assassinations per thousand persons, (3) ratio of liquid liability of the financial system to GDP, (4) log of 1 + black market exchange rate premium, (5) ratio of central government surplus/deficit to GDP and (6) log of telephones per 1,000 workers. The independent variables are defined as follows. fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. Variance inflation factor values are presented in {} brackets. The table reports in () parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

7.3.3 Summary regression table (1960 – 2009)

Table 7 – Ethnolinguistic Fractionalization And Development: 1960 – 2009

	(1) Schooling	(2) Financial depth	(3) Black market premium	(4) Fiscal surplus	(5) Telephones per worker
Fractionalization	-0.000	0.004	0.000	0.000	-0.002
	(0.002)	(0.003)	(0.000)	(0.000)	(0.006)
	{3.76}	{4.00}	{3.92}	{3.32}	{3.86}
Partitioning	-0.003	-0.004	-0.000	-0.000*	-0.009*
	(0.002)	(0.004)	(0.000)	(0.000)	(0.005)
	{2.62}	{2.84}	{2.78}	{2.48}	{2.83}
Colonial history	0.275*	-0.037	0.000	-0.008	1.026**
	(0.143)	(0.123)	(0.007)	(0.006)	(0.419)
	{1.15}	{1.08}	{1.14}	{1.14}	{1.14}
Sub-Saharan Africa	-0.487***	-0.104	0.004	0.002	-2.384***
	(0.150)	(0.297)	(0.007)	(0.006)	(0.443)
	{3.21}	{3.93}	{3.54}	{2.46}	{3.57}
Latin America & Caribbean	-0.005	-0.282***	0.008	-0.001	-0.445
	(0.135)	(0.065)	(0.010)	(0.004)	(0.367)
	{1.28}	{1.29}	{1.25}	{1.26}	{1.24}
Observations	362	326	305	292	384
Number of countries	75	68	80	78	79
Overall *R* - squared	0.366	0.006	0.008	0.035	0.633

7.3.4 Complete regression tables (1960 – 1989)

Table 8 – Determinants Of Schooling (1960 – 1989)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	-0.009***		-0.007***	-0.005*	0.000
	(0.002)		(0.003)	(0.003)	(0.002)
Partitioning		-0.009***	-0.005*	-0.005*	-0.002
		(0.002)	(0.003)	(0.003)	(0.002)
Colonial history				0.393***	0.301
				(0.149)	(0.201)
Sub-Saharan Africa					-0.667***
					(0.195)
Latin America & Caribbean					-0.029
					(0.190)
Constant	1.734***	1.607***	1.782***	1.592***	1.559***
	(0.093)	(0.081)	(0.092)	(0.117)	(0.208)
Observations	265	207	194	194	194
Number of countries	93	73	68	68	68
Overall *R* - squared	0.181	0.172	0.232	0.304	0.440

Notes: This table reports random effects estimates associating ethnolinguistic fractionalization and schooling (log of 1+ average years of educational attainment) over three decades: 1960s, 1970s and 1980s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 9 – Determinants Of Assassinations (1960 – 1989)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	-8.440e-08		2.723e-08	-1.769e-07	4.784e-07
	(0.000)		(0.000)	(0.000)	(0.000)
Partitioning		-1.172e-07	-1.216e-07	-1.558e-07	3.402e-07
		(0.000)	(0.000)	(0.000)	(0.000)
Colonial history				-4.079e-05**	6.712e-06
				(0.000)	(0.000)
Sub-Saharan Africa					-2.477e-05
					(0.000)
Latin America & Caribbean					1.104e-04**
					(0.000)
Constant	3.531e-05***	3.648e-05***	3.591e-05**	5.534e-05**	-1.374e-05
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	314	239	234	234	234
Number of countries	107	81	79	79	79
Overall *R* - squared	0.000350	0.000656	0.000591	0.0161	0.127

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and the number of assassinations per thousand persons over three decades: 1960s, 1970s and 1980s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 10 – Determinants Of Financial Depth (1960 – 1989)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	-0.003***		-0.003**	-0.001	-0.000
	(0.001)		(0.001)	(0.001)	(0.001)
Partitioning		-0.002*	-0.001	-0.001	0.000
		(0.001)	(0.001)	(0.001)	(0.001)
Colonial history				0.259***	0.091
				(0.086)	(0.081)
Sub-Saharan Africa					-0.300***
					(0.067)
Latin America & Caribbean					-0.260***
					(0.049)
Constant	0.470***	0.403***	0.476***	0.352***	0.505***
	(0.048)	(0.043)	(0.057)	(0.053)	(0.056)
Observations	300	224	221	221	221
Number of countries	104	78	77	77	77
Overall *R*-squared	0.103	0.0551	0.102	0.254	0.398

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and financial depth (ratio of liquid liability of the financial system to GDP) over three decades: 1960s, 1970s and 1980s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 11 – Determinants Of Black Market Premium (1960 – 1989)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	0.002***		0.002	0.000	0.000
	(0.001)		(0.001)	(0.001)	(0.001)
Partitioning		0.000	0.001	0.001	0.000
		(0.001)	(0.001)	(0.001)	(0.001)
Colonial history				-0.222***	-0.186***
				(0.039)	(0.058)
Sub-Saharan Africa					0.046
					(0.084)
Latin America & Caribbean					0.062
					(0.083)
Constant	0.110***	0.257***	0.122***	0.228***	0.191***
	(0.031)	(0.052)	(0.041)	(0.050)	(0.063)
Observations	316	258	234	234	234
Number of countries	109	89	80	80	80
Overall *R* - squared	0.0426	0.00145	0.0310	0.0923	0.0952

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and log of 1 + black market exchange rate premium over three decades: 1960s, 1970s and 1980s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 12 – Determinants Of Fiscal Surplus (1960 – 1989)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	-1.187e-04		-2.609e-04	-1.771e-04	-2.572e-04
	(0.000)		(0.000)	(0.000)	(0.000)
Partitioning		-3.841e-05	8.871e-05	8.843e-05	2.731e-05
		(0.000)	(0.000)	(0.000)	(0.000)
Colonial history				1.655e-02*	2.463e-02*
				(0.009)	(0.014)
Sub-Saharan Africa					2.198e-02*
					(0.012)
Latin America & Caribbean					1.161e-02
					(0.016)
Constant	-3.470e-02***	-3.501e-02***	-3.031e-02***	-3.794e-02***	-4.458e-02***
	(0.006)	(0.006)	(0.007)	(0.009)	(0.015)
Observations	227	177	169	169	169
Number of countries	93	75	69	69	69
Overall *R* -squared	0.00765	0.000789	0.0229	0.0443	0.0637

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and fiscal surplus (ratio of central government surplus/deficit to GDP) over three decades: 1960s, 1970s and 1980s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 13 – Determinants Of Telephones Per Worker (1960 – 1989)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	-0.032***		-0.021***	-0.013*	-0.001
	(0.005)		(0.007)	(0.007)	(0.007)
Partitioning		-0.031***	-0.021**	-0.019**	-0.009
		(0.007)	(0.009)	(0.008)	(0.006)
Colonial history				1.685***	1.102**
				(0.459)	(0.491)
Sub-Saharan Africa					-2.156***
					(0.520)
Latin America & Caribbean					-0.508
					(0.421)
Constant	4.718***	4.271***	4.890***	4.084***	4.347***
	(0.291)	(0.241)	(0.281)	(0.344)	(0.425)
Observations	293	222	222	222	222
Number of countries	107	80	80	80	80
Overall *R* - squared	0.256	0.229	0.319	0.443	0.559

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and log of the number of telephones per worker over three decades: 1960s, 1970s and 1980s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

7.3.5 Complete regression tables (1960 – 2009)

Table 14 – Determinants Of Schooling (1960 – 2009)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	-0.007***		-0.005***	-0.003*	-0.000
	(0.001)		(0.002)	(0.002)	(0.002)
Partitioning		-0.007***	-0.006**	-0.005***	-0.003
		(0.002)	(0.002)	(0.002)	(0.002)
Colonial history				0.341***	0.275*
				(0.115)	(0.143)
Sub-Saharan Africa					-0.487***
					(0.150)
Latin America & Caribbean					-0.005
					(0.135)
Constant	1.947***	1.873***	2.007***	1.840***	1.815***
	(0.074)	(0.055)	(0.066)	(0.090)	(0.141)
Observations	481	418	362	362	362
Number of countries	101	89	75	75	75
Overall *R* - squared	0.140	0.156	0.223	0.280	0.366

Notes: This table reports random effects estimates associating ethnolinguistic fractionalization and schooling (log of 1+ average years of educational attainment) over 5 decades: 1960s, 1970s, 1980s, 1990s and 2000s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 15 – Determinants Of Financial Depth (1960 – 2009)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	0.001		0.004	0.004	0.004
	(0.004)		(0.006)	(0.005)	(0.003)
Partitioning		-0.002*	-0.003	-0.003	-0.004
		(0.001)	(0.002)	(0.002)	(0.004)
Colonial history				0.107	-0.037
				(0.123)	(0.123)
Sub-Saharan Africa					-0.104
					(0.297)
Latin America & Caribbean					-0.282***
					(0.065)
Constant	0.437***	0.529***	0.382***	0.356***	0.539***
	(0.098)	(0.100)	(0.093)	(0.093)	(0.084)
Observations	421	369	326	326	326
Number of countries	91	85	68	68	68
Overall *R* -squared	0.000200	0.000720	0.00368	0.00396	0.00635

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and financial depth (broad money as a percentage of GDP) over five decades: 1960s, 1970s, 1980s, 1990s and 2000s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 16 – Determinants Of Black Market Premium (1960 – 1999)[13]

	(1)	(2)	(3)	(4)	(5)
Fractionalization	0.000		0.000	0.000	0.000
	(0.000)		(0.000)	(0.000)	(0.000)
Partitioning		-0.000	-0.000	-0.000	-0.000
		(0.000)	(0.000)	(0.000)	(0.000)
Colonial history				-0.004	0.000
				(0.007)	(0.007)
Sub-Saharan Africa					0.004
					(0.007)
Latin America & Caribbean					0.008
					(0.010)
Constant	0.004	0.009**	0.005	0.007	0.002
	(0.003)	(0.004)	(0.005)	(0.008)	(0.005)
Observations	400	352	305	305	305
Number of countries	106	98	80	80	80
Overall *R* -squared	0.00208	0.000413	0.00253	0.00410	0.00812

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and log of 1 + black market exchange rate premium over four decades: 1960s, 1970s, 1980s and 1990s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

[13] We were unable to obtain black market exchange rate premium data for the 2000s for a large cross-section of countries.

Table 17 – Determinants Of Fiscal Surplus (1960 – 2009)

	(1)	(2)	(3)	(4)	(5)
Fractionalization	0.000		0.000**	0.000**	0.000
	(0.000)		(0.000)	(0.000)	(0.000)
Partitioning		0.000	-0.000**	-0.000*	-0.000*
		(0.000)	(0.000)	(0.000)	(0.000)
Colonial history				-0.008	-0.008
				(0.005)	(0.006)
Sub-Saharan Africa					0.002
					(0.006)
Latin America & Caribbean					-0.001
					(0.004)
Constant	-0.010***	-0.010***	-0.010***	-0.006**	-0.005
	(0.003)	(0.003)	(0.004)	(0.003)	(0.005)
Observations	390	321	292	292	292
Number of countries	106	92	78	78	78
Overall *R* -squared	0.00630	0.000970	0.0220	0.0338	0.0346

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and fiscal surplus (cash surplus/deficit as a percentage of GDP) over five decades: 1960s, 1970s, 1980s, 1990s and 2000s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.

Table 18 – Determinants Of Telephones Per Worker

	(1)	(2)	(3)	(4)	(5)
Fractionalization	-0.034***		-0.024***	-0.015**	-0.002
	(0.005)		(0.007)	(0.007)	(0.006)
Partitioning		-0.029***	-0.022**	-0.021***	-0.009*
		(0.006)	(0.009)	(0.007)	(0.005)
Colonial history				1.641***	1.026**
				(0.408)	(0.419)
Sub-Saharan Africa					-2.384***
					(0.443)
Latin America & Caribbean					-0.445
					(0.367)
Constant	5.198***	4.638***	5.481***	4.682***	4.935***
	(0.275)	(0.205)	(0.244)	(0.321)	(0.374)
Observations	509	457	384	384	384
Number of countries	105	96	79	79	79
Overall *R* -squared	0.261	0.219	0.371	0.487	0.633

Notes: This table reports random-effects estimates associating ethnolinguistic fractionalization and log of the number of telephones per worker over five decades: 1960s, 1970s, 1980s and 1990s.The independent variables are defined as follows. Fractionalization measures the probability that 2 randomly selected nationals of a given country belong to different ethnolinguistic groups. Partitioning denotes the proportion of the population in a country which belong to ethnic groups split by borders. Colonial history is a dummy variable which takes a value of 1 if the country was not formerly a colony and 0 otherwise. The final two independent variables, Sub-Saharan Africa and Latin America & Caribbean, are dummy variables which take a value of 1 if the country is located in the continent and 0 otherwise. The table reports in parentheses standard errors clustered at the country dimension. *** p<0.01, ** p<0.05, * p<0.1.