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Indigenous Origins of Institutions in Sub-Saharan Africa

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Abstract

By analysing the institutional structures of indigenous sub-Saharan African groups, this paper aims to highlight the effect that these institutions may have had, and continue to have, on contemporary institutional performance. Using ethnographic and anthropological data sources a set of variables are created that attempt to capture the institutional characteristics of indigenous African groups. These newly created variables aim to proxy for the deeper, underlying determinants of current institutions and are shown to be complementary to existing measure of institutional quality.

Keywords: Institutions, Ethnic Groups, sub-Saharan Africa

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Introduction

In order to determine the role that institutions play in determining economic outcomes they need to be defined - a difficult task given the intangible and wide ranging nature of the concept. The prevailing definition is that of Douglass C. North:

> Institutions are the humanely devised constraints that structure human interaction. They are made up of formal constraints (e.g. rules, laws, constitutions), informal constraints (e.g. norms of behaviour, conventions, self-imposed codes of conduct) and their enforcement characteristics (North 1994: p.360). [N]orms are informal constraints on behaviour that are in part derivative of formal rules (North, 1990, p.1321).

Theories of institutions typically fall into three main categories - economic[1], political and cultural (La Porta *et al.,* 1999). From an economic perspective, institutions matter when there are positive transaction costs (Coase, 1960) and as such, are created when it is efficient to create them i.e. when social benefit is greater than the transaction costs of doing so. Politically, institutions are defined in relation to redistribution rather than efficiency as in the economic case. Finally, there are cultural institutions, these are particularly hard to characterise (in fact, there is no real consensus as to what factors should be considered); they reflect societies' beliefs that shape collective action and government and as a result are particularly context-specific.

There is substantial heterogeneity amongst sub-Saharan African countries in terms of their economic performance when comparing a range of outcomes. This variation is often attributed to the institutional quality of their respective institutions. From a historical perspective, even when indigenous institutions of a mercantile economy thrived, the process of developing more complex organisational structures suited for industrial investment and innovations (which occurred in the West) did not take place – nationalist historiography has blamed this on colonial or neo-colonial policies (Bardhan, 2005). Bardhan attributes this lack of development to a coordination failure, which prevented the development of financial markets and explains the lack of technical and pecuniary externalities in investment between firms (and industries). Perhaps in more recent times, given the basic economic problem of a scarcity of resources, countries in Africa that face high levels of poverty have viewed increasing education and wealth as prior actions to democracy and other institutional improvements (Barro, 1999; Przeworski *et al.*, 2000). The abundance of natural resources in Africa and the 'natural resource curse' has been blamed for creating incentives that increase rent-seeking, whether government is democratic or autocratic.

[1] Known as rational choice institutions from the framework of New Institutionalism in political science (Hall and Taylor, 1996).

The persistence of institutions is linked to the proposition of 'path dependence' that once a country's course of development has been established from initial conditions it will continue on that path. But is this necessarily the case for institutions, particularly as there are programmes of reform ongoing in most developing countries. In addition, is there a difference in the type of institutions that persist? When North began writing on the topic he maintained that only those institutions which are optimal for development can survive (Przeworski, 2004). This point was also made in Cohen's (1978) summary of the Marxist economic history: when social relations fetter the development of productive forces, they 'burst asunder'. Yet both institutionalists and Marxists were forced to admit that sub-optimal institutions can survive if they protect the interests of the powerful.

By analysing the institutional structures of indigenous sub-Saharan African groups, this paper aims to highlight the effect that these institutions may have had, and continue to have, on contemporary institutional performance. Using ethnographic and anthropological data sources a set of variables are created that attempt to capture the institutional characteristics of indigenous African groups. These newly created variables aim to proxy for the deeper, underlying determinants of current institutions and are shown to be complementary to existing measure of institutional quality..

This paper is organised as follows: section 1 introduces the indigenous institutional structures that we are concerned with and provides the rationale as to why these characteristics may have left an institutional legacy. Section 2 presents the main data sources consulted and the subsequent creation of the indigenous institutional variables is covered in Section 3. Section 4 provides a comparative analysis of these newly constructed variables to existing and more contemporary measures of institutional quality. Section 5 concludes this paper and highlights the potential use of these variables in subsequent empirical analysis.

1 Indigenous African Institutions

A. Political and Administrative Organisation

Fortes and Evans-Pritchard (1940) provides the basis for much of the work carried out on classifying political systems and administrative structure in pre-colonial Africa[2]. Given the vastness of the continent and the large number of distinct communities and tribal groups, their classification is not exhaustive, but has provided the impetus for further study into specific groups within Africa. In addition, the peoples of pre-colonial Africa shared relatively common population structures, levels of technology and stocks of material wealth that renders possible a comparative analysis, with the usual caveats.

[2] Pre-colonial Africa generally refers to the period prior to 1885 and the Scramble for Africa. The colonial period is considered roughly 1885-1950s/1960s, depending on when individual countries gained their independence.

Fortes and Evans-Pritchard's initial classification consisted of two main groups of political system: primitive states and those considered stateless.

Primitive states were those societies with centralised authority, some form of administrative framework and a judicial system. Social cleavages of wealth, privilege and status corresponded to the distribution of power and authority. Chiefs were the head of a territorial/administrative unit and were responsible for the economic and legal control of the land within that unit. In order to ensure stability the powers of the paramount ruler were counter-balanced through the regional devolution of powers and privileges, thus creating a potential threat from subordinate chiefs if power was abused. These societies were also characterised by some form of organised force as an instrument of government. But whilst these societies may have been considered politically centralised, the size of these states was limited to the extent over which the paramount leader could effectively communicate with his people. Herbst (2000) documents that for the Ashanti kingdom, even with roads converging on its capital at Kumasi and taking this as a centre point, the size of the kingdom could be measured by the radius of the distance that it took a messenger eight days to walk.

Stateless societies were the polar opposite of primitive states and exhibited almost none of the characteristics listed above. Territorial units were not defined by an administrative system, but rather represented local communities which were linked depending upon lineage ties and bonds of direct cooperation. There was no dominant class in the political structure and no organised force. As Fortes and Evans-Pritchard (1940) highlight, the main difference between the two groups is whether the society is characterised by a lineage system or a kinship system; the former generating a permanent system of separable, unilateral descent groups, which correspond to specific political functions. The latter is a much looser association, where sets of relationships link individuals and particular social units through the wider extended family group. As Fried (1960) highlights, a state emerges only in stratified societies, which corresponds with the former group. However, despite the presence of an aristocracy or system of castes in more politically centralised states, the bargaining powers of the masses was strong relative to the elites (Bates, 1983) and the standards of living between chiefs and their subjects were not that different (Goody, 1971). Middleton and Tait (1958) provide a more in-depth analysis of stateless or decentralised societies and differentiate between centralised political authority, which these societies lack, and internal political authority, generally determined by lineages. Given the lack of a centralised and persistent political authority, these societies tend to be in a state of continual change and instability; however the common acceptance of social values by the members of the society, rather than more formal rules and sanctions worked to prevent widespread conflicts of interest. However, Bates (1983) questions the interest in decentralised societies on the basis that they occurred relatively infrequently and were transitory – either moving away from centralisation or towards it.

Murdoch (1959) provides a more detailed depiction of indigenous political structures covering sub-Saharan and North African regions. Given that a large body of his work has focused on the political structures of the indigenous communities of North America he is able to draw an interesting, but disparaging comparison with Africa. In his words, "It is almost as though all of Africa south of the Sahara were permeated, as it were, by a mental blueprint of a despotic political structure, transmitted from generation to generation as a part of traditional verbal culture, and always available to be transmitted into reality whenever some individual arises with the imagination, enterprise, strength, and luck to establish, with the aid of his kinsmen, an authoritarian regime over people residing beyond the limits of his local community" (Murdoch, 1959, p.37). When one examines current political regimes in Africa this view may not seem too far off the mark. In his view, despite the geographical remoteness of Africa and its communities, political forms seem to trend towards the same underlying (and decidedly negative) pattern, whereas North American evidence suggests the presence of more diverse and complex systems.

However, Davidson (1992) shows that some of the largest and most established African societies were characterised by constitutional checks and balances regulating the abuse of power. For example, the Ashanti, an empire-state in what is now Ghana, exemplified the notion of powerful leadership, but this centralised power was exercised within a devolved framework where the paramount ruler, while at the top of the hierarchical pyramid, was subject to constant observation and possible challenge by lesser chiefs. Davidson goes on further to state that pre-colonial states were implicitly distrustful of executive power and that a well-built polity had to be one that ensured full participation. In his view, the societies that endured were those that continued to ensure their legitimacy in the eyes of their people who in turn accepted their rule. In a comprehensive summary of the political and administrative structure of the various Bantu tribes in South Africa, Schapera (1956) provides examples of this participatory style of government. In addition to having a number of close advisors to help determine policy and administer his duties, a Bantu chief also had a much wider council which met at his summons to discuss important policy questions. More specifically, the Sotho and the Tswana discussed almost all matters of public concern within this arena. Further, any cases at the Chief's court were tried publicly with free attendance for all permitted.

If the political systems of pre-colonial Africa can be characterised by the presence of a state or not, what can be attributed to the causes of such an evolution? Stevenson (1968) points to a positive correlation between societies of a higher population density and the presence of an organised state. Whilst it is difficult to determine a unique direction of causality, he states that the relationship between state and population density is mediated by the development of both regional and long-distance trade. This is contrary to Fortes and Evans-Pritchard (1940) who do not attribute a causal role to population density. They highlight the fact that it is not necessarily the case that a stateless society is small relative

to a primitive state, nor is there a limit to the size of the population that can form a cohesive society without some form of centralised government.

There is a larger literature that details the relationship between trade, particularly regional and long-distance/international exchanges, and the formation of states or more formal administrative systems, with an intermediary factor being the formation of market institutions. Hodder (1965) summarizes the two main theories underlying the creation of market institutions (viewed as the physical location where trade can take place, as well as associated mercantile services). In the first, the direction of causality implies that individuals have a propensity to barter which creates the necessity for local exchange; this then results in distance or external exchange – essentially the Ricardian model. The reverse causality underpins the second theory: due to the division of labour and the variable location of goods long-distance exchange of goods takes place, this then encourages the development of local markets around the original market.

There is mixed evidence concerning the development of local or traditional markets within sub-Saharan Africa, with a larger concentration in West Africa and along the East African and Horn of Africa coasts – these regions historically integrated into long-distance trans-Sahara or Arab trading routes. In more central regions, such as the Congo, there is also evidence of traditional markets, but less so in southern and south-eastern Africa. This imbalance in the distribution of traditional markets may suggest that the causality described in the second theory is more likely and that long-distance trade is not sufficient in itself to generate market institutions. Hodder (1965) posits that a sufficient population density is necessary (to ensure the security of the traders and the peace of the markets), as well as a well-developed and highly organised political unit. In fact, it appears that where political organisation was most widespread geographically, it was restricted in scope to the control of vital markets and trade routes (Meek, 1937; Radcliffe-Brown and Forde, 1950). But again the issue of causality is not addressed conclusively. Vansina (1964) proposes that the development of trade favoured the creation of centralised political systems, although the strength of this relationship may differ according to region i.e. greater in West African kingdoms than in east and central Africa (Gray and Birmingham, 1970). Given the benefits of a centralised system with respect to auxiliary services such as security and protection, traders would have preferred to transact with centralised groups (Bates, 1983).

It is possible though that the degree to which long-distance trade can facilitate the development of centralised political systems depends on the nature of commodities being traded. Gray and Birmingham (1970) suggest that where there was trade in rare or semi-rare minerals, more complex marketing procedures and security procedures were likely to have resulted, for example in the West African gold mining areas. In the case of southern Africa where ivory and rubber dominated, political organisation may have been unrewarding as over-production could deplete resources. Thus it was not necessarily

the stimulus of long-distance trade but the relative endowments of the region that determined political development. Fenske (2010) shows that the gains from trade resulting from ecological diversity can explain the presence of centralised states. His results imply that moving to an ecologically diverse environment from one that was relatively homogenous increases the probability of centralisation by between 11 to 13 percentage points. Bates (1983) also highlights the importance of ecology, or more specifically the presence and abundance of fertile soils, and links it with demography, the creation of property rights and thus, the centralisation of the state. Despite land being abundant in Africa and there being a relatively low population density, the availability of good quality, fertile soil is more scarce. As a result in areas where the soil is better there tended to be a higher population density. Given the competition for land, there was more incentive to render land a well-defined commodity.

Despite the expansion of trade and professional traders, most Africans remained dependent on subsistence agriculture and were only marginally affected by market demands. Long distance trade had both the power to facilitate the creation of a centralised political system, as well as the ability to put at risk its stability and ultimately its sustainability. For instance, the increased use of new exchange media could obviate the necessity for the royal clearing house and weaken the importance of kinship barter links (Gray and Birmingham, 1970). Once colonisation began in Africa, the control of trade was assumed by the colonising European powers and as a result weakened the basis for political control (Stevenson, 1968; Hodder, 1965; Gray and Birmingham, 1970)[3].

B. Land and Property Rights

The formation of states and the elaboration of institutions such as those governing property rights had a very different development path than that which was followed in Europe. This is predominantly due to the fact that land was so abundant in Africa and consequently, population density was equally minimal. This was not the case in Europe where peoples and then states continually fought wars for territorial gains. Colson (1975) highlights two principles that underpinned the pre-colonial African society's perception of land rights: firstly, everyman had a right to cultivation and secondly, an individual had a right to anything he had created e.g. a cultivated field and its produce. As long as land was seen as plentiful, these two principles (based on citizenship and of particular rights based on creative pre-emption) did not clash. As a result "land rights were rarely defined since they were rarely questioned" (Colson, 1975, p.95). However, in Africa the relative quality of the land proved a more important factor than its abundance and evidence shows that those areas that were more densely

[3] For example the Bemba state rose and prospered through the localised monopoly of the trade in slaves and ivory. When the British, in 1890, colonised that region of Africa, this monopoly ended and the basis of Bemba power was destroyed, both within itself and over other tribes. Simply, the Bemba developed trade, which led to an increased population density, as the British destroyed the basis of the state, this led to migration and thus the population declined (Stevenson, 1968).

populated also benefited from higher quality soil and associated natural resource endowments. In addition, populations freely moved from area to area once soils were depleted (Herbst, 2000). Given these characteristics, it becomes evident that rulers in pre-colonial Africa did not value land and its ownership in the same manner as landlords in Europe, where land rights were highly individualised given its scarcity. There was no incentive for individuals or kin groups to lay specific claims to large tracts of territory, since land itself was virtually a free good (Goody, 1971). However, in West Africa where long-term claims to land where exercised to some extent, this is likely to have been driven by perceived shortages in land or the mutually incompatible uses that certain individuals/communities envisaged for a particular tract of land (Colson, 1975).

Crucially, the distinction between private land and communal land was not made and even in a kingdom such as the Ashanti, the chief was considered the custodian of the land and any 'rights' he may claim coexisted with a cluster of other 'rights' held by the lineages residing there (Ahene, 2000). Each lineage had right to a portion of that land and any decisions concerning its use had to be approved by all members of the lineages, living and dead (the latter highlighting the role of quasi-religious practices within day to day activities of a society) (Goody, 1971).

Given the land abundance and scarce population, agriculture in pre-colonial Africa was not particularly intensive. Goody (1971) and later Diamond (1997), state that the lack of technological innovation in Africa, particularly the failure of the Bronze age plough to be adopted (and later the water wheel to aid irrigation systems) meant that agriculture remained unproductive. Ultimately, there was little incentive to demand exclusive rights to the use and ownership of land if the economic rents were low. In this environment, a more valuable commodity was live property, with wealth being determined by human and animal ownership (Sundstrom, 1965). In fact, the most common and widespread punishment within the Bantu was a fine in cattle or small stock (Schapera, 1956). African communities began to alter their views regarding land during the colonial period due to, amongst other factors, the presence of foreign settlers.

2 Data Sources

One of the key data sources made use of in this study is Murdoch's (1967) Ethnographic Atlas – a compilation of ethnographic evidence used to classify 862 societies across the world, including 239 in Africa. The Murdoch dataset provides a wealth of information equating to approximately 60 variables that capture societal, economic and political characteristics of ethnic groups, although with varying data coverage. As would be expected, larger or more prominent groups are better represented in the data. For the purposes of this analysis, the sample is limited to just sub-Saharan African (SSA) societies and

covers the period of their colonisation, prior to their independence. Many of the surveys used to compile this data were undertaken as a form of early census carried out by colonial powers, as well as those with more academic motivations – some as early as 1870. In addition, Murdoch's (1959) Ethnolinguistic Map provides a visual distribution of the ethnic groups in Africa.

Combining both the map-based representation and the geographic coordinates provided by Murdoch (1967), geographic information system (GIS) software is used to determine how these societies correspond to the contemporary countries of Africa (see Figure 6). In addition to observing the groups and societies that constitute the nation-states of Africa, the groups that are fully encapsulated by a country's national border or those that overlap with other neighbouring countries are determined. This distinction has proved important in the literature as societies that are fragmented across borders have been negatively associated with the quality of governance institutions and overall state legitimacy (Easterly and Levine, 1997; Englebert, 2000; Posner, 2004).

Figure 1: Ethnolinguistic Map (Murdoch, 1959) and Current Political Boundaries of Africa

From the wealth of information that the Murdoch dataset provides interest is focused on those variables which are believed to provide the best indication of the indigenous institutional environment for state formation and taxation, namely: family organisation, community organisation, agricultural intensity, nature of settlement and class stratification. Intuitively, a number of these variables are correlated with each other. For example, agricultural practices that extend to cultivation require some

degree of permanence in settlement, and similarly settled groups are less likely to rely on nomadic, transitory agricultural practices. Where there is an organised society characterised by a jurisdictional hierarchy with an accompanying division of labour, there is also more likely to be a class divide based on economic function and thus a higher probability of class stratification. It is assumed that organised family structures are the building blocks for structures that involve larger groups, such as the community.

In addition, one can also distinguish between the types of institutions that can be proxied using these variables[4]. For instance, jurisdictional hierarchy and class stratification could be used as an indicator of political institutions, whilst settlement and agricultural intensity lend themselves more rationally to representing economic. Family organisation and community organisation could provide a proxy for social institutions, which may provide a useful starting point in trying to capture social norms and their interaction with more formal political and economic institutions.

Given the focus of the empirical analysis presented in the next chapter, the relevance of indigenous institutions and the construction of the respective variables will be elaborated here using just three of these ethnic group characteristics: clan-based organisation, permanent settlement and jurisdictional hierarchy. These variables tend to have the best coverage in the original data sources and have sufficient cross-country variation for empirical analysis.

Box 1: Jurisdictional Hierarchy Variable

Number of jurisdictional levels - first digit indicates the number of levels up to and including the local community, second number those transcending the local community. For example:

20' represents the theoretical minimum e.g. Independent nuclear or polygynous families and autonomous bands or villages; and

44' represents the theoretical maximum e.g. nuclear families, extended families, clan-barrios, villages, parishes, districts, provinces and a complex state.

The second digit incidentally provides a measure of political 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.

Source: Murdoch (1967, p. 52)

Jurisdictional hierarchy provides information on the number of jurisdictional levels that both encompass and are external to the local community. This variable is considered a direct proxy of political institutional development and has been used previously in the literature (Gennaioli and Rainer

[4] It is acknowledged that this dataset is being approached through the eyes of an economist and not an anthropologist or sociologist, although this literature has been reviewed.

2006, 2007; Michalopoulos and Papaioannou 2011a, 2012). Using data based on this classification, the variable '*cent*' is constructed which takes the value 1 for the presence of jurisdiction hierarchy (see Box 1) or a system of centralised organisation, otherwise, it takes the value 0 representing a 'stateless' or nomadic society.

Clan-based organisation is determined from the community organisation variable. The community is considered a collective of related or unrelated family units and classified according to whether marriage takes place outside or within the family unit (exogamy and endogamy, respectively). In addition, the presence of a clan structure implies a more formal hierarchy with some form of centralised decision making. The 'clan organisation' variable (*clan*) takes the value 1 for values C or D to represent a clan based structure (see Box 2); otherwise it takes the value 0.

Box 2: Community Organisation Variable

A – agamous without localised clans of any marked tendency toward local exogamy or local endogamy[5]

C – clan-communities, single localised exogenous kin group or clan

D – demes, communities with tendency toward local endogamy

E – exogamous communities without having specific structure of clans

S – segmented communities, localised kin group with the absence of any local exogamy

T – segmented communities, with a marked tendency toward local exogamy

Source: Murdoch (1967, p. 48)

Settlement distinguishes between whether societies are considered migratory or settled, i.e. in non-shifting settlements. The interest in this variable is centred on the fact that if societies are less transitory then there is more opportunity for institutional structures to develop. As mentioned previously, settlement enables agricultural cultivation and the storage of food, allowing for a diversification of labour away from hunting and gathering, and thus facilitates the development of a bureaucracy. The 'settlement' variable (*set*) takes the value 1 for values H, N, V and X to represent some form of permanent settlement (see Box 3); otherwise, it takes the value 0.

In addition to the Murdoch (1967) dataset, the Atlas Naradov Mira (1964) from the Miklukho-Maklai Institute of Anthropology and Enthnography[6] provides population data on world ethnic groups

[5] '*agamous*' – no sexual union and complete lack of marriage; '*demes*' – a local, genetically similar population.

[6] Given the rarity of this particular Atlas, gathering this data involved a trip to the British Library, St. Pancras, London as well as transcribing and translating from the original Russian to English. The English translation of the Atlas Naradov Mira by Telberg (1965) was consulted but did not include a translation of the section detailing the population data by society.

organised by countries (correct at the time of publication). This Atlas allows for the geographic dispersion of ethnic groups to be validated and also permits the construction of population weighted variables for empirical analysis.

Box 3: Settlement Variable

B - fully migratory or nomadic bands

H - separated hamlets where several such form a more or less permanent single community

N - Neighbourhoods of dispersed family homesteads

S - Seminomadic communities whose members shift from one to another fixed settlement at different seasons or who occupy more or less permanently a single settlement from which a substantial portion of the population departs seasonally to occupy shifting camps

V- compact and relatively permanent settlements i.e. Nucleated villages or towns

W - compact but impermanent settlements i.e. shifts in location every few years

X - complex settlements consisting of a nucleated village or town with outlying homesteads or satellite hamlets

Source: Murdoch (1967, p. 51)

As mentioned earlier, the distinction between fragmented and non-fragmented groups is one that has been investigated within the literature with measures typically identifying the degree of ethnic fragmentation *within* a country, i.e. the number of different groups and the subsequent population distribution (Easterly and Levine, 1997: Posner, 2004). In this analysis, the focus is somewhat different, with fragmentation *across* national borders being of interest; reflecting the arbitrariness of colonially-imposed political borders and the ensuing implications for state legitimacy (Englebert, 2000)

The proposed rationale for the selection of these variables is based on the hypothesis that those groups or societies which had more experience with organised forms of government, at whatever level, were more able to replicate the principals of Western-style governance during and following the colonial period, and then maintain these structures. In addition, having experienced a relatively more formalised system of decision-making this would likely lead to a greater ability for the consensus-building necessary for the formulation of government policy (and in the context of this overall analysis, particularly in relation to tax policy). A lack of state legitimacy due to the fragmentation of groups across borders renders government policymaking somewhat redundant if barriers to implementation result due to the non-acceptance of the government and their policies.

3 Construction of the Indigenous Institutional Variables

As mentioned above, the data provided by Murdoch (1967) and the Atlas (1965) are cross-checked and combined to form the main dataset used by this study, the former providing specific socio-economic and political characteristics of the ethnic groups and the latter the population data. Based on these characteristics (clan-based organisation, jurisdictional hierarchy and centralised organisation) variables are created that aim to proxy for the socioeconomic and political institutions of indigenous Africa, ultimately providing a deeper understanding of the determinants of contemporary institutions.

Our overall analysis is at the country-level and thus the data collated on the ethnic groups requires aggregating. The fact that these groups are associated with a sub-Saharan African country and have corresponding population data enables the creation of country-level variables that capture the socioeconomic and political characteristics discussed previously. This is done by constructing concentration ratios. A number of other methods of aggregation were also considered, including constructing a Herfindahl Index, using principal component analysis (PCA) and simple population shares of various combinations of the characteristics[7].

A concentration ratio is a standard measure of competition in economics, although for the purposes of this analysis, the 'firm' is replaced by the ethnic group and the 'industry' by the country – the concentration ratio is calculated at the country-level, based on ethnic groups with particular socioeconomic/political attributes. The concentration ratios for the 3 largest societies are calculated, i.e. CR_3, essentially replacing market share with population share[8].

Table 1 provides details of the new variables constructed from the Murdoch (1967) and the Atlas Naradov Mira (1965) data using the techniques described above. In addition to the three organisational variables, a concentration ratio that takes into account whether or not the ethnic group is fragmented across borders is also considered.

[7] These methods are not discussed further here given that they performed poorly in subsequent empirical analysis and were particularly limited by a lack of data. However, information and results are available on request.

[8] Concentration ratios using the largest 5 societies were also calculated, but not utilised in any further analysis as institutional characteristics for these 5 groups tended to be less available and the resulting concentration ratios were too few in number to allow for econometric analysis. Where they were calculated they tended to be similar in magnitude to those of the concentration ratios using 3 societies. As such, the latter concentration ratios appear to be an acceptable reflection of the structure of the countries in question.

Table 1: Description of Indigenous Institutional Variables: Concentration Ratios

Variable	Concentration Ratio
cent	3 largest societies whose system of governance is organised centrally.
set	3 largest societies who exhibit some form of permanent settlement.
clan	3 largest societies that are characterised by a clan-based community structure.
frag	3 largest societies that are fragmented across national borders.

While the concentration ratio method provides us with the means to create country-level variables, the subsequent analysis of these ratios is more complicated, particularly if attempts are made to provide inference regarding the level of political competition and thus potential conflict within the respective countries. On one hand, the hypothesis made use of here is that higher population proportions of similarly organised groups increases the likelihood of consensus-building within the country. However, on the basis that the three largest ethnic groups are used to create the ratio, this also suggests a higher likelihood of dominance by one or a few ethnic groups within the country as a whole. In a society characterised by fewer groups, there may be more opportunity for consensus and thus less conflict. But whether or not this is the case in practice can be disputed, as has been evidenced in a number of African countries, when the presence of a few dominant ethnic groups have led to internal conflict, e.g. Rwanda (Hutus and the Tutsis), Kenya (Odinga and the Kikuyu), South Sudan (Lou Nuer and the Murle) and Liberia (Gio /Mano and the Krahn). It may be the case that more groups indicates more competition, diluting the potential for conflict, or that a more fragmented society may create problems of state legitimacy and thus have a negative overall effect on the institutional environment, as suggested by Englebert (2000). Certainly, Easterly and Levine (1997), Posner (2004) and Campos, Saleh and Kuzeyev (2009) all show that the degree of ethnic fractionalisation has a negative effect on economic outcomes[9].

In addition, the variables fail to capture other underlying factors which may have had a subsequent effect on the performance of contemporary institutions. These include the geographic location of these groups, their political engagement during the colonial period, the effect of nationalisation and state-building and the degree to which the blood or ethnic ties have been diminished over time, through migration, marriage or other socio-political influences.

Table 2: Descriptive Statistics: Concentration Ratios

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
cent	29	56.63	25.86	3.71	99.75
set	35	58.60	25.24	6.67	98.65
clan	30	23.63	27.25	0.12	95.14
frag	36	55.21	32.53	0.18	98.79

[9] Whilst Easterly and Levine (1997) treat ethnic fractionalisation as an exogenous, static variable, Campos, Saleh and Kuzeyev (2009) treat ethnicity as an endogenous variable that changes over time – they find a robust, negative correlation to economic growth over the period 1989-2007.

Table 2 provides the descriptive statistics of the four indigenous institutional variables (Appendices 3 & 4 provide more detail). It is clear that the number of observations varies according to the particular indigenous characteristic and this is due to the availability of data from its primary source – Murdoch (1967). As such, it is recognised that the data may be subject to sample selection bias as there is a tendency for the larger, as well as the more fragmented groups to be better represented. It is not clear from Murdoch (1967) whether the missing data is simply not available or actually not relevant for the group in question. As a result, when constructing the institutional variables focus is directed towards those groups for which there is adequate data and one can view it with some certainty.

As one may expect, there is some degree of correlation between these variables. Centralised organisation (*cent*) is positively correlated with permanent settlement (*set*) (coefficient equal to 0.7725) and this is statistically significant at the 1 per cent level, whilst *set* is also positively correlated with clan-based organisation (*clan*) (coefficient of 0.4483), statistically significant at the 5 per cent level. Thus the earlier proposition that organised institutional structures are not possible without some permanence in settlement is validated statistically. In fact, given the high positive correlation between *cent* and *set*, they could be substitutable. In addition, one could consider *clan* and *cent* as representing organisational structures at two levels – the former being more micro-based, the latter at a macro-level. Further, it may be reasonable to assume that a micro-level organisational structure is a necessary condition for broader, organisation at a macro-level that encompasses wider geographic locations and populations. Although a lack of a statistical correlation between *jur_h* and *clan* does not lend support to this hypothesis. In addition, the fragmentation of ethnic groups (*frag*) positively correlated with *set* and *cent* (correlation coefficients equal to 0.5455 and 0.7630, respectively and statistically significant at the 1 per cent level) – this appears to be no more than a statistical relationship, with no real economic or social rationale readily available given that the borders of countries were arbitrarily determined.

Table 2 highlights that in a majority of cases it is the same 3 ethnic groups which are being captured in the concentration ratios; this is particularly true when one compares *jur_h* and *set*. This is not unexpected given the inter-dependence between these two concepts and this is also reflected statistically through their correlation. However, there is more variation in the group composition when considering *clan* and *frag*.

4 Comparative Analysis of Variables

A. Other Indigenous, Ethnographic-based Variables

The impetus for creating these indigenous institutional variables is a desire to capture the deeper or underlying determinants of current institutional performance, thereby providing an indication of the indigenous institutional structures in place at the time of the European colonisation and prior to the subsequent independence of SSA countries during the post-war period. A number of studies have attempted a similar analysis and they are briefly outlined below:

1) Morrison, Mitchell and Paden (1989)

Morrison *et al.* (1989) provide a rough classification similar to that of Murdoch (1957) where societies are classed as 'stateless', 'tribal' or 'state-like'. The latter captures factors that are characteristic of modern day states, such as a degree of political centralisation, presence of organised force and the centralised collection of fiscal revenue. In empirical analysis, this variable is often found to be statistically insignificant; however this result may rest on the reliability of this rather general 'catch-all' variable, which has been questioned in related literature (Englebert *et al.*, 2001).

2) Easterly and Levine (1997)

Using the Atlas Naradov Mira, Easterly and Levine (1997) developed an index of ethno-linguistic fractionalisation (*elf60*) using a Herfindahl index method[10]. Using this variable they show that ethnic diversity helps explain cross-country differences in public policies, political stability, and other economic indicators such as, schooling outcomes, insufficient infrastructure and high government budget deficits. Using a simple bivariate growth regression they find that a one standard deviation increase in *elf60* is associated with a decrease in per capita growth of about 30 per cent of a standard deviation in growth across countries, or more simply, moving from an state of ethnic homogeneity to one of complete heterogeneity would result in a decrease of more than 2 per cent in the growth rate. They conclude that ethnic fractionalisation and the resulting interest group polarisation, leads to rent-seeking behaviour that prevents consensus-building regarding the provision of public goods and as such, this has a negative effect on long-run economic growth. It has now become common practice to control for ethnic heterogeneity in growth regressions[11] and this index has been cited extensively.

3) Englebert (2000)

Pierre Englebert creates two variables that measure horizontal and vertical legitimacy - the former relating to the arbitrariness of colonial borders with respect to pre-colonial institutions, the latter to

[10] Specifically, elf*60* = $1-\sum_{i=1}^{m} S_i$, where Si is the population share.

[11] Including, but not limited to: Alesina, Devlees-Chauwer, Easterly, Kurlat, and Wacziarg (2003), Brock and Durlauf (2001), Easterly (2002), Englebert (2000), Collier and Gunning (1999), Hall and Jones (1999) and Rodrik (1999).

state legitimacy and the social endogeneity of state structures as well as the historical continuity of institutions. These variables are created using information from the International Country Risk Guide (ICRG) and Morrison *et al.* (1989) for Africa-specific variables such as the heterogeneity of pre-colonial political systems and their state-like qualities. They are then used as proxies for institutions in subsequent analysis and both are shown to be positively correlated with economic growth. The underlying rationale is that if the state, and by extension the government in power, are not deemed legitimate by the populace then institutions and public programmes are likely to be viewed with scepticism, ultimately rejected and thus unlikely to achieve their objectives (horizontal legitimacy). In addition, countries that had more limited periods of colonial rule are better off, in that they have greater institutional continuity and thus, vertical legitimacy i.e. the colonial period has less of an opportunity to negatively affect political and social continuity.

4) Acemoglu, Johnson and Robinson (2001)

Acemogulu, Johnson and Robinson (2001) use historic data on settler mortality to instrument for current institutional performance measured as the protection against capital expropriation within their developing country sample. They find a large, statistical effect of the quality of current institutions on income per capita and once this is accounted for, African countries or those considered equatorial do not exhibit lower per capita incomes. Their paper is considered a seminal work and is widely cited (Easterly and Levine, 2003; Rodrik *et al.*, 2004; Nunn, 2004), however a number of critiques have been published, the most notable of which is Albouy (2004, 2012). He argues that the proposed relationship between expropriation risk and mortality rates is not robust, due to a number of data inconsistencies, and as a result the instrumental variable (IV) estimates suffer from weak instrument problems, i.e. point estimates are unstable and corrected confidence intervals are often infinite (see Chapter 2 for more details). Given that the focus of this analysis is on sub-Saharan Africa, Acemoglu *et al.* (2001)'s variable does not provide an adequate number of observations for Africa.

5) Posner (2004)

Following a critique of the *elf60* index, Posner (2004) presents an alternative index, termed the Politically Relevant Economic Group (*preg*) index which aims to address the main shortcoming of the earlier index. Specifically, that the full range of ethnic groups included in the *elf60* index may not all be relevant in determining the causal relationship between ethnic fractionalisation and economic growth via the determination of policy. As such, the *preg* index attempts to better measure ethnic diversity within the context of economic growth analysis as well as providing more than one observation per country over time. In the subsequent analysis, Posner (2004) is able to replicate the two per cent decrease in economic growth experienced from a shift to complete ethnic heterogeneity and crucially,

this result holds in a SSA sub-sample, which is not the case when Easterly and Levine's (1997) *elf60* index is used.

6) Gennaioli and Rainer (2007)

In a similar method to the one used in our study, Gennaioli and Rainer (2007) construct a country-level index of centralisation based on the share of societies that are considered 'centralised' out of the total population. They too consult the Ethnographic Atlas (Murdoch, 1967) and the Atlas Narodov Mira (1964). Using the Jurisdictional Hierarchy variable they define an ethnic group as "fragmented" or "centralized" depending on the number of jurisdictional levels transcending the local community, where more jurisdictional levels correspond to more centralized groups[12]. In their subsequent analysis they find a strong, positive correlation between this variable and the provision of public goods (health, education and infrastructure)[13] between 1960 and 2002 in African countries. Their main thesis purports that pre-colonial centralisation had a positive impact on the subsequent modernization of societies and that the key attribute of traditional institutions was the availability of mechanisms that held local leaders accountable. As public goods have to be financed by the government one would expect this measure to also be related to tax revenue.

Table 3: Spearman Rank Correlations: Indigenous Institutional Variables and Other Pre-colonial/Ethnic Institutional Variables

	set	*jur_h*	*clan*	*frag*
hlegit	-0.2929	-0.3821	-0.0857	-0.2107
lnmort	0.3092	0.3816	-0.4449*	0.3834
state	-0.1887	-0.1581	-0.5876*	0.2300
elf60	-0.6601*	-0.6118*	0.1878	-0.3327
preg	-0.4143	-0.4107	0.2857	-0.2643

Note: * denotes statistical significance at the 10 per cent level.

While all the variables have been used as proxies or instruments for institutions in quantitative research they are constructed using a range of data sources and aim to capture varying aspects of institutions. Bearing this in mind, the degree of rank correlation between the indigenous institutional

[12] However it is not clear from their paper exactly how many levels of jurisdictional hierarchy pertain to each of the classifications.

[13] Measured using the following variables: percentage of roads paved (1990-2005), percentage of infants immunised for DPT in 2001, the adult literacy rate (1970-2002) and school attainment (1960 – 1990).

variables created and these existing measures[14] is shown in Table 3. Countries that have groups which exhibit higher degrees of permanent settlement, as well as jurisdictional hierarchies also have lower scores on the *elf60* index of ethnic fragmentation. And although negatively correlated with *preg,* with correlation coefficients of a respectable magnitude, they are not statistically significant. In addition, countries with higher proportions of ethnic groups organised on a clan basis are less likely to be considered 'state-like' (*state*), and thus it appears that a more micro-based organisational structure substitutes for broader organisational control.

B. Contemporary Institutional Measures

The assumption made in this chapter is that indigenous organisation and institutions have laid the foundation for the subsequent institutions to follow and of which we observe currently. However, what is not clear is whether an identifiable indigenous institutional structure has led to the development of better modern institutions, or whether through the resulting conflict with colonial governments, the opposite is true. British colonial governments tended to adapt their governance style to that which was present in the country and make use, to some extent, of the prevalent institutional structures. Conversely, the French colonies tended to be run entirely by French civil servants and there was a concerted effort to remove any indigenous identity from the public sphere.

In line with the geography-institutions economic growth literature, the institutional variables typically used are composite indices such as those from the Polity IV dataset (Marshall, Gurr and Jaggers, 2009), the International Country Risk Guide (ICRG), as well as the Good Governance Indicators compiled by the World Bank (Kaufmann, Kraay and Mastruzzi, 2009). With regards to the latter, a number of critiques have arisen which focus on the data compilation (estimates for different countries and periods may be based on different underlying data sources) and econometric shortcomings (generally focused on the aggregation) (Arndt and Oman, 2006; Glaeser *et al.*, 2004; Kurtz and Shrank, 2006; Thomas, 2006; Knack, 2006)[15]. In a rebuttal article of their own, Kaufmann, Kraay and Mastruzzi (2007) reassert that the main criticisms are actually the benefits of their indicators. For example, the broad country coverage, the averaging which allows both for the summarising of a wealth of information on governance into one variable, as well as the smoothing out of volatility in individual indicators – all of

[14] A Spearman rank correlation coefficient, with raw scores being converted to ranks is used rather than the more traditional Pearson correlation coefficient, which measures the linear dependence between two variables given the raw data.

[15] In addition, since the indicators are scaled to have the same global averages in each period, governance using these indicators cannot be compared over time (Arndt and Oman, 2006; Knack, 2006); the data used to form the indicators are overly influenced by the recent economic performance or development of the country leading to 'halo ratings' – compilers give rich or fast-growing countries better scores because they must have better institutions in order to facilitate that performance (Glaeser *et al.* , 2004; Kurtz and Shrank, 2006); the indicators are too imprecise to allow for reasonable comparison of governance over time or across countries (Arndt and Oman, 2006); changes in the indicators reflect corrections of past errors rather than actual changes (Knack, 2006).

these combined, providing strong justification as to why the Good Governance indicators remain a mainstay of any economic institutional analysis. However, one cannot ignore the fact that these indicators measure relatively recent institutional performance and as such, the time series for which they are available is not particularly long (although the Polity IV dataset has observations over the period 1960-2010). Some of these variables will be used as part of the sensitivity and robustness checks to be undertaken following the empirical analysis, but for now simple correlations are presented here.

From the Polity IV dataset (1960-2010)[16]:

- *POLITY2* – is a revised combined POLITY score, resulting in a unified polity scale ranging from +10 (strongly democratic) to -10 (strongly autocratic). The resulting scale measures the degree of democracy versus autocracy.
- *EXCONST* - measures the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectives.
- *POLCOMP* - a Political Competition concept variable combining Regulation of Participation (PARREG) and Competitiveness of Participation (PARCOMP), which provides an alternative method for comprehending authority patterns.

From the World Bank's Good Governance Indicators (Kaufmann, Kraay and Mastruzzi (2010):

- *Government Effectiveness (govteff)* – measures the quality of public services, the capacity of the civil service and its independence from political pressures; and the quality of policy formulation.
- *Control of Corruption (cc)* – measures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.
- *Rule of Law* (*rol*) – measures he extent to which agents have confidence in and abide by the rules of society, including the quality of contract enforcement and property rights, the police, and the courts, as well as the likelihood of crime and violence.

Comparing the correlation between the indigenous institutional variables and contemporary institutional measures yields two possible outcomes: if there is a correlation then this suggests that the indigenous institutional structures and current institutional measures capture similar institutional features and that there is a link between the deeper determinants of institutions and current institutional outcomes (correlation and not causation is inferred). Thus the indigenous institutional variables provide an alternative. On the other hand, if there is no correlation then it may be the case that

[16] POLITY IV Manual, Marshall, Gurr and Jaggers (2013)

our indigenous institutional variables capture factors that are different or additional to those being measured by the contemporary measures and are thus complementary. The correlation coefficients shown in Table 4 seem to suggest the latter; this will be investigated further in the subsequent empirical analysis.

Table 4: Spearman Rank Correlations: Indigenous Institutional Variables and Contemporary Institutional Measures

	set	*cent*	*clan*	*frag*
polity2	-0.0389	0.0808	-0.2362	0.1577
exconst	-0.1008	-0.1216	0.0435	0.0304
polcomp	-0.0615	-0.0777	-0.1046	0.0662
cc	0.0646	0.1700	-0.1955	0.2177
govteff	-0.0792	-0.0015	-0.1323	0.0362
rol	-0.0900	0.0262	-0.2015	0.0823

Note: * denotes statistical significance at the 10 per cent level.

5 Conclusion

The role that institutions have to play in determining economic growth and other economic outcomes is a well-established result in the empirical economic literature. Enabling this analysis is a range of measures and indicators that have been constructed with the aim of being used as proxies for current institutional performance. Despite a number of these indices being updated on a regular basis, there are a still a range of concerns, some statistical, others conceptual that are a constant reminder of the difficulty in measuring the quality of institutions. Perhaps the most pertinent of the criticisms is the fact that many of these measures are in fact outcome-based and ignore the so-called 'inputs' to institutions, which may be crucial to understanding the variation in outcomes despite common histories (i.e. colonial heritage) and subsequent reforms.

By analysing data of an ethnographic and anthropological nature, this paper has aimed to uncover the underlying factors which may help to explain to some degree the heterogeneity in institutional, as well as economic outcomes in sub-Saharan Africa. Combining this data with historic population data, new variables have been created that proxy for the underlying institutional structures of indigenous African groups. Subsequent comparative analysis shows that these newly constructed variables are complementary to those indicators and measures that are currently available and which capture predominantly, contemporaneous institutional performance.

Whilst no empirical analysis is undertaken in this paper, it is intended that these variables be used in subsequent analyses that require the institutional environment to be taken into account.

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Appendices

Appendix 1: Validation of the Data

The population data provided by the Atlas (1964) allows the ethnic groups to be weighted within a country by their relative size. However, there are some cases where the ethnic groups listed in Murdoch (1967) do not correspond directly (as noted by Easterly and Levine, 1997; Gennaioli and Rainer, 2005). Using alternative names as provided by Murdoch (1959), as well as more aggregated 'clusters'[17] to combine societies that are considered ethnographically similar, data from both sources is validated[18]. It is acknowledged that this clustering of ethnic groups is not without its own shortcomings. In particular, clustering of ethnic groups in some cases implies that clearly distinct and politically important groups from a modern perspective are subsumed under an umbrella grouping, e.g. the Hutus and Tutsis from Rwanda and Burundi are referred to jointly as the Banyarwanda as from an anthropological perspective they are one, sole ethnic group (Neuffer, 2002)[19]. In addition, there are cases where the ethnic group that defines the overall grouping is not even considered the more dominant ethnicity, e.g. in Togo, the Kabre are listed with two other groups as a subgroup of the Tem. However, contemporary literature on Togo identifies the Kabre and not the Tem as the dominant group in the country's political environment (Posner, 2004). In order to make our dataset as all-encompassing as possible, additional sources of information were consulted in order to overcome discrepancies, details of which are provided below:

Firstly, Bantu is used to refer to the collective of ethnically related groups found throughout Central and Southern Africa who speak Bantoid languages. As such, many Bantu groups are referred to using a prefix – 'ma', 'wa', 'ama' and 'ba' – before the name of the specific group. The 'wa' generally refers to the plurality of the group, whereas 'ma' or 'm' denotes the singular, 'u' is used as an abstract noun. For example, Wakamba refers to the Wakamba race, Mkamba refers to a member of the Wakamba race and Ukamba to the land of the Wakamba. Similarly, the tribe may be referred to without a prefix altogether, e.g. Bangala was matched with Mbangala. This variation was taken into account when matching names of ethnic groups between Murdoch (1967) and the data from the Atlas Naradov Mira.

Secondly, for some rather notable ethnic groups it was not possible to match them between the two sources of data, for example the Shona of Zimbabwe were not found in Murdoch (1967), nor were the

[17] For example, the Fang-Dzem cluster groups together the Fang, Kota, Dzem, Ngumba and Sanga in what is now Cameroon, Gabon and Equatorial Guinea.

[18] These sources have been previously used by Gennioli and Rainer (2007) and Fenske (2009); the former construct concentration ratios of pre-colonial centralisation whilst investigating the provision of public goods in sub-Saharan Africa.

[19] The names Tutsi and Hutu first referred to the status of an individual, the former referring to 'cattle-owner' and became the term for the elite, power-holding group; Hutu referred to subordinates or followers. These hierarchical designators of proximity to power then became cemented as ethnic-like identifiers before the arrival of Europeans (Newbury, 1988).

Matabele (Zimbabwe), Tswana (Botswana), Ashanti (Ghana), Fulani (West Africa) and Mandingo (Mali), in cases such as these, individual searches were carried out in order to reconcile the data. For the Shona (or Mashona), information from groups that represent ethnic dialects of the larger Shona group was used, including: the Zezuru, Manyika, Karanga, Karekare, Ndau, Kalanga, Nambya and Manyika. In this case, only data for the Ndau was available and was thus taken to represent the Shona group as a whole. The Atlas (1965) refers to the Bechuana as being the most populous ethnic group in Botswana (almost 69 per cent of the total population) - 'Bechuana' is in fact the common spelling form of Tswana and the principal Tswana groups are the Bakgatla, Bakwena, Baleto, Bangwato, Bangwaketse, Barolang, Batawana, Batlokwa. However, the larger Bechuana/Tswana group is not included in Murdoch (1967); instead the ethnographic data from these principal groups is used[20]. Similarly, for the Fulani of West Africa there was no single entry in Murdoch (1967) and so the Fulani's linguistic divisions were taken into account: Kano, Katsiva, Boramo, Bagirmi and Sokoto. Data was subsequently only available for the Bagirmi and so this group was taken to represent the Fulani as a whole. In Zimbabwe, the Ndebele are now referred to as the Matabele. The Ashanti/Asante and the Fante from Ghana are grouped together in one group by the Atlas Naradov Mira (1965) - the collective group being the Akan (also including the Akim, Akwapim, Boule-Anya, Abrong and Gonja). The Ashanti are the Twi-speaking branch of the Akan group, while the Fante represents a coastal group. Characteristics of the Ashanti group from Murdoch (1967) were thus used to represent the whole Akan group and the subsequent calculation of concentration ratios. Whilst the Mandingo are referred to in the Atlas (1965), there is no corresponding entry in Murdoch (1967). Further investigation reveals that Mandingo refers to the name of the Mali Empire of the Mandinka people; over time the Mandinka became known as the Malinke – the latter being noted in Murdoch (1967) and thus this data is used in relation to the Mandingo.

Thirdly, as noted by Posner (2004) there is no distinction made between the Hutus and the Tutsis in Rwanda. Instead 'Banyaruanda' refers to both of those groups as well as the Batwah in both Murdoch (1967) and the Atlas Naradov Mira (1965). Referring to current population statistics, the Hutus constitute 84% of the Rwandan population, with the Tutsis at 15% (CIA World Factbook). For Burundi, a similar pattern is noted; 'Barundi' refers again to both the Hutus and the Tutsis. Whilst no distinct socio-economic or political characteristics are provided by Murdoch, this distinction has been taken into account when creating variables.

Lastly, within the population data, as it refers to a country as a whole there are classifications such as 'Europeans', 'other Africans' or 'others and unknowns' listed – as these do not correspond to the indigenous groups that are of interest in this analysis, these were dropped entirely and the country's total population altered appropriately.

[20] Specifically, the Bakwena, Bangwato, Bangwaketse, Batawana, Batlokwa.

Appendix 2: Other Data Aggregation Methods and Approaches

During the initial stages of analysis, a number of statistical methods and conceptual approaches were trialled in order to investigate how best to make use of Murdoch's (1967) rich dataset and construct variables that capture the indigenous institutional environment prevalent in the respective countries, as well as aiming to capture the capacity for modern, effective institutions to develop in the future. In terms of the former, a Herfindahl Index (as well as its reciprocal), principal component analysis and concentration ratios using the 5 largest societies were trialled. For the latter, various combinations of the institutional and fragmentation variables were investigated. These are briefly covered below:

Herfindahl Index

In order to measure the potential degree of political competition between groups a Herfindahl Index was calculated (a method favoured by Easterly and Levine, 1997; Posner, 2004). In this analysis, the Herfindahl-Hirschman Index (more commonly known as the Herfindahl Index, or HI) is constructed for those groups that are characterised by some form of jurisdictional hierarchy (dummy variable *cent* equal to 1) – the proxy for political organisation.

Like concentration ratios, the Herfindahl Index features most prominently in the industrial organisation literature, where S_i is the market share of firm i in the market and N is the number of firms. A small index indicates a competitive industry with no dominant players (the index tends to zero), which corresponds to the economic theorem that more firms equals more market competition. In addition, using the reciprocal of the index (i.e. 1/HI) indicates the "equivalent number of firms in the industry", more specifically the number of firms of the same size that would characterise the industry. This provides an alternative perspective on the degree of competition in the market and again supports the rationale that a higher number of firms indicates a greater degree of competitive behaviour. The benefit to using the Herfindahl Index (HI) over a concentration ratio is the fact that it gives a much heavier weight to firms with larger market shares (a mathematical result of the squaring of the market shares). In addition, the HI uses information for all firms in the industry, however this entails being able to obtain the market share for each firm in the industry.

In terms of this analysis, the market share of the firm is replaced with the population share of the ethnic group (characterised by the presence of jurisdictional hierarchy) over the total population.

Principal Component Analysis

Principal component analysis (PCA) is a statistical technique that allows summary measures or 'principal components' to be derived from a set of indicators. The original purpose of PCA was to reduce a large number of variables, p, to a much smaller number of principal components, m, whilst retaining as much of the variation as possible in the p original variables. Typically, the number of variables is less

than the number of principal components (Jolliffe, 2002). Each principal component is a weighted average of the underlying indicators – the weighting determined by the eigenvector of the correlation matrix (or if the data is standardised, the co-variance matrix).

In order to generate an index of indigenous institutional capacity, principal component analysis was carried out on indicators from Murdoch (1967). The principal component analysis was then carried out on each of these variable groupings; the variables were then weighted according to the factor loadings on the first principal component generating three distinct indices. The first principal component was chosen to weight the variables as is practice in the literature (Filmer and Pritchett, 2001); however, the general rule of thumb indicates that eigenvalues of greater than 1 indicates how many principal components should be used in the construction of subsequent indices. In applied analysis, each principal component is meant to capture a particular characteristic of the underlying data, with obvious changes in the magnitude and sign of the coefficient being evident as one moves from one principal component to another. However, there was no clear pattern in the principal components, and it was difficult to interpret these results. It had been anticipated that successive principal components would capture differing aspects of institutional organisation, for instance, political, economic and social; however interpretation proved difficult. In fact, this is the major constraint and commonly applied criticism to this approach. It is a statistical technique that often does not lend itself to rationale economic explanation. Based on this, as well as the fact that the PCA-weighted indices performed weakly in further econometric analysis, this approach was not pursued further.

Composite Variables

In a further attempt to capture the 'institutional capacity' that indigenous societies may possess and which may determine current institutional performance, a range of composite variables that measure the proportion of the total population that is made up of 'institutionally organised' and 'settled' groups were calculated. 'Institutional organisation' is captured by community organisation (*com*), family organisation (*fam*), class stratification (*class*) and jurisdictional hierarchy (*jur/p*); 'settled' by permanent settlement (*set*) and permanent agriculture (*agricp*). These characteristics tend to be correlated, however it may be the case that particular combinations are better suited at capturing 'institutional capacity'. Investigating a number of potential combinations to proxy for this inter-dependent relationship a number of 'political capacity' variables are created. However, when used in the subsequent empirical analysis, they seldom yield statistically significant results.

Appendix 3: Indigenous Institutional Variables: Concentration Ratios

	jur_h	*set*	*clan*	*frag*
Angola	70.84	70.84	70.84	13.86
Benin	74.63	74.63	0.88	74.63
Botswana	3.71	14.86	12.00	14.86
Burkina Faso	65.91	69.55	5.45	7.5
Burundi	98.65	98.65	18.51	98.79
Cameroon	27.95	49.53	23.35	18.51
Chad	38.43	38.43	4.48	16.04
Congo, DRC	39.82	39.82	24.96	28.14
Congo, Rep.	79.44	83.33	76.67	83.33
Côte d'Ivoire	38.48	55.91	6.52	22.88
Eq. Guinea	.	95.68	95.14	95.68
Gabon	.	47.99	35.49	89.29
Gambia, The	40.32	40.32	14.52	47.99
Ghana	81.52	81.52	4.10	81.52
Guinea	57.74	57.74	1.23	77.10
Kenya	25.32	54.76	54.76	16.95
Lesotho	.	98.28	10.76	98.28
Liberia	43.33	61.90	28.57	57.62
Madagascar	.	.	.	0.18
Malawi	78.03	78.03	.	82.18
Mali	29.40	29.40	0.12	68.33
Mozambique	78.35	78.35	6.39	81.95
Namibia	.	53.37	8.05	67.98
Niger	.	53.37	.	75.41
Nigeria	.	18.03	5.90	36.43
Rwanda	99.45	97.64	.	97.64
Senegal	80.50	80.50	44.17	80.5
Sierra Leone	69.59	69.59	5.51	42.65
South Africa	48.01	48.01	20.48	31.51
Sudan	14.92	19.20	5.13	8.44
Swaziland	93.98	93.99	90.23	93.99
Tanzania	30.52	30.52	15.03	17.65
Togo	60.81	60.81	.	87.5
Uganda	39.81	39.81	14.76	35.06
Zambia	49.19	60.08	4.84	27.42
Zimbabwe	83.65	6.67	.	70.95

Appendix 4: Dominant Ethnic Groups

Country	Ethnic Group	
	Population Share	Name
Angola	35.93	Ovimbundu
Benin	58.54	Ewe
Botswana	68.57	Bechuana
Burkina Faso	54.55	Mossi
Burundi	98.21	Barundi
Cameroon	18.51	Fang
Chad	29.85	Arab, Sudan
Congo, DRC	17.70	Baluba
Congo, BR	52.22	Bakongo
Eq. Guinea	95.14	Fang
Ethiopia	48.67	Am hara
Gabon	42.41	Bakele
Gambia	45.16	Mandingo
Ghana	47.24	Akan
Guinea	40.32	Fulani
Ivory Coast	23.18	Baule-Anyi
Kenya	29.50	Kikuyu
Lesotho	87.52	Basotho
Liberia	28.57	Grebo, Kru, Kran
Malawi	56.57	Malawi
Mali	40.48	Mandingo
Mozambique	51.88	Makua
Namibia	53.37	Ovambo
Niger	44.26	Hausa
Nigeria	21.40	Hausa
Rwanda	92.73	Banyaruanda
Senegal	44.17	Wolof
Sierra Leone	33.47	Mende
South Africa	21.52	Khosa
Sudan	48.48	Arab, Sudan
Swaziland	77.07	Swazi
Tanzania	18.63	Wanyawezi, Wahehe, Wabena
Togo	41.55	Ewe
Uganda	18.99	Baganda
Zambia	33.67	Bemba
Zimbabwe	65.40	Mashona