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The Long-Term Effects of African Resistance to European Domination: Institutional Mechanism

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Abstract

In this study, we show that historic events have a long term incidence on institutional development. Within the framework of the paper, we attempt to provide insights into a historical dimension that has not received the scholarly attention it deserves in empirical literature, notably: African resistance in the face of colonization. The main finding suggests that contemporary institutions in Africa are endogenous to historical trajectories adopted by countries in the continent. Countries that experienced high resistance to colonial domination are associated with better contemporary governance standards. The findings are robust to a multitude of tests, notably: changes in estimation techniques, accounting for outliers, transformation of the outcome variable, control for endogeneity and changes of the outcome variable.

JEL Classification: N17; P48; O55

Keywords: Colonialism; Resistance; Domination; Africa

1. Motivation

Over the past decades, the consequences of the non-contemporary resistance to African domination have not been comprehensively studied by both historians and economists (Boahen, 1987). This tendency is most apparent in empirical literature. Recently Kodila-Tedika *et al.* (2016) have shown that this resistance to colonization has had a contemporary negative effect on the development of Africa. In the same vein, Wantchekon and Garcia-Ponce (2015) earlier established that the level of democracy prevalent in Africa is endogenous to the types of resistance movements that occurred across Africa during independence. According to the narrative, urban manifestation or resistance enabled participants to elaborate peaceful norms of expression. Conversely, armed rebellions produced a culture of political exclusion which established violence as a mechanism of political expression and channel to the resolution of conflicts. Wantchekon and Garcia-Ponce (2011) also investigated the incidence of repressing the 1947 revolt in Madagascar to establish long term negative effects of the repression on contemporary levels of freedom of expression.

The present paper is positioned as an extension of the underlying studies in the scant literature. We attempt to demonstrate that contemporary African institutions are a function of historic events, notably: the resistance to European colonial domination. Accordingly, resistance to European colonial domination has had a negative incidence on contemporary institutions in Africa. Hence, the hypothesis underlying this study builds on prior established evidence from Wantchékon and García-Ponce (2015) in the perspective that movements of colonial resistance were more apparent in rural areas than in urban areas. This

is essentially because rural areas are more conducive to hiding owing to *inter alia*: topography (e.g. ruggedness) and forests.

Hence, as was apparent in the post-colonial period, most guerilla movements of resistance developed in rural areas. Therefore, a correlation between rural areas and resistance to colonial domination is logical. Moreover, high concentration of resistance movements resulted in a violent transition from colonial rule to independence. The position is more apparent in the light of the postulation of Oloruntimehin (1987, 613). *“It is a mistake to consider, as has been done so far, African nationalism as an elitist and purely urban phenomenon. Recent work is increasingly revealing the importance in rural areas of discontent and anticolonialist sentiments”*¹. This postulation is substantiated by Boahen (1987) in the perspective that resistance movements in Western Africa were harbored for the most part in rural areas.

Numerous studies have focused on the dimension of institutional cost (Meisel & Aoudia, 2008, 2009), given that institutions need to be funded from a fiscal perspective (Meisel & Aoudia, 2009; Besley & Persson, 2009, 2013; Besley *et al.*, 2013). However, resistance to colonial domination hampers the effective development of state capacities that are essential for fiscal resource mobilization in view of funding, developing and sustaining institutions in a country.

Another argument is that the contemporary quality of institutions is dependent on Western hegemony, owing to *inter alia*; foreign aid affects the quality of governance (Asongu, 2014; Asongu & Nwachukwu, 2016a). This narrative is consistent with the positioning that Western-imposed structural adjustment

¹ Translated emphasis from original.

programs and neocolonialism have substantially contributed to affect institutions in Africa because these foreign policies constrain African leaders to be accountable to the foreign leaders and institutions, and not to African citizens.

Related literature. This study complements the extant literature on the contemporary politico-economic development effects of historical events (e.g. Nunn, 2009; 2014). Englebert (2000) has argued that changes in the degree by which institutions in the post-colonial era clash with pre-existing institutions substantially account for variations in state capacity and economic prosperity in Africa. According to Acemoglu *et al.* (2001), the rate of mortality of colonialists is linked to the contemporary level of institutional and economic developments in Africa. According to Nunn (2008), slave trade explains contemporary African development. The relationship is explained by Nunn and Wantchekon (2011) within the framework of deteriorations of trust in trade relations. A nexus is established by Nunn (2010) between the location of Christian missions and modern development outcomes. Cagé and Rueda (2016) establish the long-term role of missionaries in social capital. According to Bezemer *et al.* (2014), indigenous slavery is negatively linked to current income levels.

Bertocchi and Canova (2002) have shown that colonization is a main cause of Africa's underdevelopment while Huillery (2009, 2011) has presented evidence on the impacts of post-colonial institutions of public education on health. According to Michalopoulos and Papaioannou (2011), the partitioning of ethnic groups by colonizers has generated more conflicts, compared to regions that were not impacted by border partition. The transatlantic slave trade

has had an incidence on ethnic stratification in Africa (Whatley & Gillezeau, 2011).

Gennaioli and Rainer (2006, 2007) have provided cross-country evidence substantiating that pre-colonial political centralization positively correlates with contemporary institutions and the provision of public commodities. A link between regional economic development and pre-colonial political centralization is established by Michalopoulos and Papaioannou (2013). Besley and Reynal-Querol (2014) have established that historical conflict is linked to greater prevalence of post-colonial conflict with, a higher sense of ethnic identity, lower levels of trust, and a weaker sense of cross-country national identity and with prevalent networks of development looking at the within-country grid-cells patterns. The relevance of historical political centralization on the prospect of contemporary conflicts of civil nature has been empirically examined by Depetris-Chauvin (2014).

A positive relationship is established by Bates (2014) on the connection between competition within the military and the centralization of the state in Sub-Saharan Africa. The findings provide more insights into when and where “war makes states”. Furthermore, Bandyopadhyay and Green (2016) have employed a Ugandan case study to document a positive nexus between historical institutions (with emphasis on pre-colonial era political centralization) and contemporary development outcomes. Using a new dataset on local government income and expenditure for native authorities across some former British colonies (i.e. Malawi, Kenya, Ghana and Nigeria), Bolt and Garder (2016) have established an accurate link between colonial institutions, indigenous state and contemporary development. They find a significant nexus

between local authority revenue per capita and pre-colonial centralization. The relationship is robust to the control for geographic and economic factors.

In the light of the above, the main contribution of this study to the extant literature is to articulate the relevance of a historical event to contemporary institutional change. The rest of the study is structured as follows. A historical background is presented in Section 2. The data and methodology are covered in Section 3 while Section 4 presents the findings and corresponding discussion. Robustness checks are presented in Section 5 while concerns about endogeneity are engaged in Section 6. Channels to persistence are covered in Section 7 while we conclude with Section 8.

2 Historical background

Consistent with Kodila-Tedika *et al.* (2016), between 1880 and 1935, the continent of Africa witnessed the start of the European colonial domination which resulted in the partition of almost all the continent. Adu (1987a, b) maintains that only approximately 20% of Africa was occupied or controlled by colonialists in 1880. However, with the exception of Ethiopia and Liberia, by 1914, the whole continent of Africa was within the control of colonial power which had divided the continent among themselves without consideration for cultural realities. Hence, such division led to substantial cultural damages, which among other factors, led to resistance movements against European colonisation and domination.

African colonial domination and corresponding reactions (i.e. resistant initiatives) can be divided into a multitude of phases (Adu, 1987a, b). The first phase which occurred between 1880 and 1919 is aptly characterised by confrontation within the perspectives of defence of independence and

sovereignty. This phase can be sub-divided into two periods, notably: 1880-1890 and 1890-1919 which respectively correspond to sub-periods of conquest and occupation. The second phase which is captured by the period 1919 to 1935 is encapsulated by some form of adaptations on the part of Africans that are reflected in terms of protesting and resistance strategies. The third phase which approximately begins from 1935 encompasses the phase that is characterised by post-colonial movements of resistance, notably, with: increasingly active resistance and concrete strategies.

Among the various phases outlined above, it is relevant to articulate that contact between the external world and Africa had already been established even before the first phase (Crowder, 1968, p. 17-19). Accordingly, a quasi-form of colonization such as slave trade was already prevalent and the sale of human beings was responsible for the occurrence of many issues then, notably: within Africa and between Europeans and Africans. In essence, between the mid-15th century (upon the first contacts) through 1880, interactions might have been characterized as principally commercial, contrary to political interactions, such that Africans retained some degree political input even in regions that were fundamentally dominated by European powers.

The underlying modicum of African political influence was lost dramatically at the beginning of the first phase when Africa was partitioned among European powers between November 15th 1884 and November 26th 1885, with the notable Berlin Conference. From the Berlin Conference, the partition was characterised by various protocols, notably: in some cases, Europeans and Africans concluded treaties (e.g. treaties signed between the Buganda and Imperial British East Africa Company) and in others, bilateral treaties were

established between Europeans (e.g. the Anglo-German treaty on the delimitation in 1886). With regard to the narrative, such partitioning of the African continent was partly motivated by White supremacy (building, *inter alia* on social Atavism and Darwinism) and partly inspired by the inexorable constraints of capitalism.

The conquest in the field was spectacular and bloody such that by 1902 the conquest was almost complete on the continent. The bloody historical experience was characterised by a bitter experience for Africans due to *inter alia*: the comparatively sophistication of European technology and devastating firepower of the machine gun (Kodila-Tedika *et al.*, 2016). While Europe's conquest of Africa was relatively easy, the occupation of the continent and subsequent consolidation of established European administration was quite difficult (Uzoigwe 1987, 65) because Africans for the most part did not bow to the domination (Ranger, 1987). Accordingly, there was resistance to European domination from all quarters in Africa. However, striking disparities in the intensity of resistance varied from one region to another. For instance, in Northern Rhodesia (which is today's Zambia), armed resistance movements were apparent. These resistance movements were feeble in terms of magnitude when compared with those that occurred in Southern Rhodesia (now Zimbabwe). With respect to effectiveness in organisation, the cases of Northern and Southern Rhodesia pale in comparison to movements of resistances in the Zambezi valley against the Portuguese (Ranger, 1987).

As we have already emphasised above, all regions in Africa were characterised by resistance movements. For instance, in North-East Africa, the Mahdist revolution of Sudan constituted one of the major rebellions while in French

West Africa, the conquest by Europeans and subsequent occupation attained their apogee between 1880 and 1990 (Gueye & Boahen, 1987, 137), substantially consolidated by military strategies. The Chief of the Mandenopta Empire in the capacity of Samori Toure openly preferred confrontation instead of a strategy of alliance. In essence, while he employed diplomacy, armed resistance was the dominant strategy.

In Central Africa (Isaacman & Vansina, 1987)² and East Africa (Mwanzi, 1987), Europeans were met with strategies of both resistance and diplomacy, contrary scenarios in British West Africa where the British occasionally preferred peaceful negotiations, though some violent cases were also apparent. It is admitted by Rodney (1987) that between 1880 and 1910, economic colonization was substantially slowed down by African resistance movements. However, accordingly to Adu (1987a, b) the dominance of Europe continued in the second phase.

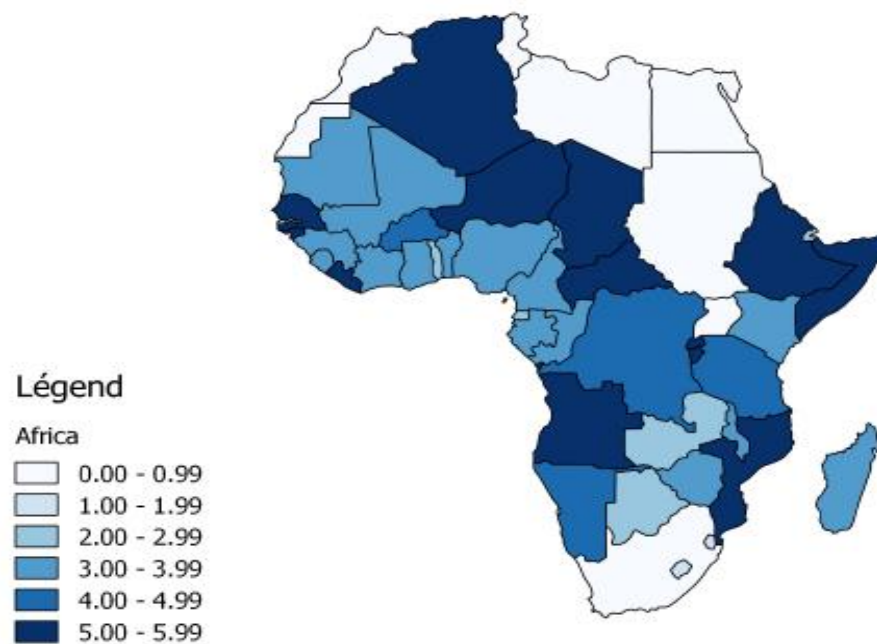
The nationalist sentiment grew between 1919 and 1935 and the configuration of colonial administration only boosted the process. Hence, exclusive development that educated Africans were confronted with (in the light of their European peers with the same levels of education), motivated much of the need for the emancipation and independence of Africa. According to Oloruntimehin (1987), for efficiency and economic motives, elites in Africa were no longer contented with structures of intermediate nature. For instance, in West Africa, the riots in Sierra Leone in 1919 were due to among others: unemployment in major cities and frustration from educated Africans.

² Davidson *et al.* (1987, p. 739) have aptly documented the situation in Central Africa.

3. Data and methodology

The data on African resistance to colonial domination is from Frankema (2012). According to the author, the index is computed on a scale of 1 to 5 with high values denoting a higher level of insecurity or resistance. From another perspective, insecurity is the product of the failure by colonial powers to invest in the suppression of movements of resistance. The most important phase in the determination of this index is the interval between the Berlin conferences (of 1884-1885) and the beginning of World War I.³ An illustration of native resistance in the light of magnitude of resistance is provided in Figure 1 below.

Figure 1. Native resistance



The native resistance indicator has been substantially used in the literature. For instance, Frankema (2012) has used it to establish the effect of native resistance on education in Africa whereas Kodila-Tedika *et al.* (2016) have

³As previously noted, the conference of Berlin marks the beginning of the conquest of the African continent on a massive scale.

employed it to substantiate that economic development in Africa has been hampered by resistance to Western domination.

The outcome variable is obtained from Principal Component Analysis (PCA). Consistent with recent African governance literature (Asongu & Nwachukwu, 2016b; Asongu *et al.*, 2018), the institutional variable is the first principal component of six World Bank governance indicators from Kaufman *et al.* (2007), notably: political stability/no violence, voice and accountability, government effectiveness, regulation quality, corruption-control and the rule of law. Compared to simple average, PCA produces better weights because it entails the computation of the eigenvalue decomposition of a data covariance matrix after centring the data on average for each attribute of components constituting the outcome variable (Tchamyou, 2017, 2018). Accordingly, multidimensional data is transformed by the analysis to a composite indicator (weighted institutions), such that the highest variance moves to a point on the first coordinate. The first principal component is retained as the composite indicator because it has an eigen value which is greater than one or the mean. This choice of the first principal component is consistent with recent African institutional literature (Asongu, 2015; Asongu & Nwachukwu, 2016c, 2017).

An alternative governance indicator from the Mo Ibrahim foundation is used for robustness checks. This governance indicator has been used in recent institutional literature (Asongu & Kodila-Tedika, 2016). The indicator from the Mo Ibrahim Foundation consists of a multitude of variables measuring the same dimension from varying sources or measuring similar dimensions from the same source. The underlying variables are: property rights from the Berstelmann Foundation; property rights from the African Development Bank

and the World Bank; guaranteed of rights from the Economist Intelligence Unit (EIU); the World Street Journals and property rights from the Heritage Foundation.

The choice of the control variables is consistent with recent institutional quality literature (Ayyagari *et al.*, 2006; Asongu & Kodila-Tedika, 2016). These indicators include: Real GDP per capita; legal origins; resource-wealth; ethnic fractionalisation; latitude; social infrastructure; state history and location in tropics. Real GDP per capita data is sourced from Maddison (2003) while Legal origins are obtained from La Porta *et al.* (1999). All countries in the sample are coded as either British common law or French civil law countries. Resource wealth in terms of the production of crude petroleum is from the British Geological Survey's World Mineral Statistics and World Mineral Production. All the three indicators are computed as the natural logarithm of the mean annual per capita production during the period 1970-2000. The ethnic fractionalisation variable (Ethnicfract) is from Alesina *et al.* (2003) while data on the history of the state is from Putterman (2007). The tropical and latitude indicators are from Easterly (2011) and La Porta *et al.* (1999) respectively.

Table 1. Summary statistics

	Obs	Mean	Std. Dev.	Max	Min
Native resistance	42	3.357	1.2845	5	1
GDP per capita (log)	52	7.134	.825	9.274	5.385
UK legal origin	52	.346	.480	1	0
ln(oil prod/pop)	52	-6.715	4.031	3.236	-9.210
Governance	52	47.773	13.605	75.565	9.675
Institution	50	-1.603	1.416	1.813	-4.893
Latitude	42	11.414	7.458	29	.2
Social infrastructure	48	.292	.135	.851	.112
Ethnic fractionalization	51	.630	.251	.930	0
State history	46	.3339	.2307	.028	.964
Tropical	42	58.449	40.917	0	100

There are 50 observations for our principal variable to be estimated. Missing observations are apparent for Namibia, Guinea-Bissau and Algeria. There are also missing observations for Sudan. Most missing observations are apparent in the infrastructure indicator, notably in the following countries: Libya; Djibouti, Equatorial Guinea and Sao Tome & Principe.

Table 2. Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Institution (1)	1.000								
Native resistance (2)	-0.622	1.000							
GDP per capita (log) (3)	0.603	-0.529	1.000						
ln(oil prod/pop) (4)	-0.252	0.031	0.191	1.000					
Ethnic fractionalization (5)	-0.203	0.213	-0.172	0.39	1.000				
State history (6)	-0.081	0.303	-0.019	0.057	-0.051	1.000			
UK legal origin (7)	-0.042	-0.262	0.0882	-0.200	-0.064	-0.095	1.000		
Latitude (8)	0.518	-0.415	0.2735	-0.486	-0.516	-0.014	0.237	1.000	
Tropical (9)	-0.122	0.022	0.0016	0.373	0.375	-0.298	-0.299	-0.551	1.000

Table 1 presents the summary statistics and from the summary statistics, it is apparent that the variables are comparable. Moreover, from the corresponding standard deviations, we can be confident that reasonable estimated linkages would emerge owing to the substantial degree of variations. The correlation matrix disclosed in Table 2 provides the study with insights into the absence of substantial issues of multicollinearity on the one hand and on the other, a feeling of expected signs between the independent variable of interest (or native resistance) and outcome variables (institutions). While the negative

correlation informs the study that the motivation in the introduction could withstand empirical scrutiny, it is relevant to substantiate the correlation with empirical validity because native resistance and institutions do not interact in isolation, but are contingent on other factors which should be captured by the conditioning information set in the perspective of control variables.

Consistent with recent development literature which is based on cross-sectional data (Asongu, 2013 Kodila-Tedika & Asongu, 2015a, 2015b, 2018a), the specification in Eq. (1) examines the correlation between native resistance and institutions.

$$Int_i = \alpha_1 + \alpha_2 NR_i + \alpha_3 C_i + \varepsilon_i , \quad (1)$$

where, Int_i (NR_i) represents institutions (native resistance) indicator for country i , α_1 is a constant, C is the vector of control variables, and ε_i the error term. C includes a set of controls to account for the potential direct effects on institution from state history and geographical variables. Hence, the purpose of Eq. (1) is to estimate if native resistance affects institutions. The estimation process is by Ordinary Least Squares (OLS) with standard errors that are corrected for heteroscedasticity.

4. Empirical results

The empirical results are presented in this section. The section seeks to substantiate the naïve correlations established in Table 2 with empirical validity. Table 3 presents the main results from the OLS findings (in the light of Equation 1) in columns 2 to 6.

Table 3. Main results

	eq1	eq2	eq3	eq4	eq5
Native resistance	-0.642*** (0.149)	-0.481*** (0.144)	-0.378** (0.155)	-0.570*** (0.157)	-0.498*** (0.135)
GDP per capita (log)		0.506 (0.349)	0.827*** (0.255)	0.989*** (0.285)	0.921*** (0.283)
ln(oil prod/pop)			-0.154*** (0.042)	-0.180*** (0.039)	-0.145*** (0.042)
Ethnic fractionalization				0.902 (0.753)	1.282 (0.842)
State history				0.566 (0.709)	0.418 (0.774)
UK legal origin				-0.857** (0.388)	-0.905** (0.389)
Latitude					0.044 (0.030)
Tropical					-0.000 (0.005)
Constant	0.345 (0.534)	-3.708 (2.608)	-7.383*** (2.159)	-8.427*** (2.570)	-8.639*** (2.403)
Number of observations	40	40	40	35	35
R ²	0.337	0.391	0.535	0.681	0.705

Notes. Coefficients are reported with standard errors in brackets. 0.01 - ***; 0.05

- **; 0.1 - *.

The findings in Column 2 depict a simple linear relationship between the outcome variable and the independent variable of interest. A significant relationship is apparent between institutions and native resistance. Based on the coefficient of adjustment, native resistance explains about 33.7% of institutions in Africa. The negative relationship between native resistance and institutions is robust to the introduction of other macroeconomic, geographic and historic variables in the conditioning information set. Most of the significant control variables display the expected signs, notably: income levels have been established to be associated with higher levels of institutions in Africa (Asongu, 2012) and nations that have acknowledged scarcity in natural resources have also been associated with higher levels of institutions (America,

2013; Amavilah, 2015), partly because of the recourse curve which is most apparent in oil-rich countries.

With regard to the control variable with the insignificant sign, we expected the UK legal origin to positively affect institutions. This is under the assumption that the French legal origin will display the opposite sign. Within this framework, the underpinning assumption on the comparative strength of the UK legal origin vis-à-vis France legal origin may not hold for a multitude of reasons (see Deakin & Siems 2010; Fowowe, 2014; Asongu, 2018). (i) Doubts have been expressed in some scholarly circles on whether the distinction between UK legal origin and France legal origin is justifiable from a historical perspective. (ii) With globalization, the distinction between Civil law (i.e. a French legal tradition) and Common law (a UK legal tradition) is less persuasive. (iii) The classification of nations with respect to Common law versus Civil law fails to take into consideration the following factors, among others: modifications and mixtures at the moment former colonies copied foreign laws, the influence of transplant law and the post-transplant period during which the transplanted law could still be altered and/or applied differently.

We also notice that the coefficient of adjustment or determination increases from the left-hand-side to the right-hand-side. The increase of this explanatory power of the model is contingent on the increase of variables in the conditioning information set. In essence, the involvement of more variables in the conditioning information set translates the fact that the model is more realistic by taking more factors into account. This is essentially because in a real world, contrary to the model in the second column, the interaction between

native resistance and institutions does not take place in isolation but involves other historic and geographic factors captured by the conditioning information set.

5. Robustness checks

This section is substantiated with three main robustness checks, notably: (i) the use of alternative institutional indicators; (ii) the transformation of resistance indicators and (iii) the account for influential observations. The multitude of robustness checks are substantiated in chronological order. In each of the estimations, the control variables employed in the last column of Table 3 are used but not disclosed for lack of space.

5.1. Use of alternative institutional indicators

In order to test the solidity of our findings, we use alternative indicators of institutional development. First, we employ the measure of Hall and Jones (1999): an indicator of institutional quality, termed “social infrastructure”. Moreover, following Kodila-Tedika (2014) and Kodila-Tedika and Asongu (2016), we exploit the Mo Ibrahim Foundation Governance Index. This indicator compiles 86 indicators of governance regrouped into 14 sub-categories and four categories, notably: security and rule of law, participation and human rights, sustainable economic development and human development. The Mo Ibrahim Index represents the most comprehensive annual collection of quantitative data which is suitable for cross-country empirical studies of governance in Africa.

Table 4. Alternative indicators of institution

	Social Infrastructure	Governance (Mo Ibrahim)
Native resistance	-0.027 (0.019)	-4.075** (1.595)
Constant	-0.563* (0.299)	-20.700 (21.482)
Number of observations	34	34
R ²	0.740	0.606

Notes. OLS estimates of (1) are reported. Coefficients are reported with standard errors in brackets. All estimations contain constant and reproduce control variables in the last column of Table 3. 0.01 - ***; 0.05 - **; 0.1 - *.

The estimations in Table 4 confirm previously established findings, notably: on the negative relationship between native resistance and institutional development. Whereas the nexus is not significant in the second column (pertaining to social infrastructure), it is significant in the third column (in relation to the Mo Ibrahim indicator of governance). It is also important to note that in terms of magnitude of significance, the effect on the indicator of the Mo Ibrahim foundation is substantially higher compared to the corresponding incidence on the social infrastructure indicator from Hall and Jones (1999).

We have also used other types of resistance measurements. The conclusions do not diverge. This reinforces these results⁴.

5.2. Transformation of resistance indicators

In Table 5, we replicate the estimations of the last column of Table 3 with emphasis on extreme observations. Box-transformation, or transformation of the resistance variable is employed in Column 2 and we use the logarithm of resistance in Column 3. We notice that the variable of interest remains

⁴ These results are available on request.

consistently significant with the same negative sign, though with an improved coefficient. Hence, we conclude that native resistance is negatively linked to contemporary African institutional development. As shown in the Appendix, the established findings still withstand empirical scrutiny when the underlying transformation process is performed for the alternative outcome variables.

Table 5. Transformation of the resistance indicator

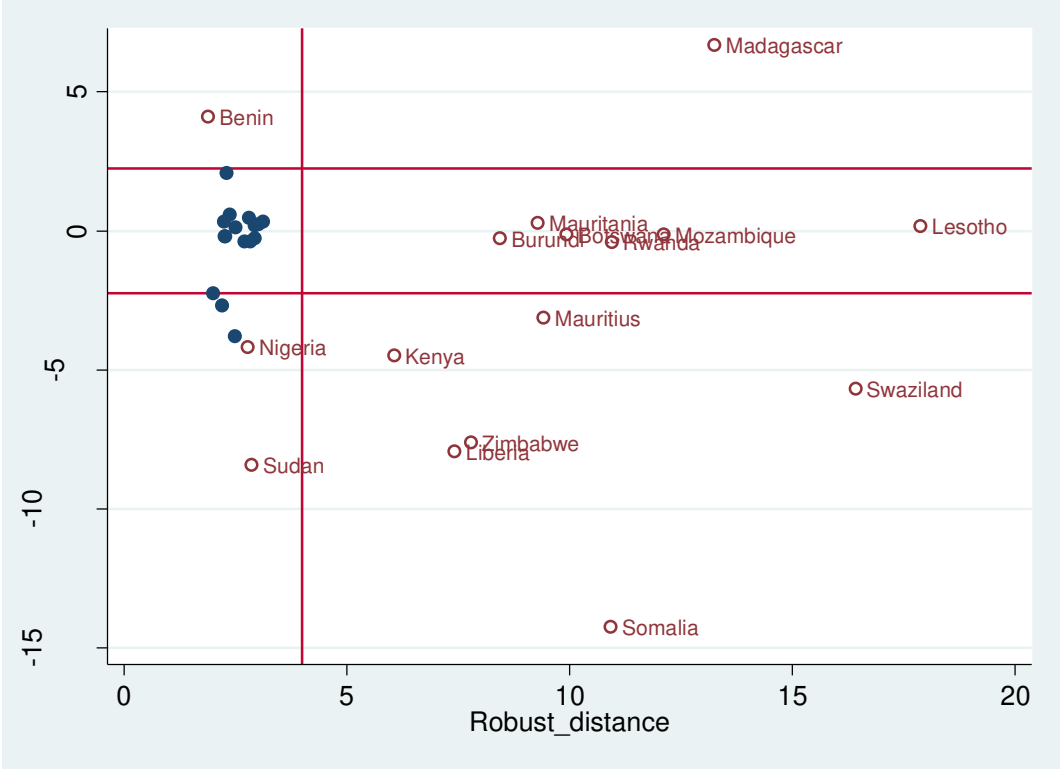
	Box-Cox Transformation of Resistance	Using ln(Resistance)
Resistance	-0.403*** (0.103)	-1.129** (0.525)
Constant	-9.227*** (2.245)	-9.357*** (2.892)
Number of observations	35	35
R ²	0.711	0.662

Notes. OLS estimates of (1) are reported. Coefficients are reported with standard errors in brackets. All estimations contain constant and reproduce control variables in the last column of Table 3. 0.01 - ***; 0.05 - **; 0.1 - *.

5.3. Robustness with respect to influential observations

Madagascar is a poor leverage point. Its characteristics are pretty different from those of the bulk of the data and its institution is much higher than it should be according to the fitted model. Mauritania, Burundi, Lesotho, Mozambique, Rwanda, Botswana are substantial leverage points because they are outlying in the horizontal dimension but not in the vertical one. This means that their characteristics are rather different from those of other countries. Finally, these outlying observations are sufficient to distort classical estimations (Table 3). Because several vertical outliers are present as well as a severe poor leverage point, there is a serious risk that the OLS estimator becomes strongly attracted by the outliers.

Figure 1. Diagnostic plot of standardized robust residuals versus robust Mahalanobis distances for the estimations of Table 1 (Column 5)



In Table 6, in order to further examine if the established finding in Table 3 withstand empirical scrutiny, we follow the empirical approach on M-estimators from Huber (1973) using Iteratively Reweighted Least Squares (IRWLS) in Column 2 of Table 6. In Column 3 and Column 4 respectively, the ten most resistant and ten least resistant countries are omitted. As has been noted by Midi and Talib (2008), compared to the OLS approach, the advantage of these robust estimators is that they simultaneously fix any issue arising from the existence of outliers and/or non-constant error variances (i.e. heteroskedasticity). The results in Table 6 confirm those established in Table 3 in terms of significance and sign of the independent variable of interest. Surprisingly, the findings in the last-two columns are the same.

Table 6. Robustness check for the presence of outliers

	IWRLS	Omit 10 Most Resistance	Omit 10 Smallest
Native resistance	-0.486** (0.196)	-0.683*** (0.162)	-0.683*** (0.162)
Constant	-8.381*** (2.808)	-7.859** (3.104)	-7.859** (3.104)
Number of observations	35	28	28
R ²	0.648	0.635	0.635

Notes. OLS estimates of (1) are reported. Coefficients are reported with standard errors in brackets. All estimations contain constant and reproduce control variables in the last column of Table 3. 0.01 - ***; 0.05 - **; 0.1 - *.

Table 7 below presents a further robustness check in which we exclude regions. Its objective is to investigate the relevance of the established relationship in Table 3 when regions are excluded from the sample. This robustness measure also denotes a means of accounting from extreme values that can affect the baseline results. The comparatively lower correlation coefficients observed when some regions are excluded imply that the excluded region has a substantial weight in the established relationship. In the same vein, a comparatively higher correlation coefficient upon the exclusion of a region implies the excluded region reflects a larger variation and variables that are more related to institutions. The results in Table 7 confirm those established in Table 3 in terms of significance and sign of the independent variable of interest.

Table 7. Exclusion of continents

	Exclusion North	Exclusion South	Exclusion Weoust	Exclusion East	Exclusion Central
Native resistance	-0.498*** (0.174)	-0.523** (0,219)	-0.576** (0.261)	-0.401* (0.208)	-0.585** (0.214)
Constant	-8.639*** (2.502)	-7.386** (3.144)	-7.905** (3.177)	-11.927*** (2.897)	-6.855** (3.173)
Number of observations	35	28	22	27	28
R ²	0.705	0.727	0.790	0,703	0,687

Notes. OLS estimates of (1) are reported. Coefficients are reported with standard errors in brackets. All estimations contain constant and reproduce control variables in the last column of Table 3. 0.01 - ***; 0.05 - **; 0.1 - *.

6. Endogeneity

Whereas the nexus between the two variables of interest (i.e. resistance and institutional development) has been established, issues of endogeneity are still apparent. Accordingly, the non-contemporary character of the resistance indicators can be used to make a case for a possible causal impact between the two variables of interest. Moreover, it is relevant to emphasize that most variables in the conditioning information set have historical fundamentals (e.g. Kodila-Tedika & Asongu, 2018b), which could generate issues of variable omission bias owing to the fact that the outcome variable is contemporary. Another reason for employing a Two Stage Least Squares regression is to control for the concern of endogeneity is the quality of the indicator. The weakness is aptly documented by Kodila-Tedika et al. (2016) who have used the same measure of resistance. In the paper, the resistance variable is instrumented with instruments from Nunn (2008), namely: Atlantic distance, Indian distance, Saharan distance and Red Sea distance.

Table 8. Native resistance and institution : 2SLS

	I	II	III
Native resistance	-10.500*** (5.195)	-4.807* (2.671)	-0.026 (0.024)
Constant	-18.254 (50.693)	-14.583 (30.753)	-0.565* (0.328)
Number of observations	35	32	34
R ²	0.520	0.6257	0.790
Anderson canon. corr. LM statistic (p-value)	0.3479	0.2738	0.2315
Hansen J statistic (p-value)	0.7404	0.2228	0.0932

Notes. OLS estimates of (1) are reported. Coefficients are reported with standard errors in brackets. All estimations contain constant and reproduce control variables in the last column of Table 3. 0.01 - ***; 0.05 - **; 0.1 - *.

The 2SLS results are presented in Table 8. In the first column, the outcome variable is from Kaufmann *et al.* (2007). In the second column, the governance variable is from Mo Ibrahim while in the third column, it is from Hall and Jones (1999). With the exception of the third model pertaining to the institutions indicator from Hall and Jones (1999), the Hansen test confirms the validity of the instruments used. Hence, a causal negative relationship can be inferred from the two variables of interest.

7. Channels of Persistence

After robustly establishing the relationship between institutions and native resistance, it is important to further investigate channels through which the relationship withstands empirical scrutiny. Many mechanisms are considered in this respect, notably: human capital, the capacity of the state, pre-independence institutions and conflicts. The findings on these mechanisms are disclosed in Table 9. Our first hypothesis is that native resistance affects institutions by reducing the accumulation of human capital. Glaeser *et al.* (2004) and Kuada (2015) have established that human capital is the basis for good institutions: a stance that has been confirmed from a broad framework by Kalonda-Kanyama

and Kodila-Tedika (2012) and with the use of African data by Kodila-Tedika (2014). The hypothesis builds on the fact that Frankema (2011, 2012) has established a negative relationship between human capital accumulation and native resistance. With this channel in mind, it is reasonable to infer that the negative nexus between institutional quality and native resistance may be due to decreasing human capital accumulation.

With regard to the second hypothesis, Acemoglu *et al.* (2014) have argued that in Africa, the capacities and structures of local governments have substantial ramifications for subsequent development outcomes. We confirm the negative nexus between the public income and the degree of resistance (see Table 2, Column 2)⁵. This implies that sufficient financial resources were not mobilized by state apparatus in order to offset the administering costs engendered by various colonies, essentially because native resistance augmented with progress of colonial administrators and implicit taxation. For instance, in 1898, chiefs that were linked with Mende in Sierra Leon revolted and unanimously took the decision not to pay any tax. The rebellion led to the promulgation of the 1896 Protectorate Ordinance by the British government which established direct British governance and imposed 5 shillings and 10 shillings annual taxation for respectively, two-room and larger houses.

⁵The data is obtained from Frankema and van Waijenburg (2013). This is data before independence.

Table 9. Potential Mechanisms

	Fiscal revenue		Poppar colonial administrator		Centralization		Vertical legitimacy		Horizontal legitimacy		Ethnic fractionalization	
Native resistance	-0.199**	-0.261***	17.385***	24.935***	-0.031	-0.023	-0.087*	-0.090*	-0.045	-0.043	0.058**	0.040*
	(0.073)	(0.069)	(5.161)	(5.856)	(0.043)	(0.046)	(0.047)	(0.053)	(0.040)	(0.041)	(0.024)	(0.024)
Regional fixe effects	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Constant	0.943***	1.133***	-21.808	-60.450**	0.633***	0.645***	0.481***	0.611**	0.715***	0.814***	0.485***	0.624***
	(0.254)	(0.297)	(17.808)	(26.935)	(0.158)	(0.158)	(0.169)	(0.229)	(0.145)	(0.138)	(0.088)	(0.108)
Number of observations	25	25	32	32	40	40	42	42	42	42	41	41
R ²	0.243	0.518	0.274	0.475	0.014	0.074	0.078	0.279	0.035	0.161	0.127	0.333

Notes. OLS estimates of (1) are reported. Coefficients are reported with standard errors in brackets. All estimations contain constant and reproduce control variables in the last column of Table 3. 0.01 - ***; 0.05 - **; 0.1 - *

Our hypothesis on the low mobilization of tax income has at least two consequences on institutional development. First, a weak mobilization of income did not provide African nations with sufficient financial resources with which to support institutions of higher quality. This explanation is even more logical and consistent with findings because we have established that the wealth of nations or GDP per capita is positively associated with institutional quality. Second, the low tax collection rate also legitimized a weak fiscal culture which seriously undermines the accumulation of financial resources that are essential for the provision of public commodities.

The third hypothesis underpinning this section is what is termed “institutional capital”. Following Acemoglu *et al.* (2001), we deduct that African countries which initially had good institutions are those which present a comparative contemporary advantage over others. However, this relevance on initial conditions is contingent on some factors. Within this specific framework, the analysis builds on the fact that countries which experienced high levels of native resistance are those that have developed institutions that are not consistent with contemporary levels of development, especially with regard to inclusive development. In effect, resistance is social conflict which reduces possibilities of social harmony. We confirm this thesis by considering many pre-independence institutional indicators, notably: data from Richens (2009); data on centralization from Gennaioli and Rainer (2006, 2007), on legitimacy from Englebert (2000) and ethnic fractionalization from Alesina *et al.* (2003). Of all the estimations, only results corresponding to data from a few sources are not significant, notably: Gennaioli and Rainer (2006, 2007) and Englebert (2000). However, the expected signs is consistent with those established earlier.

There is a negative correlation between resistance and centralization on the one hand and on the other, with horizontal legitimacy. It is apparent that vertical legitimacy is negatively associated with institutional development, positively linked with an increase in the number of colonial administrators (data from Richens, 2009). A societal disharmony, based on an administration that is overwhelmed with issues can therefore be inferred. Ndulu and van de Walle (1996) and Sindzingre (2004) have established that in states with low income, nations states should support a society based on consensus as well as an administration capable of promoting pro-market and efficient policies.

Our findings within the framework of Africa do not support the underlying position from Ndulu, van de Walle and Sindzingre. This is apparent from the established positive relationship when ethnic fractionalization is considered. Young (1976) and Bates (1983) have shown that ethnic identifies and groups have evolved with modernization. Building on this postulate, we understand that owing to inequalities that increased in the era of colonization, ethnic tensions could emerge. However, beyond colonial manipulation, it is logical to infer that restrictive institutional development is the result of exclusions, in the light of Sokoloff and Engerman (2000) within the context of the New world. In the face of these different elements, it can be inferred that low institutional capital is associated with nations in which native resistance was high.

8. Concluding remarks

In this study, we show that historic events have a long term incidence on institutional development. Within the framework of the paper, we attempt to provide insights into a historical dimension that has not received the scholarly attention it deserves in empirical literature, notably: African resistance in the

face of colonization. The main finding suggests that contemporary institutions in Africa are endogenous to historical trajectories adopted by countries in the continent. Countries that experienced high resistance to colonial domination are associated with better contemporary governance standards. The findings are robust to a multitude of tests, notably: changes in estimation techniques, accounting for outliers, transformation of the outcome variable, control for endogeneity and changes of the outcome variable.

The main contribution of this study has been to extant scholarly literature by providing empirical insights with which historical events can be used to explain the contemporary poor institutions in Africa. Future studies can extend the corresponding literature by assessing the relevance of non-contemporary native resistance within the context of other contemporary development outcomes.

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