An expansion of history:

Pre-colonial order, public goods provision, and the realities of historical change across the 20th century in Nigeria

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Abstract

This paper investigates the relative importance of pre-colonial institutional capacity on long term development outcomes in an African context. It firstly questions the approach, often used in economic history, that relies on statistical regression analyses spanning a considerable time periods (the so-called 'compression of history'), and secondly the use of data from the Murdock ethnographic atlas to accurately capture the realities of pre-colonial Africa. We construct a new measure of pre-colonial institutional capacity based on North et al. (2009) and apply a decade by decade analysis of public goods provision to a case study of Nigeria from 1900-2010. We use data on education, health and public works at a provincial level from a variety of colonial, missionary and Nigerian state sources. Our results provide evidence that colonial-era investments were strongly influenced by pre-colonial conditions and showed strong path dependency until the independence era. However, contrary to other studies, instead of finding evidence of early colonial investments or pre-colonial centralisation impacting on current outcomes, we found that the post-colonial era saw a break in the pattern developed earlier in the century and demonstrate that this was due to factors unique to Nigeria. This suggests that future research on long term change in Africa should take local and temporal complexity into account when investigating the impacts of past variables on present day outcomes.

1. Introduction

The recent news that the leader of South Sudan's opposition and rebel movement was seen reading a copy of *Why Nations Fail* (Acemoglu and Robinson 2012) in order to "to reflect on whether he is making the right decisions"[1] is evidence of the wide ranging influence of the New Institutional Economics (NIE). This strand of academic thought sees weak institutional arrangements as being ultimately the most significant barrier to economic growth (Acemoglu, Johnson, and Robinson 2005, Rodrik, Subramanian, and Trebbi 2004). Proponents have argued that weak states which cannot or will not protect property rights and functioning markets will be unable to provide their citizens with the public goods necessary for long term development (Acemoglu and Robinson 2010). Within the case of Africa, one important strand of this literature has suggested that areas which had greater levels of centralisation in the precolonial era have, since independence seen better levels of public goods provision through a greater state capacity. (Gennaioli and Rainer 2007, Michalopoulos and Papaioannou 2013, Osafo-Kwaako and Robinson 2013, Englebert 2000). However, to define state centralization (both in the pre and post-colonial eras) in the context of Africa is problematic as measures such as population density which have served as a suitable proxy in Europe and Asia (see for example, (Huillery 2011) have been found to be unsatisfactory (Osafo-Kwaako and Robinson 2013). To solve this problem, economic historians (including all those cited above) have used a variable from either the Murdock Standard Cross Cultural (Murdock and White 1969) or an updated version maintained by Douglas White at UC Irvine[2]. The Cross Cultural Sample was a wide scale work of anthropological investigation which assigned codes and numbers to various ethnic groups around the world.

By entering this variable into large cross country regressions some scholars have claimed to have found that pre-colonial centralisation 'correlates significantly with regional development' (Michalopoulos and Papaioannou 2013). This supports earlier work by Gennaioli and Rainer (2007) who suggest that the more centralised a particular ethnic groups' precolonial institutions the more effectively local chiefs would handle public goods provision due to higher levels of accountability. Likewise (Englebert 2000) argues that the greater the divergence between post-colonial and precolonial state institutions the more likely it would be that elites would choose to follow neo-patrimonial policies with less favourable development outcomes. While this research does provide some very plausible mechanisms for explaining long term development in Africa, their conclusions are somewhat weakened by flaws in both their methodology and data.. Firstly, the cross cultural samples and Murdock's ethnographic atlas do not accurately capture data on *pre*-colonial centralisation. Secondly, the cross country regressions are often able to account for intra/within-country differences and which means their conclusions have therefore few practical applications. Thirdly, and perhaps most importantly , the 'compression of history' approach which seeks to link two points in time without considering the complexities of historical change in the intervening period. This has been applied not only to the issue of public goods provision and development but also modern day outcomes in terms of wealth (Acemoglu, Johnson, and Robinson 2000), African hostility and European settlement (Huillery 2011) and slave trade and GDP/capital and trust (Nunn and Wantchekon 2009). This paper will argue that such papers pay insufficient attention to the historical process and suggests an alternative approach to investigating the impact of past variables on present day outcomes.

The principle weakness of the Murdock and White's cross cultural sample for capturing the reality of *pre*-colonial political centralization is that the majority of the sources and observations upon which the

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data is based are dated from at least a quarter century after the advent of European rule and many from the 1950s and 1960s. We argue that colonial government had a profound impact on societies within Africa and therefore the institutions of particular areas on the eve of independence were very different from those before the 'Scramble for Africa' began. . This paper will suggest a new approach that attempts to more accurately capture the reality of local *pre*-colonial institutions. We create a taxonomy based on North (2009), which can be applied to analysis of both primary and secondary sources to analyse the reality of local pre-colonial political institutions in greater detail. The paper is based on a case study of Nigeria, chosen as it contains within its borders a very broad range of political, social and geographic variations (Falola and Heaton 2008). The modern country of Nigeria contained within its pre-colonial boarders the Sokoto caliphate, one of the most powerful and centralised indigenous African states of the 19th century as well as smaller political entities such as the Yoruba successor states, and the so called 'acephalous' regions of the South-East. Different regions were integrated into both the Atlantic and Saharan economies and inter regional trade was long established. In addition the country has had a range of religious traditions from a relatively long established tradition of Islam in the north, a missionary led adoption of Christianity in the south and many areas where local religions have survived or been integrated into the imported Abrahamic traditions. Our analysis showed a number of key differences from the Murdock data, showing certain areas with considerably higher institutional capacity than that suggested by the Cross Cultural Sample which potentially has a substantial impact on present day outcome.

Our case study approach also highlights another weakness of cross country regressions, where a territory which contains the complexity of modern day Nigeria can be reduced to a single unit (e.g. Nunn). Even in cases where localised complexity is taken into account, by for example using the Murdock data, the end results are correlations which work for the entire sample. Inevitably the conclusions drawn from such results will have little to say about the realities of specific areas. In the case of our study, we find very different results across Nigeria from those suggested in the cross-country regressions. Of course, there is use in having certain generalised hypothesis to test in more localised case studies but an alternative approach would be to conduct more inductive research which formulates theory on the basis of more focused, area specific studies. Furthermore, we question the validity of using econometric techniques which link variables in the past to present day outcomes – an approach which some scholars have aptly framed as a 'compression of history' (Austin 2008, Hopkins 2009). The principle weakness of such studies, is that there is the assumption that certain factors such as institutions can retain a consistent influence on an outcome such as public goods provision. The succession of economic, political and military shocks with followed the imposition, establishment and end of colonialism in the less than the space of a single lifetime make it crucial to more thoroughly test this assumption. This study therefore analyses patterns of change on a decade by decade basis from 1900 until 2000. In line with some other recent studies (Acemoglu et al. 2014, Bezemer, Bolt, and Lensink 2014), we find that pre-colonial path dependency only continued until the 1950s at which point a very different pattern of investment and development began to emerge due to the failure of the post-colonial state.

Our paper seeks to make several contributions towards the literature. Firstly, we propose a newly constructed means of measuring pre-colonial centralisation following (North, Wallis, and Weingast 2009). We apply it to the case of Nigeria, but this approach could be also used for other countries in Africa as opposed to relying on the Murdock cross cultural sample and atlas. Secondly, we have collected and analysed, on a decade by decade basis, an extensive dataset for over a century of Nigerian public goods provision at a regional level. This has provided evidence to argue against the compression of history literature, and for more localised studies which take the complexities of historical change into account. This paper is organized as follows. In section 2 we summarize our critique of the Ethnographic

Atlas and the 'compression of history' literature. Section 3 introduces the taxonomy, the data and outlines our methodology. Section 4 presents the empirical results. Section 5 zooms in further and provides some case-specific explanations. The conclusions ensue.

2. Critique of the Ethnographic Atlas and the compression of history approach

2.1   The Ethnographic Atlas and Precolonial Centralisation

For the purposes of illustration we will provide a sample from the Murdock Atlas for four ethnic groups in Nigeria from the north, south west and south east of the country (Table 1). The data in the atlas is organised by codes, the most relevant for the purposes of this study are 32 (Jurisdictional Hierarchy) and 67 (Class stratification) as they are used as markers of precolonial centralisation.[3,4]

Table 1. *Sample ethnic groups Nigeria, Murdock Atlas.*

Observation Date	Ethnic Groups	32 R	32 Tr	Class Stratification (#67)	Colonial Province
N/A	Hausa	2	3	Wealth Distinctions	Kana, Sokoto, Katsina, Bornu
1950	Ibo	1	4	Absence among freeman	Calabar, Owerri, Ontisha
1950	Yoruba	3	4	Complex social classes	Oyo
1950	Ekiti	3	4	Dual hereditary aristocracy	Ondo

The first and perhaps most important feature to note is that Murdock's Atlas does not present a measure of institutional difference in the pre-colonial period and instead uses observations from around 1870 till 1960, ca 90 years. This has already been noted by Whately and Henderson (2013) who state that the data '...*is neither panel, not cross-sectional, but the trend has been to ignore this temporal heterogeneity despite the fact that it is possible that a group observed in, for example 1870 will systematically differ in certain ways from a group observed in, for example, 1930*'. In the case of Nigeria the differences in this regard are striking. 71% of observations included by Murdock occurred after 1920 and 22% after 1940.[5] Michalopoulos and Papaioannou (2013) deal explicitly with this issue by arguing that colonialism had very little practical impact in Africa. Following Herbst (2000), they argue that central government within sub Saharan Africa has always been limited and imposing any degree of

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[3] See for example Gennaioli and Rainer (2007) p7

[4] The Atlas (Murdock 1981) defines the codes as follows:
- **32: Jurisdictional Hierarchy**. The Number of jurisdictional levels in each society is shown by a pair of digits, of which the first (R) indicates the number of levels up to and including the local community, and the second (Tr) those which transcend the community. Thus 20 represents the theoretical minimum, e.g., independent nuclear or polygynous families and autonomous bands or villages, whereas 44 represents the theoretical maximum, e.g., nuclear families, extended families, clan-barrios, villages, parishes, districts, provinces and a complex state. Incidentally the second digit provides a measure of complexity, ranging from 0 for stateless societies, through 1 or 2 for petty and larger paramount chiefdoms or their equivalent, to 3 or 4 for large states.
- **67: Class stratification**. The degree and type of class differentiation, excluding purely political and religious statuses is indicated by the following symbols: C Complex stratification into social classes correlated in large measure with extensive differentiation of occupational statuses, D Duel stratification into hereditary aristocracy and a lower class or ordinary commoners or freeman, E Elite stratification, in which an elite class derives its superior status from, and perpetuates it through scarce resources, particularly land, and is thereby differentiated from a property-less proletariat or serf class, O Absence of significant class distinctions among freemen, W Wealth distinctions, based on possession or distribution of property, present and socially important but no crystallized into distinct and hereditary social classes .

[5] In 18% of cases no dates for the observations were recorded and in only one instance was an observation taken from before 1900.

centralised control. Even in the 20th century this was largely impractical for colonial governments given the limited size of their bureaucracies. This meant that officials were forced to rely on existing elites to govern.

However, while this analysis very much understates the impact of colonialism, especially in the early years of conquest. Taking the case of the Ibos of south eastern Nigeria; in the 1880s the area had a degree of internal cohesion through coalitions of elites. The Aro confederacy regulated inland trade and acted in many areas as an pan regional arbitrator in legal disputes (Northrup 1978). Aro elites maintained links with coastal trading monopolies (the canoe house corporations around Bonny (Wariboko 1998), or Efik trading groups in Old Calabar (Latham 1973), through both of economic ties of dependency and memberships of shared age sets and secret societies (Dike and Ekejiuba 1990). The economy was focused on local exchange but also export agriculture with output determined by local producers and was also heavily dependent on slave labour and exchange (Dike and Ekejiuba 1990). The onset of colonial rule saw the violent destruction of the Aro confederacy (Falola 2009). The coming of missionaries and increasingly assertive European trading concerns, especially in the 1880s and 1890s, undermined local elites and changed existing structures of power, especially with regard to slavery (Latham 1973). Furthermore the imposition of the warrant chief system whereby Europeans claimed the sole right of appointment to chieftaincies led to traditional rulers being ousted by a generation of 'new men', often English speaking and missionary educated, from outside the ruling class (Afigbo 1972). Law and justice was served by native courts, supervised by white officers and economic policy, while not invasive was nonetheless ultimately determined by Britain. Murdock and White (1969) figure in this instance would therefore not be a true representation of pre-colonial Igboland, which could only be arrived at through an analysis of the area in the 1880s.

It is important to stress that it is not our intention to question the accuracy of the observations recorded in Murdock and White's cross cultural sample. Our argument is that as a means of classifying pre-colonial centralisation or institutional capacity they are unsatisfactory. Yet in spite of such weaknesses, this has been the standard measure inputted into econometric regressions by many scholars researching the long term impact of the socio-political context of Africa before the onset of European rule. For example, Gennaioli and Rainer (2007) calculate centralisation on a country level by *"the share of each country's non-European population belonging to centralized ethnic groups."* (p7). Englebert (2000) uses the Atlas to test for *"...the congruence of modern African states vis-a-vis pre-colonial institutions"* (p17). Whatley (2012) makes use of the Atlas to test for the impact of the slave trade on pre-colonial authority, while Fenske (2014) uses it to test whether *"..ecological diversity predicts the existence of centralized states.."* (p4) in the pre-colonial era. Even the more detailed work in the Cross Cultural Sample (Murdock and White 1969) which has been updated by other anthropologists and was recently utilized by Osafo-Kwaako and Robinson (2013) to measure the impact of pre-colonial centralisation, has few pre-colonial observations for Africa and none for Nigeria.

### 2.2   The "Compression of History"

A series of articles, beginning in the 1990s, began to use the econometric cross country regressions in an effort to pinpoint the underlying cause of world economic inequality.[6] In the case of Africa these have come under criticism both for the accuracy/reliability of the data used but also for ignoring much of the reality of historical change, especially at local levels (Hopkins 2009, Austin 2008). In the case, for example, of Nigeria the colonial period saw positive economic growth through a huge expansion of cash

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[6] The most famous example is Acemoglu et al. (2002) which claimed to demonstrate that it was the failure of certain parts of the world to adopt European / North American institutional arrangements that led to current day world income disparities. In the case of Africa such studies have looked at, among other topics, the impact of geography (Gallup et al. 1999), ethno linguistic fragmentation (Easterly & Levine 1997) and the slave trade (Nunn 2008)

crop production and a general improvement in certain welfare indicators (Austin 2008 p4), which would not figure in the regressions of Acemoglu et al (2002).[7] Furthermore it is questionable exactly how much faith can be put in the quantitative conclusions of studies whose data selection is subject to a great deal of qualitative judgement. In a recent working paper which analysed Nunn's findings that areas most effected by the slave trade suffered greater poverty today, Bottero and Wallace (2013) found that similar results are possible if slave exports are regressed with Italian economic performance. This is not however to reject the potential value of using econometrics to analyse African development. As Fenske (2010) has demonstrated regressions and other econometric tools have been utilised by both historians, social scientists and economists to provide valuable insights into many areas of African history. However, we argue that applying such tools to the task of isolating a particular variable in the past and estimating its impact in the present can produce misleading results.

To take two examples, starting with Michalopoulos and Papaioannou (2013) who find a statistically significant correlation between the level of pre-colonial centralisation (following Murdock) and present day wealth. As a proxy for wealth they use the light density from satellite images in the different ethnic regions as mapped by the ethnographic atlas (Figure 1a). However when examined at the level of our case study the results become less convincing. There is no different in light density between the decentralised Ibo and Hausa regions and the more centralised Yorubas (Figure 1b) and this is not even taking into account the weakness of the Murdock Atlas.

Figure 1 (a) *Average light density 2007 – 2008 across ethnic groups* and **Figure 1(b)** *Light Density and Pre-Colonial Centralisation in Nigeria*

	32r	32tr
Ibo	4	1
Yoruba	4	3
Hausa	2	3
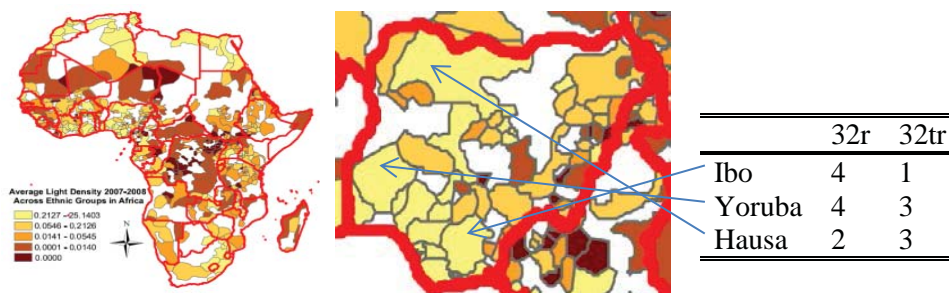
Source: Michalopoulos and Papaioannou (2013)

Another well cited paper is that of Gennaioli and Rainer (2007) who also argue that pre-colonial centralisation predicts better modern day outcomes, but in this instance focusing on education, health and infrastructure. However, their dependent variable data only begins in the 1960s and doesn't take account of the considerable and varied impacts of the colonial period which according to Austin (2008) were profound. Furthermore, the applicability of their conclusions to individual African countries must be questioned as the data for each nation has been aggregated. Thus Nigeria, with its plethora of different polities and political systems is dealt with as a single entity, despite the fact that different areas of the country had very different outcomes in terms of the kinds of public goods provision Gennaioli and Rainer were investigating (see our results below). It is not our intention to question robustness of their results or the quality of their analysis (for this see (Cogneau and Dupraz 2014), however it does stress the need for more localised studies to understand why different countries have very different outcomes.

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[7] Neither, incidentally, would impact of colonial conquest, the first and second world wars, the economic crisis of the 1930s, independence, the Biafra war, military juntas or the impact of modern telecommunications

2.3   The impact of historical change

One element which is often missing from large scale research focusing on long term change across Africa are the impacts of the many changes that occurred in the era of independence and during the often traumatic years following the end of colonial rule. From the end of the second world war until the 1960s, weakened colonial regimes in Europe contended both politically and militarily with rising nationalist demands, leading to significant changes in policy. In addition the first experience of the first generation of African governments was more often than not characterized by disappointment and mismanagement (Meredith 2011). A recent investigation by Acemoglu et al. (2014) into the effects such changes had on areas with different levels of pre-colonial state capacity suggests that a number of different outcomes are possible. For example Uganda contained a strong pre-colonial kingdom, Buganda. Under the British policy of indirect rule the Buganda elites retained much of their power but this led the elected post-coloniel government to take a number of measures to weaken their authority as they were seen as a threat to the new order. Without the legitimacy of the traditional ruling class the new regime was forced to rely more on the military which was conducive to rise of Idi Amin. By contrast, in Sierra Leone the elite that had been established by indirect rule were able to retain power after the departure of the British. This too was to lead to the creation of a weak state with large parts of the population alienated from a ruling class that practised a patrimonial rule in which they were able to use their legitimacy to extract rents from the state. Recently Heldring (2014) has argued that the tradition of strong state capacity in Rwanda was a strong contributing factor to the genocide in 1994 as elites were able to harness this to more efficiently carry out the killing and rely on a greater willingness among the people to obey them. However strong pre-colonial order can also have more positive outcomes as demonstrated by the case of Botswana. Here, pre-colonial elites managed to not only successfully retain power but were to preside over the countries so called 'economic miracle' in the post-colonial era (Hjort 2010).[8]

In the specific case of Nigeria an historical analysis would suggest that pre-colonial political conditions had little impact on provisions of public goods and services across the entirety of the 20th century although they were of importance in the period before WWII. The colonial government was at first committed to maintaining relatively low levels of investment in human capital (such as education and health)[9]. Much of this work was instead carried out by missionaries who were far more active in the Southern provinces than in the North where they faced opposition both from local rulers and the colonial government[10]. By contrast major investment projects in roads and railways were largely focused on improving access to the Northern areas from the coast. This meant that less centralised Southern areas had, by and large, greater numbers of schools and hospitals while the more ordered North saw the greatest improvements in terms of transport. Just as importantly, the actual organisation and distribution of public goods provision was in the hands of a tiny number of officials (supported by the aforementioned, limited

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[8] Acemoglu et al. (2002) explain this this was due to the existence of pre-colonial institutions of private property, which is extended by Hjort (2010) who sees this along with other aspects of Tswana cultures as being responsible. By contrast Hillbom (2011), while not denying that the country has seen impressive rates of growth also points out the role of the elites in promoting inequality and retarding economic development.

[9] This was the *real politiek* at the heart of Lord Lugard's ' Dual Mandate' or indirect rule (see for example (Berry 1992). Lugard had been the first Governor of Southern and then of the entire territory of Nigeria and wrote that British colonial governments should not impose themselves on local populations so as not " *..to forgo the high ideal of leading the backwards races, by their own efforts, in their own way, to raise themselves to a higher plane of social organisation, and tends to perpetuate and stereotype existing conditions"* (Lugard 1922a)

[10] Lord Lugard, wrote it would be "…unwise and unjust to force missions upon the Mohammedan population, for it must be remembered that without the moral support of the Government these missions would not be tolerated. And it they were established by order of the Government the people have some cause to disbelieve the emphatic pledges I have given that their religion shall in no way be interfered with." (Lugard 1919). His successor Sir Percy Girouard, was just as forthright stating that "[p]ersonally I should like to see the Missions withdraw entirely from the Northern States", quoted in Faught (1994), p15

missionary network), with all national decisions ultimately residing either with the governor and a small advisory staff or in the provinces with residents and their district officers[11].

This economic and political situation was to undergo substantial changes in the years leading up to, and beyond independence. The second world war had perversely led to a boom in the Nigerian economy as demands for resources and therefore prices rose. The end of the war not only bought about a severe economic slump but also the return of combat veterans less willing to accept rule by a tiny clique of white men (Falola and Heaton 2008). Rising agitation for change led to increasing recruitment of Nigerians into the civil service but also the rise of regional organisations set up to demand increasing local autonomy and spending, thus providing the roots of the destructive ethnic/regional politics that were to dominate Nigerian life in the latter 20th century (Falola and Heaton 2008). At the same time the colonial government began to break away from the minimalist economic policies that had characterised the early period of British rule and began seriously investing in both human and physical capital. However, this was not accompanied by serious political reform, which meant that decisions about spending allocations were still concentrated in the hands of a relatively small group of unaccountable white officials. Thus at independence the new politicians who took over from the British came to power with the support of their own regions and ethnic groups whilst at the same having few constraints on their exercise of power and patronage (Meredith 2011, Osaghae 1998).[12] Amuwo (2010) has argued that the state was 'programmed to implode by colonialism with all the booby traps of a lopsided federal system and a mono-cultural economy'.

In this new federal system old political structures focused on purely regional or even sub regional concerns became increasingly irrelevant when control over spending rested with the central government. Capturing control over the mechanisms of the state therefore came to be of prime importance. The military coups of Ironsi and Gowom and the Biafran civil war only served to create a precedence of military rule in which state power was increasingly centralised in the hands of ever changing elites with few checks on their powers to distribute largess to consolidate their positions and regimes. Coups and civil conflicts undermined or swept away the power of old elites and although some, such as the Northern Emirs, still held considerable power and prestige, they no longer constituted a dominant political class, even within their former territories. Instead power over the distribution of Nigeria's wealth came to be held by a new breed of military rulers and politicians characterised by policies of regionalism, military federalism and nepotism (Osaghae 1998, Adebanwi and Obadare 2010).

The situation was further complicated by the discovery of oil and, coupled with growing global demand led to a massive expansion of output. The wealth this generated greatly increased the stakes of political power, providing a substantial motivation to elites not only to enrich themselves but also monopolise control of the governmental apparatus. This in turn meant that many in Nigeria came to both acutely distrust central government while at the same greatly fanning the flames of regionalism as articulated by Falola and Heaton (2008) "....*residents in each region increasingly came to fear that other regions intended to use the political system to enrich themselves at the expense of their Nigerian "brothers" in other regions. Under such conditions, it became imperative for parties, once in power to stay in power and for those out of power to either ally with the major party or to wrest control of the government away from that party in the next election, as opposition parties faced the prospect of perennial marginalization*" (p165). The new and chaotic situation was perhaps best summed up by Chinua Achebe in "The Man of the People" (1966). In the aftermath of the downfall protagonist's former

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[11] In the 1930s there were around 463 white administrative officials working in Nigeria (Kirk-Greene 1980), at ratio of 1:54,000 to the population over which they exercised their rule (Austin 2008).

[12] For example the larger population of the Northern regions ensured that its party was able to allocate the bulk of 1962 – 1968 development plan's expenditure in the North (Falola and Heaton 2008, 103).

patron, a minister in a thinly veiled fictionalisation of the first republic he writes; "*Overnight everyone began to shake their heads at the excesses of the last regime, at its graft, oppression and corrupt government: newspapers, the radio, the hitherto silent intellectuals and civil servants – everybody said what a terrible lot; and it became public opinion the next morning. And these were the same people that only the other day had owned a thousand names of adulation, whom praise-singers followed with song and talking-drum wherever they went.*" (p148).

It is therefore easy to see how the period after 1945 saw such a dramatic break in the patterns of public provision investments and why conclusions that there has been strong path dependency from the pre-colonial, and colonial eras until the present day must be treated with a large degree of scepticism, at least in the case of Nigeria. The rest of this paper will examine how quantitative evidence can support this historical analysis.

3. Methodology and Data

3.1 Pre-colonial order taxonomy

Given the weaknesses of the Murdock Atlas it is first necessary to find a new method which can better capture the concept of pre-colonial centralisation in the very unique context of sub-Saharan Africa. Herbst (2000), supported by Osafo-Kwaako and Robinson (2013), argues that definitions for political centralisation developed for a European context are largely unsuitable. In Europe high-density populations and limited, valuable land made conquest both possible and profitable. It also meant that such states needed to be internally cohesive with well-defended borders and the resources of the entire nation harnessed which meant developing relations with and control over a country's hinterlands. Cities became important centres where capital could be raised, for the purposes of trade, defence and aggression. Therefore a successful European state, as defined by Max Weber, was one where a human community was capable of claiming monopoly over the legitimate use of force within a given territory. The instrument of the state relies on legitimacy, but also constitutive elements such as a government, a military force, a territory and the power of an administration to raise taxes from its constituents . Any administration should be able to maintain a satisfactory degree of civil order, be able to secure state's boundaries, issue and control a currency, provide public services and raise public revenues to sustain the administration .

However, Herbst argues that such a definition cannot hold true for pre and even colonial/post-colonial Africa. A number of decisive factors prevented the establishment of the kind of centralised states characteristic of Europe. Firstly the terrain itself prevented the development of efficient infrastructure. Water travel was limited, the wheel often impractical and beasts of burden excluded from much of the continent due to the disease bearing tsetse fly (Alsan 2012). More crucially was the combination of very low populations and huge amounts of unoccupied territory, which always allowed the possibility of simply moving to escape the control of predatory states. Furthermore, much of African agriculture was rain fed, and required little of the investment that might convince populations to turn for the state for capital or protection. This firstly meant that wealth came to be defined by control over people, not land which explains why some states became so powerful through the slave trade. Secondly a state was always a much more fluid and dynamic entity based more on temporary loyalties, coercion and the power of a military elite. Tribute, rather than tax would be paid as long as the centre was powerful enough to project its power to hinterlands that could easily break away. Warfare was often aimed at the capture of humans or booty rather than the more invaluable land and no states were ever able to effectively control either movements of people or money preventing the development of a standard currency.

Instead, successful African states, or more particularly coalitions of elites within a particular territory, were those who were able to broadcast power from areas or centres which they control. An example is the Asante 'state', based around matrilineal kinship ties centred on the king or Asantehene, tightly controlled its central territories in Kumasi and exercised power in ever decreasing circles of influence away from the capital (McCaskie 2003, Herbst 2000). Last (1967) describes a similar system in West Africa's most powerful 19th century state, the Sokoto caliphate. Fulani and Hausa elites, given a sense of unity by the religious, moral and military prestige of the royal house of the first caliph Uthman den Fodio, engaged in near constant warfare to bring new territories into the caliphate's sphere of influence. However, instead of attempting to pacify and control a well-defined territory they instead followed a policy of founding new towns or 'ribats' from which they could broadcast power (through raids, cultural influence or trade) without ever governing the territory in between in the way envisaged by Weber. A further illustration of this logic comes through the 19th century city state of Ibadan. Founded in the aftermath of the collapse of the Oyo empire (Law 1977)it was essentially an armed camp from which powerful military commanders could recruit followers or 'war boys' to conduct predatory raiding. However, it also demonstrated a number of state like characteristics, from the perspective outlined by Herbst. It controlled a fairly substantial territory through appointing its own rulers in conquered towns (the Ijele system (Awe 1964)), it could organise sufficient forces to defend itself against neighbouring powers such as Ilorin (Falola 1985) and could impose tolls on travel along its roads (Falola 1989). Its ability to broadcast power was clearly much effective than the neighbouring Ekiti cities, who were never able to broadcast their power beyond their city walls except briefly at the end of the 19th century (Johnson and Johnson 1921, Lloyd and Cutt 1971). However in the standard cross cultural samples by Murdock these two groups are given equal scores of regional level institutional capacity and even more strikingly the atlas shows the Ekiti as having more complex institutions than the Hausa who were part of the aforementioned Sokoto caliphate (see Table 3).

What is needed therefore is a way of defining the extent to which elites in various African territories could effectively broadcast power and maintain their influence. One approach, which also carries considerable influence within the field of NIE, is that of North, Wallis, and Weingast (2009). Their hypothesis is that the majority of states / political orders around the world today and throughout history work by aligning "the interests of powerful individuals to forge a dominant coalition in such a way that limits violence and makes sustained social interaction possible on a larger scale" (p35). These are classified as 'limited access order (LAO) or natural states' which have two basic characteristics (p36)

1. All natural states limit access to organisational forms
2. All natural states control trade

Recognising that elites in certain states are more effective at exercising authority and promoting order they break down LAOs into three groups, Fragile, Basic, Mature. For each group North et al (2009). seek to provide a detailed taxonomy which outlines the extent to which governing coalitions are stable against external and internal shocks, the extent to which the 'state' is able to facilitate more complex economic and political activities and the ability of elites to manage violence. Thus in a fragile natural state (such as current day Afghanistan or Somalia) would be characterised by '*commitments within the dominant coalition* (which) *are fluid and unstable, often shifting rapidly, and dependant on the individual identity and personality of the coalition members*' (p42). By contrast basic states (for example ????) '*sustain a durable and stable organisational structure for the state......public institutions...provide standard solutions to reoccurring problems: succession of a leader, succession of elites, determination of tax and tribute rates, and division of spoils of conquest*' (p43). This typology is very suitable for the African context as it is not reliant on definitions of 'states' that are dependent on territorial control, thus providing an institutional as opposed to geographic definition of political order. In addition it was, and to a large

extent remains, the case that the majority of states within Africa are governed through elite coalitions due to the difficulty of extending state control to periphery areas as outlined by Herbst and the many barriers to institutional reform identified by (Gardner & Broadberry, 2014). Working with North et al.'s typology recognises and allows for meaningful comparison between such coalitions instead of the more simplistic division of states into centralized / decentralised or complex / acephalous. The Igbo region in South West Nigeria (already discussed above) would be an example of what some have termed a typical 'acephalous' society, with few pan regional institutions (Radcliffe-Brown, Fortes, and Evans-Pritchard 1940, Falola and Heaton 2008). Yet this is hardly the view of scholars who have investigated this area in the 19th century. Groups within this area were able to use institutions such as age sets, secret societies and Arochukwu religious practices to engage in complex long distance internal and external trade (Dike and Ekejiuba 1990, Northrup 1978, Osafo-Kwaako and Robinson 2013), creating what McIntosh called 'horizontal complexity' (1999 p9). While there was certainly an absence of states there were institutions that were able to project power and impose order which transcend local communities, although for the limited purpose of trade. This would contrast with other areas of modern Nigeria such as the Jos Plateau, which lacked such pan regional institutions.

North et al. provide detailed descriptions of Fragile, Basic and Mature 'natural states' which we analysed and then transcribed as closely as possible into a taxonomy (Appendix A-1). In many regions of Nigeria, such as the aforementioned Igbo and Jos Plateau areas, the taxonomy was not sufficiently detailed as both seemed to fit into the fragile state category. For this reason we further elaborated the taxonomy to include *Fragile Order High*, for the least well-ordered regions and *Fragile Order Medium* for those with greater levels of institutional capacity. For each type of LAO state, we choose 10 different categories which described their various features, which as far as possible were comparable. For example, the first category focused on the durability of elite coalitions which become progressively more stable as we move through the LAO states:

Table 2. *Limited access order (LAO) example.*

Category	Description	Score
Fragile Order High Category 1	Coalitions can only sustain themselves in the face of external threats, typically break up due to instability	1
Fragile Order Medium Category 1	Coalitions can sustain themselves in the face of external threats and for the organisation of trade, coalitions fragile	2
Basic Order Category 1	Durable and stable organisational structure	3

The next stage was to take the boarders of the colonial state which will be used to calculate regional levels of public goods provision in the 20th century (Table A-2). These provincial boarders, established by the British, were to prove relatively stable until the present day. They were also used by post-colonial governments for the purposes of census taking, administration, as well as public goods allocation. For each province we identified ethnic groups through the use of the Harvard Africa Map and the limits of pre-colonial LAO 'states' through analysis of secondary/primary sources. Then using sources we identified which areas of the taxonomy fitted the ethnic groups/states within the province in the time just before the advent of colonial rule in the 1870s/1880s. Each time a particular typology was appropriate it was converted into a number with higher scores for higher level LAO states. Therefore each part of the Basic Order taxonomy equalled 3, while each for Fragile Order High only 1. By this process the differing degrees of pre-colonial order exercised by elites across the entire country was quantified. The result was significantly different from that of Murdock (see Table 3).

Table 3. *Differing scores of pre-colonial order between the North et al taxonomy and Murdock Atlas*

Province	North et al. taxonomy score	Ethnic Group (Murdock)	Date of Murdock Observation	32
Katsina/Kano	**40**	**Hausa**	**No data**	**2 levels**
Abeokuta	**25**	**Yoruba**	**1950**	**3 levels**
Ondo	20	Ekiti-Yoruba	1950	3 levels
Oyo	25	Yoruba	1950	3 levels
Calabar	15	Ibo-Edo	1950	1 levels
Owerri	15	Ibo-Edo	1950	3 levels

In the case of Katsina/Kano province the Murdock Atlas is only looking at the Hausa ethnic group, which indeed constituted the majority of the population. However in the 19th century this was a significant province of the Sokoto caliphate ruled by a coalition of a dominant Fulani elite, along with prominent Hausa families with a common conception of government based on both Islamic law and West African state precedents (Smith 1997). There was regularised taxation (Barkindo 1983), a standard solution to the successor of the ruler or emir and reforms to centralise state administration and bureaucracy (Smith 1997). The state was able to engage in complex activities such as the maintenance of a permanent army (Adamu 1999) and regulate long distance trade (Barkindo 1983). By contrast the Yoruba city states in Abeokuta, did not have the same institutional capacity to project order. They were able to field armies in defence of their territory (Johnson and Johnson 1921, Peel 2003) , maintained a degree of regional unity through promotion of the Ogboni secret society (Johnson and Johnson 1921) and common forms of hierarchal organisation (Lloyd and Cutt 1971). However while the elites were able to create a degree of stability and sense of common identity (Peel 2003, Lloyd 1965) any attempts at greater degrees of centralisation with one town or group gaining ascendency were largely failures (Lloyd and Cutt 1971). Even the most significant town, Abeokuta was not considered at the time to have been run as a coherent town but a conglomeration of villages over which the ruler or Ake had nominal authority (Johnson and Johnson 1921). The taxonomy based on North et al. can capture a sense of the complexities of political, social and economic arrangements to allow for a more meaningful comparison of the different levels of pre-colonial order. By contrast, the Murdock observations, based on a single category with only four variables and focusing on single ethnic groups rather than territories in the latter period of colonial rule cannot be seen as providing an accurate an indication of the realities of institutional capacity before the onset of European rule.

3.2   Public Goods Provision Data

To provide enough evidence about our hypothesis, we collected data on public goods provision at the provincial level, which in most British West Africa was the highest administrative unit within a colony (see map A-1, administration units). The colonial administration invested in three public goods: *education, health and infrastructure*. Every year British officials had to record how many teachers, schools, doctors and hospitals were needed and how much of the collected local revenues/budget was allocated for public works. This detailed register enables us to retrieve original annual data for the *colonial period* from four types of annual government reports, namely the Administration Reports, Sessional papers, Correspondence letters and the Bluebooks of Statistics. These four types of reports start at the beginning of the 20th and continue until the late 1960s.

Regarding education, we collected the number of teachers, number of schools and enrolment rates per province for each year between 1905 and 1959. We normalized these figures per 10000 inhabitants and aggregated them into ten year averages which we use as a proxy of investments in education. Similarly, we used the number of doctors, medical staff as well as the number of health facilities such as

hospitals and dispensaries as proxy for health investments per 10000 inhabitants. Finally, we collected the annual figures of road miles, railway miles and telegraph line miles as well as the number of wells and bridges per province as a proxy of investment in public works.

For the *post-colonial period*, data was collected from the annual federal digest of statistics, various five and ten year development plans, several censuses and the Central Bank of Nigeria.[13] As expected the post-colonial period data was not as consistent as the colonial ones(Jerven 2013). Therefore, in order to be consistent, we retrieved information for each year available between 1960 and 2010 and used the ten year average numbers of education, health and public works per 10000 of the population as proxies for post-colonial development.

In order to compare the data at a provincial level we have created relative per capita shares for each administration unit within colonial Nigeria (see descriptive statistics in Table 4). Thus the figures in Table 4 show the percentage shares of the total national figure. For example, if we look at the figure for education in Oyo province in 1920 it is 4.10%. This indicates that in the decade between 1920 and 1935, Oyo province had 4.10% of Nigeria's teachers, schools and enrolled students. By using this method it is possible to see the relative share of public goods investments at a sub-national level. We believe that this is a more effective means of illustrating difference, from a comparative methodological perspective.

In each case we have used outcome variables and not state budget allocations for two reasons. Firstly, using revenue and spending to measure public goods provisions can be misleading as an indicator as throughout the 20th century there was often a mismatch between the distribution of resources and the results on the ground. For a start, in the colonial era much of the investment in human capital were was undertaken by non-governmental actors such as missionaries (Frankema 2010) meaning that an analysis of governmental spending does not provide an accurate picture of levels public goods provisions. In the post-colonial era political bargaining and corruption ensured that large proportions of state budgets were misappropriated or stolen (Osaghae 1998). A recent article by (Marwah 2014) suggests that the scale of mismanagement means that the revenue and spending figures from government publications should be seen as principally a work of fiction. It also demonstrates the difficulties in disentangling the reality of government spending from the byzantine complexity of official financial accounts. However, concrete outcomes, such as the number of hospitals, children in school or kilometres of road, can be more easily measured and verified and more importantly capture the reality of human and physical capital investments. The second reason for choosing our specific variables is that they were used by both colonial and post-colonial governments and therefore allow for consistent comparison over time.

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[13] For current day outcomes, we used several indicators from the Afrobarometer survey to double-check whether our figures are a good representation of reality, and found a high correlation between these two (0.87).

Table 4. *Descriptive statistics*

Administration Units	Education_1905-1915 (% shares)	Education_1920-1935 (% shares)	Education_1945-1960 (% shares)	Education_1961-1970 (% shares)	Education_1971-1980 (% shares)	Education_1981-1990 (% shares)	Education_1991-2005 (% shares)
Oyo	2.70	4.10	2.13	2.32	11.06	7.02	8.42
Ondo	3.46	1.52	1.07	0.85	6.78	7.57	9.97
Abeokuta	3.21	4.33	4.30	2.88	6.06	6.79	5.57
Calabar	8.60	9.17	5.89	3.61	4.66	5.50	6.32
Owerri	9.93	11.29	2.81	12.92	3.14	6.23	6.54
Warri	15.96	10.90	13.08	2.16	2.12	5.88	5.33
Benin	12.13	8.36	12.09	8.82	7.65	5.59	6.26
Onitsha	17.12	9.29	6.16	8.58	4.72	6.55	6.66
Ogoja	5.00	3.56	4.78	4.74	2.50	4.82	3.64
Sokoto	1.01	1.74	0.83	2.37	2.99	3.56	3.54
Kano	1.44	1.43	0.24	3.92	3.47	5.61	4.56
Lokoja-Kabba	1.81	6.05	8.67	1.47	3.56	5.51	3.21
Bornu	1.07	2.27	0.87	7.22	2.87	3.83	1.51
Yola	0.94	1.57	3.38	10.45	3.61	4.09	3.38
Bauchi	1.11	5.46	3.27	8.17	2.71	3.61	4.73
Zaria	1.31	6.66	6.87	2.37	11.58	4.52	7.94
Ilorin	6.71	4.37	9.08	4.17	8.48	5.54	5.48
Niger	2.69	4.39	7.99	6.37	5.31	3.76	3.65
Benue	3.80	3.53	6.47	6.62	6.74	4.00	3.29
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.00

Administration Units	Health_1905-1915 (% shares)	Health_1920-1935 (% shares)	Health_1945-1960 (% shares)	Health_1961-1970 (% shares)	Health_1971-1980 (% shares)	Health_1981-1990 (% shares)	Health_1991-2005 (% shares)
Oyo	9.88	8.51	8.55	6.14	6.87	7.51	6.77
Ondo	11.19	7.18	9.62	5.30	5.47	6.68	6.17
Abeokuta	13.17	8.03	9.59	3.19	4.51	5.32	4.87
Calabar	5.93	8.25	10.39	1.38	5.69	5.69	7.43
Owerri	7.97	12.33	8.27	4.91	4.40	5.21	7.50
Warri	4.94	9.05	7.84	5.55	6.22	5.34	7.14
Benin	6.26	7.18	8.05	10.07	3.33	5.64	6.44
Onitsha	11.19	10.38	6.53	1.87	4.29	5.64	3.26
Ogoja	10.21	8.78	9.63	2.16	3.65	5.00	6.76
Sokoto	0.70	0.75	1.62	2.31	4.29	4.27	2.44
Kano	2.63	0.32	1.38	3.83	3.33	4.57	2.77
Lokoja-Kabba	5.93	5.20	2.28	1.92	5.04	5.26	5.85
Bornu	0.33	0.31	1.07	6.53	7.94	4.52	4.62
Yola	3.95	6.98	1.53	7.27	5.26	4.71	3.68
Bauchi	0.40	0.41	3.93	11.00	6.97	4.72	4.49
Zaria	0.33	0.42	3.26	5.65	5.36	4.76	3.22
Ilorin	0.49	0.57	2.47	6.29	5.79	5.26	5.54
Niger	0.56	0.29	0.70	6.04	7.08	5.12	7.09
Benue	3.95	5.06	3.30	8.60	4.51	4.77	3.96
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Administration Units	Infrastructure_1905-1915 (% shares)	Infrastructure_1920-1935 (% shares)	Infrastructure_1945-1960 (% shares)	Infrastructure_1961-1970 (% shares)	Infrastructure_1971-1980 (% shares)	Infrastructure_1981-1990 (% shares)	Infrastructure_1991-2005 (% shares)
Oyo	1.40	5.21	5.37	1.27	4.00	8.25	4.72
Ondo	1.52	4.01	7.24	7.35	12.11	9.80	7.06
Abeokuta	0.46	6.58	2.27	9.51	15.77	8.33	15.90
Calabar	10.39	8.88	11.68	3.55	5.10	4.81	10.75
Owerri	2.26	6.43	3.66	2.03	5.06	5.73	3.81
Warri	0.84	1.71	4.64	4.44	4.11	5.37	6.57
Benin	2.79	6.78	5.14	1.39	18.88	4.85	6.17
Onitsha	0.51	4.31	6.97	9.51	7.56	6.70	7.11
Ogoja	0.47	2.43	1.97	4.44	6.38	3.51	2.30
Sokoto	12.32	6.47	5.63	5.58	1.38	2.96	1.01
Kano	8.22	6.09	8.38	12.67	3.11	6.75	3.46
Lokoja-Kabba	7.60	5.08	7.98	3.55	7.39	5.16	5.54
Bornu	6.66	4.63	3.18	3.93	0.76	4.60	3.05
Yola	4.80	5.47	3.63	7.35	0.57	3.58	0.94
Bauchi	9.44	4.76	3.19	9.76	1.29	3.12	3.10
Zaria	9.36	5.68	6.64	2.28	2.99	4.49	6.48
Ilorin	6.33	4.70	3.89	4.94	1.05	5.52	3.75
Niger	8.33	6.10	5.03	4.18	0.78	3.77	4.81
Benue	6.29	4.68	3.54	2.28	1.72	2.70	3.46
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

3.3   Method Description

To estimate the impact of pre-colonial order on public goods of each province we proceed in two stages of analysis. We *first* ran several simple OLS regressions (equivalent to simple scatterplots between the two variables) using the newly constructed index as the main explanatory dependent variable on each indicator for each decade in the sample. In this way, we aim to investigate whether there is a consistent correlation –either positive or negative, between pre-colonial order and (a) education, (b) health and (c) infrastructure throughout the century. We *then* created a matrix of decade by decade figures for each indicator to explore whether there is a long term continuity in the patterns of investment.[14]

4. Empirical Results

Table 3 below shows that for the two measures of human capital development, there are clear negative correlations with pre-colonial political order until the beginning of the 1950s. This suggests that those areas in which elites had less effective authority over regional territories were more open to European education and health initiatives. This broadly confirms Frankema's (2010,2012) conclusions that non-governmental missionary organisations were largely responsible for gains in human capital development in British Africa and that they were able to make more of an impact in areas with less powerful local elites. Certainly within Nigeria, colonial policy was often hostile to missionary activity in the North of the country where officials felt it jeopardized the *modus vivendi* established with the Muslim emirs who were intensely suspicious of Western cultural influence (Lugard 1922b). In terms of physical capital the correlation is a positive one and again remains relatively robust throughout the colonial era until independence. This can be explained by the fact that the principle government investment in Nigeria over this period was the construction of the railway and roads from Lagos to Kano which linked the more ordered territories of the Yoruba and the former Sokoto caliphate. We would suggest that there was a motivation to broadcast power by the indigenous elites who were therefore more supportive of such investments than education and health which could have potentially posed a threat against their authority. It also seems that these patterns were fairly constant throughout the period of colonial rule as decade by decade correlations remain strong.

However the post-colonial era saw a dramatic break with the patterns of the first half of the century. Both human and physical capital indicators no longer show any meaningful correlation with pre-colonial order and the path dependency established under British rule ends. It is not until the reestablishment of civilian government in the 1990s that any kind of meaningful pattern remerges, with figures from the 2000s correlating with those of the previous decade for all measures of public goods provision. As this pattern does not seem in any way linked to either events or political structures in the pre or colonial eras, we would conclude that it is in the period from independence to the end of military rule that explanations of present day outcomes should be sought. It should also be noted that there is, during the 1990s, one strong correlation between education and pre-colonial order. This is a good example of the care which is needed when interpreting the results generated by regression analysis. Thus if this study were to take the 1990s as our dependent variable and centred our analysis around this figure it would have been possible to argue that pre-colonial order did impact on present day education outcomes, despite the fact that this figure is clearly an abnormality.[15]

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[14] During the colonial period it was not considered necessary to do a strict decade by decade analysis due to high levels of continuity. Whereas in the period after WWII higher degrees of discontinuity meant that a stricter decade by decade analysis was necessary.

[15] A similar case was made by Bottero and Wallace (2013) who wanted to test the regressions of Nunn (2008) who claimed to find a link between the severity of the transatlantic slave trade and modern day incomes. Italian economic indicators were substituted for African ones and the authors found that the regressions produced similar results.

Table 3. *Education, Health and Infrastructure correlations with pre-colonial order*

Panel A	Education_1910	Education_1920	Education_1950	Education_1965	Education_1980	Education_1990	Education_2000
Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pre-Colonial Order	-1.194	-1.633	-0.938	0.141	0.533	-4.552	-1.084
	[-2.26]**	[-1.98]**	[-1.38]	[0.15]	[0.49]	[-2.04]**	[-0.75]
R-squared	0.231	0.168	0.076	0.014	0.014	0.196	0.032

Panel B	Health_1910	Health_1920	Health_1950	Health_1965	Health_1980	Health_1990	Health_2000
Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pre-Colonial Order	-1.779	-2.366	-1.925	1.573	2.313	-5.356	-2.883
	[-3.11]***	[-4.84]***	[-2.66]**	[1.51]	[1.02]	[-1.41]	[-1.77]*
R-squared	0.363	0.579	0.293	0.116	0.057	0.105	0.1562

Panel C	Infrastructure_1910	Infrastructure_1920	Infrastructure_1950	Infrastructure_1965	Infrastructure_1980	Infrastructure_1990	Infrastructure_2000
Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pre-Colonial Order	1.705	2.677	-0.299	0.643	-0.345	-1.017	-0.833
	[2.50]**	[1.98]**	[-0.24]	[0.69]	[-0.59]	[-0.65]	[-0.97]
R-squared	0.268	0.171	0.003	0.019	0.019	0.024	0.052

Notes: Slope coefficients are shown in the first row of each correlation and t-statistics are shown in brackets. Significance level at which the null hypothesis is rejected: ***, 1 percent; **, 5 percent; and *, 10 percent.

Moreover, we aggregated each outcome variable (education, health and infrastructure) by adding all figures from 1960 till 2008 and created three new variables named as *sum of post-colonial education*, *health* and *infrastructure*, in an attempt to add some robustness to our findings and better illustrate our hypothesis. As it is clear from Figure 2 a, b and c below, there is no correlation between the pre-colonial order measure and post-colonial development.

Figure 2 a, b and c. *Pre-colonial order and 1960-2008 sum of education, health and infrastructure*
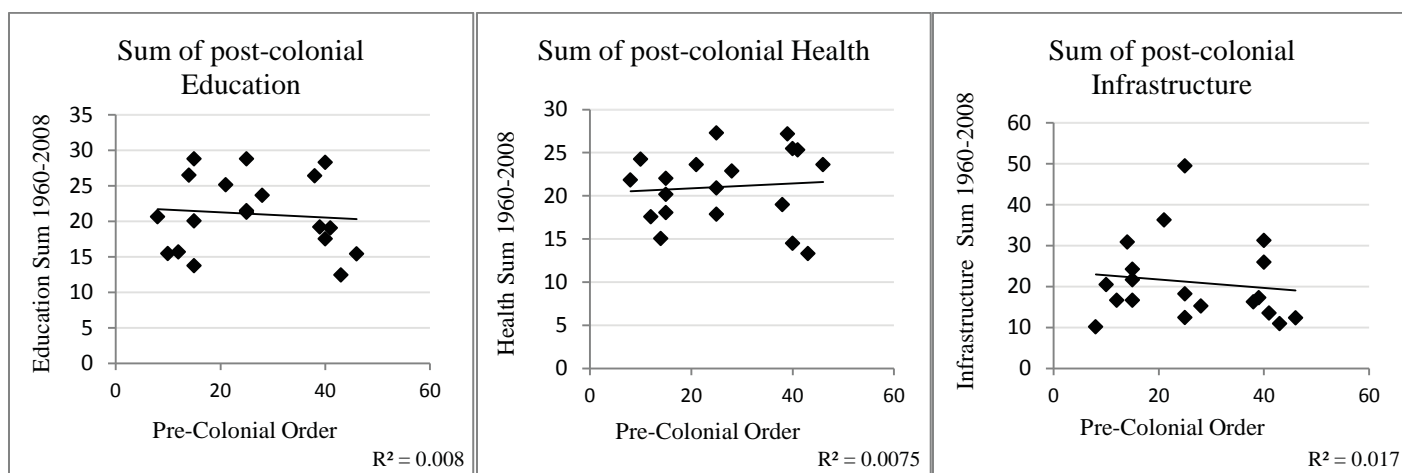
Finally, we scatter plotted the outcome variables against each other on a decade by decade basis to capture continuities and breaks in the provision of these public goods.

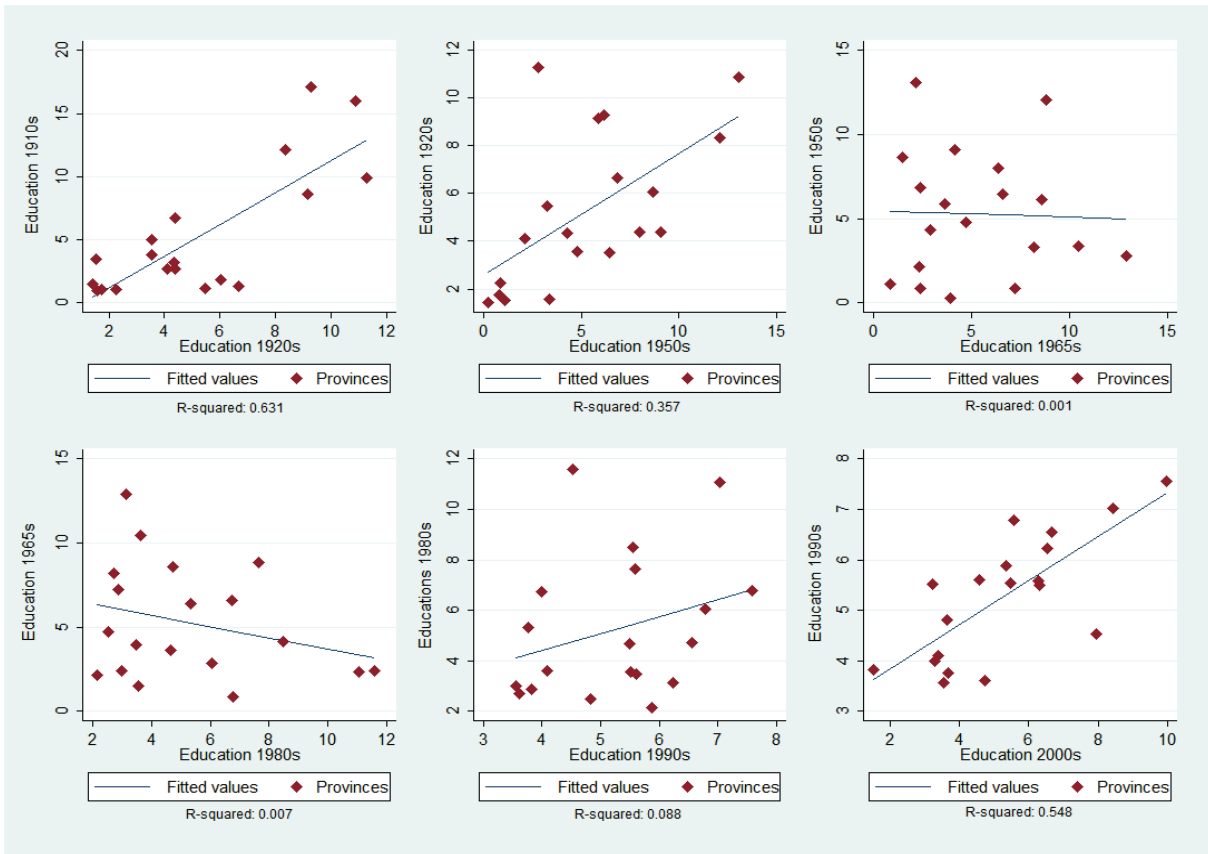**Figure 3a.** *Decade by decade correlations, capturing continuity in education*

Figure 3b. *Decade by decade correlations, capturing continuity in health*
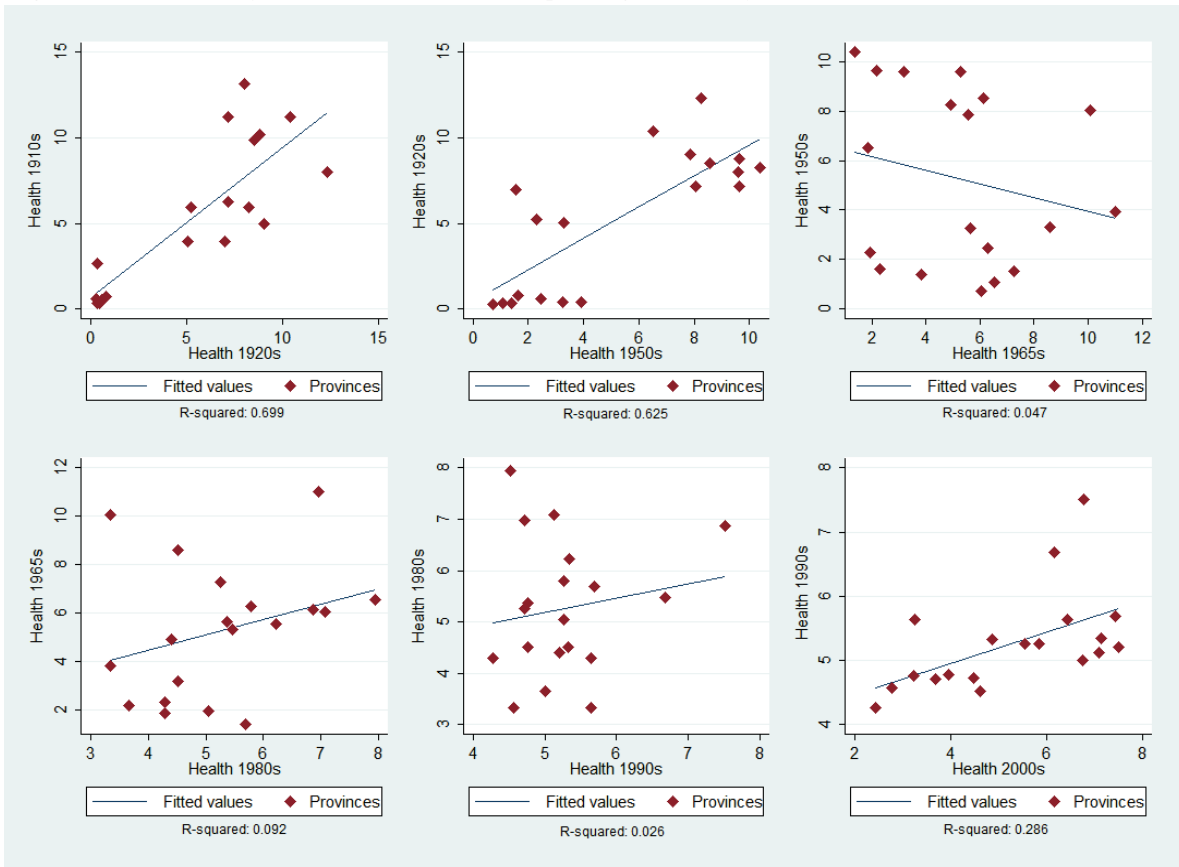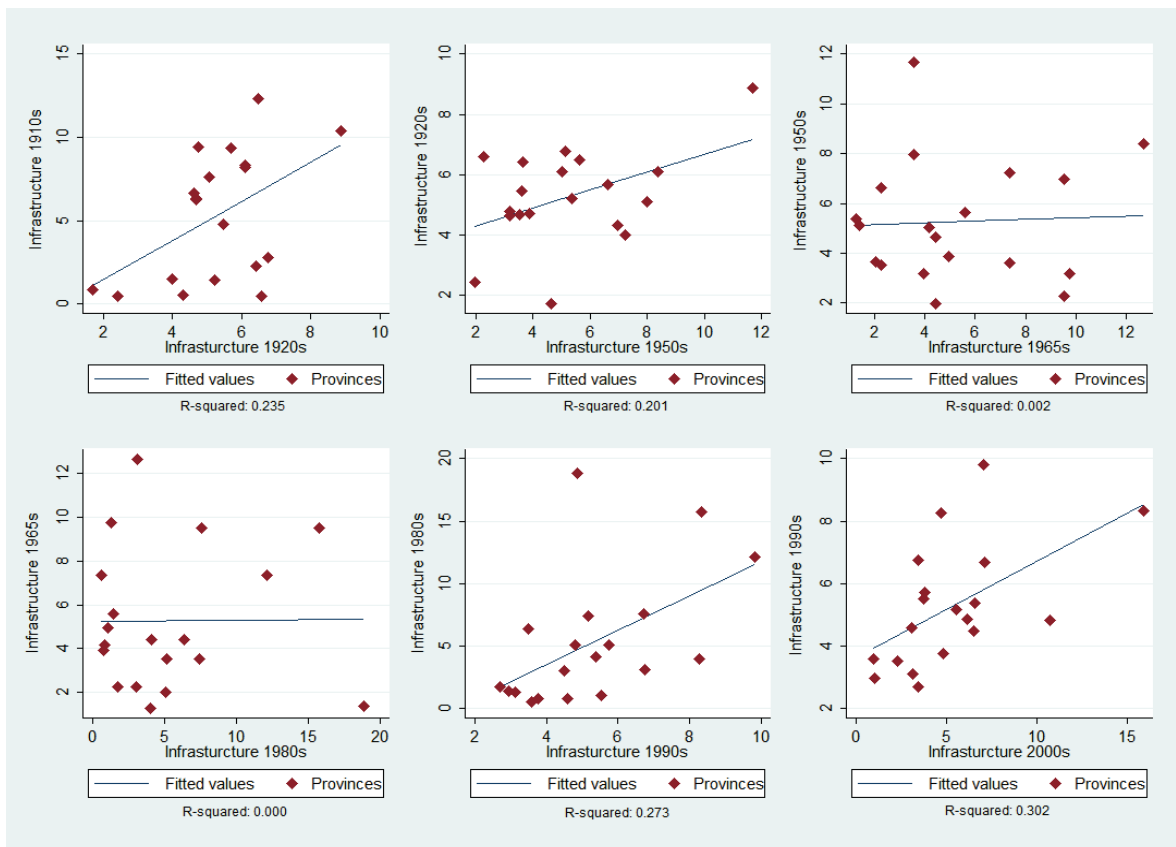
Figure 3c. *Decade by decade correlations, capturing continuity in Infrastructure*


5. Zooming in: three Case studies

Clearly trying to give valid explanations for changes over 100 years in 19 provinces is beyond the scope of this paper. We have therefore selected three provinces with different degrees of centralized orders and try to indicate the plausible mechanisms of the patterns we have established. The provinces used are Sokoto, Oyo and Calabar, which were chosen for a number of reasons. Firstly because with respective scores of 43, 25 and 15 in our measure of pre-colonial centralisation they represent a broad range of indigenous 19th century political capacity. Secondly, they provide a sample from the East, West and North of the country, which in the post-colonial period was the broad division which defined much of the political landscape[16]. Thirdly the three provinces have very different histories with regard to their long term contacts with Britain allowing for a meaningful comparison of the impact of the pre-colonial and colonial eras. Calabar had a long history of trade with the wider Atlantic world and was among the first to accept the presence of missionaries and profit from the benefits of West education (Latham 1973). The province of Oyo was the centre of the 18th century Yoruba state and while there had been trade in slaves and produce with the outside world this had always been at a distance as coastal states and societies such as Lagos had always maintained their position as intermediaries (Peel 2003). Missionary activity, while important and helping to provide a degree of cultural unity to the wider Yoruba community (Peel 2003), arrived later and was subject to more resistance (Falola 1985). Finally, Sokoto had been centre of a large Islamic caliphate, with a pattern of trade focused on the African interior and where the influence of foreign missionaries and Western culture had been deliberately and vigorously excluded until very late in the colonial era (Falola and Heaton 2008). Thus with these samples we can attempt to provide evidence of

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[16] For example, the Biafran conflict saw 'Easterners' fighting for independence from the 'West' and the 'North' of the country. Until the 1980s, the Nigeria Annual Abstract of Statistics also used this three part division for the purposes of comparing government expenditure and infrastructure.

the various patterns in greater detail. Here is the graphic illustration in a nutshell (figure 4a below show the relative normalized shares of literacy for each of the 3 selected provinces):

**Figure 4a**. *Education Relative Shares, Panel A*
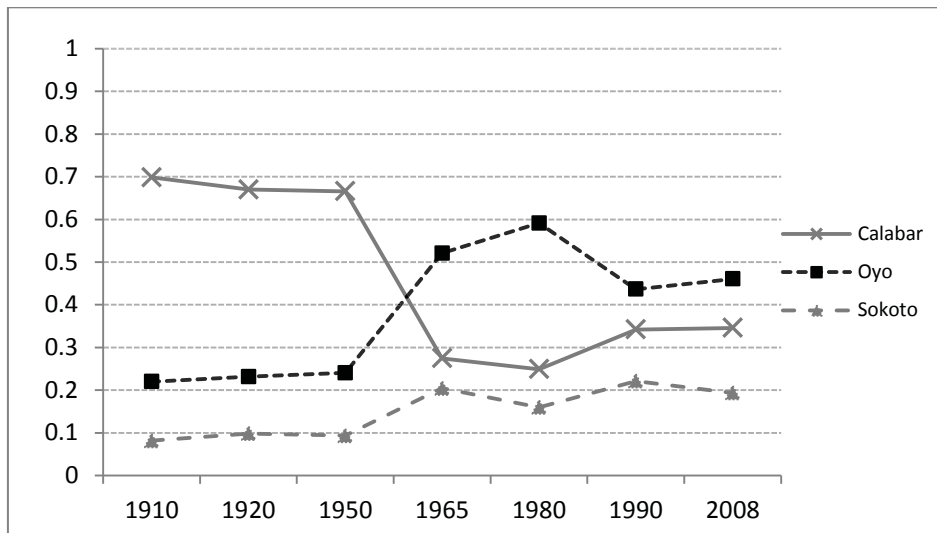
In the North of Nigeria the impact of European education during the colonial period was limited. Some historians argue that there was a deliberate policy to restrict the introduction of European education in the North as a way of ensuring that opportunities for advancement within government were restricted. (ref) However as can be seen from archival research, there were in fact more government schools in the North than the South, where Western education was to have a far greater impact. The problem was that the government simply did not invest heavily in development, focusing instead on the maintenance of their hegemony. The biggest difference confirms Frankema's conclusions (2013) that it was the work of missionaries that made by far the biggest impact in the introduction of modern formative education. That can partly explain the low school attainment in the Sokoto Caliphate in the first half of the 20th century, and in sharp contrast, the high levels of education seen in Southern Nigeria, and in particular in Oyo and Calabar. A pattern that seems to have changed in the post-colonial era, as seen in the pie-charts above. Of course, further study would be necessary to decisively prove the validity of this theory but it seems that the success of education in the East (Calabar) is due to a combination of a more fluid structure of society, an acceptance of missionaries as a counter weight to the powers of the Warrant chiefs and the wealth to develop an educational system. Yet again, the evidence for a path dependency until the present breaks down as we move on to the post-colonial period , where the West (Oyo) seems to have the highest enrolment of primary students. Needs to be linked to the work above

Figure 4b. *Health Relative Shares, Panel B*
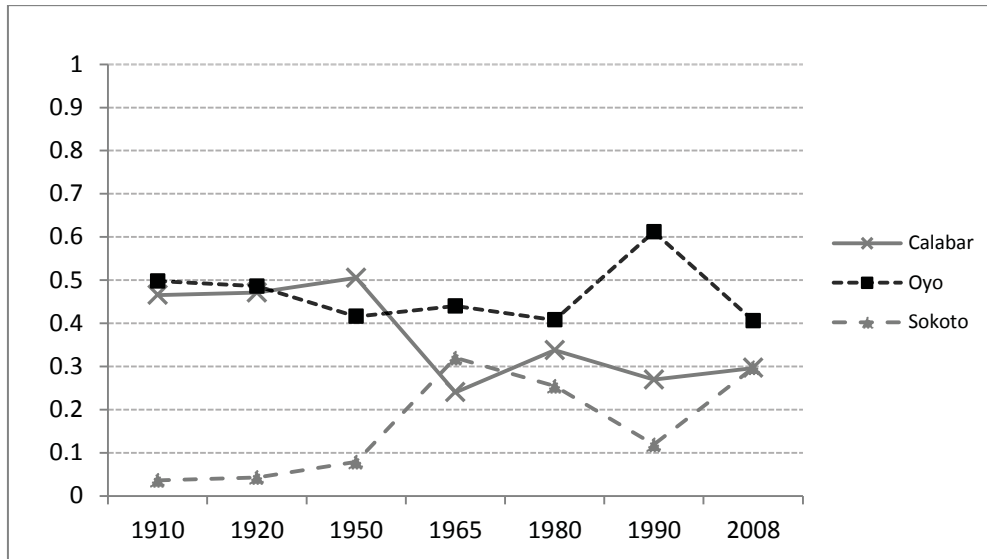
The situation with regards to health is somewhat *similar*. The health patterns established in colonial times did not establish strong path dependence to the present day. The Southern regions saw the most investment in health care as measured both by hospital numbers and patients treated during the colonial period under review and the North saw the lowest. However, while the results seem to mirror those of education the difference is that in this case government investment was far more significant. Missionaries were still important in healthcare but not to the same extent as in education and interesting invested comparatively more in the North. We make three suggestions as to why this may have been the case. Firstly, the greater wealth of the Eastern areas (more notably in Calabar, as being the busiest port in the area) and the importance of the revenue generated through import / export tariffs. While the government did not need an educated population to maintain the output of palm oil, palm kernels and cocoa it did need one that was healthy. This may explain why they were prepared to invest more in this area. Secondly the higher numbers of Europeans in the South could have led to more hospitals to keep them healthy which had a ripple effect, leading to higher numbers of African hospitals. Thirdly the fact that there were more educated Easterners who could potentially speak English meant that more could have been trained as doctors and nurses by Europeans. We suggest that healthcare infrastructure carries higher fixed costs and the devastation of civil conflict and government neglect in the 60s and 70s led to damages that could not be repaired leading to a decline in levels of healthcare in the formally relatively well provided East and West.

Figure 4c. *Infrastructure Relative Shares, Panel C*
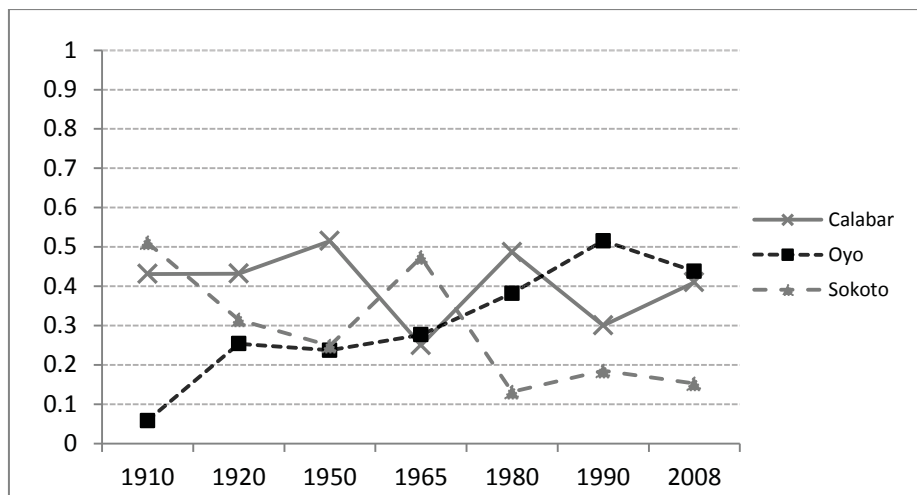
6. Conclusion

This paper has examined the realities of long term change in the patterns of public good provision in Nigeria across the 20th century. Using a newly constructed index of pre-colonial order, along with an extensive regional level dataset we have found that the socio-political conditions that existed before the arrival of European rule, have not had a persistent influence across time. Instead, and contrary to the conclusions of others who have followed what may be termed the 'compression of history' approach, we argue that in the case of Nigeria patterns of path dependency while strong until the 1950s experienced a severe break due to the complex and damaging process of decolonisation. The combined impacts of state failure, the rise of regionalism and conflict ensured that until the restoration of more stable civilian government in the 1990s, there are no discernible patterns to be found for measures of human and physical capital.

Our intention has never been to suggest that quantitative analytical tools are not useful for historians seeking to understand long term change. However, the application of large cross country regressions, especially in the case of African countries, does not produce, at a regional level, useful or applicable conclusions. We believe that to ignore the impacts of the colonial period, the often abrupt and unplanned independence process and the often turbulent post-colonial time, ensures that these wider studies lack explanatory power for individual country's long term development outcomes. To imagine that a particular variable can survive unchanged throughout such upheavals is, while not beyond the realms of possibility, at the very least unlikely.

As our analysis has shown, all types of public goods provision in Nigeria experienced profound and irreversible changes around the 1950s. At a sub-national level we witness a great deal of reallocation of resources, fuelled by the various forces of regionalism, economic and political change. Such meaningful patterns can only be captured by a process of detailed, regional level data collection and analysis combined with an appreciation for the complexities of long term historical change. Such an approach requires moving away from attempts to compress history and find Africa wide solutions to a more in depth case study approach. This also requires moving away from the use of Murdock's ethnographic Atlas as a convenient proxy to capture pre-colonial political order. As previously stated, the Atlas should be regarded as a fine piece of scholarship but it was never intended to provide a measure of the realities of the continent before the onset of European rule,. Instead this paper offers an alternative method of investigating the extent to which African societies and elites were able to manage political order and broadcast power within their territories.

The issue of the impact of pre-colonial institutions on long term development continues to be debated but we would argue that any conclusions reached would vary considerably from country to country and even from province to province. Therefore more country / subnational level studies which expand as opposed to contract the historical process should provide a far clearer picture of the ripples of the past on the waters of colonial and post-colonial Africa.

7. Appendix

Table A-1. *Revised taxonomy based on North, Wallis, and Weingast (2009)*

Category	Description	Score
Fragile Order High (FOH)		
FOH1	Coalitions can only sustain themselves in the face of external threats, typically break up due to instability	1
FOH 2	Commitments with in the dominant coalition are fluid and unstable often shifting rapidly and dependent on the individual identity and personality of the coalition members	1
FOH 3	Shocks can easily lead to violence and the creation of a new coalition. Alternatively shocks can lead to rearrangements with the coalition	1
FOH 4	Characterised by simple institutional structures / private elite organisations (e.g. secret societies) rarely beyond village level	1
FOH 5	Elites only commit to observe laws in very limited circumstances (e.g. external threats)	1
FOH 6	Cannot support many if any private elite organisations	1
FOH 7	Patron client networks dominate the organisations within fragile natural states but gains for both sides very limited	1
FOH 8	Elites capable of organising violence for limited periods of time (e.g. external threats)	1
FOH 10	Simple laws that govern the relationships among individuals based on social identity and stipulate a set of rules that patrons can use to make decision	1
Fragile Order Medium (FOM)		
FOM 1	Coalitions can sustain themselves in the face of external threats and for the organisation of trade, coalitions fragile	2
FOM2	Commitments with in the dominant coalition show degrees of stability and are not always dependent on the individual identity and personality of the coalition members	2
FOM3	Shocks can sometimes lead to violence and the creation of a new coalition. Alternatively shocks sometimes lead to rearrangements with the coalition	2
FOM4	Characterised by simple institutional structures / Private elite organisations that can extend to province level	2
FOM5	Elites only commit to observe laws to facilitate trade and in the face of external threats but instability prevents societies from forming durable forms of law	2
FOM7	Patron client networks dominate the organisations within fragile natural states, potential to accumulate power on both sides	2
FOM8	Elites capable of organising violence against internal threats and to maintain trade (monopolies)	2
FOM10	Simple laws that govern the relationships among individuals based on social identity and stipulate a set of rules that patrons can use to make decisions	2
Basic Order (BO)		
BO1	Durable and stable organisational structure	3
BO2	Standard solution to succession of ruler	3
BO3	Standard solution to succession of elites	3
BO4	Standardised tax / tribute rates	3
BO5	Standardised division of spoils of conquest	3
BO6	Common beliefs about the behaviour among elites	3
BO7	Only organisations with direct connections to the states are durable	3
BO8	Elite privileges are closely aligned with the state	3
BO9	State used as the vehicle for complicated organisational activities – warfare, foreign trade, religion	3
Mature Order (MO)		
MO1	Supports elite organisations outside the structures of the state	4
MO2	Durable institutional structures	4
MO3	Presence of private law – codifies personal relationships	4
MO4	Law defines offices and functions of the state	4
MO5	Law embodies in a state organisation such as courts	4
MO6	Individuals / Organisations can be legally recognised	4

Table A-2. *Murdock ethnic groups by colonial province.*

Province	Ethnic Groups	Cultural Groups	Observation Date
Abeokuta	Egba	Yoruba	1920
Abeokuta	Yoruba	Yoruba	1950
Abeokuta	Gun	Yoruba	N/A
Adamawa	Dera	Bolewa-Tera	1920
Adamawa	Yungar	Chamba Yungur	1920
Adamawa	Junkun	Tiv Jukum	1920
Adamawa	Mumuye	Chamba Yungur	1932
Bauchi	Bolewa	Bolewa-Tera	1920
Bauchi	Tera	Bolewa-Tera	1920
Bauchi	Warjawa	Hausa	N/A
Benin	Edo	Ibo-Edo	1900
Benue	Angas	Jos Plateau	1920
Benue	Tiv	Tiv Jukum	1920
Benue	Basa	Niger, Middle	1960
Bornu	Kanuri	Bornu	1870
Bornu	Tera	Bolewa-Tera	1920
Bornu	Bolewa	Bolewa-Tera	1920
Calabar	Ibibio	Mende Temne	1910
Calabar	Ekoi	Cross River	1930
Calabar	Ibo	Ibo-Edo	1950
Kabba	Igbira	Nupe Idoma	1952
Kabba	Basa	Niger, Middle	1960
Katsina/Kano	Mazugawa	Hausa	1940
Katsina/Kano	Hausa	Hausa	N/A
Katsina/Kano	Warjawa	Hausa	N/A
Lagos	Egba	Yoruba	1920
Lagos	Yoruba	Yoruba	1950
Niger	Gbari	Nupe Idoma	1910
Niger	Kamuku	Niger, Middle	1920
Niger	Katab	Jos Plateau	1930
Niger	Gwandara	Hausa	N/A
Ogoja	Yako	Cross River	1930
Ogoja	Ekoi	Cross River	1930
Ogoja	Mbembe	Cross River	N/A
Ondo	Ife	Yoruba	1920
Ondo	Ekiti	Yoruba	1950
Ontisha	Ibo	Ibo-Edo	1950
Owerri	Ibo	Ibo-Edo	1950
Oyo	Yoruba	Yoruba	1950
Plateau	Angas	Jos Plateau	1921
Plateau	Birom	Jos Plateau	1921
Plateau	Borrom	Jos Plateau	1921
Sokoto	Sokoto	Hausa	N/A
Sokoto	Bakakari	Hausa	N/A
Warri	Isoko	Ibo-Edo	1930
Zaria	Gbari	Nupe Idoma	1910
Zaria	Kurama	Jos Plateau	1921
Zaria	Katab	Jos Plateau	1930
Zaria	Hausa	Hausa	N/A

Source: (Murdock 1967, Murdock 1981), http://worldmap.harvard.edu/africamap

Table A-3. *Long run correlation for each indicator of public goods*

Panel A	Education	Panel B	Health	Panel C	Infrastructure
	(1)		(2)		(3)
Education_1910	1.269	Health_1910	0.881	Infrastructure_1910	1.178
Education_1920	[5.38]***	Health_1920	[6.29]***	Infrastructure_1920	[2.29]**
R-squared	0.631	R-squared	0.699	R-squared	0.235
Education_1920	0.511	Health_1920	0.916	Infrastructure_1920	0.295
Education_1950	[3.07]***	Health_1950	[5.33]***	Infrastructure_1950	[2.07]**
R-squared	0.357	R-squared	0.625	R-squared	0.201
Education_1950	-0.041	Health_1950	-0.278	Infrastructure_1950	0.034
Education_1965	[-0.15]	Health_1965	[-0.92]	Infrastructure_1965	[0.19]
R-squared	0.001	R-squared	0.047	R-squared	0.002
Education_1965	-0.334	Health_1965	0.637	Infrastructure_1965	0.006
Education_1980	[-1.20]	Health_1980	[1.31]	Infrastructure_1980	[0.04]
R-squared	0.007	R-squared	0.092	R-squared	0.000
Education_1980	0.674	Health_1980	0.274	Infrastructure_1980	1.387
Education_1990	[1.28]	Health_1990	[0.67]	Infrastructure_1990	[2.53]**
R-squared	0.088	R-squared	0.026	R-squared	0.273
Education_1990	0.360	Health_1990	0.245	Infrastructure_1990	0.308
Education_2000	[4.54]***	Health_2000	[2.61]***	Infrastructure_2000	[2.71]**
R-squared	0.548	R-squared	0.286	R-squared	0.302

Notes: Slope coefficients are shown in the first row of each correlation and t-statistics are shown in brackets. Significance level at which the null hypothesis is rejected: ***, 1 percent; **, 5 percent; and *, 10 percent.

Map 1. *Administration Units in colonial Nigeria, 1939.*

A-3. Taxonomy Methodology

A-3a. <u>Bibliography consulted per sample state:</u>

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Calabar

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A-3b. <u>Example Taxonomy for Calabar</u>

	Score	Nwokeji The Slave trade and Culture in the Bight of Biafra	Latham Old Calabar	Northrup Trade without rulers	Dike Aro
FOH1	1	FOM1			
FOH 2	1	FOM 2			
FOH 3	1	p178/179 increasing militarisation in the latter		p141 late 19th century visitors noted	

		19th century leading to civil conflicts and increased violence and instability as elites fight for control of economic rents and influence. The Aro themselves seem to retain a degree of unity	very intense internal disputes	
FOH 4	1	FOM4		
FOH 5	1	p76/77 use of oracle to extend power but not ever institutionalised into law	p140 independence of individual Aro settlements and very different strategies in different areas to develop trade pp139 +, p143 example of elites putting aside internal differences to enforce trade and punish competitors	
FOH 6	1	FOM 4		
FOH 7	1	p61 Aro Lineage spheres able to dominate markets but generally only for their benefit. Non Aro excluded. P68 some sense that the Aro were able to dispense justice and were sometimes invited by local communities to do so. Nonetheless the underlying purpose always seems to have been to dominate trade for their own benefit		
FOH 8	1	pp68 - 71 use of violence and warfare to estabish settlements, get slaves and defend monopoly / p187 ability to use violence against areas to defend their interests against the British	FOM 1	
FOH 10	1		p116 Use of Oracle to provide a degree of religious / semi legal authority	
FOM 1	2	p53 The Aro created what K Onwuka Dike termed a regional 'pax' under which large scale trade flourished in a multiethnic region and their operations eased exchange and 'brought rapid impetus to economic expansion' in a region with a multitiered	p116 use of guns to enforce authority or use of mercenary forces in particular the Abam (p138 note that they do not use guns)	

		currency system		
FOM2	2	p185 New state of Opobo led by Jaja makes every effort to maintin ties with Aro and oracle and maintain the influence of the organisation		p140 maintence of links to Arochukwu despite independent nature of the different Aro communities and settlements
FOM3	0			
FOM4	2	p54 Aro settlements were more than permanent settlements in the common sense because their routine contact with, as well as determined cultural and political fidelity to, the Arochukwu metropole were an essential feature / p 75 Three key institutions 'Okpankpo (Aro central council), the Ibiniukpabi oracle, and the Ekpe / Okonko confraternity', p77 spread of these insitutions to local levels. e.g. Ekpe at Old Calabar and Bonny		p117 creation of rotating markets under Aro control to maintain trade monopoly / p118 idea of an Aro 'state' which fell short of what might be traditionally thought of as a kingdom but which nontheless had characteristics of a state
FOM5	0			
FOM7	0			
FOM8	0			
FOM10	0			
BO1	0			
BO2	0			
BO3	0			
BO4	0			
BO5	0			
BO6	0			
BO7	0			
BO8	0			
BO9	0			
MO1	0			
MO2	0			
MO3	0			
MO4	0			
MO5	0			
MO6	0			

Total	15					
Summary	Aro influence connected with trading powers on the coast extends involves Eastern Calabar, Owerri and Ontisha. We agree with Northrup's basic assertion that 'The Aro did not create anything like a state. Rather than departing from the traditional segmental organisation of the hinterland peoples, they depended upon it as the basis of their trading organisation, distributing themselves across the hinterland in territories that mirrored the village and lineage patterns of the Arochukwy'. However by alliance with local trading organisations especially at the coast they were able to preside over a wider economic system that allowed trade to flourish both in the 18th and 19th centuries across SE Nigeria which required a overarching organisation to enforce rules, organise markets and transport and maintain relations with elites in different segmented societies					

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