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Africa's Slave Trade and its Long-term Impact on Militarism and Institution

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Abstract

Recent studies show that significant historical events, particularly the slave trade, had an impact on contemporary African economies. The transmission mechanisms, however, are not well established. The purpose of the present paper is to consider two such transmission mechanisms, notably militarism and economic institutions. The present paper explores the impact of the historical slave trade, or exports, on institutions in two ways. Firstly, its impact on contemporary militarism as a political institution and, secondly, its impact on economic institutions, in particular property rights enforcement. The analysis uniquely shows the causal link between an important aspect of the historical slave trade, notably the import of military arms, and current African institutions. Finally, we also show that contemporary militarism, especially in the affected African economies, has a direct impact on their incomes.

Keywords: African slave exports, militarism, property rights, institutions, average incomes
JEL: N17, N47, O43, O55

I: Introduction:

Economists have put forward several factors to explain the contemporary growth rates and income levels of African economies. In recent years, a number of papers have focused on a couple of interesting new directions. These papers advocate the role of historical and institutional development as important contributing factors[1]. Indeed, a critical phase of African history is the slave trade. Nevertheless, the transmission mechanism from the historical slave exports to contemporary growth rates and income levels in affected African economies are not well established, and there may be many. The purpose of the present paper is to consider two such transmission mechanisms, notably militarism and economic institutions.

In related recent research, several papers have emphasized the importance and interplay between political and economic institutions[2]. The present analysis explores the impact of the historical slave exports on both types of institutions. In the case of the first type, we specifically consider its impact on contemporary militarism as a political institution, that is the military interference or involvement in African governments. Secondly, we consider the impact of the historical slave trade on economic institutions, specifically property rights enforcement.

While previous analyses assessed the impact of democracies (versus non-democracies), we consider a specific aspect of government. Militarism transcends mere democratic and non-democratic institutional distinction. Many established democracies have close ties with their military, with either serving or retired military personnel directly involved in civilian governments (for example, the USA, UK, Ghana and Singapore). While other more recent democracies have emerged from military dictatorship that purposefully enabled the transition to a democratic state (recent examples are Greece, Spain, Portugal, and South Korea). Indeed,

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[1] Recent studies include Acemoglu and Robinson (2001) , (2003), (2011) and (2017), Acemoglu et al (2003), (2005a) and (2005b), Banerjee and Iyer (2005), Guiso et al (2016), Michalopoulos and Papaioannou (2013), (2017) and (2020), Nunn (2008) , (2007) and (2020) for more elaboration.

[2] See recent examples, Acemoglu et al (2019) and (2014), Amendola et al (2013) and references therein.

others have chosen to remain in the background and interfere in the democratic process when it suited them (for example, Egypt, Turkey, Thailand and Pakistan). In many ways, this depends on the country's tradition and history. In the present paper, we will argue it is more relevant to assess the impact of the historical slave exports on military interference of contemporary governments.

European involvement in the African slave trade, which came to be known as the Transatlantic slave trade, was primarily to provide labour for the established settlements in the Americas and West Indies and spanned several centuries and in various stages. While there have been many phases and critical points, historians have argued that a significant phase of the trade was the guns-for-slave cycle[3]. This enabled the late arriving British traders to establish dominance in the trade during the 18th century. By trading in arms in exchange for slaves, British traders were also able to source slaves in new areas in West Africa. Other European slave traders soon followed suite as they tried to retain a foothold in the lucrative trade. This new phase of the slave trade created politically centralized African regimes that were also highly militarised. Hence, an important issue to investigate is what was the impact on contemporary militarism in Africa states that engaged in historical slave exports[4]. Figure 1 below illustrates the correlation between militarism index and slavery per population. The moderate negative correlation (with an estimated coefficient of -0.293, t-ratio = -3.07, R2 = 0.2035, 39 countries) suggests that as slave-exports per population increases, so does the military interference in contemporary African governments.

Figure 1 [about here]

Similarly, the emerging politically centralised regimes did not pursue stability but were dominated by families that become wealthy through their involvement in slave exportation.

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[3] Further elaboration of the guns-for-slave cycle from a historical perspective is found in Inioki (1977) and Alpern (1995). While Whatley (2018) and Easaw and Ghoshray (2023) investigate the issues econometrically.
[4] Similar patterns are found in East Africa (see Beachey (1962), Alpers (1970) and Vernat (2013) for detailed historical facts and analysis). This issue is examined in more detail in the next section.

These states were depicted by extractive institutions. Another important aspect to consider is what was the impact on contemporary African economic institutions. Figure 2 below shows the correlation between composite institutions and slave exports per population. The negative correlation (with an estimated coefficient of -.0769, t-ratio = -1.83, R2 = 0.0754, 43 countries) here indicates that as slave-exports per population increases, the quality of contemporary composite institutions degrades.

Figure 2 [about here]

If historical slave exports impacted contemporary institutions, an important issue to explore is: are these institutions a form of transmission mechanism that determine current income levels for the African countries effected by historical slavery? While the relationship between economic institutions, such as property rights enforcement, and countries' incomes levels and growth are well established[5], the impact of militarism is not.

The paper empirically investigates these issues in two stages. Firstly, we assess the direct impact of the historical slave exports on contemporary Africa institutions. We consider political institutions, specifically the level of military involvement and interference in governments. Therefore did arms importation during this period, which was linked to the slave exports, and its impact of African militarism persists to present times. We also consider its impact on economic institutions, such as property rights enforcement and composite institutions. So, did the centralised slave-exporting states with extractive institutions also persists to the present period. The second stage of empirical analysis is to assess the impact of contemporary militarism on income, especially whether militarism in these slave exporting states had a more detrimental impact on the income levels. It is important to note that the current analysis needs to assess the impact on both political and economic institutions at an aggregate,

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[5] Seminal research on property rights and its impact on growth and income was undertaken by Besley (1995) and Besley and Persson (2009). Assessment of the impact of institutions on long-run growth is found in Acemoglu et al (2005b) and, more recently, Callen et al (2023). Indeed, Fenske (2013) showed that pre-colonial African institutions can predict contemporary institutional outcomes, which was enhanced during the colonial period.

or country, level. As institutional development at a country level crucially determines their growth and income.

The paper, therefore, makes a few novel and important contributions to the existing literature. Firstly, the paper considers the impact of the historical slave exports on contemporary African political and economic institutions. The key point here is that we consider the impact of the historical exports, specifically the long-term impact of the guns-for-slave cycle, on militarism as a contemporary political institution in African. We present a robust quantitative relationship between the historic arms imports and contemporary militarism and institutions for the relevant African countries. Secondly, we also introduce two innovative instrumental variables that relate directly to weaponry used in exchange for slave exports. Finally, we consider how militarism effects income levels. Once again, our focus is on slave-exporting African countries.

The paper is organised as follows: the next section overviews the legacy of the Transatlantic slave trade pertaining to militarism and institutions. Section III outlines and discusses the data and variables used in the empirical analysis. The remainder of the paper focusses on the empirical investigates.

II: The Legacy of "Guns-for-Slave Cycle": Its Impact on Militarism and Institutions:

In this section we consider how the historical slave exports impacted contemporary institutions in the relevant Africa economies. We consider specific political institutions, that is the interference of the military in governments. Also, economic institutions that enable and incentivise economic activity, such as the enforcement of property rights and composite institutions.

The British merchants' foray into slave trading was relatively late compared to her Portuguese counterpart. Indeed, Britain's importance in the Transatlantic slave trade was only established in the mid and late-18th century (Williams, 1944, pp. 29-31). During this period

'the (British) slave trade was more than a means to an end; it was also an end itself.' (Williams 1944, pp. 29). The size of the British slave trade grew with the increasing demands from the West Indian sugar plantations. In addition, the Treaties of Utrecht (1713-14) following the War of Spanish Succession gave the British traders privileged access as suppliers of slaves to the Asiento trade[6].

A crucial aspect of the British dominance of this slave trade is the introduction of guns in exchange for slaves in the late 17th and early 18th centuries. The Portuguese, who dominated the Transatlantic slave trade up to this point, were bound by the Catholic church's edict prohibiting the sale of arms to non-Christians. The Protestants, led by the British, lacked such conformity or restraint. Subsequently, the Portuguese too engaged in the sale of arms for slaves to ensure their continued access to the lucrative trade. The European gunpowder technology and the sale of arms in exchange for slaves came to be known as the guns-for-slaves hypothesis[7]. Whatley (2018), following a comprehensive empirical assessment of this hypothesis, concluded that there was a 'guns-for-slave cycle' where the demand for one product led to the supply of the other.

There were both political and economic consequences for the affected African states and their people. The growing militarisation of these states and regions were evident[8]. The Gold Coast and Bight of Benin, for example, experienced a 'gunpowder revolution' (see Thornton, 1999, pp. 61). Similarly, Law (1991) described the Dahomey state as a highly

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[6] Edwards (1801) records that throughout the 18th century British slave traders supplied half a million African slaves to French and Spanish sugar planters establishing themselves as 'the foremost slave trading country in the world' (Williams, 1948, pp. 30). The relative position of the British in the slave trade was best captured by the growth and importance of Liverpool. Towards the end of the 1700s, the city of Liverpool alone controlled upwards of 40% of the entire European slave trade.

[7] An extensive recent assessment of the key issues can be found in Whatley (2018) and Easaw and Ghoshray (2023).

[8] In a recent interesting study Zhang et al (2021) showed that the slave trade increased the prevalence of ethnic conflicts and riots, in part due to the undermined national identity. Dincecco et al (2019) showed novel evidence that in Sub-Sharan Africa historical warfare uniquely predicts high fiscal capacity and high civil conflict and, thereby, where and when 'war makes states'. While Fenske and Kala (2017) argued that as the slave trade declined in the early 1800s in West Africa, leading to the empowering of rivals, political leaders resorted to violence to maintain their influence.

militarised state with a large standing army of riflemen. While the Aro traders were able to establish large trading networks using modern arms[9].

Large politically centralized regimes were established with slavery wealth, for example the Ashante kingdom. However, as Whatley (2022) noted, these states only resulted in greater political instability. Indeed, Lindsey (2014) when considering the role of 'extraversion' and the Atlantic slave trade, specifically in the context of large-state predation argued that leaders of a centralised state tried to control important trading sites. Therefore, for example, the kingdom of Dahomey's eventual control of the coastal port of Ouida allowed her leaders to closely supervise and control external trade with Europeans. Likewise, the Aro traders who established an extensive trading network in the Bight of Biafra had close trading ties with British slave traders. Also, as Diouf (2004) points out that there were widespread armed resistances to slavery, while other groups engaged in the slave trade as a form of self-preservation. Similar patterns were found in East Africa too. Beachey (1962) highlights contemporary accounts of European arms trading by the Church Mission Society in Uganda in 1888, which noted that "these arms will be used in raids for women and slaves". Alpers (1970) emphasized the vital role of French slave traders for their plantations in the Mascarene Islands, Ile de France and Bourbon, which is modern-day Mauritius and Reunion respectively. As part of this trade, he also noted that the French imported firearms and coinage.

Bolt et al (2020) proposes a hypothesis for explaining contemporary African institutions they refer to as 'persistence of institutional constraints', with reference to British African colonies[10]. Using novel datasets, they found that the contemporary political

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[9] Njoku N. L. (2016) Nwokeji (2010) provides elaborate accounts of the Aro traders involvement.

[10] The debate assessing contemporary African political institutions placed varying emphasis on the impact of the colonial era. On the one hand, the 'colonial-authoritarianism' suggests that colonists transformed existing indigenous institutions to create authoritarian ones, and these became large and decentralized colonial states (see Mamdani (1996), Hobsbawm and Ranger (2012), Baldwin 2015, and Stasavage 2020). Others, played down the important of the colonial era. The 'precolonial-authoritarianism' advocates argued that the European colonisers chose to preserved existing local institution that were authoritarian (see Diamond 1997 and Herbst 2014).

institutions were persistent as the colonial rule adapted existing postcolonial authoritarian regimes. In a recent paper, Sharman (2024) took a slightly different view when explaining the relationship between historical slavery and state formation. He argued that the substantial demand for slaves created opportunities for African rulers to use external resources for "outside-in" state building. The rulers primarily did so by creating highly militarised predatory slaving states. The result was increased insecurity. The literature broadly affirms that historically low population density posed a unique challenge to African rulers. They had to focus on controlling people than territory. The possibility of internal conflict and unrest was often a greater concern than external threats. The excessive demand for slaves also meant that African rulers and regimes had to do deal with European traders and establish predatory states that were highly weaponised.

Clearly, the guns-for-slave enhanced Transatlantic slave trade in the 18th century had a direct impact in creating centralized regimes that were highly militarised and weaponised. So, an interesting hypothesis to investigate empirically is whether this affected the levels militarism found in contemporary African states. Indeed, this also must be considered in the context of the ensuing European colonialism.

In an important recent study Whatley (2022) sets out to assess the impact of Transatlantic or international slavery on Africa's detrimental economic development. The paper assessed this long-held notion from the prospective of its impact on institutions or institutional development. The paper advances the idea that the international slave trade resulted in African states transitioning to despotism with slave trade under the control of the political elite. Consequently, the institution of slavery become more widespread and established, with property rights over people. This is unsurprising as such an institution, and the creation of human chattels, was well established in slave importing countries, such as the United Sates of America. In a recent study González et al (2017) argued that slave property

rights, or wealth, were not only as source of coerced labour but also an important source of collateral. A similar position was advocated by Hodgson (2014) regarding slaves as 'human capital'.

The existence of such institutions within politically centralised states suggests the emergence of highly extractive institutions. Once again, in this historical context, it would be interesting to assess the impact of the historical slave trade on contemporary African institutions, such as property rights enforcement[11]. The remainder of the paper will focus on the empirical analyses, starting with the data and variables description in the next section.

III: Data and Variables Used:

We use aggregate cross-sectional data at country level to conduct the empirical analyses, which consist of 43 African countries that were the exporters in the historical slave trade. The principal variables used in this study are volumes of slave exports and measures for institutions. We use 2009 as the base year for the cross section to ensure best possible data coverage, as some more recent observations are unavailable for a number of African countries. Our dataset contains observations from a range of sources, including the slavery data for African countries from Nunn (2008), the institutional data from the *Fraser Economic Freedom* index (2018), and observations for various control variables taken from *World Development Indicators*. In this section we provide an extensive description of the data used.

The first principal variable is the volume of slave exports. We utilize two measures of slave exports: logged total slave exports between 1400 and 1900, normalized by land area, and historic population. Nunn (2008) assembled the slavery estimates. It was constructed by

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[11] It is well established that institutions and institutional development, such as property rights enforcement, has an impact on growth (see Besley and Persson (2009)). Also, recently Price and Whatley (2023) empirically investigated the impact of population growth on innovation and, consequently, growth in African countries effected by historical slave trade.

combining shipping data from African ports or regions, and data that reports the volumes and ethnicities of slaves shipped from Africa to assemble the total slavery exports data.

To capture the degree of military interference or involvement in the government and in the broader sense of economic and legal institutions, we consider three estimates from the Fraser database as the dependent variables: the index for military interference in rule of law and politics, the index for protection and enforcement of property rights, and lastly, a composited institutional index intended to index the quality of broader institutions. The index for military interference is an annual qualitative score from 0 to 10, given to a nation to measure military's involvement said nation's politics, higher score indicates less involvement and therefore more independent government functioning and inversely, a lower score would imply more military interference in the government. The property right index measures the level of property right protection and enforcement for investments and businesses, which is suitable for an approximation of the quality of economic institutions. The composite institutional index is the aggregated average score of eight institutional components focused on the quality of legal systems as a determinant of economic freedom. The components include scores for judicial independence, court impartiality, protection of property rights, military involvement in the government, legal system integrity, enforcement of contracts, regulatory costs of real property trading and police reliability. The composite institutional index captures the quality of a country's political and economic institutions and is an appropriate estimate besides the militarism and property rights indices.

As control variables, we use share of agricultural lands, trade exposure and education measured by secondary school enrolment. These were sourced from the World Development Indicators (WDI). Table 1 outlines the standard descriptive statistics for the variables we use in estimations.

Table 1 [about here]

IV: Empirical Analysis:

IV.1: Basic Correlations: OLS Estimates.

Initially, our empirical investigation assesses the impact of the historical African slave exports on contemporary militarism and institutions. We consider two measures of slave exports: slave exports (land) and slave exports (population) as described in the preceding section[12]. The empirical investigation introduces various control variables, which also includes effects of colonialism. Thereby, our empirical analysis can verify whether slave export has an additional or separate effect to colonialism, which followed the European slave trade in Africa. The model to be estimated is expressed as follows.

$$Inst_i = Slave\ Exports_i + X_i + Coloniser_i + \varepsilon_i$$

where X_i denotes the control variables, excluding colonialism.

Table 1 below provides the results, where Columns 1 - 3, 4 - 6 and 7 - 9 outline the estimates when the dependent variables are the military presence in government, property right enforcement and a composite institutional quality index respectively. The dependent variables are sourced from the Fraser database and is regressed on slave exports of the target country with a number of control variables using OLS estimator. Control variables include logged share of agricultural land, exposure to trade and education measured by secondary school enrolment. Column (1) presents the estimates without slavery or colonialism and columns (2) and (3) includes the results when slavery and colonialism are added respectively.

Table 2 [about here]

When explanatory variable slave exports (land) is introduced, it has a significant and negative impact on militarism. Following the description of the militarism variable in the

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[12] While we use the base year of 2009 for contemporary institutions, for robustness, we also estimated the respective institutions as dependent variables taking the average from the year 2000 to 2009. These years provide the best possible data coverage. The estimates are found in the Appendix (Tables A2 and A3) and the results are consistent with the results outlined in Tables 1 and 2 – notably for the slave export and colonisers explanatory variables.

previous section, this suggests that historical involvement in slave exports lead to higher levels of military involvement and interference in the contemporary African governments. When we introduce colonialism (Column (3)) we find two interesting results. Firstly, the absence of colonialism had no impact on the level of militarism[13]. Secondly, and more importantly, column (3) clearly indicates that colonialism, specifically British, French and Belgian colonialism, has an additional impact on militarism. Hence, for instance, countries such as Ghana and Nigeria would have experienced this additional impact on militarism as ex British colonies and being in the heart of the British Transatlantic slave trade.

When considering the impact on specific institutions, that is Property Rights Enforcement, we can report that only slave exports, that is engaging in historical slave exports, matters. However, when assessing the impact on Composite Institutions, we find comparable results to militarism. Once again, slave exports have a significant impact on institutions. Contemporary institutions are degraded by the country's involvement in historical slave exports. Once again, colonialism has an additional impact.

It is also noteworthy that Portuguese colonies did not have this additional impact on militarism, but they do for Composite Institutions. This is in contrast with British colonies. This interesting finding may suggest, while speculative, that the 'guns-for-slaves' cycle led by the British slave traders had a direct impact on the slave exporting countries. On the other hand, Portuguese traders had a close relationship with the Dahomey kingdom. The overall export of slaves to European traders were also dominated by the Asante and Dahomey kingdoms. The Dahomey kingdom had an extensive and long-standing relationship with Portuguese traders, which included embassies in Bahia, Brazil, and Portugal (see, Araujo (2012) for a detailed account). This could explain why Portuguese colonies also had persistently poor or extractive institutions.

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[13] It must be noted that these countries are scare in the sample of African countries.

In table 1 and 2 we conduct Oster's test (2019) for omitted variable bias. According to Oster, the delta ratio tells the degree of selection on unobserved variables relative to observables that is required to explain the results fully by omitted variable bias. When the ratio is larger than one, the correlations are not likely reflecting unobserved variables. As demonstrated, Oster's delta values are larger than 1, which indicate that our results are unlikely to be driven by unobservable.

For consistency and robustness, we also run the same regressions with slave exports (population), and the results are outlined in Table 3 below. Essentially, the results remain the same. The only exception is now Composite Institutions, similar to Property Rights Enforcement, is unaffected by colonialism.

Table 3 [about here]

IV.2: Causality and Instrumental variables.

Nunn (2008) rightly noted that the causal explanation of historical slave exports on current economic indicators is unclear as there is a plausible alternative explanation that these societies are underdeveloped prior to the European slave trade. Here, too, an argument can be made that these societies were already militarised with poor institutions before the European slave trade[14]. However, it is important to emphasize that Whatley (2022) and (2018) clearly established that politically centralized and militarised African regimes were the direct result of the slave trade and, importantly, also the institutionalising of slavery. Regardless, it is important to specifically verify the impact of arms importation as part of the historical slave exports on the militarisation of these contemporary African economies.

We consider two strategies to evaluate the causal effect of the historical slave export on contemporary militarism and institutions. Firstly, we replicate the estimation using an IV

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[14] Some have queried whether militarism can be deemed an institution or a cultural trait (see, for a recent example, Heldring (2023)). It has been argued that formal institutions have informal origins, and cultural traits may come under the category of informal institutions.

approach. Secondly, we consider whether the historical slave exporting countries have lower contemporary levels of militarism and poor institutions than others in an extended sample. These other countries include developing countries and ones that are historically both centralised and militarised[15]. This is done using a simple dummy variable approach with an extended sample of countries.

In the first instance, we introduce two novel instrumental variables relating to European weaponry imported into Africa in the 18th Century. The arms trade, or imports, is based on the presumption that the importation of arms related directly to the supply of slaves for exports but did not influence the demand for exported African slaves. Whatley (2018) clearly established that the introduction of arms in the African slave trade by Protestant was key to increasing the production of slaves. Indeed, it enabled greater regions in the hinterland to be explored for slave exports. The use of arms meant that slaves could be more readily transported from greater distances to the coast for exporting. As discussed in Section II, once the Protestants lead by the British entered the slave trade, they introduced weaponry in exchange for African slaves. The recent literature has shown how this had structurally changed the historical slave trade, while establishing British dominance. Crucially, on the other hand, the growing demand for slaves were the direct result of ever-increasing demand for sugar and cotton. This resulted in the expansion of European and settlers owned plantations in the West Indies and the USA.

Furthermore, arms importation has a very low, if any, correlation with other country characteristics. As Inikori (1977) states "These imports (guns) were due very largely to the strong preference for firearms by slave sellers and gatherers. The preference of ivory sellers for guns came a distant second to that of slave sellers. Sellers of other commodities, particularly foodstuffs, do not seem to have had any stronger demand for firearms (p. 361)." Finally,

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[15] See list countries in the Appendix, Table A1. These include other African countries, as well as other developing and developed countries from various continents with different political and military histories.

arguably the instrumental variables relating the arms importation compliments the instruments introduced in Nunn (2007). Hence, we contend that the arms imported during the historical slave trade only impacted contemporary African institutions through its effect on slave exports.

The instrumental variables we construct capture the distribution of military arms-in-exchange-for-slaves in two ways. The first follows the geographical flow of arms from ports of entry to neighbouring countries, and the alternative variable assumes even distribution of firearms based on historic population density of the receiving countries. Both measures use an aggregate arms imports dataset that is assemble by consolidating empirical observations from three existing studies. They are the British arms-slave trade data between 1699 and 1808 (Whatley 2018), detailed West African ports of entry data for arms imports between 1750 and 1807 (Inikori 1977) and, finally, an aggregate data point for Eastern African arms imports for the year of 1888 by Beachey (1962). We explain the steps of database assembly below.

The first step of constructing a unified arms imports dataset is to derive a continent-wide observation for imports of weaponry from major arms exporters and colonial powers that covers the largest possible time dimension. To this end we first aggregate the arms import data from Whatley (2018), which is the most straightforward step. The aggregated arms imports data from the Whatley database is measured in value and is of mostly of British origin, which enters the continent of Africa from her western ports. The second step requires a comparable and compatible data source for East African arms imports, which we can identify from the work of Beachey (1962). Beachey (1962) presents detailed information for the imports of guns, pistols and gunpowder recorded by the Zanzibar Custom House in 1888 and the unit prices of these commodities at the time. Using this entry, we can calculate the annual value of arms imports for the Zanzibar region, which during the colonial era was the transit hub for a number of East African ports and includes the coastlines of modern-day Tanzania, Kenya and, to a lesser extent, Madagascar (Sheriff 1987).

Now we have the aggregate arms imports for West Africa between 1699 and 1808 and an annual observation for East Africa, we then extrapolate the East African data point backwards to cover the time periods that are available in the Whatley (2018) and Inikori (1977) data. The justification for utilizing the extrapolation method is as follows: for West Africa, logged arms imports from 1700 and 1800 is largely linear and upwards sloping, as shown in Figure 3. Based on this observation, one may then propose a reasonable conjecture that East African arms trade may follow a similar trend of growth from early eighteenth to late nineteenth century. After extrapolation we now have annual observations for the value of arms imports for East and West Africa between 1699 and 1808, which we aggregate.

Figure 3 [about here]

The first instrumental variable, which takes geography, ports of entry and national borders into account, is comparatively more elaborate than the alternative. To construct this version of the arms imports data we first identify the ports and countries of entry for arms in East and West Africa. For West African ports we reference Inikori (1977), which lists 7 colonial trade regions from which guns and gunpowder flow into the continent from the western coasts: Sene-Gambia, which correlates to modern day Gambia and Senegal; Sierra-Leone Windward Coast, which correlates to modern day Liberia, Sierra Leone and the Ivory Coast; Gold Coast, which correlates to modern day Ghana; Bight of Benin, which correlates to modern day Benin and Togo; Bonny, which correlates to modern day Nigeria and finally, Calabar Cameroon, which is present day Cameroon. For the East African ports we reference Beachey (1962) and Sheriff (1987) in identifying the countries of entry as Tanzania, Kenya and Madagascar. The above-mentioned studies contain detailed value of arms imports at each port, from which we derive a ratio of arms distribution for the importing countries. We assign

the value of arms imports to the countries of entry in their respective regional group using their historic population density[16]

Now we have the aggregated volume of arms imports distributed among the entry countries based on the historical regions they are part of and their population density, we now consider the flow of arms based on the features of national borders. Figure 4 shows how we map the proliferation of arms in Africa following these assumptions. Firstly, we assume that half of the arms entering a country are transported to neighbouring countries. Secondly, we assume that the back flow of arms does not occur (For instance, weapons transported into Chad from Nigeria are not traded back into Nigeria). Thirdly, we assume that when a country has two or more downstream countries, their population densities determine the distribution of arms transported from the previous transit country. Lastly, arms do not flow into countries that are earlier or in the same stage of transportation[17]. In figure 4 we denote countries based on a color-coding system: countries that are within the colonial trading regions, which we consider countries of entry, are marked blue for the Western routes, and purple for the eastern routes. Secondary and tertiary countries in the flow of arms are labelled green and pink respectively. The flow of cross-border arms transit is marked by arrows. Countries that are not available in the database or are otherwise not mentioned in data sources are marked as red. Based on these rules, we are able to construct a secondary cross-sectional database of arms imports for the African countries.

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[16] Note, in contrary, to the first version of the arms imports data, this is one of two instances where population density is used as an approximate for arms distribution. Subsequent distribution assignment relies on geography and only when arms flow into multiple secondary countries from one country do we use population density to divide the flow of arms. For an example of arms distribution within a colonial trade region, Bight of Benin, which correlates to modern day Benin and Togo, is recorded to have received 41276 guns and related goods in value between 1750 and 1807 (Inikori 1977), so we compute a ratio between Benin and Togo based on their respective population density in 1400 (Nunn 2008), and then distribute the arms imports between the two countries using said ratio. Both Benin and Togo are referred to as countries of entry, so are the remaining countries that made up of the historic colonial trade regions outlined in Inikori (1977).

[17] That is, secondary countries (marked in green) do not transport arms into another secondary country, and tertiary countries do not transport arms into a secondary or primary country. The flow of arms stops if a country does not have any adjacent downstream country.

To illustrate our methodology and how the arms import database is constructed, consider the Nigeria route as an example. Being part of the Bonny region, Nigeria received a total amount of 55 4531 arms in value (Inikori 1977). Half of the total amount, 27 7266, is transported to the following countries: Niger and Chad. The amount is divided between the two receiving countries based on their historic population density ratio. After distribution, Niger receives 13 2109, and Chad 14 5157. Following the arrows in Figure 4, half of the arms entering Niger are then transported to Mali and Algeria (66 879, to be distributed based on Mali and Chad's population density ratio), and half of arms entering Chad goes to the sole receiving country, Sudan, which is also receiving arms transports from Ethiopia and Central African Republic (17 5442 from Chad, 11 3814 from C.A.R, and 22 972 from Ethiopia, 31 2228 in total). Lastly, half of the total amount of arms going into Sudan is transported into Egypt as her only downstream country, which amounts to 15 6114 in value. Since Mali is designated as a tertiary country (receives arms from a secondary country), there is no arms flow out of Mali into Algeria, which is also a tertiary country.

The second instrumental variable is a more straightforward estimate of arms imports, which assumes even distribution of firearms and related commodities based on historic population density of the receiving countries. We evenly distribute the aggregated arms imports data among African countries based on their population density in 1400[18] to obtain a cross-sectional data for 43 available African countries. We argue that this measure is a more straightforward approximation of how weapons of Western and colonial origin prolificated in Africa and is appropriate to be used as an instrument for slavery, according to the guns-for-slaves hypothesis.

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[18] The data of which is taken from the Nunn slavery dataset (2008).

Figure 5 outlines both instrumental variables for each of the countries of interest for the present analysis. It is worth highlighting that there are three countries (Burundi, Rwanda and Cameroon) where there is large difference between the two variables. In the case of Burundi and Rwanda, the second instrumental variable (Arms Import (Density)) is much greater than the first (Arms Import (flow)). While in the case of Cameroon, the opposite is true. Burundi and Rwanda, which are both landlocked, would receive flow of imported arms through secondary sources from the Western routes (blue, via Congo, DR) and directly from the Eastern route via Tanzania (purple). Nevertheless, the relatively high population density in 1400 would show the imported arms based on population density to be high. Cameroon, on the other hand, is an important entry point of arms import from Europe but have a relatively low population density in 1400. Table 4 presents summary statistics of the variables constructed.

Figure 5 [about here]

Table 4 [about here]

Table 5 and 6 outlines the effects of slave exports on institutions, using the IV estimation approach and the two different instrumental variables respectively. The first-stage estimates are reported in the bottom panel of each table. In Table 5, the coefficient for the instruments using Arms Import (Flow) are always positive and significant. This suggests as arms importation increases, so does the export of slaves. The second-stage estimates are reported in the top panel. The results clearly indicate that slave exports (land) continue to be significant. So, historical slave exporting increases contemporary militarism and degrades institutions, both Property Rights enforcement and Composite institutions. French and Belgium colonies also continue to display significant effects on contemporary institutions. The point estimate of slavery export on militarism, property rights and composite institutions is similar to the counterpart OLS estimates reported in Table 2.

Table 5 [about here]

Table 6, using the Arms Import (Density) instrument, is significant and positive in both militarism estimates and the estimates of property rights enforcement and composite institutions which includes all the colonial control variables. As Table 5, it is also positive. The estimates are also consistent with the OLS estimates reported in Table 3.

Table 6 [about here]

Table 7 outlines the results of another fixed effects estimation[19], but using a slave exports dummy to denote the African countries who experienced historical slave exports. This set of estimations is carried out using a larger dataset containing 155 countries including those outside Africa[20]. A list of countries and their designations is outlined in Table A1 in appendix.

The slave export dummy is shown to be negatively correlated to the institutional variables in column 1, 4 and 7, suggesting that slave exporting can negatively and significantly reduce institutional qualities in terms of military involvement in government, protection of property right and general institutional qualities respectively. The estimated constant denotes the average levels and slave exports reduces these scores, in all three instances. This implies that African countries that were historically engaged in slave exports on average have lower institutions and greater levels of military interference in their governments. Columns 2, 5 and 8, compares historically slave-exporting African countries with those countries that were not European colonies. When have a larger sample of countries, compared to the estimates outlines in Tables 1 and 2, we can clearly report that countries that have not been colonised have a lower level of military interference and better institutional quality (both property rights enforcement and composite institutions). On the other hand, when focus on countries that were colonised

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[19] Table 5 uses a larger cross-sectional dataset with non-African countries included as well. We use a slavery dummy for which African countries which exported slaves from the Transatlantic Slave Trade are denoted as one while remaining countries are not. Note that the slavery dummy does not account for any other sources of slavery. The estimations use the identical setup as the baseline estimations with respect to estimation technique, dependent and control variables.

[20] Besides the expanded list of countries and the dummy variable denoting African slavery, we use the identical cross-sectional setup as the baseline estimations. 2009 is the base year, and the same set of control variables is used.

and slave-exporting, we find similar results to Tables 1 and 2. Historical slave-exporting countries and ex-British, French and Spanish colonies experience greater military interference of contemporary governments. In the case of institutions, these results persist with composite institutions, but only French, Belgian and Spanish colonies have a detrimental effect on property rights enforcement. As before, with the larger sample of countries, we find countries that would have experienced this additional impact on militarism as ex European colonies and historical exporters of slaves.

Table 7 [about here]

We include the usual estimation and test statistics as well as Oster's deltas to demonstrate the validities of our results. The Oster's delta is above 1 for each of the estimation, indicating that our results are unlikely to be influenced by unobserved variables.

IV.3: Income and Militarism:

The final phase of the empirical analysis is to investigate the impact of militarism on income levels. This is undertaken in two steps. Firstly, we try to establish whether and how militarism impacts growth. Secondly, we consider how this impact is different in countries that were engaged in the historical slave trade. To this end we use a large cross-country panel database containing observations from 1970 to 2018 for 155 countries. The dependent variable is logged GDP per capita, list of control variables includes trade exposure, share of agricultural land, child mortality rate, government consumption and education, approximated with secondary school enrolment. Table 8 displays summary statistics for the dependent and control variables and source of data.

Table 8 [about here]

We need to establish the causal impact of militarism on income too. Therefore, we also investigate empirically the impact taking both an IV and GMM approach. Table 9 below

reports the results for the estimations on the effects of military interference in government (militarism in the government) on growth. The model is estimated as follows:

$$Y_{i,t} = M_{i,t} + slave\ exports_i + (M_{i,t} * slave\ exports_i) + X_{i,t} + \varepsilon_{i,t}$$

$Y_{i,t}$ denotes growth approximated by logged GDP per capita, and $M_{i,t}$ is the index for military government. Note that military interference in government is a qualitative index where countries with low levels of interference is assigned higher scores, $slave\ exports_i$ is a dummy for indicating if an African country has suffered from colonial slavery.

Column 1 to 4 are the results from fixed effects estimations. Column 5 is the first of IV estimation where military interference in government is instrumented with ethnic fractionalisation. Column 6 military interference in government is instrumented with ethnic fractionalisation, judicial independence, and legal system integrity. Column 7 indicates the results of a GMM estimation.

Table 9 [about here]

In the first instances we establish that militarism has a significant impact on income. It implies that with lower levels of military interference in government, which is a higher index score, has a higher impact on income. This is indicated by the positive estimated coefficient. Focussing on countries with history of slave exporting, we have two interesting results. Firstly, these countries have a lower income. The slave exports dummy is significant and negative and indicates that the average income in these countries is lower. Secondly, the estimated militarism and slave exports interaction terms is both significant and negative too. Thereby, suggesting that in historically slave exporting countries the positive impact of lower military interferences on incomes is considerably smaller or negligible (0.048-0.045). In the other countries, on average, an equivalent decrease in military interference has up to 16 times more positive impact on their income.

V: Summary and Concluding Remarks:

Recent studies have shown that the history matters, especially when institutional development is an essential element of economic growth and development. Indeed, a number of studies have also shown that significant historical event, such as African slave trade has impacted these economies. The present study uniquely shows the causal link between an important aspect of the historical slave exports, specifically the import of military arms, and contemporary African institutions and, consequently, their incomes.

African countries that have been impacted by the historical slave trade experience elevated levels of military involvement in their contemporary governments. The import of arms, which lead to such phenomena as the 'guns-for-slaves' cycle, created highly centralised and militarised local regimes that have continued to depict current political institutions. Likewise, these extractive regimes have also persisted and led to extractive economic institutions in the present day. It is important to emphasize that European colonial expansion in Africa, which followed the establishing of the slave trade, had an impact on contemporary militarism too. Hence, British, French and Belgium colonies that were part of the historical African slave trade experienced additional and greater impacts.

An equally important contribution of the paper is the creation of two novel instrumental variables that captured arms importation during this period. It shows that the historical military arms trade has affected contemporary militarism and poor institutions through its effect on the slave exports. Finally, we show that militarism in governments is an important transmission mechanism for low aggregate incomes. We find that countries with higher military interference in governments have lower average incomes. While reducing militarism in slave exporting countries has a positive impact on incomes, the impact is significantly smaller or negligible.

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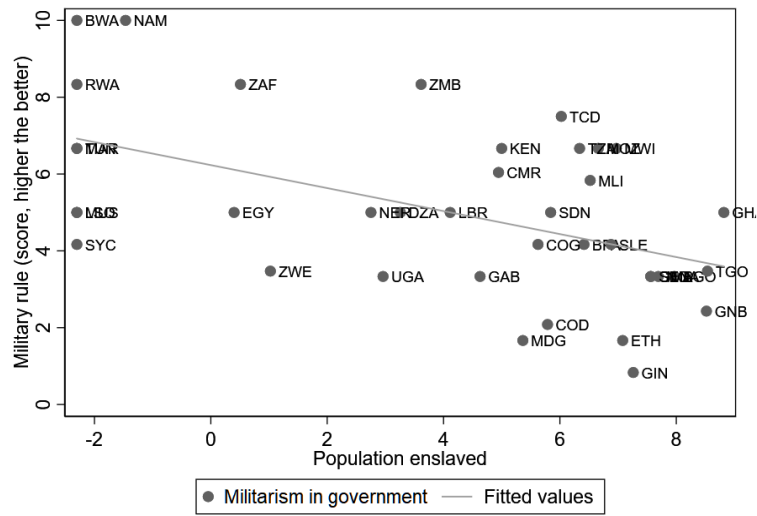
Figure 1: Slave exports and military involvement in government in African countries
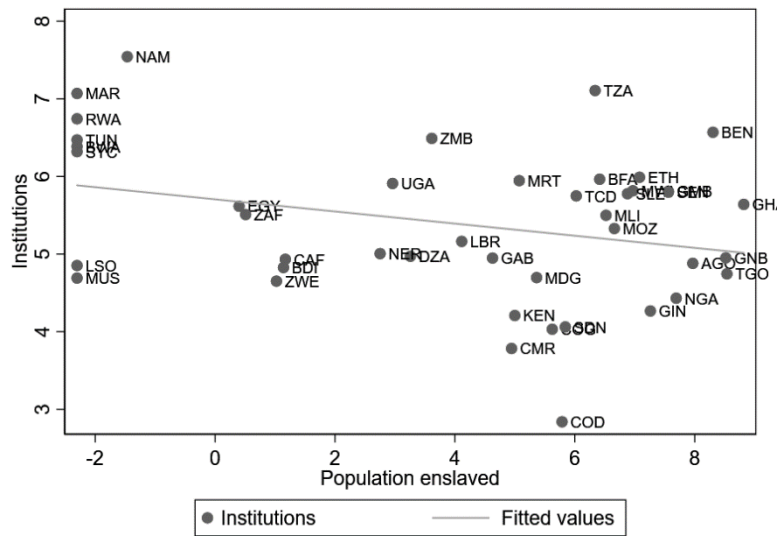
Figure 2: Slave exports and institutional qualities in government in African countries

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Slave exports (land)	43	3.970	3.714	-2.304	8.818
Slave exports (population)	43	9.909	3.493	3.912	14.400
Militarism	39	5.007	2.254	0.833	10
Property rights	43	4.846	0.880	2.793	6.832
Composite institutions	43	4.368	1.001	2.453	6.760
Agricultural land	42	0.460	0.210	0.037	0.800
Trade exposure	42	0.707	0.375	0.315	2.250
Education	39	0.449	0.250	0.114	0.929

Table 2: Institutional effects of slave exports – slave exports (land)

	Military government			Property Right Protection			Composite Institutions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Agricultural land	-0.278	-0.221	-1.201	0.840	0.877	0.712	0.977	1.031	0.421
	(2.093)	(1.804)	(1.832)	(0.676)	(0.630)	(0.641)	(0.811)	(0.719)	(0.626)
Trade	-0.271	-1.531	-2.252*	0.324	0.025	-0.099	0.545	0.106	-0.066
	(1.084)	(1.008)	(1.100)	(0.356)	(0.353)	(0.388)	(0.427)	(0.403)	(0.379)
Education	2.204	0.588	0.863	0.247	-0.146	0.386	0.785	0.207	0.516
	(2.274)	(2.019)	(2.074)	(0.760)	(0.725)	(0.756)	(0.911)	(0.828)	(0.737)
Slave exports (Land)		-0.339***	-0.349***		-0.089**	-0.082**		-0.131***	-0.113***
		(0.102)	(0.108)		(0.036)	(0.039)		(0.041)	(0.038)
Not Colonised			-3.531			-0.323			-1.498
			(2.764)			(1.054)			(1.029)
Britan			-3.625*			-0.291			-1.136
			(2.059)			(0.785)			(0.766)
France			-4.421**			-0.519			-2.041**
			(2.052)			(0.782)			(0.763)
Portugal			-2.506			-1.178			-1.838*
			(2.478)			(0.942)			(0.919)
Belgium			-5.515**			-1.390			-2.439***
			(2.486)			(0.896)			(0.874)
Constant	3.375	7.238***	11.894***	4.088***	5.033***	5.137***	2.810***	4.197***	5.888***
	(2.312)	(2.306)	(3.075)	(0.768)	(0.811)	(1.134)	(0.920)	(0.925)	(1.107)
N	33	33	33	37	37	37	37	37	37
R-sqr	0.033	0.307	0.474	0.079	0.226	0.387	0.130	0.338	0.617
adjR-sqr	-0.067	0.208	0.269	-0.004	0.130	0.183	0.051	0.255	0.489
F	0.331	3.101	2.306	0.948	2.340	1.898	1.644	4.086	4.830
dfres	29	28	23	33	32	27	33	32	27
BIC	158.357	150.860	159.225	99.335	96.512	105.924	112.774	106.272	104.099
Oster's δ		1.129	2.204		1.753	2.140		1.466	1.907

* p<0.10, ** p<0.05, *** p<0.010

Table 3: Institutional effects of slave exports – slave exports (population)

	Military government			Property Right Protection			Composite Institutions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Agricultural land	-0.278	-0.443	-1.398	0.840	0.784	0.621	0.977	0.904	0.310
	(2.093)	(1.935)	(1.961)	(0.676)	(0.632)	(0.639)	(0.811)	(0.747)	(0.651)
Trade	-0.271	-1.127	-1.946	0.324	0.097	-0.087	0.545	0.253	0.023
	(1.084)	(1.060)	(1.169)	(0.356)	(0.345)	(0.382)	(0.427)	(0.408)	(0.390)
Education	2.204	0.906	0.999	0.247	-0.204	0.349	0.785	0.204	0.511
	(2.274)	(2.166)	(2.218)	(0.760)	(0.733)	(0.753)	(0.911)	(0.867)	(0.768)
Slave exports (Pop)		-0.284**	-0.311**		-0.092**	-0.090**		-0.118**	-0.105**
		(0.116)	(0.125)		(0.038)	(0.041)		(0.045)	(0.042)
Not Colonised			-4.538			0.000			0.000
			(2.915)			(.)			(.)
Britan			-4.517*			0.028			0.405
			(2.191)			(0.785)			(0.800)
France			-5.250**			-0.158			-0.474
			(2.166)			(0.758)			(0.772)
Portugal			-3.429			-0.771			-0.286
			(2.591)			(0.912)			(0.930)
Belgium			-6.192**			-1.114			-0.911
			(2.667)			(0.915)			(0.932)
Constant	3.375	8.193***	14.162***	4.088***	5.641***	5.427***	2.810***	4.806***	4.911***
	(2.312)	(2.904)	(3.745)	(0.768)	(0.960)	(1.244)	(0.920)	(1.135)	(1.267)
N	33	33	33	37	37	37	37	37	37
R-sqr	0.033	0.204	0.400	0.079	0.223	0.394	0.130	0.286	0.586
adjR-sqr	-0.067	0.090	0.166	-0.004	0.126	0.192	0.051	0.197	0.448
F	0.331	1.789	1.707	0.948	2.294	1.948	1.644	3.202	4.249
dfres	29	28	23	33	32	27	33	32	27
BIC	158.357	155.451	163.565	99.335	96.679	105.546	112.774	109.082	106.948
Oster's δ		1.296	3.060		1.577	2.041		1.530	1.901

* p<0.10, ** p<0.05, *** p<0.010
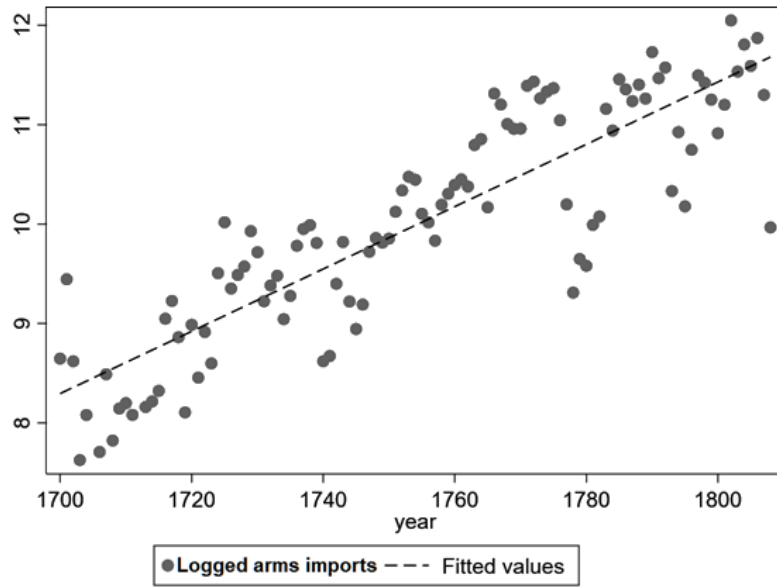
Figure 3: Logged Arms import
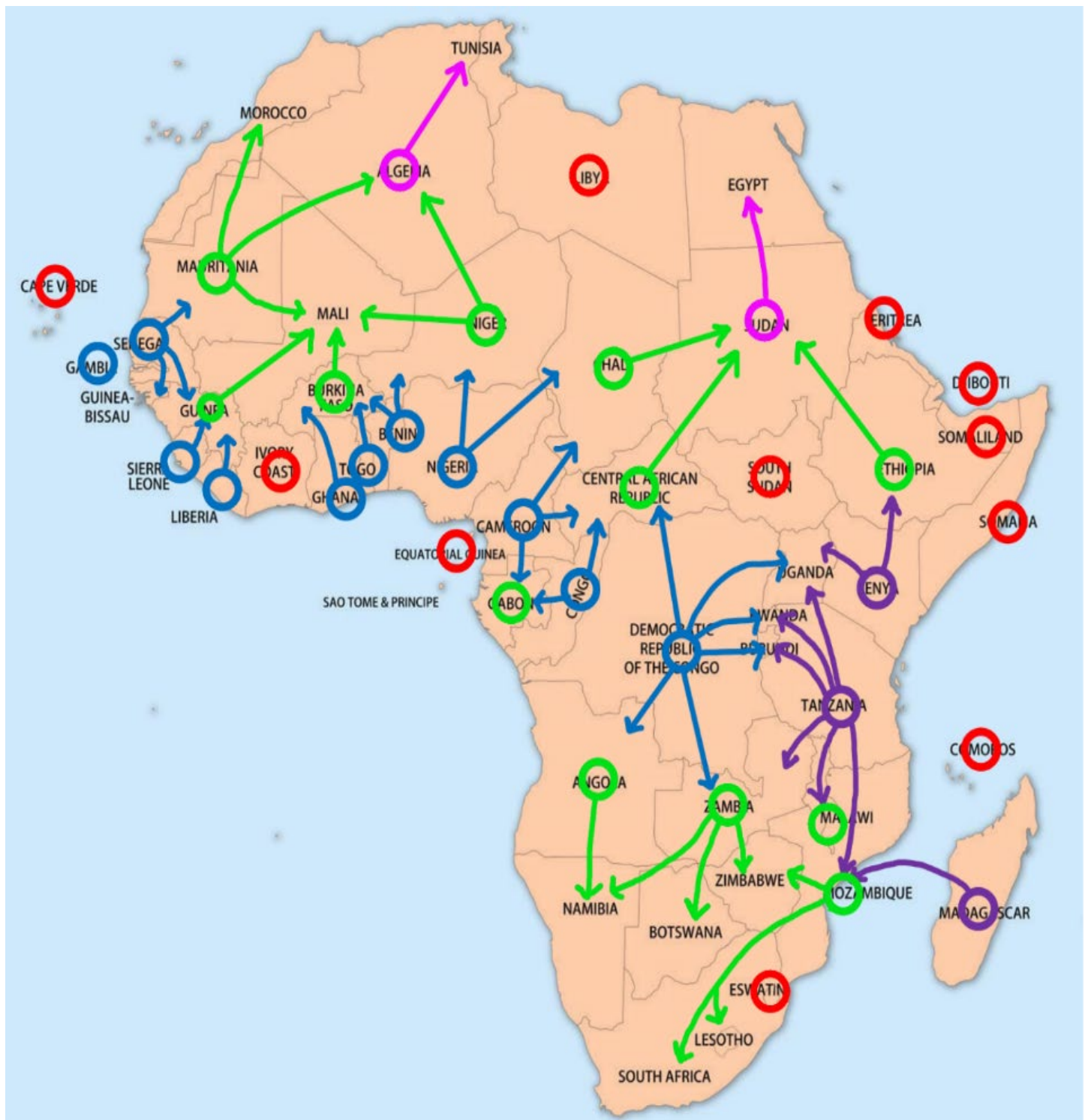
Figure 4: Flow of Imported Arms
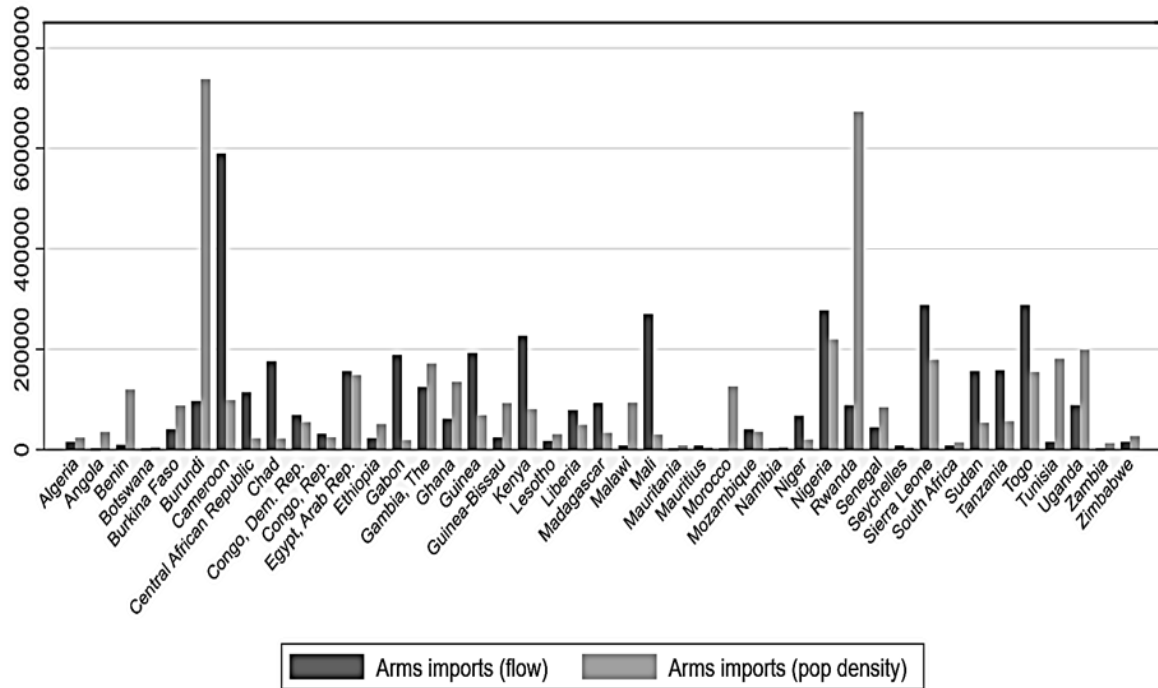
Figure 5: Arms Imports per Country

Table 4: Descriptive Statistics, arms import data.

Variable	Obs	Mean	Std. Dev.	Min	Max
Arms import (flow)	2,064	96593.6	116049.7	102.1193	589294.5
Logged arms import (flow)	2,064	10.37026	1.988929	4.626142	13.28668
Arms Import (Density)	2,064	99488.28	146560.1	3541.012	737933.3
Logged arms Import (Density)	2,064	10.78437	1.261459	8.172168	13.51161

Table 5: Institutional effects of slave exports, IV: Nunn Instrument (distance) and Arms Import (Flow)

	Military government		Property Right Protection		Composite Institutions	
	(1)	(2)	(3)	(4)	(5)	(6)
Slave exports (Land)	-0.351**	-0.311***	-0.126**	-0.088*	-0.213***	-0.162***
	(0.143)	(0.112)	(0.058)	(0.046)	(0.069)	(0.046)
Agricultural land	-0.219	-1.184	0.892	0.714	1.064	0.434
	(1.662)	(1.534)	(0.595)	(0.548)	(0.708)	(0.551)
Trade	-1.574	-2.081**	-0.096	-0.125	-0.167	-0.274
	(1.011)	(0.970)	(0.368)	(0.359)	(0.438)	(0.360)
Education	0.532	0.976	-0.307	0.373	-0.153	0.408
	(1.929)	(1.747)	(0.715)	(0.650)	(0.851)	(0.653)
Not Colonised		-3.696		-0.294		-1.268
		(2.332)		(0.914)		(0.918)
Britan		-3.693**		-0.279		-1.036
		(1.728)		(0.674)		(0.678)
France		-4.532***		-0.499		-1.884***
		(1.729)		(0.676)		(0.680)
Portugal		-2.773		-1.134		-1.484*
		(2.128)		(0.838)		(0.842)
Belgium		-5.518***		-1.391*		-2.445***
		(2.080)		(0.766)		(0.769)
Constant	7.371***	11.596***	5.418***	5.176***	5.061***	6.195***
	(2.453)	(2.628)	(0.911)	(0.990)	(1.084)	(0.995)
N	33	33	37	37	37	37
R-sqr	0.307	0.472	0.202	0.387	0.257	0.593
adjR-sqr	0.208	0.265	0.102	0.183	0.164	0.458
First stage: dependent variable: slave export (land)						
Atlantic distance	-2.223	-8.692*	-2.758	-7.914*	-2.758	-7.914*
	(4.581)	(4.156)	(4.627)	(4.422)	(4.627)	(4.422)
Indian distance	0.884	0.201	0.766	0.247*	0.766	0.247
	(0.901)	(0.745)	(0.939)	(0.833)	(0.939)	(0.833)
Saharan distance	2.378**	1.520	1.892*	1.093	1.892*	1.093
	(1.052)	(0.975)	(1.089)	(1.084)	(1.089)	(1.084)
Red Sea distance	-0.612	-2.947**	0.111	-1.700	0.111	-1.700
	(3.354)	(2.767)	(3.467)	(3.040)	(3.467)	(3.040)
Arms Import (Flow)	0.733**	0.822***	0.631**	0.777**	0.631*	0.777**
	(0.331)	(0.284)	(0.329)	(0.302)	(0.329)	(0.302)
Constant	1.202	8.152	1.301	4.108	1.301	4.108
	(13.841)	(11.465)	(13.872)	(12.390)	(13.872)	(12.390)
F-stat	3.84	5.18	3.10	3.76	3.10	3.76
Hausman p-value	0.922	0.648	0.470	0.873	0.150	0.184

Table 6: Institutional effects of slave exports, IV: Nunn Instrument (distance) and Arms Import (Density)

	Military government		Property Right Protection		Composite Institutions	
	(1)	(2)	(3)	(4)	(5)	(6)
Slave exports (Land)	-0.357**	-0.327***	-0.123**	-0.074	-0.182***	-0.131***
	(0.149)	(0.114)	(0.060)	(0.047)	(0.069)	(0.046)
Agricultural land	-0.218	-1.192	0.890	0.710	1.052	0.426
	(1.662)	(1.531)	(0.594)	(0.548)	(0.684)	(0.537)
Trade	-1.597	-2.156**	-0.085	-0.067	-0.064	-0.141
	(1.024)	(0.974)	(0.371)	(0.360)	(0.427)	(0.353)
Education	0.503	0.927	-0.292	0.403	-0.017	0.478
	(1.941)	(1.746)	(0.716)	(0.650)	(0.826)	(0.636)
Not Colonised		-3.624		-0.358		-1.415
		(2.330)		(0.914)		(0.895)
Britan		-3.663**		-0.306		-1.100*
		(1.725)		(0.675)		(0.660)
France		-4.483***		-0.543		-1.985***
		(1.727)		(0.677)		(0.663)
Portugal		-2.656		-1.233		-1.711**
		(2.130)		(0.840)		(0.822)
Belgium		-5.516***		-1.389*		-2.441***
		(2.077)		(0.766)		(0.750)
Constant	7.440***	11.726***	5.382***	5.090***	4.736***	5.998***
	(2.502)	(2.630)	(0.922)	(0.991)	(1.063)	(0.970)
N	33	33	37	37	37	37
R-sqr	0.306	0.473	0.206	0.387	0.307	0.614
adjR-sqr	0.207	0.267	0.107	0.182	0.220	0.485
First stage: dependent variable: slavery export (land)						
Atlantic distance	-4.778	-9.644**	-4.866	-8.596*	-4.866	-8.596*
	(4.343)	(4.246)	(4.375)	(4.440)	(4.375)	(4.440)
Indian distance	0.089	-0.562	0.099	-0.449	0.099	-0.449
	(0.891)	(0.770)	(0.924)	(0.844)	(0.924)	(0.844)
Saharan distance	2.802**	2.797**	2.249*	2.270*	2.249*	2.270*
	(1.165)	(1.115)	(1.168)	(1.186)	(1.168)	(1.186)
Red Sea distance	-2.418	-4.571	-1.519	-3.275	-1.519	-3.275
	(3.159)	(2.655)	(3.204)	(2.848)	(3.204)	(2.848)
Arms Import (Density)	1.344*	1.771**	1.110	1.652**	1.110	1.652**
	(0.753)	(0.698)	(0.689)	(0.690)	(0.689)	(0.690)
Constant	4.616	6.549	5.048	2.930	5.048	2.930
	(14.386)	(12.673)	(13.650)	(13.077)	(13.650)	(13.077)
F-stat	3.43	4.71	2.88	3.60	2.88	3.60
Hausman p-value	0.8911	0.8083	0.5339	0.8493	0.3984	0.6484

* $p<0.10$, ** $p<0.05$, *** $p<0.010$

Table 7: Institutional effects of slave exports – slave exports dummy

	Military government			Property Right Protection			Composite Institutions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Slave exports(dummy)	-1.909***	-0.818	-1.030*	-0.469**	-0.193	-0.260	-1.090***	-0.514*	-0.562*
	(0.484)	(0.502)	(0.593)	(0.193)	(0.209)	(0.226)	(0.259)	(0.266)	(0.288)
Agricultural land	-0.125	-1.047	-1.091	0.025	-0.247	-0.221	0.035	-0.533	-0.531
	(1.032)	(0.971)	(0.998)	(0.402)	(0.400)	(0.396)	(0.539)	(0.509)	(0.505)
Trade	1.553***	1.181**	1.173**	0.365*	0.252	0.201	0.729**	0.493*	0.450*
	(0.539)	(0.503)	(0.519)	(0.212)	(0.209)	(0.208)	(0.284)	(0.265)	(0.265)
Education	1.843	2.658*	2.874*	0.031	0.292	0.632	0.520	1.063	1.291
	(1.697)	(1.572)	(1.689)	(0.659)	(0.645)	(0.677)	(0.884)	(0.820)	(0.862)
Not Colonised		2.161***			0.567***			1.184**	
		(0.458)			(0.189)			(0.241)	
Britan			-1.215**			-0.090			-0.476*
			(0.550)			(0.221)			(0.281)
France			-			-			-
			(0.719)			(0.268)			(0.341)
Portugal			-1.584			-0.575			-1.000*
			(1.063)			(0.401)			(0.510)
Belgium			-2.280			-1.208**			-1.821**
			(1.728)			(0.579)			(0.738)
Spain			-			-			-
			(0.659)			(0.269)			(0.343)
Other			-1.825*			-0.300			-0.716
			(1.040)			(0.425)			(0.542)
Constant	4.210**	2.921*	4.775**	5.176***	4.826***	5.038***	4.566***	3.835**	4.743***
	(1.859)	(1.733)	(1.825)	(0.722)	(0.710)	(0.731)	(0.969)	(0.903)	(0.931)
N	124	124	124	131	131	131	131	131	131
R-sqr	0.184	0.313	0.323	0.069	0.132	0.198	0.171	0.306	0.357
adjR-sqr	0.156	0.284	0.263	0.040	0.097	0.132	0.145	0.278	0.304
F	6.690	10.765	5.390	2.352	3.794	2.972	6.512	10.998	6.676
dfres	119	118	113	126	125	120	126	125	120
BIC	581.731	565.104	587.441	375.211	371.013	384.914	452.333	434.062	448.255
Oster's δ		1.251	1.092		1.245	1.462		1.401	1.250

* p<0.10, ** p<0.05, *** p<0.010

Table 8: Descriptive Statistics, Growth Estimations

Variable	Obs	Mean	Std. Dev.	Min	Max	Data Source
Logged GDP per capita	1,942	6.427	1.070	4.054	9.686	WDI
Trade exposure	1,806	0.637	0.325	0.063	3.1131	WDI
Agricultural land	1,951	0.435	0.203	0.024	0.835	WDI
Child mortality	2,025	140.115	75.234	13.7	375.8	WDI
Government consumption	1,620	17.719	7.407	1.678	49.023	Fraser Database
Education	1,410	0.306	0.243	0.010	1.160	WDI

Table 9: Effects of militarism on Income, FE, IV and GMM estimations

	Fixed effects estimations				IV estimations		GMM estimation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Education	-0.228	-0.079	-0.297	-0.200	-0.490*	-0.307	-1.786*
	(0.199)	(0.192)	(0.198)	(0.187)	(0.283)	(0.224)	(0.948)
Trade	-0.090	-0.235**	-0.043	-0.197**	-1.556***	-0.315***	-0.560*
	(0.099)	(0.095)	(0.096)	(0.090)	(0.501)	(0.118)	(0.320)
Child Mortality	0.002*	0.002*	0.001	0.001	0.002	0.001	0.005*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Agricultural land	-1.318**	-1.598***	-1.316***	-1.479***	-0.731	-1.259***	-2.611
	(0.611)	(0.587)	(0.467)	(0.445)	(0.719)	(0.487)	(2.222)
Gov Consumption	0.008	0.007	0.011*	0.011**	-0.008	0.012**	0.019**
	(0.006)	(0.005)	(0.006)	(0.005)	(0.009)	(0.005)	(0.010)
Military Gov		0.031**		0.048***	1.059***	0.148***	0.121**
		(0.013)		(0.014)	(0.361)	(0.043)	(0.052)
Slave exports (dum)			-1.564***	-1.388***		-0.752**	-1.656*
			(0.229)	(0.292)		(0.376)	(0.904)
Military*Slave exports				-0.045*		-0.142***	-0.255*
				(0.026)		(0.045)	(0.155)
Constant	6.579***	7.280***	6.869***	7.430***	2.246	6.855***	12.053***
	(0.351)	(0.360)	(0.333)	(0.322)	(1.857)	(0.362)	(1.218)
N	4518	3915	4518	3915	3915	3915	3839
R-sqr	0.827	0.804	0.8261	0.8039	0.1648	0.7710	.
adjR-sqr	0.825	0.802	0.2433	0.4351	0.3566	0.5301	.

* p<0.10, ** p<0.05, *** p<0.010

Appendix

Table A1: Country list. Countries marked with S are African Countries suffered from slavery (Nunn 2008).

Country	Dummy	Country	Dummy	Country	Dummy	Country	Dummy
Albania		Denmark		Lebanon		Serbia	
Algeria	S	Dominican Republic		Lesotho	S	Seychelles	S
Angola	S	Ecuador		Liberia	S	Sierra Leone	S
Argentina		Egypt, Arab Rep.	S	Lithuania		Singapore	
Armenia		El Salvador		Luxembourg		Slovak Republic	
Australia		Estonia		Madagascar	S	Slovenia	
Austria		Ethiopia	S	Malawi	S	South Africa	S
Azerbaijan		Fiji		Malaysia		Spain	
Bahamas, The		Finland		Mali	S	Sri Lanka	
Bahrain		France		Malta		Sudan	S
Bangladesh		Gabon	S	Mauritania	S	Suriname	
Barbados		Gambia, The	S	Mauritius	S	Sweden	
Belarus		Georgia		Mexico		Switzerland	
Belgium		Germany		Moldova		Syrian Arab Republic	
Belize		Ghana	S	Mongolia		Tajikistan	
Benin	S	Greece		Montenegro		Tanzania	S
Bhutan		Guatemala		Morocco	S	Thailand	
Bolivia		Guinea	S	Mozambique	S	Togo	S
Bosnia and Herzegovina		Guinea-Bissau	S	Myanmar		Trinidad and Tobago	
Botswana	S	Haiti		Namibia	S	Tunisia	S
Brazil		Honduras		Nepal		Turkey	
Brunei Darussalam		Hong Kong SAR, China		Netherlands		Uganda	S
Bulgaria		Hungary		New Zealand		Ukraine	
Burkina Faso	S	Iceland		Nicaragua		United Arab Emirates	
Burundi	S	India		Niger	S	United Kingdom	
Cabo Verde		Indonesia		Nigeria	S	United States	
Cambodia		Iran, Islamic Rep.		Norway		Uruguay	
Cameroon	S	Iraq		Oman		Venezuela, RB	
Canada		Ireland		Pakistan		Vietnam	
Central African Republic	S	Israel		Panama		Yemen, Rep.	
Chad	S	Italy		Paraguay		Zambia	
Chile		Jamaica		Peru		Zimbabwe	
China		Japan		Philippines			
Colombia		Jordan		Poland			
Congo, Dem. Rep.	S	Kazakhstan		Portugal			
Congo, Rep.	S	Kenya	S	Qatar			
Costa Rica		Korea, Rep.		Romania			
Cote d'Ivoire	S	Kuwait		Russian Federation			
Croatia		Kyrgyz Republic		Rwanda	S		
Cyprus		Lao PDR		Saudi Arabia			
Czech Republic		Latvia		Senegal	S		

Table A2: Institutional effects of slave exports, FE – slave exports (land) – average 2000-2009

	Military government			Property Right Protection			Composite Institutions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Agricultural land	0.238	0.326	0.049	0.913	0.924	1.104*	0.659	0.679	0.309
	(1.981)	(1.695)	(1.784)	(0.606)	(0.587)	(0.613)	(0.811)	(0.747)	(0.645)
Trade	0.148	-0.817	-0.567	0.275	0.122	0.070	0.226	-0.066	-0.074
	(1.078)	(0.960)	(1.178)	(0.342)	(0.342)	(0.414)	(0.459)	(0.435)	(0.436)
Education	1.150	-0.654	-0.695	0.337	0.076	0.208	1.223	0.725	0.545
	(1.966)	(1.755)	(1.821)	(0.638)	(0.634)	(0.643)	(0.854)	(0.807)	(0.677)
Slave exports (Land)		-0.344***	-0.280**		-0.061*	-0.049		-0.117***	-0.089**
		(0.095)	(0.109)		(0.033)	(0.038)		(0.042)	(0.040)
Not Colonised			-4.645			-0.411			-2.227*
			(3.072)			(1.124)			(1.184)
Britan			-3.211			-0.309			-1.265
			(2.101)			(0.772)			(0.813)
France			-3.778*			-0.272			-2.150**
			(2.121)			(0.777)			(0.819)
Portugal			-4.421*			-1.138			-2.513**
			(2.461)			(0.900)			(0.948)
Belgium			-4.218			-0.909			-2.706***
			(2.500)			(0.867)			(0.913)
Constant	3.832*	7.635***	10.917***	3.786***	4.386***	4.555***	2.468***	3.610***	5.695***
	(1.973)	(1.989)	(2.909)	(0.609)	(0.673)	(1.034)	(0.815)	(0.857)	(1.089)
N	37	37	37	41	41	41	41	41	41
R-sqr	0.015	0.301	0.399	0.097	0.175	0.294	0.107	0.264	0.569
adjR-sqr	-0.074	0.214	0.199	0.023	0.083	0.090	0.035	0.182	0.444
F	0.169	3.444	1.994	1.320	1.907	1.437	1.482	3.221	4.547
dfres	33	32	27	37	36	31	37	36	31
BIC	176.670	167.597	180.047	103.906	103.910	116.058	127.873	123.698	120.299
Oster's δ		0.408	1.277		2.646	1.839		1.667	1.752

* p<0.10, ** p<0.05, *** p<0.010

Table A3: Institutional effects of slave exports, FE – slave exports (population) – average 2000-2009

	Military government			Property Right Protection			Composite Institutions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Agricultural land	0.238	-0.003	-0.132	0.913	0.828	1.031	0.659	0.512	0.195
	(1.981)	(1.811)	(1.876)	(0.606)	(0.589)	(0.612)	(0.811)	(0.764)	(0.655)
Trade	0.148	-0.522	-0.213	0.275	0.160	0.075	0.226	0.027	-0.009
	(1.078)	(1.014)	(1.217)	(0.342)	(0.338)	(0.406)	(0.459)	(0.438)	(0.434)
Education	1.150	-0.265	-0.450	0.337	0.093	0.213	1.223	0.801	0.589
	(1.966)	(1.868)	(1.904)	(0.638)	(0.632)	(0.638)	(0.854)	(0.819)	(0.683)
Slave exports (Pop)		-0.301***	-0.234*		-0.064*	-0.056		-0.111**	-0.087*
		(0.109)	(0.123)		(0.035)	(0.040)		(0.045)	(0.043)
Not Colonised			-5.794*			0.000			0.000
			(3.137)			(.)			(.)
Britan			-3.983*			0.104			1.033
			(2.171)			(0.866)			(0.928)
France			-4.494**			0.171			0.184
			(2.185)			(0.836)			(0.896)
Portugal			-5.339**			-0.673			-0.196
			(2.508)			(0.920)			(0.985)
Belgium			-4.746*			-0.534			-0.425
			(2.623)			(1.025)			(1.097)
Constant	3.832*	8.803***	12.441***	3.786***	4.780***	4.513***	2.468***	4.181***	3.849***
	(1.973)	(2.551)	(3.465)	(0.609)	(0.798)	(1.278)	(0.815)	(1.035)	(1.369)
N	37	37	37	41	41	41	41	41	41
R-sqr	0.015	0.204	0.341	0.097	0.175	0.301	0.107	0.236	0.559
adjR-sqr	-0.074	0.104	0.121	0.023	0.083	0.099	0.035	0.151	0.431
F									
dfres	0.169	2.047	1.552	1.320	1.908	1.487	1.482	2.773	4.363
BIC	33	32	27	37	36	31	37	36	31
Oster's δ		0.508	1.550		2.289	1.847		1.734	1.777

* p<0.10, ** p<0.05, *** p<0.010