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Abstract

This analysis investigates the issue of power allocation among ethnic groups in Sub-Saharan Africa. I construct a Political Inequality index aimed at measuring how fairly executive power is split between tribes, considering ethnic origins of presidents, in a time sample of 23 years (1990-2013). And I rely on birthplaces of politicians, along with territorial distribution of clans, to infer ethnicities. First, I find that highly fragmented and ethnically unequal countries tend to be less fair politically. Then, it seems that discriminating countries grow less and provide lower levels of public expenditures; furthermore, political inequality is associated to scarce levels of institutional development. Next, I try to explain the origin of political inequality considering geographical characteristics and I pursue an IV analysis, using “terrain difficulty” as an instrument for my index, and I confirm previous results. I continue by providing a qualitative case study in order to show how this measure can capture political unfairness and contribute to explain countries growth. And finally, I provide a micro appendix, aimed at explaining how power shares of tribes can be explained within countries.

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1 Introduction

Ethnic Heterogeneity “conundrum” has been deeply studied, leading to the clarification of its pros and cons. On the one hand, it is linked with diversity in education, skills and endowments, stimulating productivity and innovation (Alesina and La Ferrara (2005)); on the other hand, it is usually associated with poor economic growth (Easterly and Levine (1997)), low institutional quality (La Porta et al. (1999)) and civil wars (Montalvo and Reynal-Querol (2005)).

This literature has made an effort in clarifying and showing mechanism and causal chains: first, levels of ethno-linguistic fractionalization, were found to contribute to low growth and institutional development (Alesina et al. (2003)); then, other measures of fragmentation, including polarization, distance and segregation, were refined to better explain the causal link¹; and recently, the idea of inequality was incorporated into the concept of ethnic heterogeneity (Alesina, Michalopoulos and Papaioannou (2012)), and found to have a high explanatory power. Thus, evidence shows that (economic) inequality, within ethnic groups, seems to be a better line of explanation, with respect to mere fractionalization, in explaining low degrees of development; as stated by Alesina, Michalopoulos and Papaioannou (2012): “[...] *what matters for development are economic differences between ethnic groups coexisting in the same country (region), rather than the degree of fractionalization. Inequality in income along ethnic lines is likely to increase animosity, impede institutional development and, and lead to state capture.*”

The idea of my work starts from this theoretical background: what matters is not ethnic fragmentation, but inequality. Thus, I decided to take a step forward, shifting from Economic Ethnic Inequality to Political Ethnic Inequality and I built a new index, based on ethnic origins of politicians. I decided, as well, to focus on Sub-Saharan Africa, a macro-area where political relations are deeply characterized by ethnic dynamics, as stated by Francois, Rainer and Trebbi (2012), “[...] *the importance of ethnic cleavages for political and economic outcomes in Africa cannot be understated*”. Similar conclusions are

1. See Literature review for a brief list of works.

reached by Caselli and Coleman (2002) and Wimmer, Cederman, Min (2009), underlining that ethnic divisions are the frames of African political struggle. Moreover, following “Freedom House”, the area is characterized by low levels of political freedom, leading to weak democratic institutions. Thus, I decided to rely on executive power, following a solid literature stating the crucial role of executive *vis à vis* the legislative power in this geographic area; in fact: “*African legislatures legislated only in a narrow sense-passing into law proposals prescribed by the executive, but not meaningfully participating in the creation of these proposal. Nor did lawmakers engage in oversight of the executive branch.*” (Barkan’s (2008)), similar results are underlined by Norris, Matts (2003) and Southall (2005).

My first goal is, then, the construction of the index of Political Ethnic Inequality. I decided to go on with an *ad hoc* procedure, given the absence of proper measurements, and to collect data on power share of each ethnic group. I concentrated on the ethnicities of presidents, in a sample period from 1990 to 2013, and on shares of population of each group (that I found in Cederman, Buhaug and Rød (2009)) as a reliable benchmark of their presence, to be compared with their power shares. On the one hand, I relied on GREG data set (that is a digitized version of *Atlas Novorod Mira* project) in order to have a complete geographical distribution of groups for each country. Then, I proceeded with a qualitative data collection aimed at creating a data set, incorporating information of birthplace of each president. Finally, as a first step, I matched birthplaces of each politician with geographical distribution of groups in countries, in order to find, in a fully consistent way, ethnic membership of presidents; and, secondly, I was able to assign to each group a “slice” from the “power cake” and to compare this portion with shares of population; in this way I came up with a new measure (scaled between 0 and 1) showing how proportionally political power is distributed, among groups: low values mean fair distributions, while high values, unfair. I finally built two different versions of my index, a complete and a reduced one.

My second aim is to compare my index with growth and other institutional measures of countries in my sample: I found interesting evidence that highly

unfair countries grow less and sustain a lower level of public spending; thus political inequality between ethnic groups seem to have a role in explaining lower growth and this relation remaining remarkable after controlling levels of autocracy or absence of political freedom. I found, as well, some evidence that low degrees of proportionality coincide with lower institutional development, even if magnitude is lower. Then, I decided to compare my measurement with other indices used in the literature: political inequality seems to be linked with high levels of ethnic, linguistic and religious fractionalization (I used measures from Alesina et al. (2002)); finally, I found positive correlations with Alesina, Michalopoulos and Papaioannou (2012) proxies of ethnic inequality. Overall, countries with more unfair distribution of power between ethnicities seem to be highly heterogeneous, in ethnic, linguistic and religious terms and more unequal in terms of economic differences between tribes.

Thirdly, I managed to capture origins of my measurement: I followed an approach *à la* Acemoglou, using exogenous geographical variables. And I found that countries with more “terrain difficulty”, farther from the equator and closer to the sea, tend to have better values of the index, as well as, countries with lower level of geographic endowment disparities (considering water areas). Furthermore, given this evidence, I performed an Instrumental variable analysis using “terrain difficulty” as an instrument for my measure and I confirmed most of previous results.

Fourthly, I designed a specific case study, aimed at showing a concrete example of how the index works: I took into account two historically similar countries, Malawi and Zimbabwe, and I analyzed their economic and institutional performances in the light of values of the index, finding that my measure can be a good proxy for political ethnic inequality and that it seems to have a role in explaining countries performances.

Finally, I pursued a micro-analysis, within countries, aimed at clarifying how power allocation mechanism works: I basically found that population shares of single tribes have a remarkable role in explaining power but that being the largest tribe do not guarantee reaching presidential office.

The paper is organized as follows: section 2 makes a brief literature review; section 3 details index construction; section 4 and 5 present relevant correlations and regressions; section 6 reports results on index origin and on IV analysis; section 7 presents the case study, section 8 concludes, and section 9 provides evidences of the micro analysis.

2 Literature Review

My work is going to focus on four main branches of literature exploring in depth Ethnic Diversity within countries: primarily, contributions analyzing fragmentation on growth and inequalities, then studies focusing on power distribution among groups and ethnic favoritism, with particular attention to leaders' roles.

First, I am going to follow the extensive literature studying effects of Ethnic Diversity on countries development². How could we identify an ethnic group? Following Alesina, La Ferrara (2005), “*An Ethno-Linguistic Group [...] is identified by a language only in some cases and in other cases by language and skin color or other physically attributes*”. In other words, several distinct aspects contribute to define a tribe. Then, how can these diversities affect Development?

An early contribution is that of Easterly and Levine (1997), showing an inverse relation between per capita GDP growth and ethno-linguistic fractionalization in a cross-country setting; in other words, *ceteris paribus*, more fragmented countries grow less. Alesina et al. (2002), refine the index of fractionalization showing a strong, negative relation between the measure and two groups of variables: economic outcomes and institutional development; *inter alia*, if ethnic and linguistic heterogeneity respect this pattern, the opposite is true for religious fractionalization (with the idea that high levels of this index could be related to better political institution, an issue scanned by Barro, Mc Leary (2002)). More recent contributions try to deepen the impact of these indicators

2. For a general Literature review see Alesina, La Ferrara (2005).

using more sophisticated version: Montalvo, Reynald and Querol (2005) take into account polarization between groups, Fearon, Kasara and Laitin (2007) consider the presence of dominant group and the issue of segregation is incorporated within the index by Alesina and Zhuravskaya (2008), considering trust among tribes as a crucial determinant. Moreover, the issue of link among groups, in a fragmented setting, is approached by other scholars, incorporating cultural and genetic ties: Fearon (2003) includes cultural similarities and Desmet, Ortuno-Ortin, Weber (2009), account for distance between languages as well as polarization and peripheral heterogeneity; finally, Desmet, Ortuno-ortin and Wacziarg (2009) build new measures of fractionalization and polarization using “Linguistic trees” showing genealogical ties between languages.

Further, an extremely important aspect of this literature is the deep focus on developing countries, in particular for Sub-Saharan Africa; it is argued that ethno-linguistic fractionalization could explain a consistent part of institutional underdevelopment and the scarce growth in the area (Collier and Gunning (1999), Easterly and Levine (1997)).

Secondly, besides the effort in describing and measuring these indices, a more circumscribed literature is trying to focus on inequality between groups: this branch tries to link economic inequality and development, following the contribution of Simon Kuznets. First, Chua (2003) shows that economically dominant ethnicities produce tensions, institutional underdevelopment and obstacles to free market consolidations and Baldwin and Huber (2010) show that economic inequality between tribes prevents and lowers public goods provision. More recently, Alesina, Michalopoulos and Papaioannou (2012), build a new measure of Ethnic Inequality, using geographical distribution of groups and light density at night; they basically describe wealth of each clan, coming up with a measure of internal economic equity among them. Furthermore, they show a strong, negative correlation between the index and economic growth, as well as the crucial role of geographical endowments in determining economic differences.

Thirdly, I am going to follow the literature on power distribution. *In primis*, it is vital to underline how complex the study of power allocation could be in autocratic regimes, common in Sub-Saharan Africa. As stated by Lewis (1978), “*It is more difficult to study dictatorships than democracies because the internal politics of the former is deliberately hidden from the public view*” and similar results are reached by Tullock (1987), claiming the lack of suitable data. Thus, several works have tried to capture, empirically, power distribution in Africa; Mulligan and Tsui (2008) and Svobik (2009) worked on authoritarian power, as well as Arriola (2009) and Geddes (2003); then, Bueno de Mesquita et al. (2003) focus on electorate. Furthermore, another branch of literature tries to capture power allocation in Africa: these contributions are those of Gurr (1993), “Minority at Risk” project, and of Wimmer, Cederman and Min (2009), “The Ethnic Power Relation” data set. Finally, Rainer and Trebbi (2011), and Francois, Rainer and Trebbi (2012), create a data set of ethnic composition of executive power, for a sample of fifteen African countries, and study the coalition formation mechanism among groups, coming up with the result that power is equally allocated among clans.

Fourthly and finally, I consider contributions pointing up the importance of political ethnic favoritism, especially the role of leaders, for growth and institutional development. Several works stress the importance of ethnicity of executives in power in shaping public policies (Bates (1983); Fearon (1999); Caselli and Coleman (2006); Padro-i-Miguel (2007)). But even leaders’ roles are crucial: Franck and Rainer (2012) underline how leader change can affect primary education and infant mortality of ethnic groups; then, leaders’ homeland are studied in order to capture ethnic favoritism in foreign aid allocation (Hodler and Raschky (2010)) or local taxation level of crops (Kasara (2007)); finally several case studies analyze the importance of leader’s ethnic membership (for instance Kudamatsu (2009) conducts a case study in Guinea).

3 Index Construction and Data

3.1 Index Construction

3.1.1 Geographic Data

The overall structure of my work relies on geographical identification of leaders and ethnic groups. Given the difficulty to find affordable data, due to the fact that “ethnic trees” are still today a little unclear, I decided to found my work on a given data set: Geo-Referencing of Ethnic Groups (GREG) data set. The project, realized by Weidmann, Rød and Cederman (2010), consists in 8969 geo-referenced polygons, representing 929 ethnic groups and it is a digitalized version of Soviet *Atlas Novorod Mira* project (a set of 57 ethnographic maps, indicating locations of tribes). Of course, I only considered Sub-Saharan Africa data, mapping 210 ethnic groups, distributed among 50 countries (overall, there are 461 national subdivisions occupied by different clans). The dataset even takes into account overlaps in geographical area, 22 countries have ethnic overlaps at least in one region and only one country has a double overlap in at least one region. On average, each country contains 11.5 ethnic groups.

Then, I relied on Cederman, Buhaug and Rød (2009) data in order to have several infra-group information including shares of territory occupied by groups and population of each tribe, in a panel dataset from 1960 to 2005 (some countries have a lower time coverage). Overall, ethnic borders heavily partition nations, only partially overlapping on national divisions. It is quite clear, as stated by Michalopoulos and Papaioannu (2011), how “*The artificial design of Africa borders, who took place in European capitals in late 19th century [...], offers a nice (quasi) - experimental setting.*”

Finally from these data on ethnicities within countries, I computed an internal Index of ethnic fractionalization; using the inverse of the Herfindahl Index (from Alesina et al. (2002)):

$$Fract_c = 1 - \sum_{j=1}^N s_{jc}^2$$

with s_{jc}^2 the share of group j ($j = 1 \dots N$) in country c . The average of the index is 0.649, with highest value obtained by Democratic Republic of Congo and lowest by Swaziland. Finally, the measure results highly related with measure from Alesina et al. (2002), with a correlation value of 0.66.

3.1.2 Presidents' Ethnicity

My second step has been the collection of data on politicians of my sample, in order to come up with a complete dataset of leaders' Ethnicity. On the one hand, I collected information on birthplaces and, on the other, I used geographic distribution of groups to infer ethnic membership of politicians in my sample. In order to get the complete list of birthplaces I respected a protocol with four stages.

First, I consulted annual publications of “*Africa South of the Sahara*” and on-line resources (Wikipedia.en, Britannica on-line, Treccani on-line) to find the names of presidents for the period 1990-2013 in Sub-Saharan Africa³. Although the names of the office can vary among countries, I tried to identify the most powerful position in executive cabinets.

Secondly, I tried to find out birthplaces of politicians relying on Database (Lexis-Nexis, World Biographical Information System, Factiva), on-line resources (Wikipedia.en, Wikipedia.fr, Wikipedia.pt, Britannica on-line, Treccani on-line) and search engines (Google.com, Google books, Google scholar)⁴. In case of ambiguous information (differences among sources), I relied on sources of former settler country; for instance, for former French colonies I ultimately trusted French sources.

Thirdly, I designed a more careful procedure for two specific cases: politicians whose birthplaces were not found and politicians born in capital: given the “Melting pot” nature of capitals I did not trust identification strategy there. Then, I went on with a purely qualitative research approach, using quoted

3. In collecting presidents' name I primary trusted “*Africa South of the Sahara*” information.

4. For references of my research method I referred to Rainer and Trebbi (2011) and Francois, Rainer and Trebbi (2012).

references, to flush out ethnicities of these observations⁵. In this stage, given the possibility for a group of being called with the ethnic family name or with a sub-group name, I tried to relink information found within my GREG categorization, using on-line sources but also *Ethnologue* 14th, 15th, 16th Editions.

Finally, after a brief on-line security check for all observations, I built the sample of 141 presidents and I discovered their ethnicity, using GREG data. I just needed to find out coordinates of birthplaces and locate them in GREG maps: the ethnic group of president was the one of tribe living in region where he was born⁶. Only 32% (74 ethnicities) of total groups are represented. The following countries have the fewest ethnicities in power, in absolute terms⁷, only one: Angola (with Bambundu group), Botswana (with Bechuanas), Burkina Faso (with Mossi group), Cameroon (with Fang group), Equatorial Guinea (with Fang group), Eritrea (with Tigre group), Sudan (with Sudan Arabs group), Swaziland (with Swazi group, the ethnicity of the king), Uganda (with Banyarunda group) and Zimbabwe (with Mashona group); while more representative country is Liberia with Gere, Bantù-Speakers, Mano, Gola and Wai groups represented (clearly, I am not considering, here, population shares of groups; if group x rules, alone, a country where 90% of population belongs to x, the index value will be good, indicating a good degree of ethnic proportionality within the country; thus, number of represented ethnicities is just one side of the medal). Beside these data, I collected, as well, biographical information of presidents and governments. Particularly, I got information on the president background (if they were professors, militaries, businessmen, practitioners or rebels), if they came to power through a *coup d'état*⁸ and on the degree of autocracy of their government⁹. I found interesting that the majority of presidents of my sample were militaries or practitioners and that, on average,

5. When I only found parents ethnicities, I used both of them, in a weighted form.

6. When birthplaces were shared by more than one group I tried to find out, qualitatively, which was the right one.

7. I consider here even if tribes remain in power for brief periods.

8. For source of this stage, see previous section.

9. For this piece of information I consulted "*Polity IV Project*" by Marshal, Jagers and Gurr (2010).

31% of leaders got power through a *coup*, a used benchmark to stress systemic political (and economic) instability, as stated by Collier “*It’s well-known that political instability generated it’s detrimental for economic development*”. Also, average autocratic degree of countries resulted to be 8.25¹⁰ (from 0 –full autocracy– to 20 –full democracy–), countries with lowest scores are Swaziland (with score 1, mainly due to the nature of its political regime, an absolute constitutional monarchy) and Sudan (with score 3.77, mainly due to its, *de facto*, military dictatorship from 1989, marked with the presence of a more than 20 year old civil war and numerous *coups*), while most democratic countries are South Africa (with 18.35 score) and Botswana (with 17.66), both countries having solid democratic institutions (considered among causal factors of their economic success). Finally, I reported the average years in power for each leader and average number of changes in power for sample years (that means how many time leaders changed from 1990 to 2013, it only accounts for changes even if the same two presidents alternated): the average number of changes in leadership, for all my countries, is 3.5, while more dynamic countries resulted to be Guinea-Bissau and Liberia, with 9 change.¹¹

3.1.3 Index Construction

Index construction involved both information on political ethnicities and ethnic groups’ population. In order to measure the proportionality of African governments, that some scholars indexed to be highly distorted (Posner (2005)), I followed a revised version of the procedure of Francois, Rainer and Trebbi (2012): for each group j , I computed, for my sample years, the relative portion of executive power, X_j , i.e. which percentage of power was controlled by that tribe. In order to obtain the portion of the “power cake”, I considered years in charge in presidential office: I assigned to each group a score representing the number of years it was in charge¹² and finally I obtained the relative portion¹³.

10. I considered here the average level of Polity Index for period 1990-2013.

11 It’s clear how tricky this measure can be: it can indices a healthy democracy, but even a highly unstable system, marked by civil wars and coups (Mauritania, for instance, has a dynamic political setting, with 6 changes, but 60% of its governments started with a coup).

12 I didn’t take into account, in this exercise, presidents who remained in power less than one year.

Furthermore, In order to avoid distortions I excluded from the analysis those countries that, according to GREG, only have one ethnic group. These countries are Cape Verde, Comoros, Madagascar, Djibouti, Lesotho, Mauritius, Réunion, Saint Helena, Sao Tomé e Príncipe and Seychelles; these countries are mainly small, or overseas territory of European states, usually not ruled by African politicians. I finally needed to exclude, as well, Somalia from my sample, due to the lack of reliable data on presidents¹⁴: 39 countries remained.

Then I took into account the share of population, $\frac{n_j}{P}$, of groups. Clearly, the spread between these indicators:

$$(X_j - \frac{n_j}{P})^2$$

is a proxy for the degree of disproportionality of group j , as indicated by Gallagher (1991): high spreads indicate remarkable levels of disproportionality. In this setting, a perfect distribution of power among groups, will assign to each tribe a portion of power proportional to its population share, *i.e.*, for each $j \in N$:

$$X_j = \frac{n_j}{P}$$

Then, I focused on spreads as a measure of governmental proportionality and I created my index, a measure covering all time sample:

$$\rho = \sqrt{\frac{1}{2} \sum_{j=1}^N (100 * (X_j - \frac{n_j}{P}))^2}$$

High levels of the index measure unfair power distribution among groups and low levels fair one. Following this procedure I was able to make two versions of

13. In order to avoid distortions, I considered, for presidents in charge in 1990, the eventual years they were in charge before that moment, properly scaling the measure: for instance Quett Ketumile Joni Masire was president of Botswana from 1980 to 1998, I considered all these period in my calculation, scaling the measure.

14. The problem for data collection in Somalia is due to the highly conflictual recent history of the country, that was ruled, during riots, by local war lords, losing its unitary nature. I computed the index but I didn't insert in analysis this country.

the measure: on the one hand I created a version including each group present in the countries, on the other a reduced one, excluding unrepresented groups (basically excluding 2/3 of groups in dataset): I generally found that the first version shows higher correlations with reference variables.

3.1.4 Example

In order to make the construction of the index more clear, I provide a short example explaining how I came up with the measure. I decided to consider Liberia: despite the relative low number of groups (9 ethnic groups, lower than average level), Liberia has a relatively high ethnic fractionalization level (0.75 from internal data; 0.90 from Alesina et al. (2002)). Most numerous groups are Bantù-Speakers Pygmy tribes (34% of total population) and Gere (32%), while the other 7 groups are all under 10% of population share, Kisi group is the smallest with 0.2% of population¹⁵; finally, according to GREG maps, there are no ethnic overlaps in this country. Figure 1 shows ethnic localization of groups in Liberia.

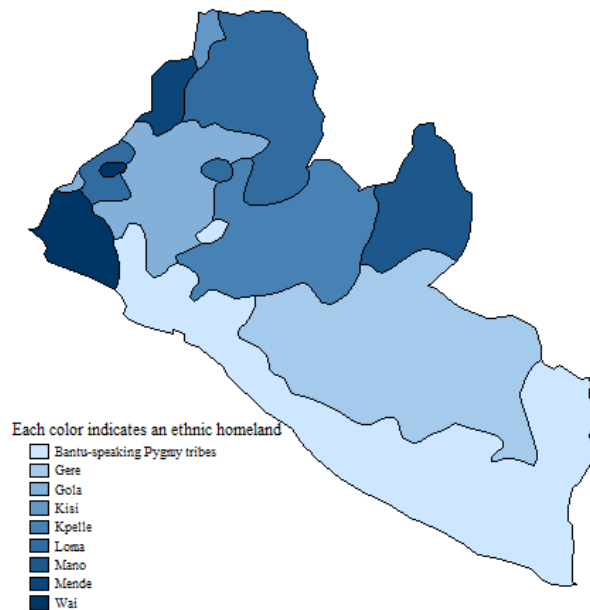


Figure 1: Distribution of ethnic groups in Liberia

15. The other groups of the country are Gola, with a population share of 3.9%, Kpelle, with 9.6%, Loma, with 4.5%, Mano with 5.7%, Mende, with 1.7% and Wai, with 7.6%.

It is visible that Bantù-Speakers Pygmy tribes occupy the south-western area, including capital Monrovia, Gere are in center-southern part, Kpelle and Mano are in central area, Wai in western areas and Gola, Loma, Mende and Kisi are located in the north-western part of the country.

Liberia is one of the fairest country of my dataset, with 5 ethnic groups represented in presidential office. Table I shows presidents turnover and linked tribes in Liberia. There have been 9 overall presidents in period 1990-2013, one of which, Moses Blath, in charge for two months after the resignation of President Taylor and before the United Nations transitional governments headed by Gyude Bryant, that I excluded from computations because of the brief period in office (then, there are 4 represented ethnicities). There are four presidents from Bantù-Speakers Pygmy tribes (overall represented for seventeen years and half), two representatives of Gola group (in charge for four years and half), one member of Gere tribe (in power for ten years) and one from Wai (with one year of power)¹⁶: Figure 2 shows political power distribution among

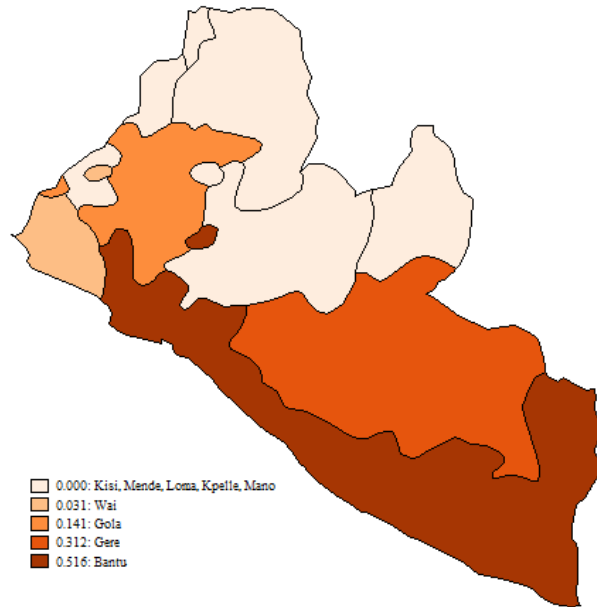


Figure 2: Power (percentages) among tribes in Liberia

16. The final years count is more than 23 because the first president started ruling, *de facto*, in 1980 and I inserted in computation all this period of power, with a proper scale.

ethnic groups. From these data I created reduced and complete versions of my index, computing spreads and getting final measures: I obtained a complete value of 0.188 (quite fair) and a reduced one of 0.161 (*idem*), as expected the reduced version produces better value, due the construction procedure, excluding unrepresented tribes and artificially decreasing the final value. Finally, the Liberian results to represent, limited to presidential offices, quite proportionally intern tribes: the most important remains in power for seventeen years and half, the second largest for ten, then one medium group is in charge for one year and a relatively small one for four years and half.

3.2 Data

Table IIa and IIb report values of Proportionality Indices (complete and reduced versions), as well as, Internal version of Ethnic Fractionalization measure, and descriptive statistic for my sample of countries (including *coup d'état* Index, number of changes in power, presidents' number, tribes in charge and number of ethnicities), for the period 1990-2013. I calculated the indices for Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Republic of Congo, Democratic Republic of Congo, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Liberia, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leona, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe. Average level of the complete index is 0.446 and of the reduced one is 0.391; the country with the worst values of the (complete) index is Gabon. It has a (complete) index of 0.896; two presidents were in charge from 1990¹⁷, El Hadj Omar Bongo, from Bateke tribe (the fifth ethnic groups of the country, with 1.92% of population) and Ali Bongo Ondimba (the son of former president), from the same group; moreover, the country has a relatively low number of internal tribes (7 groups) and an ethnic heterogeneity above average (with 0.659 of internal level and 0,769 of the measure from Alesina et al. (2002)), as well as, a relatively high level of internal

17. Ohter two presidents were in charge, Didjob Divungi Di Ndinge and Rose Francine Rogombé (both from Mpongwe clan), but they remained in office, respectively, for one and four months; thus, I didn't consider them in the computation.

inequality, in terms of Ethnic Inequality measure, from Alesina, Michalopoulos and Papaioannu (2012)). Finally, other countries with a high value of the index (above 0.7) are Cameroon, Central African Republic, Republic of Congo, Togo and Uganda. Figure 3 shows African countries and values of (complete and reduced) index: it is interesting to note how countries of central Africa tend to have the worst values¹⁸ (in fact, Tropical climate and latitude will be considered variables in trying to explain the index), while southern countries generally have better values.

Finally, Figure 4 shows Kernel densities for both measures (panel a for complete and panel b for reduced version): it's interesting to observe that both distributions are centered on the mean, in particular the reduced version has a regular shape, while the complete one has a double hump-shaped form.

4 Correlations¹⁹

4.1 Historical and Dimension indicators

Table III, panel A and B shows correlation of complete and reduced indexes with historical, power and dimension variables. This is an introductory analysis aimed at clarifying how proportionality measure relates to other explaining indicators.

Panel A, presents historical variables, from Nunn and Puga (2012). First, It's interesting to note how countries with British Common law are generally associated with better (lower) values of the index (correlation of -0.31), while French law relates with higher values (0.31); following this line it's not surprising to discover that British settlement is linked with lower levels, differently from that of French colonization, found to be highly correlated with the index, finally Portuguese settlement is, weakly, negatively correlated with

18. In fact 5 out of 7 countries with high levels of the index (>0.7) are in central Africa.

19. I only comment on relations with complete version of the index, but table V presents correlations for both complete and reduced versions.

the index²⁰. Figure 5 presents geographical evidence of British common law and French civil law countries, stressing levels of Political Inequality: it is visible, even if evidence is not straightforward, how common law countries achieve better performances (lighter colors), except for Uganda, Kenya and Ghana, while civil law countries generally have darker colors (except for north-western countries). Panel A presents, as well, relations between the index and power variables I generated in support of my data set: it's clear how high degrees of unfair power distribution are related with low numbers of changes in power, high average duration of presidents in office and frequency of *coups d'état*. Finally, Panel B, shows geographic and dimension relations. On the one hand, it is clear how the dimension of a country matters for the index: the higher the country is in terms of land area, and the more numerous the ethnic groups are, the worse the index is (this relation can be clearly inferred regarding index construction procedure: larger countries, with more tribes will have higher "ethnic unbalances", leading to the worse measures). On the other hand, it is clear that countries from central Africa tend to have the most unfair setting (with a correlation of 0.63), while southern countries achieve the best results (-0.33), along with western countries (-0.19); lastly, eastern countries don't seem to show any remarkable trend.

4.2 Growth and Institutions

Panel C of Table III shows correlations of proportionality index with economic and institutional indicators.

First, the index is found to be negatively correlated with average GDP per capita growth (1990-2013), from World Bank Database, with a correlation index of -0.21; the result underlines a relation between ethnically unfair political setting and low economic growth. Figure 6a shows the association.

20. The index is even found to be positively correlated with slave trade variables (Slave trade 1400-1900 and Distance to slave market Atlantic), but magnitude of the relation is limited.

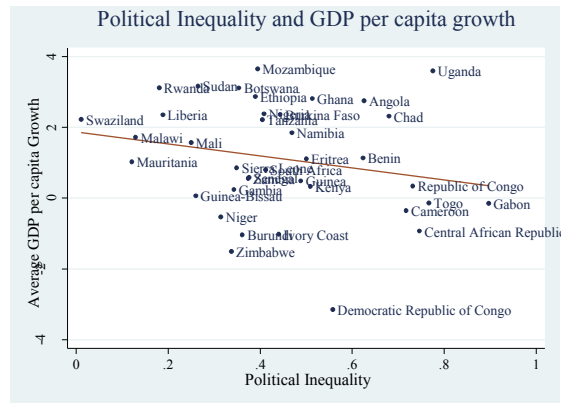


Figure 6a

Similar relations result with levels of public expenditure: there is a remarkable negative correlation with Public spending on Education (-0.31), as well as, with Public spending on Health (-0.28)²¹. These results basically confirm the idea that “*the propensity to supply true public goods should be lower in more ethnically fragmented society*”, as stated by Alesina and La Ferrara (2005), and the reason, as showed by Alesina, Glaeser and Sacerdote (2001), could be that “*altruism does not travel well across ethnic lines.*”, similar results are equally reached by Baldwin and Huber (2010)²². Thus, the idea of high levels of heterogeneity leading to public spending decrease, seems to be applicable also with political ethnic inequality measure. Figure 6b shows the correlations.

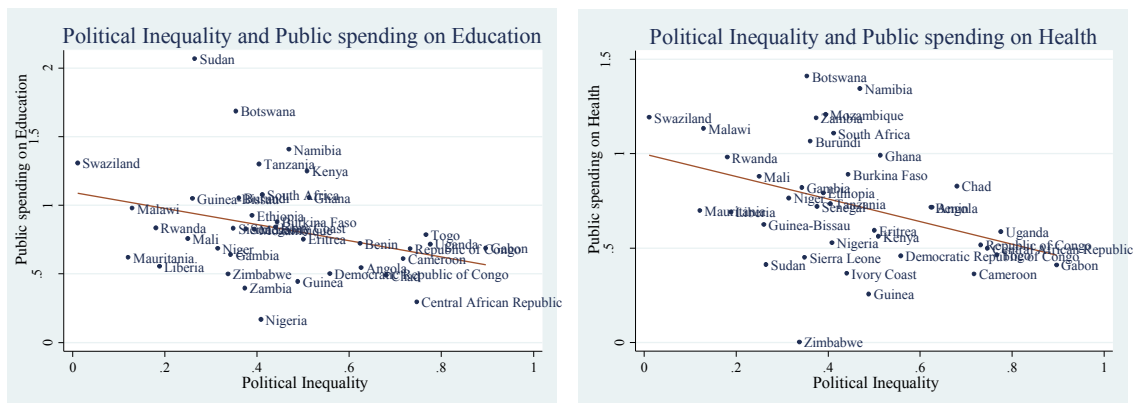


Figure 6b

21. Both Public Spending on Education and on Health are considered as % of GDP.

22. It's interesting, in this direction, the early contribution from Tajfel et al. (1971), stating that individuals assign a positive utility to wellbeing of members of their group and a negative one to that of members of other groups.

On the other side, high values of the index are related with low degrees of institutional development, considering measures from *World Bank's Governance Matters Database* (Kaufman et al. (2008)): Figure 6c, presents the relation with variables Control of Corruption and Governmental Effectiveness. The negative trend is clear. Moreover, the index is inversely related to Youth literacy rate:

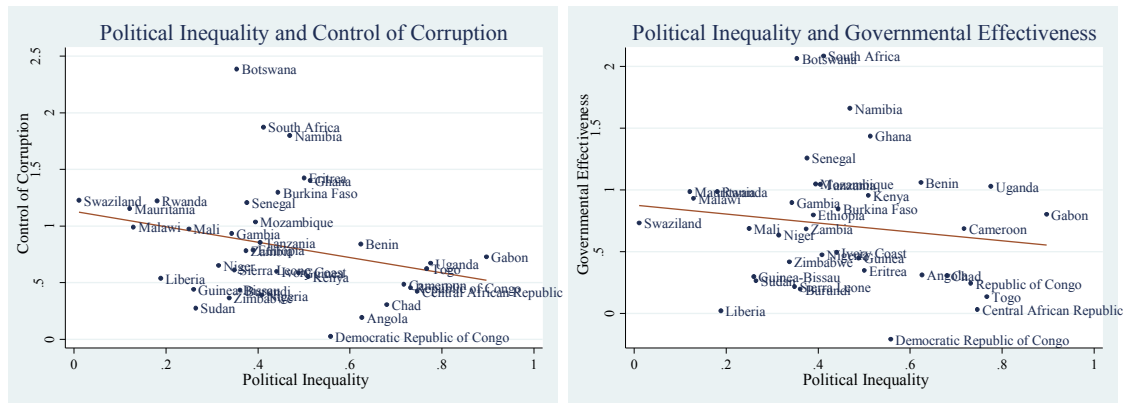


Figure 6c

4.3 Other Indices

Finally, proportionality index seems to be highly correlated with other, linked, measures of the literature; Panel D presents these relations.

Primarily, this measure is highly related to fractionalization indices of Alesina et al. (2002): in particular with Ethnic (with a correlation of 0.50), Linguistic (0.50) and Religious (0.39) Fractionalization. Finally the same trend remains unchanged using the internal measure of Ethnic fractionalization (that I built using ethnic data from the dataset) with a correlation of 0.44. These relations, in line with the literature, seem to show that the likelihood to have an ethnically unfair setting increases with the internal heterogeneity of the country. Figure 6d shows associations.

Next, correlation analysis strongly links economic and political inequality, *i.e.* proportionality measure results to be correlated with Ethnic Inequality proxies from Alesina, Michalopoulos and Papaioannou (2012): this result suggests that



Figure 6d

economic disparities among tribes are linked with political ones and that economic and political inequality seem to move together. Figure 6e shows these

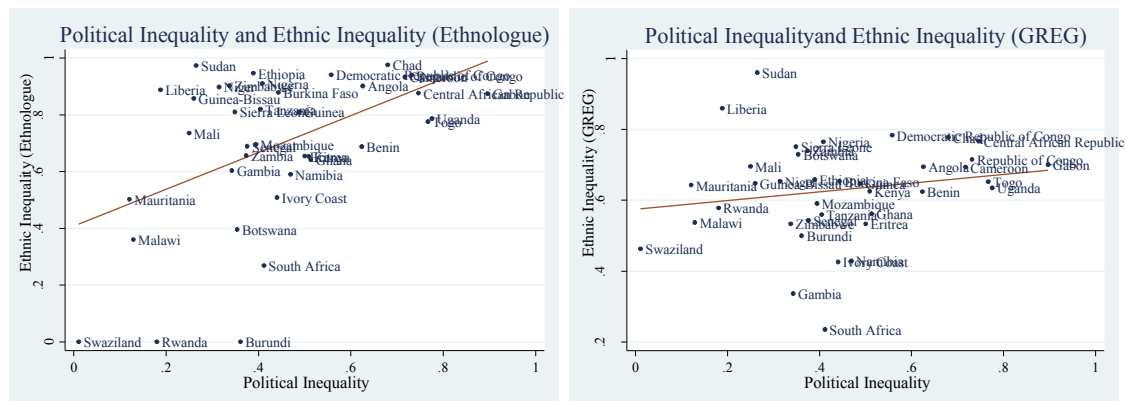


Figure 6e

correlations: proportionality index is highly linked with Ethnologue (all groups) index (with a correlation of 0.44) and weakly related with GREG (all groups)

measure (with a correlation of 0.16). Finally, to enrich this snapshot on Inequality measures, I considered indices of Inequality on Geographic endowments²³, from Alesina, Michalopoulos and Papaioannou (2012): these data basically summarize degree of unfair distributions of natural endowments within countries. Panel E shows correlations with measures on Elevation, Water area and Distance to sea: it's clear how Proportionality index and these indicators move together (in particular with variable Water area)²⁴. A possible interpretation of this association is that political power is more likely to be unequal in countries where geographic endowments are not fairly allocated among clans.

To sum up, from this preliminary analysis, it seems that more ethnically unfair countries face a lower economic growth as well as institutional development, and that the likelihood to have a politically discriminating setting, along ethnic lines, increases with levels of heterogeneity, economic ethnic inequality and unequal distribution of geographic endowment of the country.

5 Political Inequality on Growth and Institutions²⁵

In this section I am going to study, in a more consistent way, the impact of my index of Political Inequality on economic growth and institutional development: the aim of this analysis is to test if a more unequal setting, with political discrimination among tribes, low presidential turnover and high duration of presidency, is able to have a solid effect on overall development of my sample countries. As stated by, Alesina and Zhuravskaya (2008), “*higher segregation in terms of ethnicity and language is associated with significantly lower quality of government*”, and it's possible that such an unfair setting produces political

23. These data are based on *Atlas Novorod Mira* maps, presented in two versions: Inequality across ethnic Homelands and Inequality across Artificial Pixels/Areas.

24. Alesina, Michalopoulos and Papaioannou (2012), find similar correlations with their measures of Ethnic Inequality.

25. I only comment and present, in paragraph 5 and 6, relations with complete version of the index.

tensions, unrest or even civil wars (Fearon, Kasara and Laitin (2007), deepened this point), leading to low development.

5.1 Growth Estimates

Table IVa and IVb show OLS regressions on economic growth (here considered as Average GDP per capita Growth); considering Table IVa, I included into the analysis institutional and historical controls in order to better measure the impact of Political Inequality. Column 1 shows that economic growth is negatively and significantly related to the index, with starting level of GDP and number of changes, finally, a weak, positive and significant correlation with slave trade is found²⁶. It is interesting to note how the paradigm of beta-convergence is here respected, with poorer countries growing more than richer, while it is ambiguous that low numbers of changes stimulate growth (a relation that can be explained by making the hypothesis that too many changes characterize unstable societies); In columns 2 and 3 I added institutional controls: degree of civil liberty absence (from Freedom House), is found to be negatively, and significantly, correlated with growth (low values of the index mean high degree of liberty) and positively with Democracy Index (from Polity IV project), linking high democratic levels to high economic growth. In columns 4 and 5 I included controls of society development as schooling level and proportion of seats held by women in national parliaments²⁷, both are positively related with growth, despite only the second variable being significant. And finally, column 6 has the historical control Legal origin Common law, unsurprisingly found to be positively correlated with dependent variable, even if, here, the Political Inequality index loses its significance.

On the other hand, Table IVb includes dimension indicators: given the nature of the index, in fact, I considered it appropriate to include controls for dimension

26. This relation, at odds with results of Nunn (2008), can be partially explained considering the fact that inserting a proxy for ethnic political inequality could capture the lack of political freedom and the degree of racial segregation, associated with slave trade, manipulating the effect of this variable; however, the magnitude of the coefficient is very small.

27. In particular I took, here, into account, here, School enrollment in primary education (% net) and Proportion of seats held by women in national parliaments (%), from World Bank.

of groups: the idea is to figure out if negative economic effects of the index are only due to the dimension indicator (like number of ethnicities) rather than the political discrimination component. I inserted, here, controls for population and land dimension as well as number of ethnicities in the country; despite not being significant, all these controls negatively relate with growth, and decrease the index's significance, but do not remove it.

Overall, the Political Inequality index is found to be negatively and significantly related (except when controlled by Legal origin) with economic growth, even after controlling for political, institutional and historical indicators, with a magnitude between -2.21 and -3.10.

5.2 Institutions

Table Va, Vb and Vc report regressions on Institutional variables: I took into account Government effectiveness, Control of corruption and Rule of law.

Table Va shows results on Government effectiveness: the index is negatively, and significantly, related with institutional quality, while starting level of GDP per capita shows a positive effect; conversely, a negative relation is visible between dependent variable and absence of civil liberties, as well as number of changes: it is clearly intelligible how the negation of liberties leads to low institutional quality, while the relation with president's turn-over is more equivocal (as stated in previous paragraph, it is possible that high turnover is associated with political instability and low development), column 1. Furthermore, schooling control is positively, and significantly, related to development (column 3), while slave export and Common law controls are still positive but not significant (column 2 and 4).

Similar results are shown in Tables Vb and Vc, Political Inequality is still inversely related with institutional development, with significance, and other controls display similar behavior, except for historical controls (slave export and legal origin) that appear to be inversely related with outputs (columns 2 and 4).

Overall, Political Inequality results negatively affecting institutional development, in a statistically significant way, with coefficients from -0.67 to -1.15.

6 Explaining Political Inequality and introducing the instrument

6.1 Facing Endogeneity

I studied the capability of my index of Political Inequality to explain and to cause, growth and institutional performances. But, it is possible too that low development, with weak institutions and bad macroeconomics performances, produces political inequality: then, where is the causal direction?²⁸ In other words, there can exist, in current theoretical setting, an endogeneity problem, arising from the nature of the index.

Thus, I decided to handle the problem reasoning in two ways: first, it is reasonable to assume that balance of power among groups, within a country, has ancient origins, finding its *raison d'être* in pre-colonial age (where, conversely, it is reasonable to date economic and social institutions); then, it's not completely wrong to consider these ethnic power relations as a given "object" from the past (logically anticipating economic and institutional variables). Secondly, it seems reasonable to make use, in this setting, of Alesina et al. (2002)'s line of thought, claiming that "*Ethnic Fractionalization indices are generally taken as exogenous in cross-country regressions, based on the fact that [...] changes only have a minor impact on fractionalization measures*"²⁹. It may be possible, to extend this idea to the present setting, finding a partial answer to previous question.

But is it enough? I think this idea can only partially solve the problem; therefore I decided to deepen the origin of my index, in order to shed light on

28. Following the "reflexive" school in ethnology and sociology the problem generated can be a "reflexive endogeneity" among growth and ethnic groups.

29. However, I inserted in my growth regression starting level of constant GDP as an initial check, in order to control for this problem.

its roots, and, to implement an instrumental analysis, aimed at facing, more consistently, endogeneity risk.

6.2 A Geographical explanation

In order to explain political differences between groups, I primarily followed an approach *à la* Acemoglu: I relied on geographical variables as naturally exogenous regressors. And I performed a cross-country analysis. Table VI shows these results: I used variables from Nunn and Puga (2012) and from Alesina, Michalopoulos and Papaioannou (2012) as independent variables and index of Political Inequality as dependent one. Despite the weak statistical significance, several results are clear: first, column 1 shows how measures of terrain ruggedness and desert are negatively and significantly related with the index; this relation seems quite reasonable, since “environment difficulty” can be read as an obstacle for one group to gain supremacy over the others, leading more “difficult” countries to preserve tribes’ independence³⁰. Then, columns 2 and 3, report positive relations between absolute value of latitude and tropical climate with inequality: this is a classical result, since proximity to equator is negatively related with growth (as stated by Hall and Jones (1999)) and positively with ethnolinguistic fragmentation (Michalopoulos (2012)). Moreover, columns 4 and 5 analyze impact of relative position in respect to the sea: the higher the distance to the sea and the fewer the kilometers of coast line, the higher the inequality level. Several explanations can be provided, for instance the idea that being close to the coast means, for a region, a higher number of cultural exchanges had in the past, with a more dynamic setting, more difficult to subdue by one tribe; or even a more intense relation with colonial countries with, associated, “institutional gains” (see Acemoglu, Johnson and Robinson (2001) or Hall and Jones (1999)). Finally, this issue is deepened in columns 6 and 7 where Inequality in water areas (computed considering both, ethnic homelands and artificial pixels/areas) is negatively correlated with political

30. Nunn and Puga (2012) found that African countries seem to have gained from terrain ruggedness and explain this relation with slave trade; here, this result goes in the same direction, stating that this exogenous variable can be, paradoxically, positive, affecting power fairness among clans.

inequality: it's easy to infer that higher endowment disparities lead to greater political inequality.

In conclusion, this section gives weak evidence that countries with more “difficult terrain”, farther from the equator, closer to the sea and with fewer endowments disparities present better levels of Political Inequality.

6.3 An IV approach

From the previous paragraph it is clear how Political Inequality has ancient roots, partially explainable using geography. From this point, I decided to perform another analysis, using geographical variables as instrument for my index. In particular, I decided to instrument political fairness among tribes with measures of “terrain difficulty”, that result to be highly, and significantly, related to the indicator. The explanation, as partially stated in the previous section, can be that, since terrain is not “easy”, it's more difficult to control territory, then ethnic dominance is more unlikely. Such an environment could lead to politically fair setting because of its morphology: a competitive disadvantage seems to be, in the long run, an advantage. This idea clearly follows Nunn and Puga (2012): they claim that “Bad Geography” is a blessing for Africa, since “more difficult” areas remain out of the slave market, and this initial disadvantage became a gain for their inhabitants. On this theoretical path, I decided to follow the intuition, in a slightly different way: bad geography is a blessing because of its capacity to protect groups, avoiding ethnic dominance in a territory.

From this idea, I conducted my analysis instrumenting the Political Inequality index with two variables: Terrain Ruggedness and Desert. Both result in being highly related to the index: Table VIIa shows correlation and it is clear, on the one hand, how instruments are related with political inequality (correlation index is, respectively, -0.34, significant at 5%, and -0.26, not significant) and, on the other, how GDP growth has a weak link with these variables (correlations are 0.18, not significant, and -0.03, *idem*). Then, there are right conditions to go on with an IV analysis. I did the same study again as Tables IVa and IVb.

Table VIIc presents second stage results for the analysis on Average GDP growth (it's even interesting to know that from first stage analyzes variables Terrain Ruggedness and Desert result both significant). From columns 1 and 2 it's clear how relations are unchanged: the index negatively and significantly affect growth; starting level of GDP, absence of civil liberties and number of changes still negatively relate with the output (despite the first not being significant) and slave trade it's found to have positive sign, but with low magnitude. Columns 2 and 3 underline how Common law indicator and Literacy rate Youth positively affect growth, and columns 4 and 5 take into account dimension indicators (Log Population and Number of Ethnicities), with negative relations, despite not being significant. Moreover, In all these regressions the Political Inequality index remains significant and negative.

As a second point, I performed the same analysis for institutional variables again: Table VIIb shows correlations: it's clear how instruments are, mostly, weakly and insignificantly related to dependent variables. Tables VIId, VIIe and VIIf present results: relations are similar to those of OLS analysis. Institutions are found to be negatively and significantly affected by the Political Inequality index, absence of civil liberties, number of changes and Legal origin Common Law; while Initial GDP and schooling are positively related; finally slave trade has a positive sign for Government Effectiveness and a negative one for two other variables.

To sum up, new Political Inequality, instrumented with Ruggedness and Desert, confirms previous relations: it is found to negatively and significantly affect growth as well as institutional variables, and magnitude of relation is larger.

7 Case Study: Southern Rhodesia and Nyasaland

*“all of these stars... these vast worlds that remain out of reach. If I could, I would annex other planets”*³¹ Cecil Rhodes

31. Sarah Millin, “Rhodes”, London 1933, p.138.

Malawi and Zimbabwe are two medium-sized landlocked countries of southern Africa; since the early years of XX century they were, respectively, Nyasaland and southern Rhodesia, British protectorates; then, from 1953, they merged along with northern Rhodesia (current Zambia), into “Federation of Rhodesia and Nyasaland”, despite opposition of local tribes. But their destinies started to diverge, from 1965, with the dissolution of the Federation: Malawi gained independence, while Zimbabwe became the Republic of Rhodesia, an apartheid state, ruled by a white party. From that point onwards, these countries took two completely different paths: Malawi, on the one hand, after a period of autocracy, started on a democratic path, marked by internal peace and economic growth. Zimbabwe, on the other, faced a civil war, leading the country to independence in 1979, with the beginning of, and still, ongoing, Mugabe presidency, a period marked by unrest, low economic growth (with high levels of inflation) and weak institutional development.

Political Inequality Indices for these two countries well summarize these different paths. First, Malawi has a low level of proportionality index of 0.129,

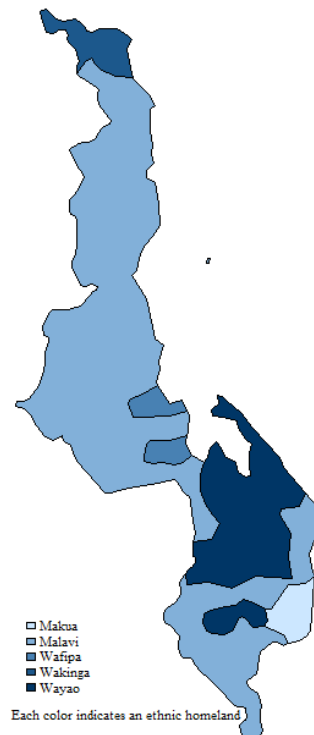


Figure 7a: Distribution of ethnic groups in Malawi

for complete version (and 0.119 for reduced one), stressing a fair political environment. Malawi's population is split in 5 tribes³²: with the two biggest groups containing almost 90% of total population; Figure 7a reports territorial ethnic distribution in Malawi. It is a relatively homogeneous country, in ethnic terms, with an internal Ethnic fragmentation index of 0.517 and an external level of 0.674 (both below average levels); moreover, the country's measure of Ethnic Inequality is low (measure from GREG is 0.537 and that from Ethnologue is 0.359). Politically, four different politicians hold presidential office in the sample period: Hastings Kamuzu Banda (from 1961 to 1994) and Bingu Wa Mutharika (from 2004 to 2012), from Malawi tribe, and Bakili Muluzu (from 1994 to 2004) and Joyce Hilda Banda (from april 2012), from Wayao ethnic group; then, the two largest groups were represented by presidents. Figures 7b and 7c compare population shares of tribes and their power shares: it's quite evident that darker green regions (areas occupied by



Figure 7b: Population shares

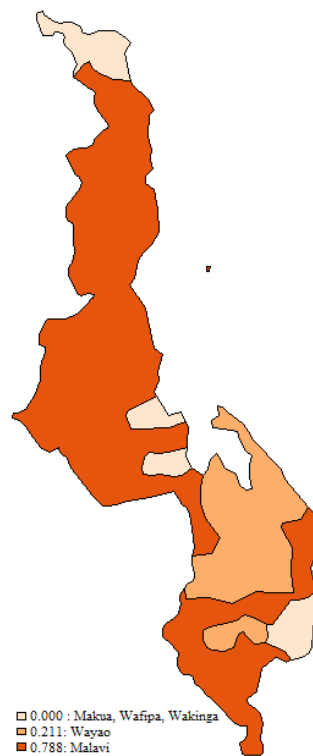


Figure 7c: Power shares

32. Malawi's groups are Makua, with 4.7% share of population, Malawi, with 64.2%, Wafipa, with 3.4%, Wakinga, with 1.8% and Wayao, with 25.6%, without ethnic overlaps.

more numerous groups) coincide with dark orange regions (areas occupied by more powerful tribes).

It's then visible, even qualitatively, how power is allocated quite fairly among clans. Furthermore, a good average level of GDP per capita growth of 1.72% per year (a level above the average)³³ and good degrees of Institutional development, all better than average levels³⁴, coincide with power proportionality. Finally political setting seems to be quite stable, with no *coups* and a good number of changes in power (even if democracy index is not high).

On the other hand, Zimbabwe setting is totally different: levels of proportionality index are higher: 0.337 for complete version (and 0.273 for reduced one) and the ethnic setting results more complex, with 10 clans³⁵ (with a demographic predominance of Mashona and Matebele), but almost the same

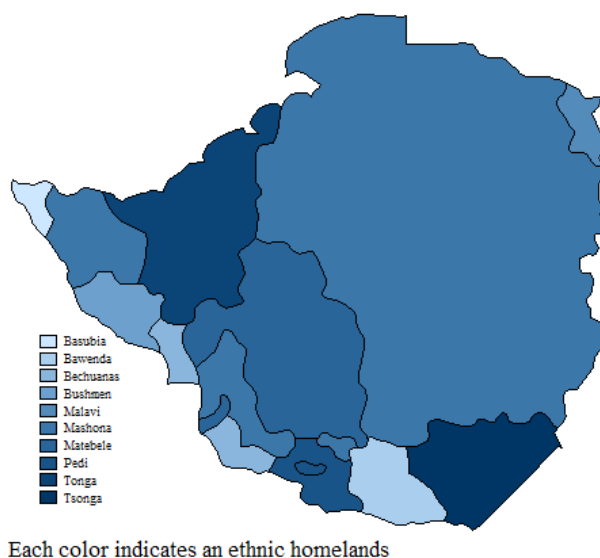


Figure 8a: Distribution of ethnic groups in Zimbabwe

33. Even if the growth path is not extremely stable, the standard deviation is 5.76 points, mainly due to GDP growth fluctuation in early 90s.

34. I am, here, taking into account levels of Voice and accountability, Political stability, Government effectiveness, Regulatory quality, Rule of law and Control of corruption.

35. Groups of Zimbabwe are Basubia, with 0.12% of population, Bawenda, with 0.75%, Bechuanas, with 0.88%, Bushmen, with 0.55%, Malawi, with 0.10%, Mashona, with 65.25%, Matebele, with 24.70%, Pedi, with 0.62%, Tonga, with 3.67% and Tsonga, with 2.35%, without ethnic overlaps.

level of heterogeneity as Malawi; figure 8a shows tribe distribution in Zimbabwe. Moreover, Ethnic Inequality level is higher, showing a higher degree of ethnic discrimination within Zimbabwean society³⁶ (measure from GREG is 0.533 and that from Ethnologue is 0.902).

Politically, Zimbabwean scene have been dominated, since late 80s by the figure of president Robert Gabriel Mugabe, from Mashona clan. It is a case of dominance of a single tribe, the largest in the country. Furthermore, the political setting seems quite unstable, with civil wars, low degrees of civil and political rights, according to Freedom House, and a more autocratic governmental form. Figure 8b and 8c report the same comparison as figures 7b and 7c: here the situation is different, apart from Mashona group, holding all political power, no other group is represented, producing a visibly unfair setting.

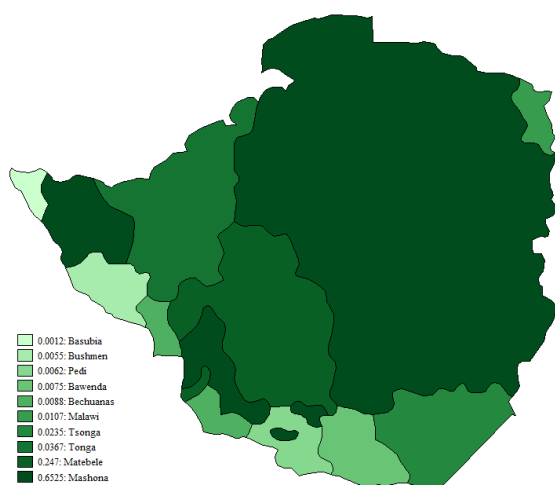


Figure 8b: Population shares

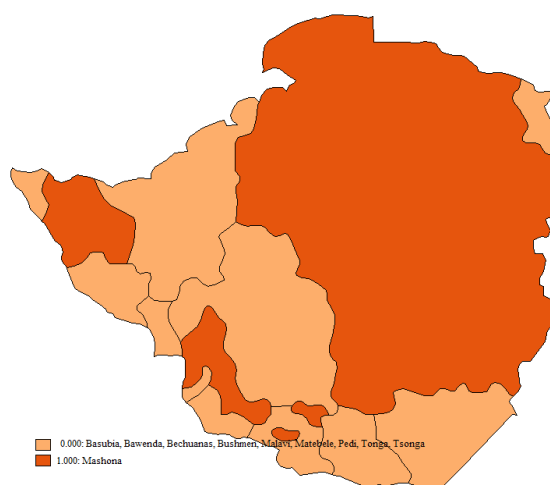


Figure 8c: Power shares

This highly conflictual society, with political discrimination and ethnic predominance, produced visible results in terms of average GDP per capita growth, that is -1.50, and of institutional development: particularly dramatic are levels of Voice and accountability, Regulatory quality and Rule of law. Overall level of development of Zimbabwe was modest in sample years.

36. Actually the history of Zimbabwe, marked by apartheid and then by Mugabe's group predominance, can give us valuable reading key for this figure.

To conclude, I think that from this case study two interesting observations can be made: first, proportionality index can be a good proxy for ethnic proportionality in power, stressing the degree of conflict, or even discrimination, among tribes and summarizing how fairly power is distributed; secondly, it is visible how low degrees of economic and institutional development are associated with highly unfair settings.

8 Conclusion

The aim of this study is to follow and deepen a totally new branch of literature on ethnic diversity, focusing on inequality rather than on mere fractionalization. We know that heterogeneity lead to poor economic growth (Easterly and Levine (1997)) and low institutional quality (La Porta et al. (1999)); but, as stated by Chua (2003), countries with economically dominant ethnicities face unrest and civil wars, leading to institutional capture and underdevelopment. Therefore, given the importance of balance of power among groups, I decided to move from economic inequality to political inequality and explore how the executive participation of tribes, in Sub-Saharan Africa, can be used as a valuable proxy for this concept.

First, I built a new measure of Political inequality among countries, relying on birthplaces of presidents and shares of population, and I compared my measure with economic and institutional variables. I basically found that political inequality is negatively and consistently related with growth and institutional development, and that there is a strong, negative, correlation with levels of public expenditures. It seems that less fair countries grow less, have low degrees of institutional development and reach lower level of internal confidence and cohesion. I then raised the issue of the origin of this inequality, and I relied on geographical regressors in order to explain, in a cross-country setting, differences among countries; I found that “terrain easiness”, closeness to the equator and distance from the sea are positively related to inequalities, as well as internal inequality in water areas. From this result I was able to pursue an IV study, instrumenting my index with “terrain difficulty” variables, and basically

confirming previous results. Finally, I presented a case study, showing how two similar countries, in historical terms, achieved different results; and I presented qualitative evidence showing how political variables, in particular the lack of political fairness, can be considered one factor in explaining this divergence.

I computed my measure as a proxy of political fairness, along ethnic lines, and I tried to study the effect of my indicators on reference variables; but the index overlooks interesting elements (for instance legislative power) only focusing on limited evidences (I only took into account presidents) and causal channels are not yet completely clear. Thus, I think that this is just preliminary evidence that should be deepened and better explained.

9 Appendix I: Political inequality. A Micro evidence

In this appendix I am going to show several results I obtained implementing a micro analysis on my sample of 461 ethnic groups. On the one hand I tried to explain political inequality, from a microeconomic standpoint, relying on population shares of tribes, on the other I made a comparison between the richest and most powerful groups within countries.

9.1 The origins of Power shares

The second attempt I made in order to explain my index is a micro analysis. Following Francois, Rainer and Trebbi (2012), I considered my micro dataset, made up of 461 national sub-regions, each occupied by a distinct tribe, and I studied how power shares of each group can be explained considering related variables, primarily population shares and land area occupied (including controls for country fixed effects and for largest groups within countries). On average, each group owns a share of 8% of presidential power, with a standard deviation of 0.23, then power distribution has a tail on the right; finally, land share has a similar behavior. Figure 9 (panels a and b) presents Kernel density of power shares and population shares of ethnic groups of the sample. The basic goal is to measure the impact of group size (land and population) on probability to gain the presidential office; therefore, my regression equation is:

$$X_{jc} = \beta_1 \frac{n_{jc}}{P_c} + \beta_2 \frac{a_{jc}}{P_c} + \beta_3 k_{jc} + \gamma_c + \varepsilon_{jc}$$

With X_{jc} power size of group j in country c ; $\frac{n_{jc}}{P_c}$ and $\frac{a_{jc}}{A_c}$, respectively, population and land share of group j in country c and k_{jc} the dummy indicator, for group j , country c , for largest tribe. I performed two analyzes.

First, I run a Probit model (assigning 1 to represented groups, whatever the share), using my complete sample of 461 groups. Table VIIIa contains results: from column 1, it's clear the positive, significant, relation between population share and probability to be represented; moreover, it's visible from columns 2 and 3 how land dimension of a group is positively related to power share, despite not being significantly so, and that a positive and significant, relation

exists between being the largest group and holding presidential power, despite the low magnitude of the effect. Then, in column 4, it is presented the same regression as column 2, taking into account country fixed effects, and results do not change.

The second analysis I present is a reduced one: since the polarized nature of power distribution, I decided to perform a reduced study, only considering represented groups. Now, average level of power share is 0.48, with a standard deviation of 0.34. Figure 9 (panels c and d) reports Kernel density for power and population shares: the first variable is now a double hump-shaped distribution, while population shares distributes as in the complete case. Figure 10 shows the relation between power shares of tribes and their population shares. The positive relation between being a big group and holding executive power is clear.

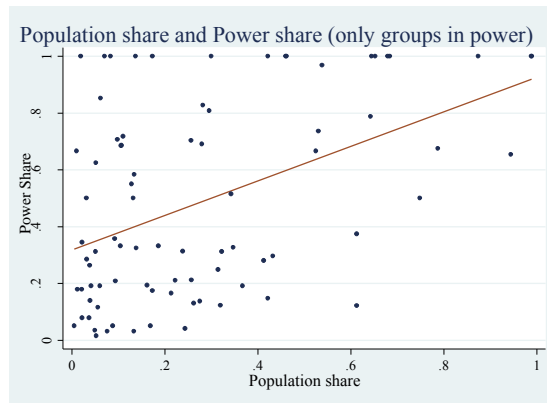


Figure 10

Table VIIIb shows results for this analysis: from column 1, we can infer that, still, population shares matter, significantly, in a positive way (even if with small magnitude); furthermore, land share has a similar behavior, still not significantly, as well as control for the largest group (regressions 2 and 3). Finally, column 4 analysis, is made adding regional fixed effects, obtaining similar results (except for largest group control becoming negative). It's interesting, therefore, to observe the behavior of control for largest groups: it is positively related to power share, but weakly and insignificantly, and relation becomes negative when adding regional controls; it basically means that, first,

population shares matter for power allocation, then the basic “allocation mechanism” follows equitable lines; but, secondly, the largest group’s control is not found to have a crucial role in this process. In other words, despite a general evidence claiming that size of groups matters, we can infer from these results that being the largest group doesn’t have a significant effect in this process (as it should have in a fair setting), then power allocation is, here, not totally fair³⁷; thus, it seems that, studying more deeply power formation, groups’ population dimension is not the only interpretative key in explaining power shares.

In conclusion, this micro-analysis shows, how population shares of groups play a considerable role in power allocation among tribes, similar conclusions are found by Francois, Rainer and Trebbi (2012): *“An extra 1 percent increase in the share of the population of a group increases its likelihood of inclusion by 6.6%. This underlines a strong relationship between size and inclusion in government.”*; but I found that there are no evidences that the biggest groups are properly represented and that land share only has a marginal impact in this mechanism.

9.2 Comparing Political and Economic winners

In this paragraph I present a further result that I obtained via the comparison of my data with data from Alesina, Michalopoulos and Papaioannou(2012): it’s clear, from section 3, how political and economic inequality, among tribes, are strongly linked; this means that countries where wealth is not fairly distributed among ethnic groups tend to be the same where political power is unequally allocated. From this idea, I performed this minimal analysis, comparing “economic winners” and “political winners”: I basically took into account ethnicities found to be the richest from Alesina, Michalopoulos and Papaioannou(2012), according to their method of satellite images of light density at night, and clans that, according to my analysis, are most powerful.

I followed two lines: first I used average value of the index of Political Inequality (it means that I considered the most powerful group in period 1990-

37. The idea from this result seems to be that, after a certain threshold of population share, power is handled by groups different from the largest in my country sample.

2013) and I found that 10 countries on 40 (25%), of my sample matched between the two datasets; these countries are: Burundi, Central African Republic, Gambia, Liberia, Mozambique, Mauritania, Rwanda, Sierra Leone, Tanzania and Zimbabwe. Secondly, given that economic data refer to 2000, I used data of 2000 in my comparison (it means that I considered most powerful tribes in year 2000) and I found that only 9 groups matched (22.5%); these countries are: Burundi, Gambia, Guinea-Bissau, Liberia, Mozambique, Mauritania, Malawi, Rwanda and Zimbabwe.

Generally speaking, this brief comparison shows how, besides cross-country analysis, where economic and political inequality move together, there is some evidence that this relation could work in micro-setting, as well. Obviously, this is only a minimal proof of a relationship that should be deepened in a more consistent way.

10 Appendix II: Data Sources

Ethnic groups distribution: Geo-Referencing Ethnic Groups (GREG), Weidman, Rød and Cederman (2010);

Population/ land shares/ mountainous portion of ethnic groups : data from Cederman, Buhaug and Rød (2009);

Presidents' names: Mainly from *Africa South of the Sahara* 1990-2013 Editions, but even from *Wikipedia.en*, *Treccani* on-line and *Britannica* on-line;

Presidents' birthplaces and ethnicities: various sources, *Lexis-Nexis*, *World Biographical Information System*, *Factiva*, *Wikipedia.en*, *Wikipedia.fr*, *Wikipedia.pt*, *Britannica* on-line, *Treccani*, *Google.com*, *Google books*, *Google scholar* and *Ethnologue* 14th, 15th and 16th Editions;

Data on governments: same sources as previous point;

Legal origin, Colonial origin, Countries land area, Countries population : data from Nunn and Puga (2011);

Number of tribes within countries, internal ethnic fractionalization index: data from Cederman, Buhaug and Rød (2009);

Average GDP per capita growth, Public spending in education and in health, Literacy rate youth total: data from *World Bank database*;

Log GDP per capita, School enrollment in primary education (net %), Portion of seats held by women in national parliaments (%): data from *World Bank database*;

Control of corruption, Government effectiveness, Rule of law: data from *World Bank Governance Matters Indicators Database* (Kaufman, Kraay and Mastruzzi (2005));

Ethnic inequality measures: data from Alesina, Michalopoulos and Papaioannou (2012);

Elevation/Distance to sea/ Water area inequality (among tribes and among areas): data from *Alesina, Michalopoulos and Papaioannou (2012)*;

Ethnic/Linguistic/Religious fractionalization index: data from *Alesina et al. (2002)*;

Slave trade 1400-1900, Distance to Atlantic slave market: data from *Nunn (2008)*;

Civil liberties degree: data from *Freedom House database*;

Democracy index: data from *Polity IV Project by Marshal, Jagers and Gurr (2010)*;

Terrain ruggedness/ Desert/ Tropical climate/ Latitude/ Average distance to the sea/ Within 100 Km of coast: data from *Nunn and Puga (2011)*;

Micro data on richest ethnic groups: data from *Alesina, Michalopoulos and Papaioannou (2012)*.

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Table I: Presidents in charge in Liberia (1990-2013)

President	Birthplace	Ethnic Group	Birthplace's Dimension	Years in charge
Samuel Kanyon Doe	Tucson, Liberia	Gere	Village	From 1986 to 1990 (<i>de facto</i> from 1980)
Amos Sawyer	\	Bantù speakers	\	From 1990 to 1994
David D. Kpormakor	Bomi County, Liberia	Bantù-speaker	Village	From 1994 to 1995
Wilton S. Sankawulo	Haindii, Liberia	Gola	Village	From 1995 to 1996
Ruth Perry	Grand Cape Mount, Liberia	Wai	Village	From 1996 to 1997
Charles Ghankat Taylor	Arthington, Liberia	Bantù-speaker	Town	From 1997 to 2003
Moses Blah ³⁸	Toweh Town, Liberia	Mano	Village	2003 (two months)
Gyude Bryant	Monrovia, Liberia	Bantù-speaker	Capital	From 2003 to 2006
Ellen Johnson Sirleaf	Monrovia, Liberia	Gola and Bantù-speaker	Capital	From 2006 to today

38. I drop this politician because it was in charge only two months.

Table IIa: Political Inequality in Sub-Saharan Africa (period 1990-2013)

Country name	Political Inequality (complete)	Political Inequality (reduced)	Ethnic Fract (internal measure)
Angola	0.625	0.550	0.765
Benin	0.623	0.623	0.579
Botswana	0.354	0.279	0.508
Burkina Faso	0.443	0.423	0.759
Burundi	0.361	0.348	0.408
Cameroon	0.717	0.677	0.891
Central African Republic	0.746	0.500	0.488
Chad	0.680	0.555	0.746
Republic of Congo	0.732	0.657	0.651
Democratic Republic of Congo	0.557	0.528	0.914
Equatorial Guinea	0.321	0.251	0.474
Eritrea	0.500	0.454	0.750
Ethiopia	0.389	0.355	0.743
Gabon	0.896	0.770	0.659
Gambia	0.342	0.341	0.107
Ghana	0.513	0.487	0.581
Guinea	0.488	0.442	0.772
Guinea-Bissau	0.259	0.102	0.726
Ivory Coast	0.440	0.404	0.831
Kenya	0.509	0.459	0.855
Liberia	0.188	0.161	0.756
Malawi	0.129	0.119	0.517
Mali	0.249	0.211	0.685
Mauritania	0.120	0.099	0.228

Mozambique	0.394	0.367	0.715
Namibia	0.469	0.424	0.723
Niger	0.314	0.180	0.730
Nigeria	0.408	0.386	0.851
Rwanda	0.180	0.170	0.355
Senegal	0.375	0.348	0.660
Sierra Leone	0.348	0.239	0.614
Somalia	0.011	0.095	0.024
South Africa	0.411	0.398	0.851
Sudan	0.264	0.248	0.519
Swaziland	0.010	0.008	0.022
Tanzania	0.404	0.340	0.912
Togo	0.766	0.649	0.701
Uganda	0.775	0.720	0.859
Zambia	0.373	0.366	0.752
Zimbabwe	0.337	0.273	0.511

Table IIb: Descriptive statistics for Sub-Saharan Africa (period 1990-2013)

Country name	<i>Coup D'etat</i> Index	Num change	Num Presidents³⁹	Represented tribes	Number Ethnicities	Democracy Index
Angola	0	1	1	Bambundu	13	7.30
Benin	0.33	4	3	Somba, Ewe, Barba, Yorube and Fulbe	9	15.82
Botswana	0	3	3	Bechuanas	6	17.66
Burkina Faso	1	1	1	Mossi	15	6.71
Burundi	0.20	6	5	Barundi (Tutsi) and Barundi (Hutu)	3	8.43
Cameroon	0	1	1	Fang	20	5.07
Central African Republic	0.66	3	3	Sere-Mundu and Mbum	11	8.80
Chad	1	2	2	Tubu and Zagawa	17	6.87
Republic of Congo	0.50	3	2	Bobangi and Bangala, Bakongo	10	5.77
Dem. Republic of Congo	0.66	3	3	Ngbandi, Baluba	31	8.03
Equatorial Guinea	1	1	1	Fang	4	4.58
Eritrea	0	1	1	Tigre	9	3.35
Ethiopia	0.25	4	4	Amhara, Tigray and Galla	16	9.10
Gabon	0	4	2	Bateke	7	6.32
Gambia	0.5	2	2	Manding and Diola	3	5.31
Ghana	0.25	4	4	Ewe and Akan	12	11.03
Guinea	0.4	5	4	Susu, Kpelle and Mandingo	10	7.50
Guinea-Bissau	0.28	9	4	Pepel and Balante	9	8.61
Ivory Coast	0.2	5	5	Akan, Mandingo and Bete	12	5.73
Kenya	0	2	2	Nandi and Akikuyu	16	8.07
Liberia	0.11	9	8	Gere, Bantù speakers, Gola and Wai	9	11.52

³⁹ I only included here presidents in charge for at least one year.

Malawi	0	4	4	Malawi and Wayao	5	4.734
Mali	0.40	5	4	Mandingo and Fulbe	10	13.51
Mauritania	0.60	6	4	West Sahara	4	4.56
Mozambique	0	2	2	Tsonga and Makua	9	9.63
Namibia	0	2	2	Ovambo	8	16.00
Niger	0.43	7	7	Songai, Hausa, Kanuri and Fulbe	11	9.46
Nigeria	0.28	7	6	Nupe, Hausa, Yoruba, Fulbe and Ijo	27	7.19
Rwanda	0.33	3	3	Banyaruanda (Hutu) and (Tutsi)	3	4.71
Senegal	0	3	3	Wolof and Serer	11	12.26
Sierra Leone	0.40	6	5	Kisi and Mandingo	6	7.09
Somalia	0.14	7	7	Somalis	4	9.04
South Africa	0	5	5	Afrikaners, Xosa, Bechuanas and Zulu	13	18.35
Sudan	1	1	1	Sudan Arabs	29	3.77
Swaziland	0	1	1	Swazi	3	1.00
Tanzania	0	3	3	Swahili, Makua, Wayao and Wazaramo	30	7.36
Togo	1	2	2	Tem	11	6.74
Uganda	1	1	1	Banyaruanda	14	5.82
Zambia	0	5	5	Malavi, Bemba and Tonga	11	8.91
Zimbabwe	0	1	1	Mashona	10	5.31

Figure 3: Political Inequality in Sub-Saharan Africa (Complete and Reduced versions)

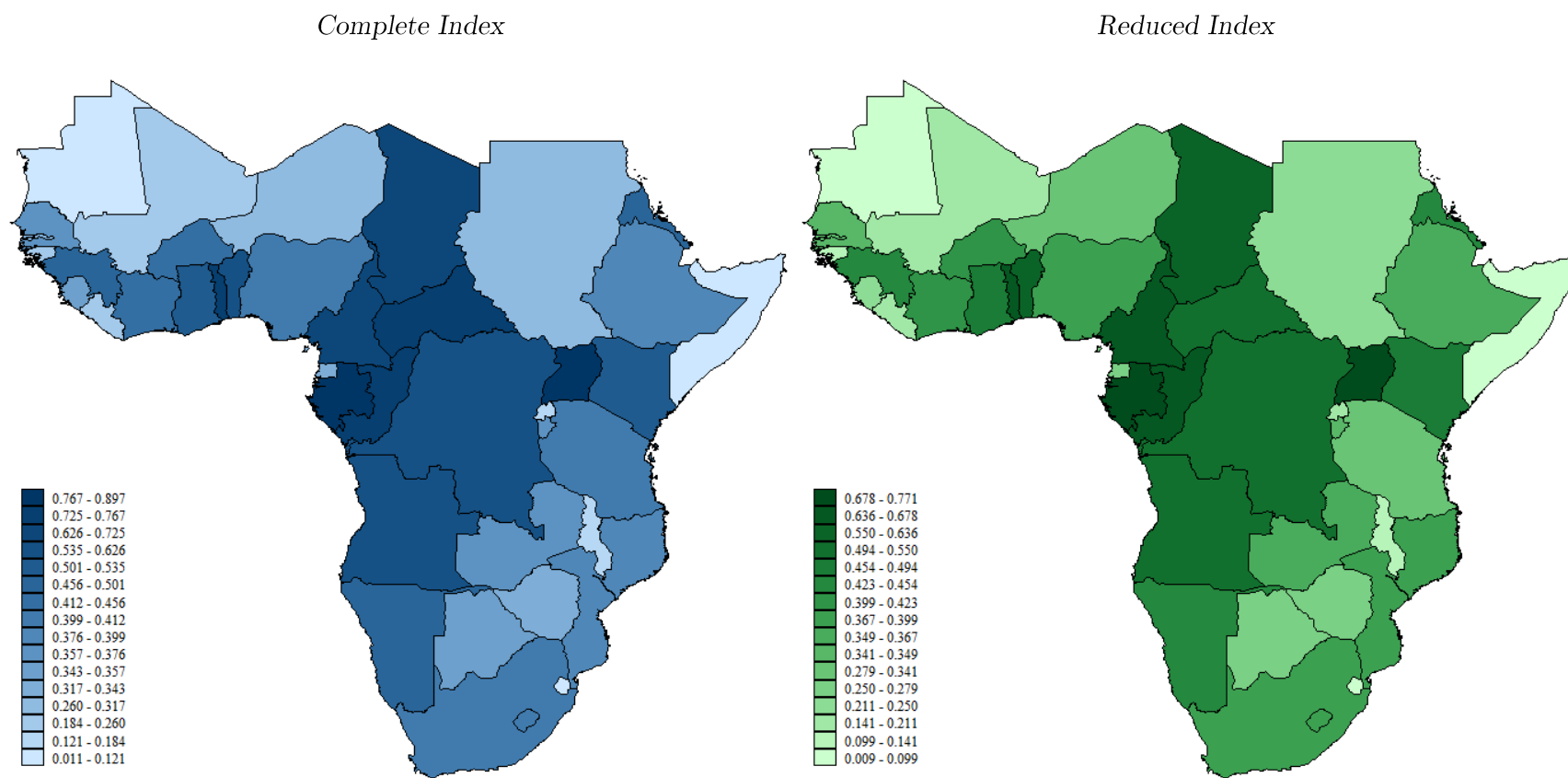
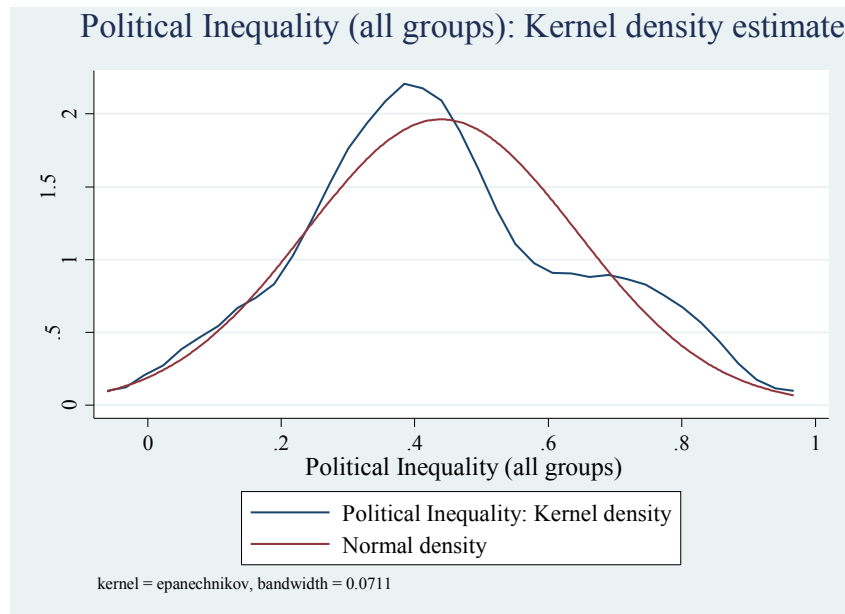
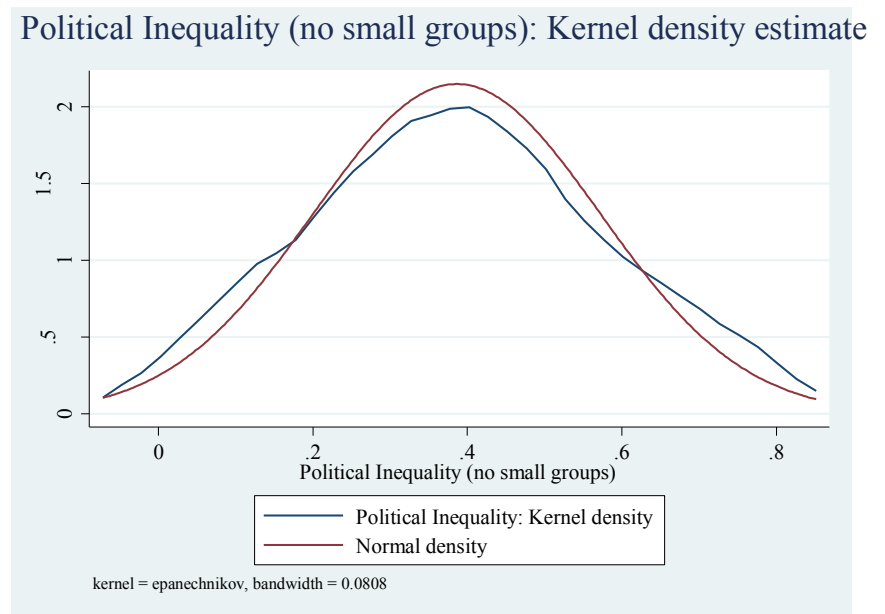


Figure 4: Kernel density of measures of Political Inequality



Panel a



Panel b

Table III: Correlations

Panel A – Historical and Power variables

Political Inequality (all groups)	1.0000									
Political Inequality (no small groups)	0.9681	1.0000								
Legal Origin Common Law	-0.3171	-0.2685	1.0000							
Legal Origin French Law	0.3171	0.2685	-1.0000	1.0000						
Colonial British	-0.2341	-0.1836	0.8920	-0.8920	1.0000					
Colonial French	0.3922	0.3381	-0.6513	0.6513	-0.6513	1.0000				
Colonial Portuguese	-0.0191	-0.0736	-0.2497	0.2497	-0.2497	-0.2236	1.0000			
Number change in Power	-0.3386	-0.3999	-0.0308	0.0308	-0.2261	0.0223	0.0564	1.0000		
Average years in Power	0.2755	0.3356	-0.1416	0.1416	-0.0859	0.2202	0.0859	-0.3067	1.0000	
Coup d'Etat Index	0.2535	0.2117	-0.2248	0.2248	-0.2424	0.3513	-0.1867	-0.1307	0.0641	1.0000

Panel B – Dimension and Geographic variables

Political Inequality (all groups)	1.0000								
Political Inequality (no small groups)	0.9681	1.0000							
Log Land Area	0.2909	0.2620	1.0000						
Number Ethnicities	0.2541	0.2803	0.4283	1.0000					
African South	-0.3339	-0.3000	-0.2698	-0.2736	1.0000				
African West	-0.1906	-0.2030	0.3018	-0.1489	-0.4170	1.0000			
African East	-0.0425	0.0026	-0.1260	0.2219	-0.2667	-0.4170	1.0000		
African Central	0.6362	0.5688	0.0357	0.2421	-0.2454	-0.3838	-0.2454	1.0000	

Panel C – Economic indicators and Institutions

Political Inequality (all groups)	1.0000									
Political Inequality (no small groups)	0.9681	1.0000								
GDP per capita Growth	-0.2176	-0.1599	1.0000							
Public Spending on Education	-0.3171	-0.2904	0.3544	1.0000						
Public Spending on Health	-0.2870	-0.2417	0.5091	0.2905	1.0000					
Literacy rate Youth Tot	-0.2126	-0.1931	0.2086	0.0000	0.2867	1.0000				
Control of Corruption	-0.2762	-0.2238	0.3954	0.4436	0.4637	0.1311	1.0000			
Government Effectiveness	-0.1410	-0.0621	0.4176	0.4390	0.4556	0.0853	0.8482	1.0000		
Rule of Law	-0.1386	-0.0755	0.3856	0.4022	0.5659	-0.0098	0.8751	0.8928	1.0000	

Panel D – Other Indices

Political Inequality (all groups)	1.0000									
Political Inequality (no small groups)	0.9669	1.0000								
Ethnic Fract (from this dataset)	0.4453	0.4507	1.0000							
GREG no small groups	0.2046	0.1553	0.3567	1.0000						
GREG all groups	0.1688	0.0961	0.2171	0.7083	1.0000					
Ethnologue no small groups	0.3255	0.2536	0.4179	0.7497	0.6122	1.0000				
Ethnologue all groups	0.4482	0.3728	0.5174	0.5587	0.6346	0.7921	1.0000			
Ethnic Fract	0.5017	0.4862	0.6385	0.4607	0.3476	0.7043	0.6807	1.0000		
Linguistic Fract	0.5059	0.4944	0.7265	0.3646	0.2403	0.6055	0.6362	0.8851	1.0000	
Religious Fract	0.3989	0.3909	0.4447	0.0725	0.0065	0.1300	0.0581	0.2015	0.2979	1.0000

Panel E – Geographic Endowments

Political Inequality (all groups)	1.0000								
Political Inequality (no small groups)	0.9681	1.0000							
Inequality on Elevation (among tribes)	0.1451	0.1939	1.0000						
Inequality on Water area (among tribes)	0.2229	0.2092	0.1166	1.0000					
Inequality on Distance to sea (among tribes)	0.1053	0.0685	0.2667	-0.0071	1.0000				
Inequality on Elevation (among areas)	0.2061	0.2454	0.9618	0.1026	0.3129	1.0000			
Inequality on Water area (among areas)	0.3285	0.3289	0.0841	0.7531	0.0552	0.1524	1.0000		
Inequality on Distance to sea (among areas)	0.2022	0.1989	0.2128	0.0308	0.9344	0.2860	0.1143	1.0000	

Figure 5: Political Inequality in British Common Law and in French Civil Law countries (Complete index)

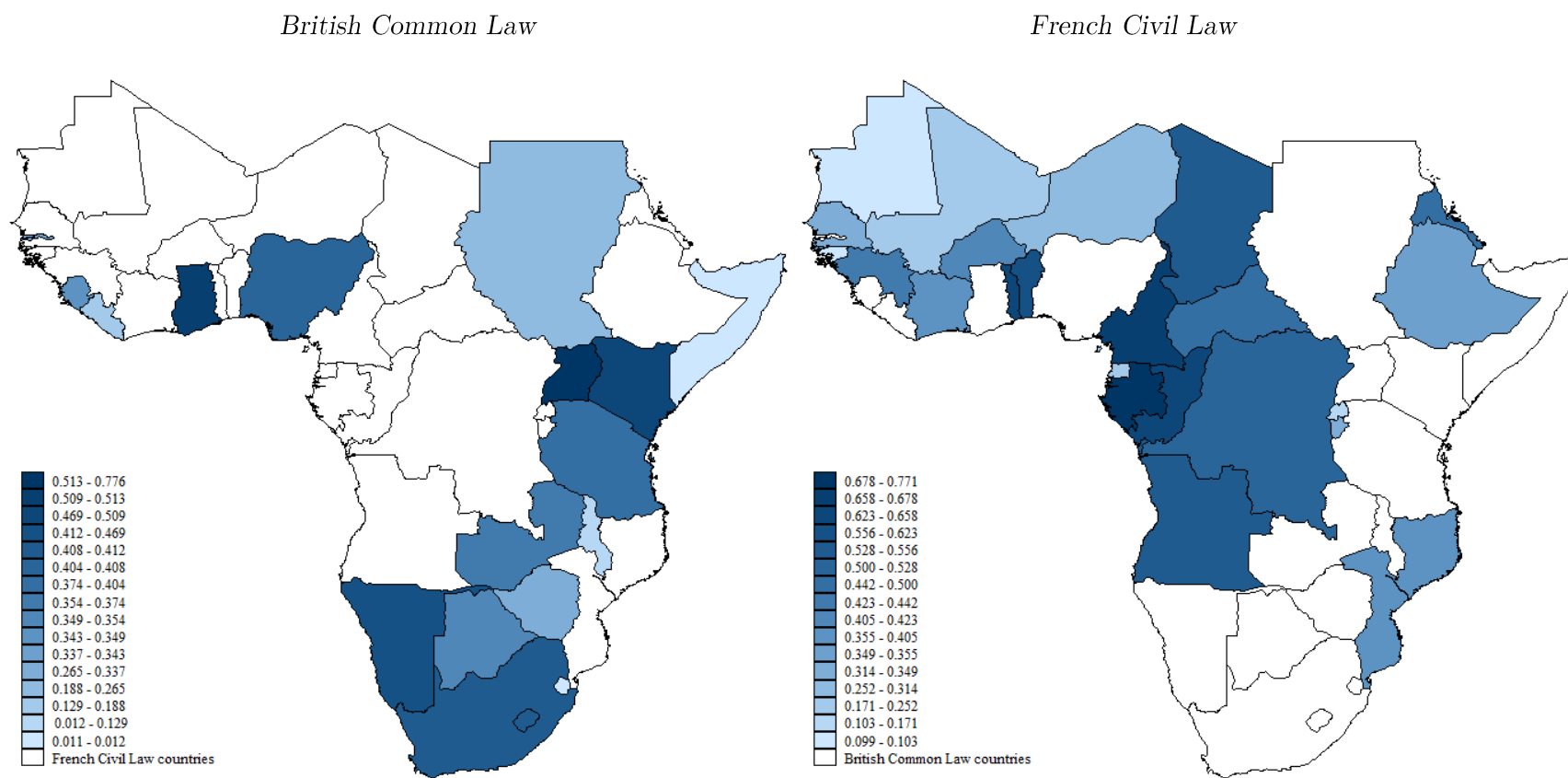


Table IVa: Estimates on Average GDP per capita growth , with Institutions and History coontrols

	(1)	(2)	(3)	(4)	(5)	(6)
Political Inequality	-2.723 (2.03)*	-2.876 (2.27)**	-3.029 (2.26)**	-3.107 (2.42)**	-2.469 (1.99)*	-2.213 (1.64)
Log GDP pc constant Initial	-0.166 (0.25)	-0.724 (1.07)	-0.494 (0.71)	-0.896 (1.29)	-0.733 (1.13)	-0.929 (1.35)
Slave exports 1400-1900	0.000 (2.15)**	0.000 (2.41)**	0.000 (2.05)**	0.000 (2.35)**	0.000 (2.50)**	0.000 (2.41)**
Num Change	-0.193 (1.62)	-0.245 (2.15)**	-0.259 (2.05)**	-0.244 (2.14)**	-0.197 (1.74)*	-0.220 (1.92)*
Civil Liberties Absence		-0.531 (2.28)**		-0.448 (1.83)*	-0.492 (2.18)**	-0.471 (2.01)*
Democracy Index			0.098 (1.40)			
Schooling primary net				0.012 (1.05)		
Proportion seats held women					0.055 (1.86)*	
Legal Origin Common law						0.680 (1.30)
_cons	3.122 (1.63)	7.158 (2.83)***	3.535 (1.85)*	6.617 (2.57)**	5.882 (2.33)**	6.751 (2.68)**
R^2	0.23	0.34	0.28	0.37	0.41	0.38
Adjusted R^2	0.13	0.23	0.16	0.23	0.29	0.25
N	37	37	37	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ - (in parenthesis t-statistics)

Table IVb: Estimates on Average GDP per capita growth, with Dimension controls

	(1)	(2)	(3)
Political Inequality	-2.827 (2.20)**	-2.831 (2.09)**	-2.767 (2.09)**
Log GDP pc constant Initial	-0.805 (1.14)	-0.741 (1.05)	-0.742 (1.08)
Slave exports 1400-1900	0.000 (2.36)**	0.000 (2.37)**	0.000 (2.36)**
Civil Liberties Absence	-0.532 (2.25)**	-0.531 (2.24)**	-0.514 (2.13)**
Num change	-0.247 (2.14)**	-0.245 (2.11)**	-0.247 (2.13)**
Log Population	-0.229 (0.44)		
Log Land Area		-0.051 (0.11)	
Number Ethnicities			-0.013 (0.34)
_cons	8.918 (1.88)*	7.548 (1.71)*	7.223 (2.81)***
R^2	0.35	0.34	0.35
Adjusted R^2	0.21	0.21	0.21
N	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis t-statistics)

Table Va: Estimates on Government Effectiveness

	(1)	(2)	(3)	(4)
Political Inequality	-0.685 (2.71)**	-0.698 (2.69)**	-0.778 (3.19)***	-0.672 (2.42)**
Log GDP pc constant Initial	0.362 (2.70)**	0.371 (2.68)**	0.298 (2.28)**	0.358 (2.56)**
Civil Liberties Absence	-0.334 (7.12)***	-0.335 (7.03)***	-0.303 (6.45)***	-0.333 (6.85)***
Num change	-0.070 (3.03)***	-0.070 (2.98)***	-0.069 (3.17)***	-0.069 (2.92)***
Slave exports 1400-1900		0.000 (0.34)		
Schooling primary net			0.004 (2.12)**	
Legal origin Common law				0.013 (0.12)
_cons	0.346 (0.68)	0.322 (0.62)	0.128 (0.26)	0.338 (0.65)
R^2	0.74	0.74	0.77	0.74
Adjusted R^2	0.70	0.69	0.73	0.69
N	37	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis t-statistics)

Table Vb: Estimates on Control of Corruption

	(1)	(2)	(3)	(4)
Political Inequality	-1.022 (3.83)***	-0.978 (3.64)***	-1.074 (3.97)***	-1.150 (4.02)***
Log GDP pc constant Initial	0.269 (1.91)*	0.239 (1.67)	0.233 (1.61)	0.308 (2.14)**
Civil Liberties Absence	-0.302 (6.10)***	-0.299 (6.05)***	-0.285 (5.46)***	-0.314 (6.25)***
Num change	-0.072 (2.97)***	-0.073 (3.02)***	-0.072 (2.96)***	-0.077 (3.15)***
Slave exports 1400-1900		-0.000 (1.09)		
Schooling primary net			0.002 (1.07)	
Legal origin Common law				-0.133 (1.18)
_cons	0.701 (1.31)	0.782 (1.46)	0.580 (1.07)	0.782 (1.46)
R^2	0.68	0.70	0.70	0.70
Adjusted R^2	0.64	0.64	0.64	0.64
N	37	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

(in parenthesis t-statistics)

Table Vc: Estimates on Rule of Law

	(1)	(2)	(3)	(4)
Political Inequality	-0.700 (2.84)***	-0.677 (2.69)**	-0.803 (3.44)***	-0.705 (2.60)**
Log GDP pc constant Initial	0.168 (1.29)	0.152 (1.13)	0.098 (0.79)	0.169 (1.24)
Civil Liberties Absence	-0.413 (9.02)***	-0.412 (8.89)***	-0.379 (8.43)***	-0.414 (8.72)***
Num change	-0.079 (3.52)***	-0.079 (3.51)***	-0.078 (3.75)***	-0.079 (3.42)***
Slave exports 1400-1900		-0.000 (0.63)		
Schooling primary net			0.005 (2.44)**	
Legal origin Common law				-0.005 (0.05)
_cons	1.204 (2.44)**	1.248 (2.48)**	0.966 (2.06)**	1.207 (2.39)**
R^2	0.78	0.78	0.82	0.78
Adjusted R^2	0.75	0.74	0.78	0.74
N	37	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

(in parenthesis t-statistics)

Table VI: Political Inequality Origin (Geography)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Terrain Ruggedness	-0.106 (2.72)**	-0.060 (1.51)	-0.099 (2.34)**	-0.052 (1.31)	-0.105 (2.76)***	-0.093 (2.06)**	-0.078 (1.66)
Desert	-0.005 (2.24)**		-0.005 (2.25)**		-0.005 (2.56)**	-0.005 (2.26)**	-0.005 (2.23)**
Tropical climate		0.002 (2.38)**		0.002 (2.64)**			
Latitude			0.001 (0.43)				
Average distance to sea				0.104 (1.17)			
Within 100 km of coast					-0.002 (1.61)		
Water Area Inequality(among tribes)						0.197 (0.56)	
Water Area Inequality(among areas)							0.288 (1.07)
_cons	0.544 (12.20)***	0.379 (5.65)***	0.539 (11.55)***	0.304 (3.29)***	0.583 (11.65)***	0.390 (1.39)	0.344 (1.79)*
R^2	0.23	0.24	0.23	0.27	0.28	0.24	0.25
Adjusted R^2	0.18	0.19	0.16	0.20	0.22	0.16	0.18
N	38	38	38	38	38	38	38

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis t-statistics)

Table VIIa: Correlations between Political Inequality, Instruments and Growth

	PI	TR	D	GDP
Political Inequality	1.0000			
Terrain Ruggedness	-0.3435 (0.0347)	1.0000		
Desert	-0.2576 (0.1185)	-0.2002 (0.2282)	1.0000	
AverageGDP pc Growth	-0.2176 (0.1895)	0.1830 (0.2714)	-0.0305 (0.8559)	1.0000

(in parenthesis p-value)

Table VIIb: Correlations between Political Inequality, Instruments and Institutions

	PI	TR	D	GE	RL	CC
Political Inequality	1.0000					
Terrain Ruggedness	-0.3435 (0.0347)	1.0000				
Desert	-0.2576 (0.1185)	-0.2002 (0.2282)	1.0000			
Government Effectiveness	-0.1410 (0.3986)	0.0904 (0.5893)	0.1045 (0.5324)	1.0000		
Rule of Law	-0.1386 (0.4067)	0.0148 (0.9296)	0.1111 (0.5065)	0.8928 (0.0000)	1.0000	
Control of Corruption	-0.2762 (0.0933)	0.2398 (0.1471)	0.0984 (0.5566)	0.8482 (0.0000)	0.8751 (0.0000)	1.0000

(in parenthesis p-value)

Table VIIc: Estimates on Average GDP per capita growth
2SLS Estimates: with Political Inequality instrumented by Terrain Ruggedness and Desert

	(1)	(2)	(3)	(4)	(5)
Political Inequality	-4.633 (2.00)**	-3.837 (-1.81)*	-4.567 (2.05)**	-4.559 (1.95)*	-4.629 (1.77)*
Log GDP pc constant Initial	-0.635 (0.99)	-0.726 (-1.19)	-0.723 (1.08)	-0.697 (1.04)	-0.636 (0.98)
Slave exports 1400-1900	0.000 (2.69)***	0.000 (2.86)***	0.000 (2.76)***	0.000 (2.66)***	0.000 (2.61)***
Civil Liberties Absence	-0.548 (2.48)**	-0.713 (-3.14)*	-0.521 (2.31)**	-0.549 (2.50)**	-0.548 (2.40)**
Num Change	-0.296 (2.43)**	-0.246 (-2.07)**	-0.291 (2.40)**	-0.297 (2.44)**	-0.296 (2.39)**
Literacy rate Youth tot		0.140 (1.38)			
Legal Origin Common law			0.335 (0.59)		
Log Population				-0.169 (0.35)	
Number Ethnicities					-0.000 (0.00)
_cons	7.921 (3.12)***	8.002 (2.84)***	7.833 (3.10)***	9.201 (2.09)**	7.919 (3.11)***
R ²	0.30	0.37	0.32	0.31	0.30
N	37	36	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ - (in parenthesis z statistics)

Table VIId: Estimates on Government Effectiveness*2SLS Estimates: with Political Inequality instrumented by Terrain Ruggedness and Desert*

	(1)	(2)	(3)	(4)
Political Inequality	-1.442 (2.86)***	-1.517 (2.87)***	-1.187 (2.99)***	-1.467 (3.00)***
Log GDP pc constant Initial	0.389 (2.75)***	0.412 (2.80)***	0.303 (2.43)**	0.417 (2.84)***
Civil Liberties Absence	-0.341 (6.88)***	-0.343 (6.81)***	-0.302 (6.72)***	-0.349 (6.89)***
Num Change	-0.093 (3.38)***	-0.093 (3.35)***	-0.081 (3.55)***	-0.094 (3.44)***
Slave exports 1400-1900		0.000 (0.74)		
Schooling primary net			0.005 (2.46)**	
Legal origin Common law				-0.105 (0.83)
_cons	0.713 (1.25)	0.677 (1.17)	0.289 (0.60)	0.740 (1.30)
R^2	0.67	0.66	0.75	0.67
N	37	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis z statistics)

Table VIIe: Estimates on Control of Corruption
2SLS Estimates: with Political Inequality instrumented by Terrain Ruggedness and Desert

	(1)	(2)	(3)	(4)
Political Inequality	-2.119 (3.65)***	-2.072 (3.50)***	-1.944 (4.00)***	-2.046 (3.98)***
Log GDP pc constant Initial	0.308 (1.89)*	0.294 (1.79)*	0.244 (1.60)	0.375 (2.43)**
Civil Liberties Absence	-0.311 (5.45)***	-0.310 (5.50)***	-0.282 (5.12)***	-0.332 (6.21)***
Num Change	-0.105 (3.33)***	-0.105 (3.36)***	-0.097 (3.46)***	-0.105 (3.65)***
Slave exports 1400-1900		-0.000 (0.42)		
Schooling primary net			0.004 (1.51)	
Legal origin Common law				-0.266 (2.00)**
_cons	1.233 (1.87)*	1.256 (1.94)*	0.923 (1.55)	1.236 (2.06)**
R^2	0.52	0.53	0.59	0.60
N	37	37	37	37

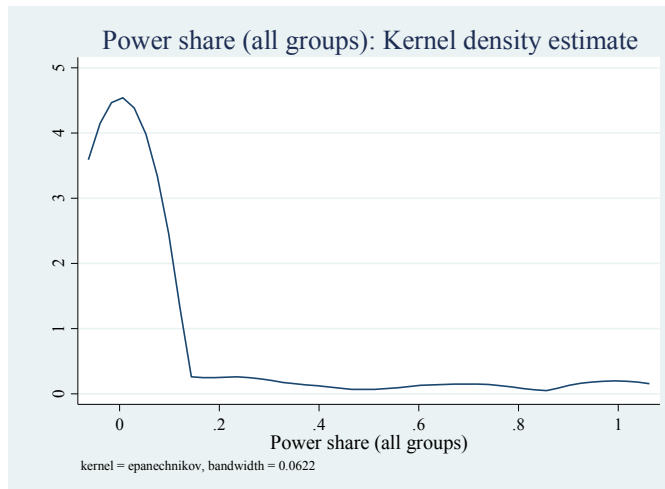
* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis z statistics)

Table VIIf: Estimates on Rule of Law
2SLS Estimates: with Political Inequality instrumented by Terrain Ruggedness and Desert

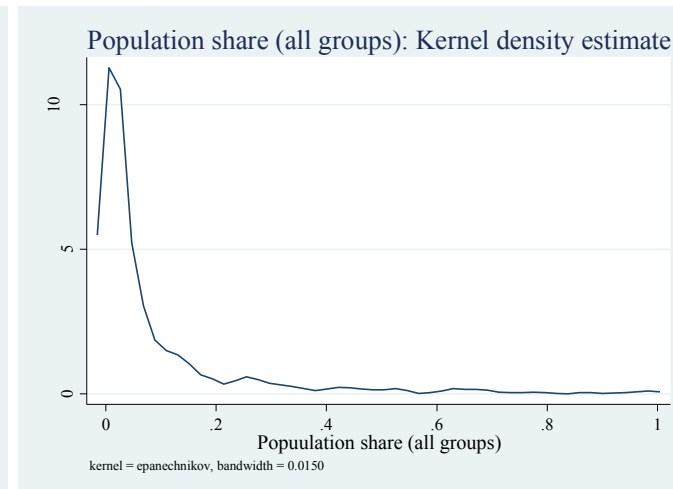
	(1)	(2)	(3)	(4)
Political Inequality	-1.285 (2.73)***	-1.259 (2.60)***	-1.011 (2.75)***	-1.342 (2.92)***
Log GDP pc constant Initial	0.189 (1.43)	0.181 (1.34)	0.101 (0.87)	0.217 (1.57)
Civil Liberties Absence	-0.418 (9.03)***	-0.417 (9.06)***	-0.378 (9.08)***	-0.427 (8.94)***
Num Change	-0.096 (3.77)***	-0.096 (3.78)***	-0.084 (3.98)***	-0.099 (3.84)***
Slave exports 1400-1900		-0.000 (0.28)		
Schooling primary net			0.005 (2.73)***	
Legal origin Common law				-0.100 (0.84)
_cons	1.488 (2.79)***	1.501 (2.83)***	1.048 (2.33)**	1.530 (2.85)***
R^2	0.74	0.75	0.81	0.74
N	37	37	37	37

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis z statistics)

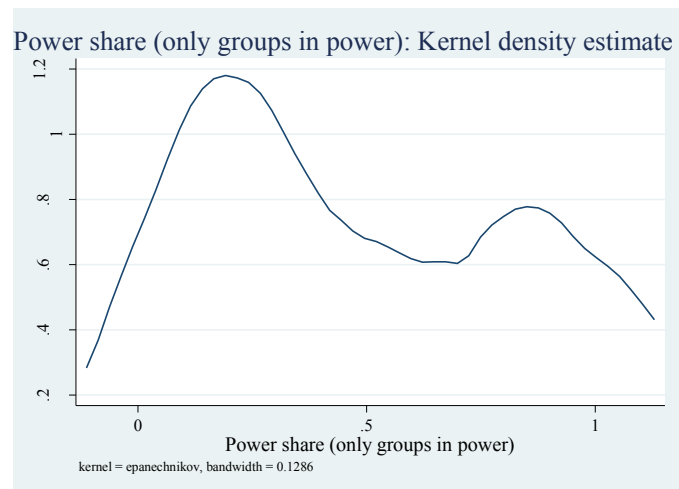
Figure 9: Kernel densities of Power and Population shares



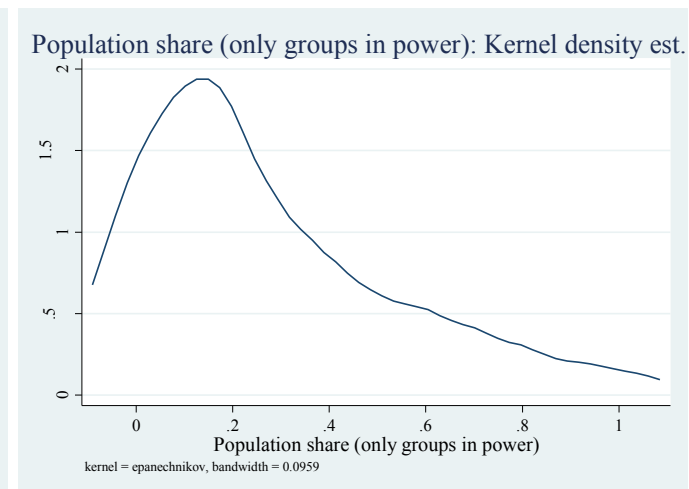
Panel a



Panel b



Panel c



Panel d

Table VIIIa: Complete sample (all ethnic groups) on Power Share
Probit Estimates

	(1)	(2)	(3)	(4)
Population Share	1.367 (14.50)***	1.110 (6.78)***	1.114 (6.78)***	5.463 (5.29)***
Largest Group		0.175 (1.92)*	0.175 (1.91)*	0.211 (0.49)
Land Share			0.034 (0.35)	
_cons	0.059 (3.51)***	0.066 (3.85)***	0.063 (3.21)***	
Country fixed effects	No	No	No	Yes
<i>N</i>	461	461	461	461

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis t-statistics)

Table VIIIb: Reduced sample (only groups in power) on Power Share
Probit Estimates

	(1)	(2)	(3)	(4)
Population Share	0.609 (4.55)***	0.560 (2.54)**	0.553 (2.49)**	0.679 (3.19)***
Largest Group		0.032 (0.28)	0.040 (0.34)	-0.016 (0.15)
Land Share			0.131 (0.52)	0.112 (0.63)
_cons	0.318 (6.32)***	0.318 (6.29)***	0.308 (5.65)***	
Region fixed effects	No	No	No	Yes
R^2	0.21	0.21	0.21	0.78
N	82	82	82	82

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
(in parenthesis t-statistics)