



AFRICAN ECONOMIC HISTORY WORKING PAPER SERIES

No. 10/2013

Writing History Backwards or Sideways:
Towards a Consensus on African Population, 1850-present

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ISBN 978-91-980438-9-1

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The African Economic History Network is funded by Riksbankens Jubileumsfond, Sweden

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Abstract

This paper aims to make an empirical and theoretical contribution towards the creation of a continent wide data set on African population extending into the pre-1950 era. We investigate the reliability and the validity of the current population databases with the aim of working towards a consensus on the long term series of African total population with a reliable 1950 benchmark. The cases of Kenya, Nigeria and Ghana are explored to show how uneven coverage census taking has been in colonial and post-colonial Africa and to demonstrate the need for an upward adjustment of the conventional 1950 benchmark. In addition, we discuss the advantages and disadvantages of Patrick Manning's approach of projecting population growth estimates backwards in time by adopting the available Indian census data as African 'default growth rates' and propose an alternative approach by incorporating the demographic experiences of tropical land abundant countries in South East Asia.

Writing History Backwards or Sideways: Towards a Consensus on African Population, 1850-present¹

The lack of reliable historical population estimates for large parts of Africa, and sub-Saharan Africa in particular, continues to hamper long-term analyses of African social and economic development. Denominator problems complicate the reconstruction of historical GDP per capita and make it hard to assess the timing and incidence of changes in development indicators such as child mortality, life expectancy, educational attainment, tax pressure and so on and so forth.² However, despite its obvious importance, African historical demography has been largely neglected for nearly two decades. Judging by the loose ends left behind and the paths of research unexplored it seems as if the field was abandoned in a hurry in the late 1980s.³ Part of the reason is the impossibility of settling the debates with hard facts. Introducing the second of two volumes of essays collected from two conferences on African historical demography in Edinburgh in 1977 and 1981, the economic historian Eric Wrigley neatly summed up the accomplishments to that date, the limitations of those findings and the difficulties for the way ahead: ‘One thing, perhaps only one thing, is certain about African historical demography. It takes a bold and determined scholar to embark on the study of numbers, and of changes in numbers, in countries where until very recently nobody was even counting, let alone recording the results’.⁴ For the pre-colonial period the empirical evidence is so thin that it suffices to point to John Thornton’s

¹ We thank the participants of the session ‘New African Economic History – Approaches to Long Term African Economic Development’ at the *XVIth World Economic History Conference 2012* (Stellenbosch, 10 July 2012); the *African Studies Association UK* (Leeds, 8 September 2012), and the *African Economic History Workshop* (Geneva, 11 September 2012). Special thanks to Gareth Austin, Patrick Manning, Alexander Moradi and three anonymous referees for in-depth comments on previous drafts of this study. We are grateful to Sanne Mirck and Aske Bonde for excellent research assistance. Ewout Frankema acknowledges financial support from the European Research Council under the European Community’s Seventh Framework Programme for the project ‘Is Poverty Destiny? A New Empirical Foundation for Long-Term African Welfare Analysis’ (ERC Grant Agreement n° 313114); and from the Dutch Science Foundation for the project ‘Is Poverty Destiny? Exploring Long Term Changes in African Living Standards in Global Perspective’ (NWO VIDI Grant no. 016.124.307). Morten Jerven acknowledges financial support from the Social Sciences Humanities Research Council Canada Insight Grant for the project ‘African states and development: a historical perspective on state legitimacy and development capacity, 1890-2010’.

² See for recent work on African historical national accounts Jerven, ‘Users and producers of African income’, and ‘Controversy, facts and assumptions’. For recent living standard studies see Bowden, Chiripanhura, and Mosley, ‘Measuring and explaining poverty in six African countries’; Moradi, ‘Towards an objective account of nutrition and health in colonial Kenya’; Frankema, and van Waijenburg, ‘Structural impediments to African growth?; Frankema, ‘The origins of formal education in sub-Saharan Africa’.

³ For important contributions see Fyfe and MacMaster, eds. *African historical demography*; Cordell and Gregory, eds. *African population and capitalism*; Manning, *Slavery and African life*.

⁴ Wrigley, ‘Population and history’.

work on baptismal records from missionaries in the kingdom of Kongo.⁵ The colonial censuses are in turn widely discredited, and therefore not used as authoritative benchmarks,⁶ and while the population in post-colonial states Africa is better recorded, census taking has remained uneven, irregular and incomplete.⁷

Recently, Patrick Manning, one of the key participants in the scholarly exchange on the population impact of the slave trade, has boldly rekindled the debate on the African population database, with a re-estimate of the total colonial and pre-colonial population for Africa.⁸ Manning suggests that previous ‘guesstimates’ of pre-colonial populations around 1850 may have underestimated the total African population with no less than 50 per cent. His study is of seminal importance not only because it re-opens the field after a long period of silence, but also because it shows that there is still much work to be done before a consensus will be reached. The key innovation of Manning’s approach is that, instead of trying to improve upon existing pre-colonial or early colonial population estimates, he re-estimates Africa’s historical population based on a backward projection from a late-colonial benchmark. Specifically, he uses UN estimates of 1950 population that are mostly based on late colonial population censuses from the 1950s or early independent censuses from the 1960s. Manning uses so-called ‘default growth rates’ to inform his backward projections from 1950 to 1850. These default growth rates are obtained from Indian census data that are deemed of better quality than the available African colonial census data for the pre-1950 era.

In this paper we investigate the reliability and the validity of the current databases on African population. We start by laying out Manning’s suggested revisions, and then move on to suggest two ways of improvement. First, we agree that writing history backwards (projecting backwards from 1950s) and sideways (borrowing growth rates from India) has important advantages,⁹ but add that if we do so, it is of critical importance that the benchmark year 1950 is correct. By exploring the long-term evolution of census measurement bias before *and* after colonial rule we argue that the 1950 estimate for the total African population should be adjusted

⁵ Thornton’s finding was that the population in Kongo for the period 1650-1700 was much lower than commonly assumed (c.500,000 compared to two million), thus suggesting that the civil wars and slave trades of the seventeenth and eighteenth centuries had a much less disastrous impact on populations than commonly assumed. (Thornton ‘Demography and history’.)

⁶ Fetter, ‘Decoding and interpreting African census data’.

⁷ Tabutin, and Schoumaker, ‘The demography of sub-Saharan Africa’.

⁸ Manning, ‘African population’.

⁹ *Ibid.*, p. 256.

upwards from 220 to 240 million.¹⁰ We substantiate this adjustment by case studies of Kenya, Nigeria and the Gold Coast.

Our second contribution is to discuss the advantages and disadvantages of projecting population growth estimates backwards in time using India as comparator. We agree that the strategy of backward projections is valuable, but we do not think it is wise to throw away the informational content of colonial census all together in the process. We argue that the case of Ghana (Gold Coast) shows that census taking has been uneven, but that the historical census documents and the reports and commentaries made by contemporary observers provide valuable insights. We also propose an alternative approach based on the demographic experiences of tropical land abundant countries in South East Asia. The Asian comparative perspective reveals that the Indian growth rates are in the lower bound and show that if we adjust the growth rate between 1850 and 1950 upwards in line with other Asian demographic histories, we end up with an 1850 estimate closer to the conventional 100 million than Manning's revision of 150 million. The revised Frankema and Jerven population data are available in the data repository of the recently established African Economic History Network.¹¹

I

Table 1 provides the starting point of Manning's argument.¹² Accepting 'the established population figures for 1950' of 220 million he argues that the growth rates implied from conventional estimates, all exceeding 2 per cent in the 1930s and 1940s, are far too high, since 'such growth rates have been documented almost nowhere in the world for that time period' and that 'no reason is given as to what propitious African conditions allowed for growth rates nearly double those of Asia'.¹³

Table 1 here

¹⁰ Total Africa includes North Africa here and in the remainder of this paper.

¹¹ See Frankema and Jerven, *African Population Database 1.0*: <http://www.aehnetwork.org/data-research/>.

¹² Ibid, Table 10.2. The underlying dataset is available at Manning, 'Replication data for African Population Estimates, 1850-1960'.

¹³ Manning, 'African Population', p. 251.

Manning proposes an alternative 1930 estimate of 176 million to arrive at a growth rate of 1.13 per cent which he deems more plausible. He then continues to rewrite the historical demography of Africa based on the assumption that, first, colonial estimates were considerable underestimates, and second, that India's demographic record offers a reasonable proxy for African population growth. The former is close to a truism in African history, though it has not been numerically substantiated for all regions and countries, nor has it been established whether the underestimates are in the order of 10, 20 or perhaps even 50 per cent.¹⁴

The second assumption is less substantiated. The African 'default growth rates' used by Manning are reproduced in table 2. Manning uses stylized facts about a set of variables (migration, slavery, colonial disorder, famine and epidemics and income growth) to make so-called 'situational modifications' for each of the six selected African sub-regions (see appendix table 2 for these modifications; the sub-regions are North, Southern, West, Central, East and Northeast Africa). Together, the modified default growth rates suggest a lower growth rate in the early twentieth century and the second half of the nineteenth century, and also defend its corollary, much higher populations in 1930 than previously estimated. Since most of the modifications entailed downward adjustments of the default growth rate, the average aggregate compound rate of population growth between 1851 and 1950 is lower than reported in table 2, namely 0.39.

Table 2 here

There remain a number of unresolved issues, however. First, it is worthwhile to reconsider accepting the 1950 and the 1960 census estimates as 'facts'. Did the colonial administrations get much better at conducting censuses from 1930 to 1950? In relation to this, what accounts for such rapid growth in the 1950s (2.4 per cent) compared to the 1930s (0.8 per cent)? Second, when we compare Indian population growth rates for the full century between 1851 and 1950 with those of tropical land-abundant South East Asian countries such as Indonesia, the Philippines, Thailand and Malaysia, it appears that India's demographic development constituted an aberration from the Asian pattern. Why would African demographic regimes, operating in a

¹⁴ See especially Kuczynski, *Colonial population*; and idem, *Demographic survey*.

context of open land frontiers, better reflect that of densely populated India rather than land abundant Indonesia?

II

Figure 1 summarizes the approach we take to assess the quality of available African census data. First, we make a distinction between the *validity* of a particular census X_t and the reliability of the growth pattern that emerges from a sequence of censuses $X_1 \dots X_t$. Validity means that the enumeration is correct and reliability means that you have two or more benchmarks that are equally valid, so that there is no ‘statistical growth’ between different population enumerations over time.¹⁵ The question is when does the demographic recording become sufficiently valid to yield reliable level estimates and sufficiently consistent to yield reliable annual growth rates?

We identify two key determinants of census quality. Firstly, the ability of a state to recruit and instruct census-takers, to collect information in a systematic way and record various aspects of demographic data that can be used for cross-checking purposes. It is a well-established fact that the scale and scope of African colonial bureaucracies were severely constrained by low fiscal resources and large logistic barriers, particularly in vast under-populated rural hinterlands.¹⁶ That the demographic record of densely populated India is better documented than Africa’s can partly be explained by higher population density levels leading to scale efficiencies in census-taking. Secondly, the interests of the census-takers (or the political forces that shape their interests) and respondents are important to take into consideration. Even when states are fully capable of organizing a valid population census, there may be political or economic incentives to bias results.

Figure 1 here

To evaluate the validity and reliability of population census in historical retrospective we see three potential angles of research. First, one can categorize the level of detail covered by the census, and especially data on age, gender, fertility, mortality and migration. Van de Walle

¹⁵ Jerven, *Poor numbers*.

¹⁶ Frankema, ‘Raising revenue’; idem, ‘Colonial taxation’.

assessed the quality of demographic information from colonial as well as post-colonial censuses and surveys available in 1968. Table 3 shows his estimates of the proportion of Africa's population for which specific types of demographic information were available in four sub-regions.

Table 3 here

Table 3 indicates that in 1968 there are satisfactory vital statistics available for slightly less than half of Africa's estimated population (Category A and B). It also reveals that at independence Central Africa had the most detailed demographic information. In the former Belgian Congo for instance, an estimated 80 per cent of births were registered in the 1950s.¹⁷ At the other end of the spectrum the table shows that more than one third of the East African population had never been enumerated in a systematic survey, with Ethiopia being the largest statistical *terra incognita* in Africa. Part of the reason for the poor quality of East African censuses may be that European powers gained later control over these areas and had, on the whole, considerably smaller per capita government budgets to conduct a proper census. Blank spots in the census for particular regions were often accommodated by using the registers of hut, head and poll taxes for population projections, without undertaking the effort to actually count people.¹⁸

A second way to check validity is to critically question the incentive structures underlying the population census, which deals with questions concerning the neutrality of census-takers, politicians and other stakeholders who may have an interest in deliberately altering the results. One odd anecdote concerns the early colonial population counts conducted for French West Africa (AOF) and French Equatorial Africa (AEF), which grossly exaggerated total population, as French colonial officers felt the need to report back to Paris on the high commercial and fiscal potential of the new territories that had recently been added to the French empire. That large parts of both federations were too poor to be fiscally independent and had to be supported by the wealthier coastal colonies, or even by Paris, soon became clear.¹⁹ Yet, the

¹⁷ Van de Walle, *The availability of demographic data*, p. 29.

¹⁸ Frankema, 'Colonial taxation'.

¹⁹ Green, 'On the size and shape', p. 231; see also Frankema and van Waijenburg, 'Endogenous colonial institutions'.

more frequently observed biases are related to fear of taxation among respondents (or their political representatives), stifling cooperation (up to violent resistance) or deliberate cheating. The opposite also occurred: population-dependent government subsidies creating incentives for stakeholders to inflate the number of community members.

A third strategy to check census-reliability is to compare inter-census growth rates. There are a number of stylized facts about population growth, that can be derived from cases all over the world (or various periods of time) that informs reasoning by analogy. One example is Manning's observation that African growth rates exceeding 2 per cent in the 1930s are implausible from a historical comparative perspective. The adoption of Indian population growth rates as 'default rates' for Africa is a similar strategy. Adopting such a strategy filters out growth rates that challenge biological constraints to human reproduction or rates that are so volatile that some benchmark estimates will have to be invalid.

By varyingly applying these three assessment methods the literature has yielded two generally accepted conclusions thusfar. First, there is widespread consensus that African colonial censuses, with some notable exceptions, underestimated total population, mainly because of the weak capacity of the state (manpower, counting skills of indigenous chiefs, logistical barriers) to conduct a valid census.²⁰ Following the declarations of independence in the 1960s, the number of universal censuses carried out in the former colonies increased. The inevitable consequence is that the historical record misleads us to believe that there was high population growth between early colonial estimates and more accurate, though not necessarily perfect, post-colonial census results. In fact, conducting comprehensive birth and death registrations to obtain representative population growth rates adjusted for migration was a tall order for colonial as well as post-colonial states in Sub-Saharan Africa. Second and related to the first, there is widespread agreement that the quality of post-colonial censuses has varied enormously (see table 3).

This yields an important point for making backward population projections: if we agree that there was a bias of underestimating populations in the 1930s, when would this bias then eventually have disappeared? Tabutin and Schoumaker reported that 28 censuses were carried

²⁰ Manning, *African population*, p. 248; see also Fetter, 'Decoding and interpreting African census data', p. 84.

out between 1960 and 1969 in the 48 countries in sub-Saharan Africa.²¹ This number increased to 41 in the period between 1970 and 1979.²² However, this number includes countries with 3 to 8 censuses (Kenya, Ghana, Burkina Faso, Senegal, Cameroon, Zambia) as well as many countries without (DR Congo, Congo, Guinea, Gabon, Chad, Somalia, Swaziland).²³ Bondestam notes that between 1950 and 1971, 11 countries conducted three censuses, 20 countries two, and 6 countries one, leaving almost one-third of African countries without any census data. According to Bondestam, ‘the obvious difficulties in carrying out censuses are further illustrated by the fact that out of 21 listed with plans to carry out censuses in 1970 only 5 succeeded in doing so’.²⁴

According to the United Nations Statistics Division in the 1990 Census round, nine sub-Saharan countries did not enumerate their populations. The situation then again deteriorated and 15 countries failed to complete the 2000 Census round.²⁵ For the 2010 round, the UN only expected three African countries not to be able carry out a census within the specified time period, namely Somalia, Eritrea and Western Sahara.²⁶ This expectation may very well turn out to be too optimistic, but overall the increasing number of successful censuses is partly caused by the fact that a significantly smaller part of the continent was plagued by civil war in the 2000s as compared to the 1990s.

In other words, census taking practices have certainly improved in the course of the twentieth century, but these improvements were neither equally spread across countries, nor did they occur in a linear fashion. A brief comparison of the four ‘conventional’ databases underlines this point. The Penn World Tables (PWT), the United Nations World Population Prospects (UN), the World Development Indicators (WDI) and the Maddison dataset of historical statistics (MAD) rely on different source materials and have adopted different adjustment methods to deal with inconsistencies. Because Maddison has taken his population data from the Penn World Tables, and the UN and WDI population data for Africa have also been equalized, we have

²¹ This number includes censuses carried out in countries or territories that had not yet gained independence. Furthermore it double counts countries in which more than one census took place in that decade. Consequently, the actual number of censuses carried out in independent countries is a mere 10.

²² Tabutin and Schoumaker, ‘The demography of sub-Saharan Africa’.

²³ *Ibid.*, p. 463.

²⁴ Bondestam, ‘Some notes on African statistics’.

²⁵ United Nations Statistics Division, ‘Census dates for all countries’ (2012) UNSTATS: <http://unstats.un.org/unsd/demographic/sources/census/censusdates.htm#AFRICA> (accessed on 10 Mar. 2012).

²⁶ 2010 World Population and Housing Census Programme ‘Progression of the Census Round 2010’, *United Nations Statistics Division*, 5 March 2012.

compared the series of ‘PWT/MAD’ with ‘UN/WDI’ and selected all the countries for which the level-difference exceeds 5 per cent. For 1950 it turns out that in the sample of 53 countries there are 28 countries, representing a total share of 57 per cent of the African population, exceeding the 5 per cent threshold (see appendix table 1). There does not seem to be a clear pattern in the direction of the bias. In 2009 we find 19 countries, together comprising c.21 per cent of the total African population. Indeed, the conventional databases are slowly moving towards a consensus based on more reliable census figures, but there still exists a considerable degree of disagreement.

III

If it is true that the problem of underestimation due to lack of state capacity and non-neutral incentive structures has carried on into the postwar era, Manning’s 220 million benchmark estimate in 1950 cannot be taken for granted. In addition, the arrival of new national governments at independence may have changed incentive structures. In this section we explore the cases of Kenya, Nigeria and Ghana (Gold Coast). Each of these three cases illustrates a different aspect of the assessment methods outlined in section II. Taken together these three cases also offer a rough indication for the possible range of upward adjustment of the late-colonial population benchmark of 220 million.

Kenya 1948-1969: matching levels with growth rates

Kenya is regarded as a country with comparatively accurate population statistics as a result of improved census coverage over time. However, the conventional estimates for 1960 and 1950 still appear problematic because of implausibly high growth rates.²⁷ The Kenyan 1969 census gave a population figure of 10.94 million, which implies an annual growth rate of 3.4 per cent when matched with the 1962 census figure of 8.64 million. Table 4 shows how the World Bank has struggled with these results, by first adjusting both the 1962 and 1969 census figures by respectively 0.22 and 0.17 million and later returning to the original census estimates. While doing so, however, they stuck to the growth rate of 3.4 per cent in the 1960s. Bondestam argues that the figures can be improved if one is prepared to assume that the 1969 census is more

²⁷ Bondestam, ‘Some notes on African statistics’.

accurate than the 1962 census.²⁸ Assuming a population growth rate of 2.5 per cent for Kenya in the 1960s - which is still a rather high rate - and taking the 11.1 million as a reliable 1969 level estimate, one has to adjust the 1962 estimate to 9.35 million (an 8 per cent upward adjustment).

Table 4 here

There are good historical arguments that support such a revision. In Kenya census enumerations of the non-native population were made in 1911, 1921, 1926, and 1931, but as in the rest of British Eastern Africa, the native population was not counted until 1948. The first official estimates were made by two colonial pioneers.²⁹ Sir Arthur Hardinge estimated the population of the East African Protectorate (Kenya) at 2.5 million in 1897. Sir Henry Johnston placed the estimate for Uganda at 4 million in 1900 (prior to the territorial transfer of the Eastern Province of Uganda to Kenya in 1902). The earliest estimate for Tanzania in 1913 came to 4.1 million. But most of these early estimates were obtained by multiplying the number of adult male taxpayers by a factor representing the proportion of dependents. According to the 1931 Colonial report for Kenya, 'No accurate census of the native population has yet been made. The population figures are based on estimates made by the administrative authorities, and related to the number of male adult taxpayers in the various districts. They are in consequence subject to a comparatively wide margin of error. The estimated native population in 1931 was 2,966,993 as compared with an estimate in 1926 of 2,682,848 which represents an increase over that period of 10.5 per cent. No reliable figures of births, deaths, and infantile mortality are obtainable'.³⁰

Ominde reports substantial differences between the numbers arrived at using tax records and the numbers of the 1948 census (see table 5). But he also notes that in the more isolated arid parts of northern Kenya census enumeration may not have been complete. Varying degrees of coverage in the 1948 and 1962 censuses thus make a direct comparison problematic. After allowing for the problems of enumeration, Ominde considered the rate of growth of the African population of Kenya (excluding the Northern Province) between 1948 and 1962 somewhere between 2.5 and 3 per cent per annum. According to van Zwanenberg:

²⁸ Ibid.

²⁹ Sir Henry Johnston for Uganda in 1900 and Sir Arthur Hardinge for Kenya in 1897, see Ominde, *The population of Kenya, Tanzania and Uganda*, p. 3.

³⁰ Annual Report on the Social and Economic Progress of the People of the Kenya Colony and Protectorate, 1931, p 18. Report No 1606 (London, His Majesty's Stationery Office, 1933).

During the early colonial period it seems from the evidence that the growth of population was brought to a halt and possibly declined to some extent between 1890 and the early 1920's. From around 1923/1924 the growth of population began to recover slowly until the early 1940 when the rapid population increase of the 19th century again began to reassert itself.³¹

Hence, the Kenyan experience suggests, first, higher rates of growth in the 1930s than assumed by Manning, and second, a 1948 and 1962 census underestimating the total Kenyan population, casting doubt on the validity of the UN estimates of 6.1 and 8.1 million in respectively 1950 and 1960, as a starting point for backward projections.

Table 5 here

Nigeria: changing incentive structures

Kenya offers just 'a minor case' compared to Nigeria. Nigeria is important because it accounts for ca. 15 per cent of the total African population in 1950 and this share has not declined since. The Nigerian case displays how the political incentive structure can bias the population count and also suggests that the conventional 1950 estimate of 220 million, if anything, is a lower bound estimate. We argue that the Nigerian census estimate for the early 1950s may be as much as 28 per cent off the actual mark and this alone would add ca. 8.5 million to the original census estimate of 1953 and ca. 4.5 million to the UN figures.

The 1952/53 census gave a total population of 31.5 million. The Nigerian ministry of health projected a total population in 1962 of 36.5 million using a 2 per cent growth rate between 1952 and 1962.³² The surprise was therefore great when the 1962 census gave a final count of 45.3 million, while in the next year, 1963, the recount went as high as 55.7 million!³³ Which count was to be trusted? The 1952/53 colonial census is believed to have suffered from a

³¹ R. Van Zwanenberg, 'A history of population growth in Kenya and Uganda', *Institute for Development Studies, University of Nairobi, Working Paper 91* (Nairobi, 1973).

³² M. Jerven, 'Controversy, facts and assumptions: lessons from estimating long term growth in Nigeria, 1900–2007', *Simons Papers in Security and Development*, No. 13 (2011), School for International Studies, Simon Fraser University, Vancouver.

³³ Caldwell and Okonjo, *The population of Tropical Africa*.

respondent bias. A widespread fear that the data would be used for taxation purposes made native authorities reluctant to cooperate. However, in 1963 the political situation was reversed. In early independent Nigeria it was expected that transfers from the central government, such as funds allocated to schooling, health and infrastructure, would depend on population numbers. Caldwell and Okonjo assessed the situation as follows: 'It may well be that in some areas in Eastern-Nigeria there was an inflation of the population figures. But the magnitude of the population increases recorded is probably to be accounted for more by undercounting in 1953 than by overstatement in 1962'. Caldwell and Okonjo argued that the best estimate for 1962/63 would be 45.3 million.³⁴ The Nigerian National Population Commission also had 'serious reservations' concerning the use of the 1963 census figure for estimating the inter-census growth rate.³⁵

There is then a gap of almost 40 years between the 1953 census and the 1991 census. The latter gave a total of 89.0 million inhabitants. The National Population Commission opts for a population growth of 2.83 per cent based on the 1953 and 1991 census. The World Bank (WDI), however, chooses a higher growth rate and a higher baseline estimate (or final estimate – depending on whether the population number is derived by projecting backwards or forwards). The discrepancy between the official Nigerian numbers and the World Bank figures is alarming. While the World Bank and the National Population Commission take a comparable growth rate, the WDI reports a population of 99.0 million in 1991, approximately 10 million higher than the census estimate.

Table 6 shows the different census estimates for colonial and post-colonial Nigeria and the implied annual population growth rates. It reaffirms the discontinuity between the 1953 and 1962/3 census, but also points to long-term problems of census reliability.³⁶ The 1973 to 1991 growth rate is implausibly low, which could be interpreted as a sign of overshooting of both the 1962/3 and 1973 censuses, although the World Bank considered the 1991 census to be an underestimate. What is particularly striking is the shaky overall pattern of growth that emerges from table 6 and the intriguing observation that population growth in the years 1911-63 outpaced

³⁴ Ibid, 85. Caldwell and Okonjo provide upper and lower bounds of 48.6 and 36.5 million. The adjustments are done by adjusting data for each province. They accept an underestimate of 11.7% for the 1952-53 census.

³⁵ Nigeria, National Population Commission: Census '91. National summary, Lagos: National Population Commission, 1994.

³⁶ Jerven, 'Controversy, facts and assumptions'.

growth in the 1963-2006 period. But to what extent is this caused by post-colonial cheating or colonial undercounting?

Table 6 here

A more reliable account of the Nigerian population may be obtained by relying on four ‘stylized facts’ of demographic development in sub-Saharan Africa: 1) Post-1950 population growth rates were substantially higher than pre-1950 rates because the pace and the timing of the decline in (infant) mortality rates has outweighed and preceded the decline in fertility rates. In the majority of SSA countries a structurally declining trend in fertility can only be observed since the 1990s;³⁷ 2) As a result of the former, the majority of SSA countries reached a peak rate of population growth between 1960 and 1990, such depending on the timing and incidence of mortality and fertility declines; 3) For sub-Saharan Africa as a whole a decadal growth peak in the 1975-85s has been estimated at 2.8 per cent per annum. The peak rate may have locally exceeded rates of 3.0 per cent;³⁸ 4) The post-1990 growth-decline has been faster than the pre-1960 rise in growth, because modern means of fertility control are more readily applicable than the hard-fought gains in disease and mortality prevention in the colonial era.

If we now assume in line with the official view of the World Bank and the UN that the latest census conducted in 2006 was the most accurate estimate in Nigerian history and, hence, take 144 million as our starting point for the growth projections, we pass 1991 with a population

³⁷ There may be a few exceptions to this rule in Southern Africa, where fertility rates have fallen more rapidly than in the rest of Africa, while mortality rates have risen since the early 1990s as a result of the AIDS epidemic. However, for virtually all sub-Saharan African countries, including Nigeria, the decline in infant mortality rates has been so large since the 1950s that the rise in AIDS-mortality rates did not off-set the decline. In their extensive survey of post-1950 African demography, Tabutin and Shoumaker show that except for Southern Africa (present-day South Africa, Namibia and Botswana) the average number of children per women was higher than anywhere else in the world during most of the period 1950-2000, that low female age of marriage (below 20 years) was the standard and that the proportion of man and women who remained single was extremely low (less than 4%).³⁷ Historically, strategies to maximize the number of children that reach maturity and increase family size were in line with institutions such as slavery and polygyny, where African elites sought the control over labour rather than land. The recorded high fertility rates in the post-colonial era may thus be seen as a reflection of a deeply ingrained preference for large families, even though the context in which family reproduction takes places (much more surviving children) has changed fundamentally in the past century. (Tabutin and Shoumaker, ‘The demography of sub-Saharan Africa’, pp. 469-71.) Scattered evidence on the average age of marriage by female (15 to 20) and male (25 to 35) among sedentary Kikuyu farmers in Central Kenya, reveal a similar preference for high fertility. (See Dawson, ‘Health, nutrition, and demography’.)

³⁸ See UN, World Population prospects, 2010 revision: <http://esa.un.org/unpd/wpp/index.htm> (accessed 23-04-2013)

figure of 103 million, which is close to the World Bank and UN revised estimate.³⁹ The projected growth rates and levels are shown in column 3 and 4 of table 7. Column 5 shows that the 1952/53 census may have underestimated the Nigerian population by as much as 28 per cent (8.5 million) and that estimates of the colonial census before 1950 were around 31-39 per cent too low. It should be mentioned that also the 2006 census estimate has been called into question, and that it is most frequently considered too low.⁴⁰ Specifically, there were complaints about the count for Lagos state of 9 million. State officials proposed that their own headcount of 17.5 million was correct, and that this would considerably raise the national total.⁴¹ So when we accept the World Bank 2006 estimate of 144 million we adopt a conservative estimate. A higher 2006 level would drive up the 1953 re-estimate even further, which would only further strengthen our point that the 220 million benchmark in 1950 for Africa as a whole is disputable. Although the growth rates we impose are still educated guesses, we do obtain a long term picture of growth for the 1911-63 (1.49 per cent) and 1963-2006 (2.54 per cent) periods that makes much more sense.

Table 7 here

Gold Coast: not all colonial census data is worthless

The upward adjustments of Nigerian colonial census estimates are substantial, but they remain a far cry from the adjustments of over 100 per cent that Manning applies to some colonial censuses, including the 1911 Gold Coast census to which we will now turn. African colonial censuses may have many shortcomings, but we follow the advice of Fetter, that they should not be entirely dismissed either.⁴² Side-stepping the colonial census estimates, Manning suggests revising the population in Gold Coast upwards to 4.2 million for 1931 compared to the official census result of 3.2 million and upgrading the 1911 census from 1.5 million to 3.3 million.⁴³ This does not square with direct evaluations of the census evidence.

³⁹ World Bank, *World Development Indicators*, reports the 2006 figure to be 143,380,000.

⁴⁰ Jerven, *Poor numbers*.

⁴¹ Report of Nigeria's National Population Commission on the 2006 Census, p 207.

⁴² Fetter, 'Decoding African census data'.

⁴³ Manning, 'African population', p. 249. In his table 10.3 Manning offers a figure of 3.3 million. His dataset gives 3.6 million, because it includes Togoland with c.350.000 inhabitants.

De Graft-Johnson provides an account of all the official population counts in the Gold Coast (Ghana) between 1846 and 1967 and suggests that the census data are in need of some revision, but not in the order suggested by Manning.⁴⁴ According to the De Graft-Johnson the 1931 census was considered a 1 or 2 per cent understatement by Dowden, the census commissioner in 1948, while Kuczynski did not find any direct evidence of the census being an undercount.⁴⁵ Cardinall also suspected a slight, but unspecified understatement in 1931.⁴⁶ In a comparative study of the censuses in 1948 and 1960 Gaisie suggests that the 1948 Gold Coast census was an underestimate of 13.3 per cent.⁴⁷ In comparison, the 1960 census data is considered being in good standing.⁴⁸ According to Gaisie, if the 1960 census was off the mark, it may have been a slight over-count. The scenarios discussed by Gaisie are between 0.6 and 2.5 per cent. Gaisie makes use of the census data and post-enumeration data and suggests that the most likely population growth rate (including natural increase and migration) was 3.1 per cent between 1948 and 1960. If the 1948 census data is revised upwards in keeping with this growth rate, this gives us 4.6 million in 1948, which is in line with Gaisie's suggestion of 13.3 per cent undercount in 1948.

De Graft-Johnson argues that the correct count could have been closer to 5 million. By adopting 4.6 million we are opting for the middle ground, and furthermore, this estimate is in line with population growth rates of 3 per cent which were well substantiated in Gaisie's study of fertility and mortality rates. Accepting the 1931 census with a 2 per cent adjustment yields a growth rate of 2.1 per cent between 1931 and 1948. Manning's suggestion of 4.1 million in 1931 would imply an implausibly low growth rate of 0.5 per cent in the same period, which is inconsistent with other observations. Moving to the 1911 estimate, we suggest that the census estimate of 1.5 million should be adjusted upwards by 500 thousand to 2 million. This is in accordance with the opinion of Kuczynski and also Szereszewski, who described this upward adjustment as 'fairly conservative'.⁴⁹ Gareth Austin has suggested an upward revision to almost 2.2 million,⁵⁰ but that is still more than one million less than suggested by Manning (see table 8).

⁴⁴ De Graft-Johnson, 'The population of Ghana 1846-1967'.

⁴⁵ Ibid, p. 7.

⁴⁶ Cardinall, *The Gold Coast, 1931*, p.123.

⁴⁷ Gaisie, 'Dynamics of Population Growth in Ghana', p. 53.

⁴⁸ De Graft-Johnson, 'The population of Ghana 1846-1967', p. 9

⁴⁹ Szereszewski, *Structural changes*, p. 125.

⁵⁰ G. Austin, 'Quantifying transitions in labour history in Ghana 1800-2000: A preliminary report', Collaboratory Workshop, Amsterdam October 2012, p. 7.

Table 8 here

In sum, some colonial censuses may have produced (large) underestimates, as in the case of Kenya and Nigeria, but this does not have to be true for all places all the time. In the words of Kuczynski ‘Official data on the total population are available for every colony in the world. Some figures are fairly accurate, while others are wide off the mark’.⁵¹ Moreover, Manning’s claim that the total African population estimate of 220 million in 1950 offers a comparatively solid starting point, speaks against the radical upward adjustments of census estimates that were produced under similar colonial regimes before 1950.

Despite the variation in individual country estimates, all the official datasets are in close agreement of a total figure of 227-228 million for 1950, as we can see in table 9. Consequently, Manning’s African default growth rate of 2.4 per cent in the 1950s is higher than those of the conventional datasets (2.2 per cent). In view of the tendency to overstate growth as a result of underreporting in late colonial censuses, this rate of growth is probably too high, while the changes in the growth rate between 1930 and 1960 have been less dramatic than Manning suggests. Our adjustment of Nigeria alone will drive the conventional estimates of 227-228 million up by about 4.5 million. Such large upward adjustments are not applicable to the rest of Africa. For the Gold Coast, we estimate an upward adjustment of 12 per cent and for Kenya an upward adjustment of 8 per cent. Based on these orders of magnitude it is reasonable to assume that the 1950 benchmark of 220 million has to be adjusted with circa 10 per cent, up to 240 million. After our discussion of these three cases this may still seem somewhat conservative, but we should also bear in mind that the estimates for some of the populous North and Southern African countries are probably more accurate than for most Sub-Saharan African countries. We will pursue this argument in the next section.

Table 9 here

IV

⁵¹ Kuczynski, *Colonial population*.

The data situation for the post-1950 era may not be rosy, but compared to what little we know for the pre-1950 era it still seems the best departure-point for making historical projections. For Mauritius, South Africa and some North African countries more or less reliable pre-1950 census figures exist. For the remaining parts of sub-Saharan Africa we only have some vague ideas about the overall trends and levels, but hardly any precise figures to underpin those ideas. A complicating factor is that whatever the overall trends in African pre-1950 population, local experiences must have differed widely. Using Indian pre-1950 growth rates as a yardstick to explore the possible boundaries of pre-1950 population growth, and then make ‘situational modifications’ informed by region-specific conditions and developments (see appendix table 2) thus makes intuitive sense. But is India the most logical choice? Manning defends this choice as follows:

If it may be assumed that changes in population growth rates throughout the tropics were somewhat similar, then it is relevant to consider growth rates in the well-documented population of India as proxies for African growth rates...
...India cannot, of course, be taken as a straightforward model for Africa. It was under stable British administration from the early nineteenth century. There are reasons to expect that African growth rates should have been lower than those for India, especially in the nineteenth-century circumstances of slave trade and in the tumultuous era of conquest and establishment of European administration. Overall, however, the available Indian growth rates are very helpful in suggesting the range of African growth rates in contemporary periods.⁵²

We take issue with three aspects. First, we do not see why African population growth rates should have been lower than Indian growth rates. The Indian sub-continent experienced several major famines which reached their deadliest peak in the late nineteenth century. These famines have been interpreted in the literature as signalling Malthusian stress-factors in a relatively stagnant economy.⁵³ By taking *observed* Indian population growth rates as *default rates* for Africa and then *again* imposing downward adjustments for famines, epidemics and colonial

⁵² Manning, ‘African population’, pp. 257-8.

⁵³ Roy, *Natural disasters and Indian history*.

disorder and out-migration, produces a double-counting of growth-impeding effects. This would be less of a problem if growth-enhancing and growth-impeding factors would cancel each other out, but this is not the case. Among the eight identified situational modifications, there are two growth-enhancing factors (post slave-trade recovery and income growth), two factors producing a zero net effect on the supra-regional level (migration of free people and intra-African slave exchanges) and four growth-impeding factors. In other words, Manning does not assume that the demographic regimes of Africa and India are comparable, he assumes that growth-impeding factors in Africa have been much more severe than in India.

Our second point is connected to the first. There is little evidence suggesting that ‘changes in population growth rates throughout the tropics were somewhat similar’.⁵⁴ India represents a comparatively densely populated sub-continent with land-labour ratios that were incomparable to African conditions. Indian labourers and entrepreneurs migrated to East and Southern Africa under British rule, because of limited access to land at home. According to Roy, emigration from India to other parts of the world accounted for 0.3 per cent of the 1881 population, which comes down to approximately 0.8 million emigrants, which is much higher than the total annual African slave-exports in this period.⁵⁵ South Africa, East Africa and Mauritius were all recipients of Indian emigration. But more importantly, when compared to more land-abundant tropical countries in Southeast Asia such as Indonesia, the Philippines, Thailand and Malaysia, India appears to be an a-typical case of low population growth in the 1850-1950 era.⁵⁶

Land-abundant tropical Asia resembles the resource endowment conditions in sub-Saharan Africa much better than India. African farmers and pastoralists were facing open land frontiers, which did not necessarily make them less vulnerable to climate shocks, tropical diseases or ecological disasters, but they did give them access to more varied diets in ‘normal’ years, with larger average amounts of animal protein, fruit and vegetables. As far as the evidence from recent empirical studies of historical African living standards reaches, they seem to underline the idea that Africans had access to comparatively varied diets, that they were

⁵⁴ Manning, ‘African population’, p. 257.

⁵⁵ Roy, *Economic history of India*, pp. 354-5.

⁵⁶ Population growth in Japan in this period was at least twice as high as well, but Japan is a-typical for other reasons. See Maddison, *Historical statistics on world population*.

relatively tall and that the purchasing power of the wages they earned during the colonial era rose and, especially in British West Africa, rose substantially above the real wages earned in India.⁵⁷

Appendix table 3 offers an overview of the aggregate population growth rates that can be derived from historical census records in Indonesia and the Philippines. Of course, these census figures are susceptible to similar weaknesses as the colonial African census data, in the sense that they may overstate population growth between certain points in time as a result of improved census taking practices. However, for Indonesia and the Philippines adjusted estimates have been produced to correct for this, taking into account additional information on fertility rates, (child) mortality rates and marriage patterns - amongst others from Church records -, combined with information on changes in the frequency and quality of enumeration practices.⁵⁸ The modified population series show that growth rates exceeding 1.5 per cent per annum were hardly exceptional for the 1850-1950 era.⁵⁹

There are several reasons why Indonesia and the Philippines may have recorded higher growth rates than tropical Africa. European colonial rule did bring a number of advantages in terms of disease prevention (for instance, smallpox inoculation started in Java in the early nineteenth century) and famine prevention – which were not necessarily intentional - as a result of improved domestic and international Asian market integration.⁶⁰ Such factors are likely to have reduced mortality rates earlier and more profoundly than in tropical Africa. In addition, Southeast Asia received regular influxes of Indian and Chinese labour migrants, which added to the natural rate of growth. But this does not take away our point that the choice for India or Southeast Asia as a template for African historical demography makes a vast difference for historical African population projections.

Thirdly, if the argument is that African default growth rates should be derived from other tropical countries, because they are likely to be comparable, why should we then accept Indian growth rates for the non-tropical regions in North and Southern Africa? These regions were less

⁵⁷ Moradi, 'Towards an objective account'; Frankema and van Waijenburg, 'Structural impediments to African growth?'; Allen et al., 'Wages, prices and living standards'.

⁵⁸ For Indonesia see Boomgaard and Gooszen, *Changing economy*; and for the Philippines see Doeppers and Xenos, *Population and history*.

⁵⁹ For Thailand and Malaysia one can find even higher rates of population growth, but these are less informative. The Thai figures are unadjusted for flaws in census taking practices and the Malayan data are, in addition, affected by high immigration rates that obscure 'natural rates' of population growth.

⁶⁰ For possible explanations of Indonesian demographic growth in the mid-nineteenth century see Marks and van Zanden, *Economic history of Indonesia*, chapter 4, pp. 46-72.

affected by tropical diseases such as malaria, trypanosomiasis and yellow fever. In our view, it would be better to adopt different default rates for tropical and non-tropical Africa. North and Southern Africa together accounted for c.27 per cent of total African population in 1950, and the available census data for these regions indicates that their growth curves were much steeper than in India. For instance, whereas Manning assumes that the Egyptian population grows at rates between 0.2 and 0.5 per cent before 1920, census estimates point to averages between 1.0 and 2.0 per cent. We finish this study by presenting the changes in Manning's estimates that result from these critiques, using the six African sub-regions of North, Southern, West, Central, East and Northeast Africa.⁶¹

North and Southern Africa

Not all pre-1950 censuses are worthless. Instead of applying 'modified' Indian growth rates to all of Africa, we derive growth rates for North Africa (Egypt, Tunisia, Algeria, Libya, Morocco and Spanish Sahara) from the available population censuses of Egypt and Algeria. We adopt Egypt as the standard for Libya, and Algeria as the standard for Tunisia, Morocco and Spanish Sahara. For Southern Africa (Namibia, Botswana, South Africa, Lesotho, Swaziland, Zimbabwe) we rely on existing South African census data. South Africa comprises 73 per cent of total Southern African population in 1950. For North Africa our estimates are c.48 per cent lower than Manning's in 1850 (12.8 versus 24.6 million) and c.57 per cent lower in Southern Africa (4.1 versus 9.6 million). Together this yields a gap of 17.4 million in 1850 between Manning's and our estimates (figure 2a).

Figure 2a here

West, Central and East Africa

For the three major tropical regions of sub-Saharan Africa our modifications vis-à-vis Manning are based on two principles. First, we let India represent the lower bound growth scenario (appendix table 3b, column 1) and we let the *minimum* rates in the modified population records of Indonesia and the Philippines represent the upper bound growth scenario (column 2) for

⁶¹ A detailed description of our data, projections and sources is to be found at the AEHN website: <http://www.aehnnetwork.org/data-research/>.

tropical Africa. We take the geometric average as the default growth rate (column 3). We then use Manning's situational modifications to adjust the default growth rate. Second, we factor-in the divergent trajectories of commercial development in West Africa versus East and Central Africa. The integration of West Africa into the Atlantic economy through the so-called cash-crop revolution had been much further advanced in 1900 than the integration of other parts of tropical Africa in either the Atlantic or Indian ocean trade networks.⁶²

The split in Manning's growth rates between the early period of colonial rule 1880-1920 and the later period 1920-1960 is, in our view, too sharp for West Africa. Colonial 'pacification' came earlier in West Africa. It stabilized political relations and reduced investment risks. Via its impact on labour specialization, international trade was also associated with growing domestic commercialization of rural and urban economies. This process of commercialization created more favourable conditions for populations in West Africa to flourish. In comparison, in East and Central Africa the disruptions of the Indian Ocean slave trade carried on to a later date. Other studies on colonial trade and tax revenue demonstrate that East and Central Africa reached similar proportions some two to three decades later.⁶³ The practice of smallpox inoculation which spread across Africa in the wake of pre-colonial commerce and colonial occupation came earlier to West Africa than elsewhere.⁶⁴ The import of soap tended to increase along with rising exports and is likely to have had a positive impact on disease prevention. In addition, West Africa did not suffer as much from the devastating rinderpest in the 1890s, nor from the prolonged crises in the Congo Free State.

Figure 2b here

Jan Vansina has argued that orchestrated mass killings by the rubber companies and the *Force Publique* in combination with disease epidemics and shortfalls in food production may have reduced the Kuba population in the Congo by as much as 25 per cent between 1900 and

⁶² Frankema and van Waijenburg record a ratio of 10:1 in per capita exports of British West Africa against British East Africa, see 'Structural impediments to African growth?', p. 916. Coquery-Vidrovitch 'Economic development in French West Africa', presents evidence that French Equatorial Africa 'was the poor relation among the French colonies', p. 190. For a general overview see Hopkins, *An economic history of West Africa*. For the cash-crop revolution see Tosh, 'The cash-crop revolution'.

⁶³ Frankema and van Waijenburg, 'Structural impediments to African growth?'.

⁶⁴ Schneider 'Smallpox in Africa', p. 199.

1920.⁶⁵ Comparable atrocities under German rule, such as the virtual extermination of the Herero's in present-day Namibia and the organized mass starvations during the Maji-Maji rebellion in Tanganyika, have also resulted in a net population loss.⁶⁶ Similar growth-impeding effects have been reported for specific parts of French Oriental and Equatorial Africa.⁶⁷ Based on the sex and age ratios in the available census material for the Congo and Northern Rhodesia, Fetter argues that the population growth rates bottomed out at the end of the WW1 and then rose gradually to reach about 2 per cent in the 1960s.⁶⁸ Taking these notions into account, we include in our projections a net loss of population in East and Central Africa of c.15 per cent between 1890 and 1920, a loss which we do not apply to West Africa. Figure 2b displays our projections for West, East and Central Africa.

Northeast Africa

For this particular region (Ethiopia, Sudan, Somalia) we adopt Manning's estimates. Land-labour ratios in Ethiopia approximated Indian conditions more closely than elsewhere and the Ethiopian highlands can be regarded as an area where Malthusian pressure did emerge in a relatively early stage.⁶⁹ Ethiopia accounts for 59 per cent of total regional population in 1950.

Total Africa

In table 10 we add up the regional series to total African population and present the aggregate continental growth rates. There are three key differences with Manning's projections. First, there is a smoother rise of aggregate population growth rates after 1920. Second, nineteenth century growth rates are higher than projected by Manning because we distinguish the demographic growth regimes in North, Southern and West Africa from those in East and Central Africa. Third, as a result of the different assumptions we have made by informing our default growth rate by broader Southeast and Southern Asian experiences, we arrive at an estimate of 114.1 million in 1850, which is c.25 million less than Manning's estimate of 139.6. If we then adopt a 10 per cent upgrade of the 1950 benchmark, our 1850 estimate would rise to 122.7 million, which leaves a gap of c.17 million.

⁶⁵ Vansina, *Being colonized*, pp. 127-49.

⁶⁶ Pakenham, *The scramble for Africa*, pp. 602-28.

⁶⁷ Gervais, 'Creating hunger'; Cordell, 'Extracting people from precapitalist production'.

⁶⁸ Fetter, 'Decoding and interpreting African census data'.

⁶⁹ Illiffe, *The African poor*.

Table 10 here

V

Our aim was to make an empirical and theoretical contribution towards the creation of a continent wide data set on African population, a research agenda that has been re-opened by Patrick Manning's bold attempt to make backward projections of African population from 1950 to 1850. His work may eventually prove to be the seminal study leading towards a consensus view on African historical demography. Since progress is possible by challenging previous work, we have taken issue with two of Manning's core assumptions. First, we challenged the assumption that the 1950 total population estimate of 220 million offers a solid starting point for backward projections. We have argued that this is an underestimate because the 1950 benchmark suffers from similar shortcomings of earlier colonial census estimates, albeit to a lesser degree. We have found support for this argument in the case-studies of Kenya, Nigeria and Ghana and have proposed an upward adjustment of the 1950 benchmark of c.10 per cent to 240 million. Clearly, there is much more research needed on a country-by-country basis to figure out whether this is an appropriate rate of adjustment. In our view, this should be one of the priorities of a future research agenda.

Second, while we have adjusted the 1950 population estimate upwards, we simultaneously argue that the backward projected pre-colonial populations have been at a *lower level* than suggested by Manning. Manning used *observed* population growth rates from India as a proxy for African default growth rates. Our intuition is that these growth rates are too low, firstly, because other countries in tropical Asia with more comparable factor endowments had much higher population growth rates than India and, secondly, because the non-tropical areas of North and Southern Africa probably experienced distinctively different demographic conditions. This opens up an important research agenda for the future in teasing out the particular features (fertility, mortality, living standards, endowments structures, ecological shocks) of demographic regimes in varying African regions.

Another implication of our study is the need to re-direct attention from the demographic impact of the various slave-trades, towards the potentially much bigger shocks produced by the increased exposure of Africans to Eurasian diseases (smallpox, Spanish flu, rinderpest) in the late nineteenth century, as well as the prevention measures that have been developed in response. After a collapse of population in some areas, living standards improved in the early twentieth century, and then markedly more so after the 1920s. Modest but steady improvements in health, education and urbanization underpinned higher rates of population growth. This was the clear pattern in some areas of Africa, though it needs to be noted that such gains may not have been universal. These offer exciting avenues for research to validate and question the broader regional trends. Finally, this study points to the importance of understanding the logistical problems and political incentive structures of census taking, an issue that is still highly relevant for building African statistical capacity at present.

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Table 1: African populations in colonial era, various estimates

year	African population	Source	Growth rate to 1950
1929	140,000,000	Willcox (1931)	2.28%
1930	145,400,000	League of Nations	2.20%
1930	143,315,000	Carr-Saunders (1936)	2.28%
1934	145,074,000	Kuczynski (1937)	2.78%
1930	175,802,302	Manning (2010)	1.13%

Sources: Sources for Manning's table 10.2 are: Willcox, 'Increase in the population', p. 78; Carr-Saunders, *World population*, pp. 18, 34-5; Kuczynski, *Demographic survey of the British Colonial Empire*, vol. I. For other estimates of African continental population, see Maddison, *World economy*; Biraben, 'Essai sur l'évolution du nombre des hommes'; McEvedy and Jones, *Atlas of World Population History*; and Durand, 'The modern expansion of world population'.

Table 2: African default growth rates, 1851-1960

Decade	Average annual growth rate (in %)
1951-60	2.4
1941-50	1.5
1931-40	0.8
1921-30	1.0
1911-20	0.2
1901-10	0.3
1891-00	0.3
1881-90	0.3
1871-80	0.3
1861-70	0.2
1851-60	0.2
Average 1851-1950	0.5

Source: Manning, 'African population', table 10.5, p. 258

Table 3: Proportion of the population in tropical Africa in categories for which the specified type of demographic information* is available in 1968 (in % per region)

Region	Category A	Category B	Category C	Category D	Category E
West Africa	32	-	1	63	5
Central Africa	71	-	17	1	11
East Africa	3	51	10	-	36
Tropical Africa	27	21	7	27	18

Source: Van de Walle, 'The availability of demographic data'.

*Category A: Detailed information on age, fertility and mortality.

Category B: Incomplete information on age, detailed information on fertility and mortality.

Category C: Detailed information on age, incomplete information on fertility and mortality.

Category D: No direct information on fertility and mortality.

Category E: No information from systematic surveys.

Table 4: Total population and population growth in Kenya 1962-69 (in thousands)

Year	1962	1963	1964	1965	1966	1967	1968	1969
WDI 2002								
Total Population	8,863	9,147	9,442	9,749	10,068	10,401	10,749	11,114
Pop. growth (%)		3.20	3.23	3.25	3.27	3.31	3.35	3.40
WDI 2012								
Total Population	8,628	8,908	9,200	9,505	9,822	10,154	10,502	10,868
Pop. growth (%)		3.25	3.28	3.32	3.34	3.38	3.43	3.49

Source: World Development Indicators 2002 and 2012.

Table 5: Administrative data and census results in British Eastern Africa, 1940s-1950s

	Administrative Data	Census Results
Kenya	4,055,000(1946)	5,251,000
Tanganyika	5,838,000(1947)	7,408,000
Uganda	3,987,500(1947)	4,918,000

Source: Ominde, *The population of Kenya, Tanzania and Uganda*, p. 3.

Table 6: Nigerian population estimated in census years and implied compound annual growth rates, 1911-2006 (millions)

Year	North'	South'	Census total	annual growth rate from previous census
1911	8.12	7.93	16.05	
1921	10.56	8.16	18.72	1,55
1931	11.44	8.62	20.06	0,69
1953	16.84	13.58	30.42	1,91
1962	22.01	23.28	45.29	4,52
1963	29.78	25.88	55.66	22,9*
1973	51.38	28.38	79.76	3,66
1991	47.37	41.62	88.99	0,61
2006	Na	na	140	3,02
1911-1963				2,39
1963-2006				2,14

Source: Suberu, *Federalism and ethnic conflict in Nigeria*, p. 169, adapted from R. K. Udo, 'Geography and population censuses in Nigeria', in *Fifty Years of Geography in Nigeria: The Ibadan Story*, ed. Olusegun Areola and Stanley I. Okafor (Ibadan, 1998), p. 356 and the 2006 Census report.

* The implied growth rate from 1953 to 1963 is 6.23%

Table 7: Nigerian population projections compared to census results, 1911-2006

year	Census totals (millions) (1)	annual growth rate from previous census (2)	Projected rates Frankema/Jerven (3)	Projected total Frankema/Jerven (4)	Ratio of projections over census totals (5)
1911	16.05			22.19	1.38
1921	18.72	1.55	1	24.54	1.31
1931	20.06	0.69	1.3	27.97	1.39
1953	30.42	1.91	1.5	39.00	1.28
1962	45.29	4.52	2	46.78	1.03
1963	55.66	22.9	3	48.22	0.87
1973	79.76	3.66	3	65.39	0.82
1991	88.99	0.61	2.5	103.14	1.16
2006	140	3.02	2.2	144	1.03
1911- 1963		2.39	1.49		
1963- 2006		2.14	2.54		

Sources: See table 6

Table 8: Estimates of Population, Gold Coast and Ghana 1871-2010 (000s)

	1871*	1891	1901	1911*	1921	1931	1948	1960	1970	1984	2000	2010
Census Data	408	764	1,549	1,504	2,298	3,163	4,118	6,727	8,559	12,296	18,912	24,223
Szerezewski**		1,650	1,800	2,000								
Maddison	1,579			2,043				6,958	8,789	12,833	19,736	
Manning***	3,098	3,318	3,481	3,652	3,777	4,172		7,126				
Revised Estimates		1,650	1,800	2,000	2,528	3,227	4,610	6,727	8,559	12,296	18,912	24,223

* 1871: the census data of 1871 refer to the colony only; Maddison's and Manning's estimates refer to 1870. 1911: Maddison's estimate refers to 1913.

** Szerezewski adjusts the actual counts upwards. The upward adjustments are made on three grounds: census reports own estimates of undercount, adjusting for missing territories and advice from Kuczynski.

*** The Manning figures refer to his revised Gold Coast estimates for 1870, 1890, 1900, 1910, 1920 and 1960.

Sources: Maddison, *The world economy: historical statistics*; Szerezewski, *Structural Changes in the Economy of Ghana, 1891-1911*; *Gold Coast Blue Books*; Ewusi, *Statistical Tables on the Economy of Ghana, 1950-1985*; and Manning 'African population'. For more detail see M. Jerven, 'Government, trade, population and economic growth in the Gold Coast and Ghana, c.1890- 2010', presented at African Economic History Workshop, Geneva, 10-12 September 2012; and Austin, 'Quantifying transitions in Labour History in Ghana, 1800-2000'.

Table 9: Total African population according to conventional databases, 1950-2000
(millions)

	1950	1960	1970	1980	1990	2000	2009/10
PWT-MAD	228	285	366	478	633	811	992
UN-WDI	227	284	366	482	638	819	1032
growth rates in previous decade							
PWT-MAD		2.23	2.50	2.67	2.81	2.48	2.01
UN-WDI		2.24	2.54	2.75	2.80	2.50	2.31

Source: see table 8 and World Development Indicators 2012, <http://data.worldbank.org/data-catalog/world-development-indicators> (accessed on 01-03-2012).

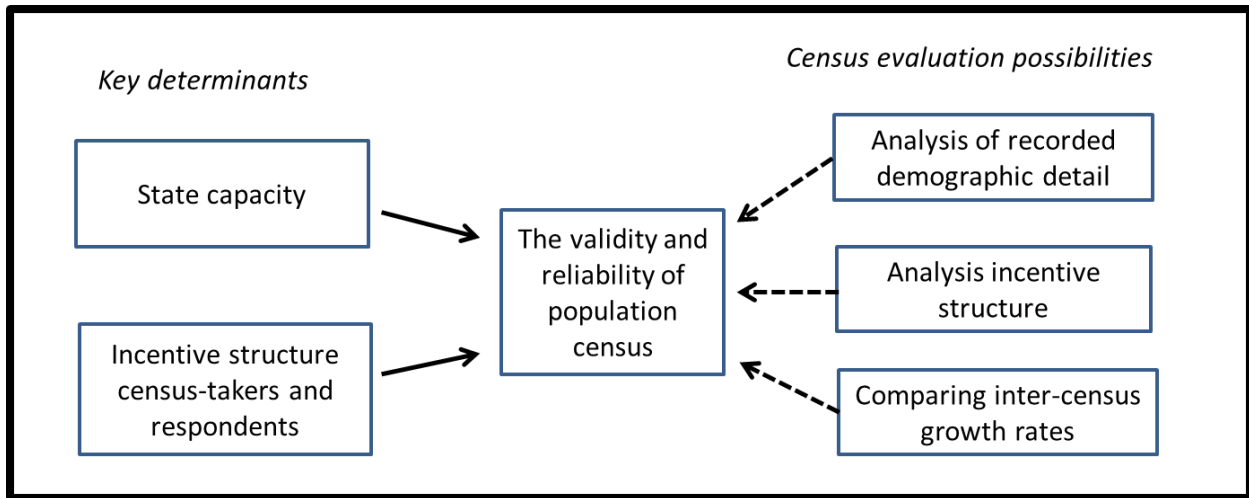
Note: Total Africa includes North Africa.

Table 10: Estimated total African population growth and levels, 1851-1960

	Manning		Frankema-Jerven		
	Levels	Decadal growth	Levels	Decadal growth	adjusted 1950 level
1850	139.6		114.1		122.7
1860	139.8	0.0	117.7	0.3	126.5
1870	143.4	0.3	122.1	0.4	131.3
1880	145.7	0.2	127.7	0.4	137.3
1890	148.2	0.2	134.4	0.5	144.5
1900	151.2	0.2	137.1	0.2	147.4
1910	157.8	0.4	141.9	0.3	152.6
1920	163.0	0.3	147.3	0.4	158.5
1930	180.0	1.0	166.4	1.2	179.3
1940	194.7	0.8	188.7	1.3	203.6
1950	220.3	1.2	221.8	1.6	240.0
1960	277.9	2.4	279.2	2.3	

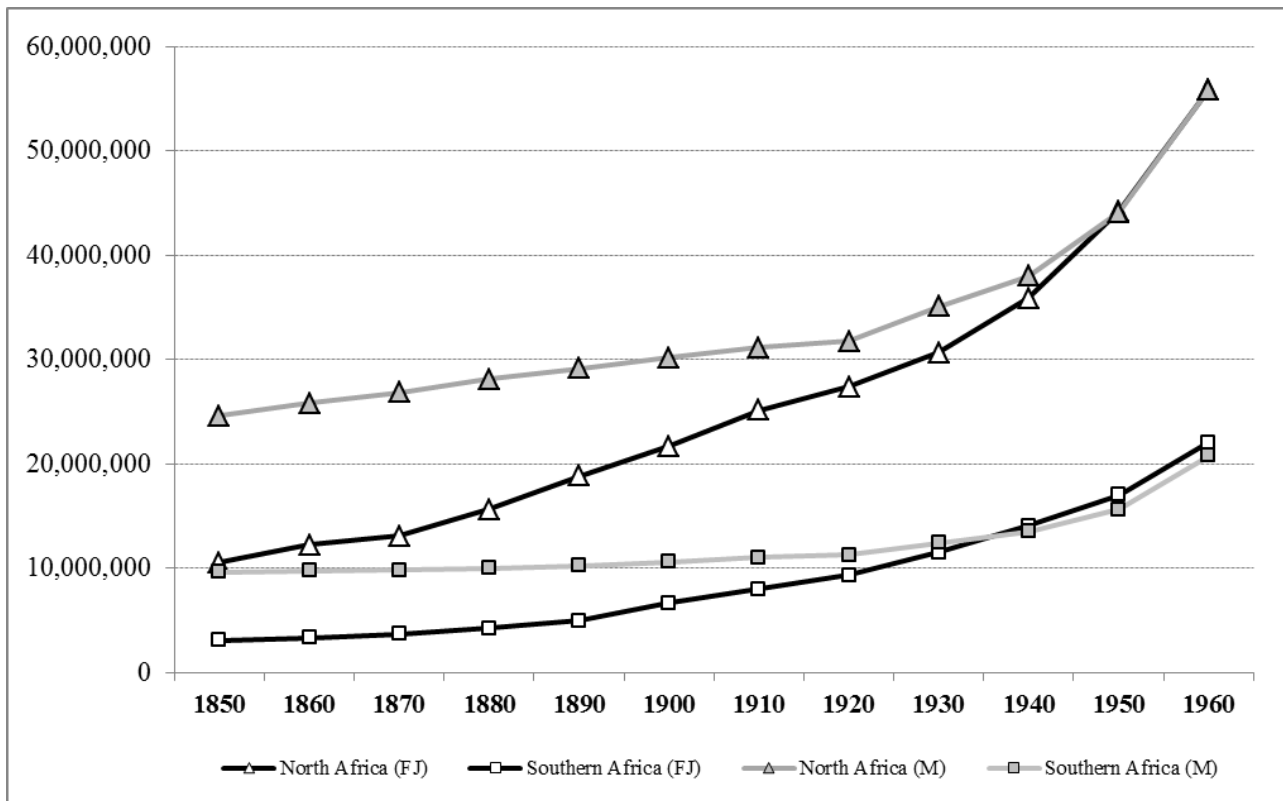
Sources: See figure 2a

Figure 1: An approach to assessing the quality of population census data



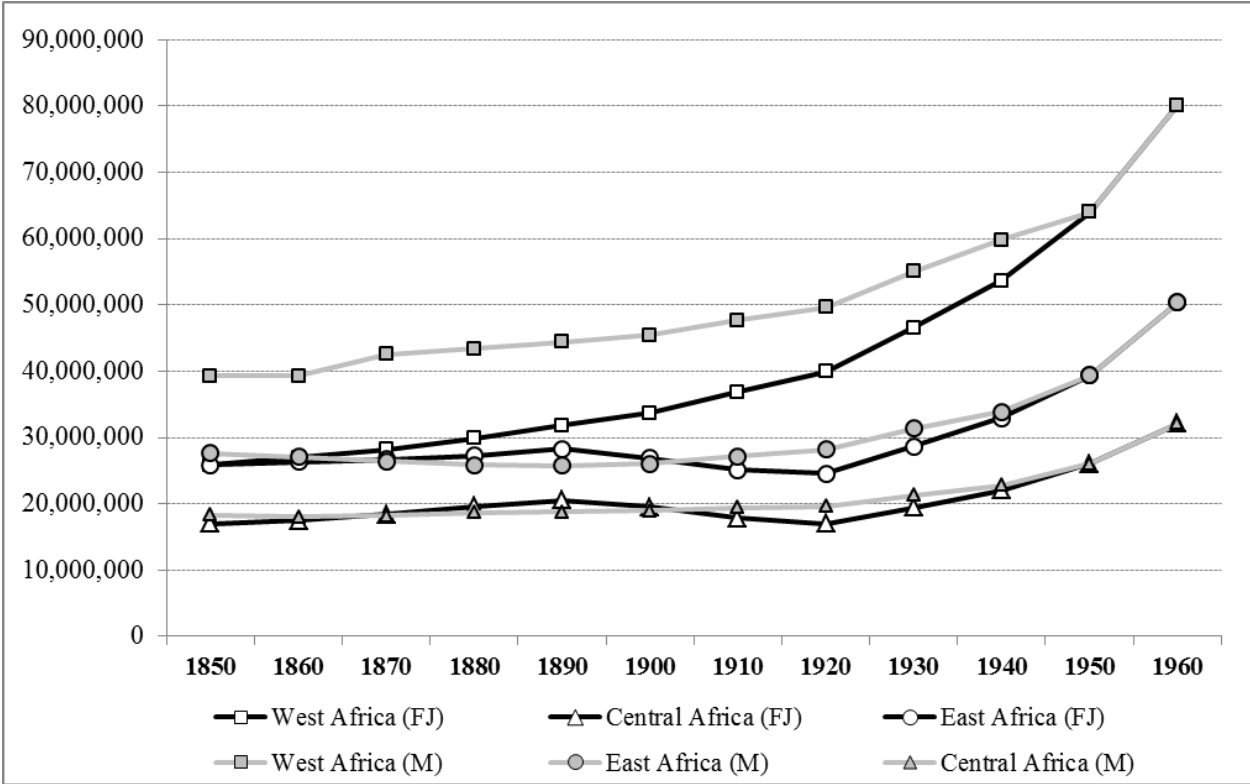
Source: by the authors

Figure 2a: Estimated populations of North and Southern Africa, 1851-1960



Source: Manning, 'African population', appendices; Frankema and Jerven, *African population database 1.0*, available at <http://www.aehnetwork.org/data-research/>

Figure 2b: Estimated populations of West, East and Central Africa, 1851-1960



Sources: See figure 2a.

Appendix table 1: Population estimates for 1950 exceeding a 5% difference

	Population PWT- MAD/UN 1950		Population figure PWT-MAD/UN 1950
Mauritania	1.54		
Niger	1.33		
Eritrea	1.23	Benin	0.82
Cote d'Ivoire	1.14	Mali	0.86
Madagascar	1.13	Nigeria	0.87
Rwanda	1.13	Sudan	0.88
Guinea-Bissau	1.11	Togo	0.88
Congo, DRC	1.11	Gabon	0.89
Senegal	1.10		
Cameroon	1.09	Seychelles	0.91
Ethiopia	1.09		
Zambia	1.09		
Somalia	1.08		
Uganda	1.07	Libya	0.93
		Equatorial	
Sierra Leone	1.07	Guinea	0.93
Burkina Faso	1.07		
Chad	1.07		
Ghana	1.06		
Gambia	1.05		

Sources: UN World Population Prospects 2010, <http://esa.un.org/wpp/>; Penn World Tables version 7.0, http://pwt.econ.upenn.edu/php_site/pwt70/pwt70_form.php; Maddison, Historical Statistics 2010, <http://www.ggd.net/maddison/Maddison.htm> (all databases accessed on 01-03-2012).

Appendix table 2: Situational modifications to African population growth rate

		<i>Maximum annual magnitude (per cent)</i>
	<i>Type of modification</i>	
1	Slave-trade disorder	- 0.2
2	Sub-Saharan slave exchanges	+ or - 0.3
3	Sub-Saharan slave exports	- 0.6
4	Post-slave-trade recovery	+ 0.4
5	Colonial disorder	- 0.4
6	Income growth	+ 0.2
7	Migration of free people	+ or - 0.6
8	Epidemic and famine	- 0.5

Source: Manning's table 10.6

Appendix table 3a: Population growth rates in Indonesia and the Philippines

	Indonesia		The Philippines	
	Java	Outer Islands		
1820-29	2,36		1591-1817	0,54
1830-39	1,75		1818-76	1,54
1840-49	1,11		1877-1903	1,23
1850-59	2,83		1904-39	2,08
1860-69	2,61		1940-59	2,54
1870-79	2,11			
1880-89	1,72			
1890-99	1,79			
1900-05	1,13			
1906-19	0,95			
1920-29	1,78	2,84		
1850-1929	1,85		1877-1939	1,71

Sources: Data for Indonesia from Boomgaard and Gooszen, *Changing economy in Indonesia*, vol. 2; for the Philippines from Doeppers and Xenos, *Population and history*.

Appendix table 3b: A new default growth rate for Sub-Saharan Africa

Decade	Decadal average growth rate India (%)	Minimum growth rate Indonesia/Philippines (%)	Default growth rate Sub-Saharan Africa (%)
1951-60	2,4	2,5	2,45
1941-50	1,5	2	1,75
1931-40	0,8	2	1,40
1921-30	1,0	2	1,50
1911-20	0,2	1	0,60
1901-10	0,3	1	0,65
1891-00	0,3	1	0,65
1881-90	0,3	1	0,65
1871-80	0,3	1	0,65
1861-70	0,2	1	0,60
1851-60	0,2	1	0,60
1851-1950	0,5	1,3	0,91

Sources: See table 2 and appendix table 3a.