African History through the lens of Economics

Questions and Answers - Week 2

Lecture 1: Precolonial Africa. Political Organization, Tuesday 8 February *with Stelios Michalopoulos, and Warren Whatley*

Lecture 2: On Origins of African States, Wednesday 9 February *with James Fenske, and Marcella Alsan*

Lecture 3: Mapping Contemporary African Development, Thursday, February 10 *with Tanner Regan and Elias Papaioannou*

Please visit our course website to access the recorded lectures and slides of each session. Due to the high volume of questions received during the live Q&A, we have prepared this document, which addresses a selection of questions that were not possible to answer during the lecture.

Question 1. How reasonable and accurate are national measures of institutional quality, such as rule of law and control for corruption? What do they miss?

These are spot-on questions. There are numerous proxies of countries' national institutions; for example, control of corruption, bureaucratic efficiency, regulatory quality, transparency, court efficiency and quality, red tape, and investor protection.

The most widely used data comes from the World Bank's World Governance Indicators (WGI) database. While not a perfect index, the World Bank team aggregates data using a statistical technique that aims to reduce measurement error (principal components) of various proxies of, for example, the rule of law and control for corruption that non-governmental organisations (NGOs), research institutes and risk agencies produce. See the WGI here.

Another widely used database of national institutions' proxies is the World Bank's Doing Business database, which has been discontinued recently. This records country performance on investor protection (shareholders and creditors), efficiency of bankruptcy, red tape, ease of registering property and trade, regulation of labour, capital and labour markets, and more.

Many of these indicators build on influential research by Simeon Djankov, Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Sheifer and Robert Vishny, who compiled cross-country measures of the regulation of entry, labour markets, constitutional guarantees of freedom, bankruptcy and debt enforcement, and shareholders and creditors' rights. For applications, see for example, Klapper, Laeven and Rajan (2006) and Nunn (2007).

Many scholars focus on democracy, a hotly debated topic in social sciences since the time of Plato and Aristotle. Again, there are various measures of political freedom and civil liberties; some binary and some continuous. See, for example, the Polity Project or the Freedom House measures.

Other scholars use specific institutional aspects, such as graft or risk of expropriation using information from NGOs and specialised international agencies, such as Political Risk Services and Transparency International. Another way to approach measurement of institutions is via 'revealed' fraud, such as the Panama Papers case and the violations of parking rules by international politicians.

Clearly, one cannot rule out error; be it classical (i.e., unrelated to development) or systematic (reflecting bias). Besides, quite often, there is non-negligible variation in institutional quality in the same country across regions (for example, on the efficiency of courts, regulatory quality and the efficiency of administration) across regions. See, for example, Glaeser, La Porta and Lopez-de-Silanes (2004), Pande and Udry (2005), and Munck and Verkuilen (2002).

For a general introduction on the interplay between institutions and development, see Acemoglu, Johnson and Robinson (2005), and for an intriguing case study on Botswana, see Acemoglu, Johnson and Robinson (2002), where they discuss in detail the role of Tswana pre-colonial institutions, such as the kgotla.

On the role of democracy on development and the compilation of binary (0/1) measures of political freedom, see Acemoglu, Naidu, Restrepo and Robinson (2019) and Papaioannou and Siourounis (2008).

Question 2. Do the correlations between precolonial political centralisation and contemporary development, captured by satellite imagery of light density, reflect an average? Are there exemptions? Nigeria seems to differ from the Africa-wide correlations. Please elaborate.

Thanks for these (and many similar) questions. The regression results that Stelios Michalopoulos presented on the long-run correlation between regional development, as captured by luminosity, and ethnic-specific precolonial political centralisation, as reflected in George Peter Murdock's map, indeed reflect the average relationship.

The positive long-run correlation does not imply that one always observes a positive link across all countries.

Indeed, as a few friends noticed, across Nigeria the correlation between precolonial political centralisation (as reflected in Murdock's map) and contemporary development as measured by nightlights is not positive. This clearly shows that deep ethnic-specific institutional traits are not deterministic, a point stressed in Stelios' concluding slide and interact with the colonial features. For example, for those interested in the long-run legacy of precolonial political centralisation and development, broadly defined, in Nigeria we recommend:

- Archibong (2019). Context: Nigeria. Main Finding: Historically centralised regions in Nigeria have less access to certain public services today. Mechanism: centralised leaders compliant with autocrats received more federally controlled services and vice versa.
- Bauer, Platas and Weinstein (2021). Context: Across Africa. Finding: Islamic states in the precolonial era are worse off today compared to areas governed by traditional or Christian kingdoms. Mechanism: Limited colonial investments and no missionary activity in Muslim-led areas.

Question 3. How does precolonial political centralisation correlate with other features that might have influenced long-run development outcomes? Could there be other factors at play here?

Many friends rightly asked whether the significantly positive long-run association between regional development, as reflected in luminosity, and precolonial political centralisation reflect something other than centralisation ethnic features; for example, effects related to geography and the mode of the precolonial economy. This is an important issue.

Murdock (1967) gives information on various ethnic precolonial characteristics, while Michalopoulos and Papaioannou (2013) examine in detail the impact of traits other than political centralisation on long-run

development. To do so, they augment the empirical specification with ethnic-level control variables, capturing the size of the ethnic group, population and land area (although they acknowledge noise in population statistics). They also condition for numerous other ethnic features, the mode of subsistence economy, settlement patterns and occupational specialisation. Michalopoulos and Papaioannou find that only precolonial centralisation correlates with contemporary development. Moreover, they allow for numerous geographic, locational and ecological features at a local level, such as distance to the coast and the border, elevation, soil suitability for agriculture, presence of streams, and more. The correlation between regional development across ethnic homelands and precolonial centralisation retains statistical significance, even after accounting for differences in the aforementioned features. This test assuages (without eliminating) concerns that the estimates capture some other ethnic feature.

For further discussion, see also Michalopoulos and Papaioannou (2015).

Question 4. Is it safe to say that the partitioning of Africa was a one-off decision made during the 1885/6 Berlin Conference, or did it pre-date it?

There were several inquiries regarding the so-called Scramble for Africa. As we have tried to show, there are significant overlaps and sizable heterogeneity across the main historical epochs. We are quite sceptical of the grouping of (African) history. The fighting among European imperial powers for African territory starts well before the Berlin Conference; however, the bargaining among European nations peaks around this time, which coincides with skyrocketing commodity prices.

We have scheduled a lecture on border design, state artificiality and the Scramble for Africa in week 5. We will discuss how border design contributed to conflict, repression and under-provision of public goods. If you are impatient (like us!), you may want to look at this op-ed from Project Syndicate.

A detailed review is provided by Thomas Pakenham in his book *The Scramble for Africa*. We also recommend *Partitioned Africans* by A. I. Asiwaju.

Question 5. How accurate are the Murdock maps detailing ethnic homelands?

Many friends asked about the accuracy of Murdock's map and misclassifications (measurement error) of the ethnic measures in Murdock's Ethnographic Atlas. These are key questions. Murdock compiled the mappings of ancestral ethnic homelands and the various quantitative measures of groups' economic organisation, class stratification, settlement patterns and political centralisation using mostly secondary sources and research published in specialised academic journals reflecting the knowledge at the time.

Let's start with the **Murdock Map** (1959), published in his book *Africa: Its Peoples and Their Culture History*.

- Obviously, there is pure measurement and projection error in Murdock's mapping on ethnic "homelands".
- Besides, groups overlapped, and Murdock's map does not take this into account.
- Moreover, the notion of ethnic/linguistic groups is blurred and one can have reasonable objections as to how Murdoch defines them.

Nonetheless, Murdock's mapping overlaps to a great extent with more contemporary mappings of Africa's linguistic (ethnic) landscape, such as the *Ethnologue* and the *Atlas Narodov Mira*. And, despite mixing of populations and population movement, Moscona, Nunn and Robinson (2020) find that there is a strong correlation between an individual's self-reported ethnic affiliation in the Afrobarometer Surveys and their current and ancestral homeland (ancestral measured according to Murdock's map). To sum up,

while there is error, at the same time there is some signal, and one can get more accurate mappings for specific countries and areas.

Let's move to **Murdock's Ethnographic Atlas** (EA), which records quantitative information across "ethnic" groups' traits just before (or at the time) of European colonisation (Murdock, 1967). Many studies, such as Michalopoulos and Papaioannou (2013), Fenske (2013, 2014), and Alsan (2016), have used Murdock's variable on jurisdictional hierarchy beyond the local level as a proxy for the degree of political centralisation of ethnicities in (and outside) Africa.

Comparing the EA against DHS survey data from 790,000 individuals across 317 ethnicities spanning 43 countries, Bahrami-Rad, Becker and Henrich (2021) find that the Murdock *Atlas* appears to be valid and reliable. Another piece of research that speaks to the accuracy of the EA looks at myths, legends and folklore tales from societies around the world and uses these narratives to infer cultural traits (Michalopoulos and Xue, 2021). The authors establish that societal characteristics such as political complexity, family structure and subsistence mode derived from the content of these stories correlate highly with data on analogous features from the EA. The fact that these two very different sources of data are correlated with each other is reassuring that there is, indeed, a significant signal in Murdock's work, while there is also noise.

Question 6. How does ethnic fragmentation (ethnic diversity), polarisation along ethnic lines and inequality between ethnicities affect conflict?

There is a large academic literature on the relationship (correlation) between development (low conflict, good institutions, sound public goods provision) and the topics touched on in this question; both across the world and zooming in on Africa. A good starting point is Desmet, Ortuño-Ortín and Romain Wacziarg (2016). Another good summary piece is Esteban, Mayoral and Ray (2012).

A similar question on linguistic (ethnic) diversity and development was asked in week 1. For convenience, we reproduce the answer here:

There is a considerable amount of research on linguistic (and ethnic) heterogeneity, fractionalisation, polarisation and segregation. One strand of academic research looks at the origins of language groups, stressing the role of geography, ecology, the disease environment and history. You may want to look, for example, at the following:

- Pelle, Ahlerup, and Olsson (2012) *The Roots of Ethnic Diversity*
- Cervellati, Chiovelli, and Esposito (2019) *Bite and Divide: Malaria and Ethnolinguistic Diversity*
- Michalopoulos (2012) *The Origins of Ethnolinguistic Diversity*

Another strand of research compiles cross-country statistics of various diversity angles, then associates income, public goods, conflict and education on these measures of diversity. You may want to consult the following cross-country works, which also provide country statistics:

- Fearon (2003). *Ethnic and Cultural Diversity by Country*
- Fearon and Laitin (2003). *Ethnicity, Insurgency, and Civil War*
- Desmet, Ortuno-Ortin and Wacziarg (2012). *The political economy of linguistic cleavages*
- Alesina, Michalopoulos and Papaioannou (2016). *Ethnic inequality*
- Posner (2009). *Coethnicity: Diversity and the Dilemmas of Collective Action*
- Galor et al. (2020) Diversity and Conflict

A more recent strand of the academic literature uses survey data to compile measures of heterogeneity in beliefs, opinions, trust and ideology across and within 'groups', and then examines their (conditional) correlation with public goods provision. See, for example, Desmet, Ortuno-Ortin and Wacziarg (2017) *Culture, Ethnicity and Diversity.*

Another strand of research looks at favouritism and discrimination (or lack thereof) across social cleavages such as race, ethnicity and religious adherence; often looking across many African economies or within countries. For example, see:

- Franck and Rainer (2012). *Does the Leader's Ethnicity Matter? Ethnic Favouritism, Education, and Health in Sub-Saharan Africa*
- Kramon and Posner (2016). *Ethnic Favoritism in Education in Kenya*
- Kasara and Kimuli (2007). *Tax Me If You Can: Ethnic Geography, Democracy, and the Taxation of Agriculture in Africa*.

There is also literature on institutional innovation to cope with ethnic diversity, such as:

- Francois, Rainer and Trebbi (2015). *How is Power Shared in Africa?*
- Burgess, Jedwab, Miguel, Morjaria and Padró i Miquel (2015). *The Value of Democracy: Evidence from Road Building in Kenya*

Question 7. Please explain the idea of spatial regression discontinuity design (RDD, border analysis).

Thanks for raising this issue, which (due to time constraints) was not much discussed in the lecture. The idea of spatial RDD to look at border discontinuities (national or within-country across traditional homelands) is appealing because regions on both sides of the border have similar geographic characteristics. That is, they will usually not substantially differ in, for example, their endowments (elevation, soil quality, rainfall), natural resources (presence of diamond or gold mines) and ecology (prevalence of malaria or tsetse fly). In economics research, the hypothesis of geographic similarities on two sides of a border is often tested and findings offer considerable support.

Once it is established that geography is similar, and thus unlikely to account for the difference in the outcome of interest, researchers look at other salient discontinuities around the border. A prominent example of applying this method is Dell (2010), who looks at the *mita* system in Peru and Bolivia, establishing that this forced labour system, which was abolished in 1812, is affecting outcomes today in Peru. Other papers using this technique in Africa include Michalopoulos and Papaioannou (2013) and Michalopoulos and Papaioannou (2014). The latter study compares development across the national border, zooming in on the ancestral regions of the same ethnic group (e.g., Ewe, Masai, Ambo, Hausa) and thus effectively also accounts (to some extent) for ethnic/linguistic features (on top of geography).

If you are interested in the technical side of regression discontinuity designs, we recommend Lee and Lemieux (2009) and the slides of Paul Goldsmith-Pinkham, available on Github.

We will also discuss the main idea and concepts behind RDD during the recitation sessions on Friday, Feb 18.

Question 8. How were precolonial states organised? Who were the major powers?

We touched upon the measure of political centralisation by Murdock in our answer to question 3. He uses a variety of variables to indicate the complexity and hierarchical structure of precolonial institutions. This highlights that there is large heterogeneity in the way that societies in Africa were organised. There were

great empires, such as ancient Egypt, the Mali Empire, the Oyo Empire, the Kingdom of Kongo, the Zulu Kingdom, and many others. These were organised under one leader who ruled over a great number of people and large geographic areas. The leaders also held sway over other kingdoms and regions. In other parts of the continent, societies were acephalous and there was little formal political organisation. Examples include the Nuer in Sudan and the Konkomba in Ghana and Togo. Other societies, in terms of level of centralisation, can be found somewhere in between. These people lived in large chiefdoms and loose alliances; examples include the Ewe and the Wolof in West Africa.

Several outstanding books offer rich historical and institutional accounts of specific kingdoms, including the Kingdom of Dahomey, the Zulu Kingdom, the Songhai Empire and the Kingdom of Zimbabwe, among others. Here are a few references:

- Biobaku, S. 0. 1957. *The Egba and Their Neighbours 1842-1872*. Clarendon Press.
- Birmingham, David. (1976). *The Forest and Savanna of Central Africa*. In *The Cambridge History of Africa*, Volume 5: c. 1790 to c. 1870, edited by J. E. Flint. Cambridge University Press, pp. 222–269.
- Bisson, Michael. (1982). *Trade and Tribute. Archaeological Evidence for the Origin of States in South Central Africa*. *Cahiers d'études africaines*, 22, 343–361.
- Dike, K. O. (1956). *Trade and politics in the Niger Delta, 1830-1885: An introduction to the economic and political history of Nigeria*. Clarendon Press.
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- Igbafe, P. A. (1979). *Benin under British administration: the impact of colonial rule on an African kingdom, 1897-1938*. Humanities Press.
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- Law, R. (Ed.). (2002). *From Slave Trade to 'Legitimate' Commerce: The Commercial Transition in Nineteenth-Century West Africa*. Cambridge University Press.
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- Wilson, Anne. (1972*). Long Distance Trade and the Luba Lomami Empire*. *The Journal of African History, 13, 575–589.*

Question 9. How is ecological diversity defined? How does it affect centralisation and development more generally?

In his 2014 paper *Ecology, trade and states in pre-colonial Africa*, James Fenske tests the hypothesis that trade across ecological boundaries promotes and facilitates state formation. Fenske attributes this idea to Robert Bates, a giant on African political economy. Fenske finds that societies that live in ecologically more diverse environments have, on average, a higher degree of political centralisation, as captured by George Peter Murdock's variable reflecting the levels of jurisdictional hierarchy beyond the local community index. Ecological diversity is measured through a Herfindahl index, which reflects the number of ecological zones present in a given "ethnic" area (in Murdock's map). The core idea is that societies living in ecologically more diverse environments can potentially achieve larger gains from trade as they have different products which they can exchange with other groups; this conjecture follows from a Ricardian view of comparative advantage in production.

In a recent work, Michalopoulos and Xue (2021) show that geographically diverse societies historically feature a larger share of trade-related folk stories in their oral tradition.

The extent to which ecology shapes economic and social outcomes today, and the channels through which this mechanism operates, is an extensively researched topic. Marcella Alsan talked about her research on the tsetse fly and provided evidence that it limited the extent of plough-based agriculture, which is often seen as central to economic development.

In their seminal work on long-run development, Acemoglu, Johnson and Robinson (2001) argue that the disease environment Europeans faced abroad impacted the early institutions that were set up by colonists. These institutions are in part persistent and thus influence outcomes today.

There is also evidence that land endowments in the form of mineral resources or suitability for agriculture are determinants of civil conflict as they can amplify income shocks if the price of these resources changes (see, for example, Berman, Couttenier, Rohned and Thoenig (2017) or McGuirk and Burke (2020)).

While most of the scholarship is based on broader ecological regions, a more recent source of ecological diversity is based on the finer data on so-called 'terrestrial ecoregions' compiled by Olson et al. (2001). You can explore this data interactively here.

Question 10. In the second lecture of week 2 we heard about the tsetse fly and its impact on African development. What about diseases such as malaria and Ebola?

The disease environment has been hypothesised to impact economic outcomes; there is a heated debate on the role of geography (broadly defined) and the disease environment and economic prosperity. While there is little to debate on the data patterns and the empirical regularities, the debate is mostly about whether geography, ecology and the disease environment directly affect economic development, or whether the effects of these endowments are indirect; working, for example, via shaping institutions or even cultural norms. We recommend the introductory chapters of *Why Nations Fail: The Origins of Power, Prosperity, and Poverty by* James A. Robinson and Daron Acemoglu on this debate.

On the role of the disease environment and malaria in particular, you may want to browse Gallup's and Sachs' influential work *The Economic Burden of Malaria*.

This historical link was not only through formal institutions but also through ethnolinguistics diversity. Cervellati, Chiovelli and Esposito (2019) show that the prevalence of malaria increased ethnic diversity in Africa as the disease necessitated geographic partitioning to halt its spread. Malaria and the tsetse fly also impacted the historic and contemporaneous structure of kinship and moral systems (Enke, 2019).

For the 2014-2016 Ebola outbreak in Guinea, Liberia and Sierra Leone, there are several fascinating papers showing significant effects of Ebola on state legitimacy; see Flueckiger et al. (2019). See also Maffioli (2021) on how the government misallocated funds during the epidemic to sway voters in Liberia.

Question 11. How reliable is GDP or census data from Africa? Is accuracy of data a proxy for development?

Thanks for your questions on the measurement of output series. We urge you to look at Tanner Regan's slides and references (at the end) from Thursday's special session on Mapping Contemporary African Development. The slides have already been uploaded on the course website.

GDP data are often used to proxy economic development across countries. Typically, GDP series come from national statistical agencies, international organisations such as the IMF and the World Bank, and specialised providers. Economics research mostly replies on the Penn World Tables, which account for purchasing power parity (effectively reflecting the fact that prices of mostly non-traded goods are, on average, cheaper in lower-income countries).

However, GDP statistics are proxies of economic wellbeing at best: as they do not factor for distributional aspects related to inequality, they often miscalculate unrecorded activities (shadow economy), may miss economic output in subsistence agriculture and 'new' economy features, and more. One example from the lecture was Equatorial Guinea, which appeared to be one of the slowest growing economies during the period 1975-1999 according to the Penn World Tables version 6.1, but in the revised series appeared to be one of the fastest growing economies.

However, these challenging issues do not mean we should dismiss these calculations. There is vibrant research trying to 'correct' output (GDP) statistics; often combing the output/income series with other (more objective) proxies of economic activity, such as luminosity from satellites (see Henderson, Storeygard and Weil (2012) or survey data on consumption, household assets and education (see Alwyn Young (2012)). While satellite and survey data have deficiencies, if these are unrelated to the errors in output (GDP), we can progress considerably on measurement via statistical aggregation.

For those interested in the effect of measurement error on output (GDP) estimates and cross-country correlational (regression) studies, we recommend the following (somewhat technical) papers:

- Ciccone, Antonio and Marek Jarocinsiki (2010). *Determinants of Economic Growth: Will Data Tell? AEJ-Macroeconomics*, 2(4): 222-246
- Johnson, Simon, William Larson, Chris Papageorgiou and Arvind Subramnian. (2013). *Is newer better? Penn World Table Revisions and their impact on growth estimates. Journal of Monetary Economics, 69*(2): 255-274

As some of you noted, accurate statistical data is indeed a proxy of state capacity. For example, the World Bank invests significant resources to help national statistical agencies improve the quality of their data. Here is some World bank information on data quality and effectiveness.

Question 12. How exactly is luminosity data calculated? Is it really a good measure for economic development?

The luminosity data we talked about is published by the National Oceanic and Atmospheric Administration, which is part of the U.S. Department of Commerce. Details of how the values are compiled can be found here. Broadly speaking, satellites track the night-time luminosity of 30 arc seconds (approx. 1 km) grid cells for most of the world using cloud-free observations and assign to these

a value from 0 - 63. Further processing the data, the Defense Meteorological Satellite Program (DMSP) provides a measure that captures the light from cities, towns and other sites with persistent lighting, including gas flares. Short-lived events such as fires are discarded.

Henderson, Weil and Storeygard (2012) discuss in length the usefulness of nightlights as a measure for economic growth. Another paper that delves into this question is Michalopoulos and Papaioannou (2013), who undertake a validation exercise using DHS data. Chiovelli, Michalopoulos and Papaioannou (2019) provide further validations of luminosity with education using detailed census data across Mozambican localities in 1997 and 2007 in their analysis of landmines and spatial development.

Overall, we learn something from the nightlights data and there is evidently signal. It is not a definitive measure of economic growth and it is useful to complement it with some of the other datasets we have seen, but it can add a lot of value when exploring questions that necessitate the availability of granular data.

Addendum: Since we have talked a lot about ethnic polarisation this week, it is interesting to ask: What leads to less polarisation along ethnic lines? One interesting answer to that question comes from a seemingly unlikely source: football. Depetris-Chauvin, Durante and Campante (2020) show that a national football team winning a match in an international competition leads to a higher level of trust between ethnicities and reduces violence.

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