

External Trade and Economic Growth in Sub-Saharan Africa, 1895-1965: Some preliminary estimates

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Abstract:

In this paper make the case for the feasibility of creating some new estimates of GDP growth for some Sub-Saharan African economies in the period 1880 to 1950. These preliminary estimates allow us to expand the database on African economic growth and thus interpret the expansion of markets and states in Africa in the late 19th and early 20th century. The new database indicates a revision of the history of African economic growth as the new estimates tend to support the existence of a long period of sustained growth in the first half of the 20th century until the decline in the 1970s. The preliminary estimates indicate that states benefitting from the growth in external markets did expand quicker than those that did not. Caution should be exercised when interpreting this result because the data does not fully pick up how the internal economies responded to external growth.

Introduction:

In a monograph marshalling an impressive amount quantitative evidence to analyse the precolonial economic history of Senegambia, *Economic Change in Precolonial Africa*, Philip D. Curtin does not discuss external trade until the final chapter, and only devotes less than ten percent of the pages to this topic. This was a deliberate choice (Curtin, 1975 p. 309):

External trade usually comes first in writing about African economic history, mainly because the historiographic tradition was laid down by Europeans who first saw Africa through the commerce that linked the two societies. This time it has been left till last.

He does so in order to maintain a Senegambian perspective, but also because he argues that this is the appropriate order of importance and analysis. Only a small part of territorial gross product entered external trade, and it only makes sense to analyse these trade flows and their relative importance once the domestic conditions for production of export commodities and slave trade have first been discussed in detail.

Also in 1975, Patrick Manning reviewed an economic history of Nigeria written by Olufemi Ekundare, where external trade did not only receive primary, but almost exclusive focus. This broke with the advice of Curtin above, and in his review Manning (1975) wrote that the book was only

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valuable as a “compendium of official data on British intervention in the Nigerian economy” and that the accompanying analysis was a “celebratory narrative” of that intervention. “The only interpretative lines drawn out of the data presented are the assertion that the British government was the main stimulant of Nigerian economic growth.” This should suffice to make it clear that there are certain pitfalls by writing an account of economic growth based in external trade statistics alone. Yet, this is roughly what this paper sets out to do.

The justification is that while until recently, most economists’ work on Africa has taken 1960 as a starting point, the past ten years have seen a surge in quantitative research on African development that attempts to establish relationships between historical events and income levels and inequalities today (for reviews see Austin 2008, Hopkins 2009).² To date, the quantitative literature on Africa has made heroic leaps of faith, asserting causal relationships across time periods, without being able to account for different trajectories of economic development.³ One basic reason is that data on national income and similar derivate are only available back to 1950.⁴

Elsewhere I have argued that in result we have gotten a literature that focusses on explaining current day outcomes as in observable income differentials, and to enrich these perspectives have suggested that one should focus on explaining African economic growth, rather than explaining the lack of it (Jerven 2011a and Jerven 2010). For this research agenda to be fruitful and its theories substantiated, it is crucial to have consistent and reliable estimates of economic change. The sources for the creation of long-term data sets on African economies exist, but valuable colonial-era data remain underutilized. Meanwhile, historical national accounts which stretch far back in time are currently being constructed for European countries and other regions.⁵ If Africa is not to be marginalized in global economic studies, similar reconstructive research should be undertaken where it is feasible. The use of these quantitative and other indicators must further be enriched by qualitative studies of the dynamics between formal economic growth and informal economic growth. The contribution of this paper is to present some preliminary estimates of economic growth between 1895 and 1965 for a set of former British colonies, specifically for the Gambia, Ghana, Nigeria, Kenya, Tanzania, Uganda and Malawi.⁶ These estimates are situated in the literature on the expansion of world trade and the economic development of Africa.

This paper first discusses the literature on the world trade and Africa’s role in it, with a particular focus on different interpretations of how African economic development interacted with the world market in the latter half of the 19th century and into the middle of the 20th century.

² For a debate on the topics see Fenske (2010) and the replies by Jerven (2011b) and then Fenske and Anthony Hopkins in the same issue.

³ Gareth Austin has referred to this as a ‘compression of history’.

⁴ The World Bank database provides GDP estimates based on national account files estimates for most countries back to 1960. The Maddison dataset and Penn World Tables have been extended back to 1950 for some countries.

⁵ See papers deriving from the papers deriving from the project ‘Historical Patterns of Development and Underdevelopment: Origins and Persistence of the Great Divergence’ <http://www.cepr.org/research/HIPOD.htm> (consulted 19 September 2011).

⁶ Current day names of these countries.

World Trade, Poverty, Growth and Africa: What do we know?

The issue of world trade and African economic development in the 19th and 20th Century is much discussed and analysed, and some aspects of it has also been very well documented by economic historians, but our knowledge of the relationship between trade and development is not evenly distributed. Three points are worth making. First, we know more about world trade than we know about how it affected participating countries. Second, we know more about how it affected the core economies than how it affected peripheral economies, and finally, within the periphery, we know less about how it affected sub-Saharan African economies.⁷ In summary, we are in good position to pinpoint changes in the explanatory variable: be it in trade volumes, prices and values, while we have a paucity of observations relating to GDP, wages, poverty, population and other data of living standards in the periphery and this is particularly true for Sub-Saharan Africa.

As Williamson (2011) has recently documented, during the ‘first global century’ or between 1820-1913, there was a big boom in world trade, and it also brought with it, with some year to year volatility and country level heterogeneity, a terms of trade boom for the periphery.⁸ Strong income growth in the core economies is well documented in this period; hence we speak of the ‘Great Divergence’. The question it then comes down to is whether peripheral economies failed to benefit, and then if so, why? The main characteristic distinguishing the two types of economies is the structure of exports; so another way of phrasing is whether primary commodity exports fail to offer the same benefits as exports of manufactured goods?

Williamson investigates three hypotheses: 1) whether the trade boom caused a deindustrialisation in the periphery; 2) whether the trade boom caused income inequality in the periphery and 3) whether export specialization increased income volatility. Williamson does not include Africa in his investigation because data on Africa are missing (Williamson 2011: 28), but presents evidence for the rest of the periphery, and finds that the ‘third world’ did make gains from the world boom in trade. More specifically, trade did increase income levels, but was associated with some deindustrialisation and considerable increased volatility following the specialization in production of primary products for exports.

How does Africa fit into this picture? As mentioned, there is a paucity of quantitative evidence pinpointing shifts in income and living standards, so the literature has very much been a contest of models and plausible assumptions. It can be boiled down to three competing perspectives: the classical and neo-classical ‘gain from trade’ perspective, the dependency and new left ‘core-periphery

⁷ One may add that we know more about West Africa than other parts of Africa, and less about regional trade than world trade, and more about the Atlantic trade than the Indian Ocean trade.

⁸ According to Williamson, “the best measure of the terms of trade is the ratio of a weighted average of export and imported prices quoted in local markets, *including* home import duties, that captures the impact of relative prices on the local market” where the “the weights of course, should be constructed from the country in question” (2011:29).

exploitation' perspective and a third political economy 'cui bono' perspective, wherein both old and new Marxists and rational choice theorists emphasise the importance of the recipients; and place less emphasis on whether it is really gains from trade or fruits of exploitation.

The basic competing models are the vent-for-surplus model versus the dependency model. The former assumes that there was a surplus of factors of production, particularly labour and land, that the world market provides a vent for these abundant factors of production. Thus when we see increased export volumes, the opportunity cost is zero. Thus, it has the basic assumption of a marginal productivity of labour being zero in the 'traditional' or 'rural' economies in common with the classical dual economy model proposed by Arthur Lewis. The main distinction is of course that in the Lewis model, land was assumed to be the constraining factor and therefore the opportunity cost of modern sector growth (here manufacturing and industry instead of agriculture) was also zero. In the vent for surplus model, both land and labour is abundant and also in this model the modern sector growth (here export instead of food) was assumed to be zero. Scholarship has in different ways contested these assumptions or explanations, most importantly it has been pointed out that labour was only seasonally abundant, and was very scarce in in certain periods (and more so in more areas outside of the forest belt), that the production of exports involved both innovation and capital (investment in new technologies) and that the opportunity costs were not zero (food quality and security, labour division and manufacturing all changed considerably).⁹ These and other empirical contributions all amounts to reminding us that when we see aggregate modern sector growth it is not equivalent to aggregate economic growth.

Other scholars do not only take issue with the assumptions, but would also analyse the political economy of growth. Thus pointing out that the move from 'traditional' to 'modern' was not only associated with 'growth', it was fundamentally driven by power. In particular the colonial state was interested in increasing taxable activities and increasing labour supply, and thus had an incentive to undermine food production and promote export production. It did do so by introducing taxes or alienate land in various degrees across the continent.¹⁰ These revisions are making the point that when we see aggregate modern sector growth it is not tantamount to 'development' – rather we should focus on who benefits from this particular type of economic growth.

⁹ See Austin (2008) for a review of this literature and for a reformulation of factor endowment perspective for Sub-Saharan Africa. More specifically Tosh (1980) emphasises the negative impact on food production in the savannah, Hill (1963) stresses the importance of capital investment and entrepreneurship in the production of cocoa, and Smith (1976) for highlighted de-industrialization in the textile production in Nigeria.

¹⁰ For a review see Cooper 1993. In particular Arrighi (1970) criticized the use of the Lewis Model to explain the proletarianization of the peasantry in Rhodesia, where he argued that it was a result of the state actively undermining peasant production, by demanding taxes and by alienating land.

World Trade, Poverty, Growth and Africa: What numbers do we have?

Thus there are some very powerful caveats to the interpretation of aggregate data trends. However, the literature leaves no doubt: there must have been economic growth. A lot of this growth was extensive, by applying more factors of production, but there was also intensive growth. There was Smithian growth through specialization, and Schumpeterian growth through entrepreneurial adaptation of new technologies and capital investment. Hopkins (1973) however reminds us out that while there was economic growth, it was limited. Chiefly, because exports were confined to staples and the import side was dominated by consumer goods – thus opportunities for value added was limited on both sides. Furthermore, income inequality prohibited the formation of a mass consumer market and the total export proceeds were too small to support the formation of a wide range of enterprises on the continent. As Kilby's calculations bear out, it was only in the 1950s that the domestic market in Nigeria could have supported basic light manufacturing industries (1969: 54).¹¹

Munro (1976) provided a useful but unambitious study of Africa and the International Economy (1800-1960). His self-confessed aim was simply to provide an account of broad trends and patterns in Sub-Saharan Africa's development and to provide a foundation for further study. He then provided a collection of aggregate trade statistics, but refrained from testing or applying any theories of development. As already discussed here, that kind of contribution is very important, and furthermore, aggregate statistics enables us to compare across the periphery. This would allow us to gauge the importance of the different constraints that have been discussed here. As shown in Williamson (2011), these kinds of comparisons are currently constrained by the lack of African data. Munro provides the aggregate trade data for the period.

Total Foreign Trade, Africa, 1897-1960 (Million £)

	Africa	West Africa	Central Africa	Southern Africa	Eastern Africa
1897	71.1	10.1	4.1	52.2	4.6
1913	187.9	41.3	10.1	121.6	14.9
1919	274.4	63.5	14.8	168.8	27.4
1929	355.7	83.3	28.7	201.3	42.3
1932	204.4	47.6	16.6	117.8	22.3
1938	391.7	73.2	26.6	248.6	43.3
1945	603.4	118.1	56.6	347.8	80.9
1952	2789.2	725.2	412.0	1238.3	413.7
1960	3782.2	1089.3	457.9	1725.4	509.7

Source: Munro (1976: Appendix).

¹¹ There were two gaping discrepancies. According to Kilby's the market would have justified a start-up of cement and textile production as early as in 1920 and the 1890s respectively, but the factories were not started until 1957 (Ibid).

The aggregate growth in foreign trade is far less impressive if impressed in constant prices. Table 2 shows the same data for Total Africa expressed in fixed 1913 British pounds using an average of Feinstein's import and export deflator (1976; Table 61)

	1897	1913	1919	1929	1932	1938	1945	1952	1960
Trade	87.6	187.9	106.2	272.4	197.1	327.5	260.8	606	834.9
Growth		4.8%	-9.1%	9.9%	-10.2%	8.8%	-3.2%	12.8%	4.1%

The second row shows annual average growth for each of the periods. The average growth in foreign trade from 1897 to 1960 was 3.64 percent, but this growth but this expansion is unevenly distributed. Large gains were made until the WW1, but then almost entirely reversed during WW1. Again from 1919 to 1929, the annual growth was impressive, but was match with a rate of decline in double digits for three years, during the Great Depression. Post WW2 growth was the fastest in foreign trade recorded.

We are less richly endowed in African GDP estimates for this period. Maddison provides the few GDP per capita estimates that do exist, with country estimates for total Africa, South Africa, the Northern African economies, but only for Ghana of the Sub-Saharan economies.

Table 3: Selected Per Capita GDP estimates (1990 international Geary-Khamis \$)

	Africa	World	UK	Ghana	South Africa	Brazil	India	Japan
1820	420	666	1,706	415	415	646	533	669
1870	500	870	3,190	439	858	713	533	737
1913	637	1524	4,921	781	1602	811	673	1387
1960	1063	2773	8,645	1378	3041	1,702	662	3986

Source: Maddison.

These data indicate that Ghana was growing exceptionally rapidly between 1870 and 1960. Almost doubling GDP per capita between 1870 and 1913 and then almost doubling again between 1913 and 1960. This would make Ghana growing roughly double the pace of total Africa, and almost a quarter quicker than the world average. The selected countries from the periphery (or semi-periphery) did not show similar growth, apart from Japan that kept pace between 1870 and 1913, and then outpaced Japan between 1913 and 1960. Recent annual estimates for the Gold Coast 1890-1954 reaffirms this growth rates, and indicate that they may also have been quicker (2011c). Moreover, the average slow growth from 1870 to 1960 is misleading; Jerven (2011c) shows that annual growth rates are much more volatile, as indeed the more episodic growth rates in foreign trade shown in Table 2 displays.

Three questions arises: 1st How does Ghana compare with other African economies? 2nd How certain are we about these GDP estimates for Ghana? And 3rd how do these estimates cohere with other data from the same period? We will deal with these questions in the following.

Frankema and Waijenburg (2011) have collected price and wage data from the colonial Blue Books to give us a picture of economic development in British Colonial Africa through wage developments. The nominal wages are summarized in table 2.

Table 4: Wages (British Pence per day)

	Gold Coast	Sierra Leone	Kenya	Nyasaland	Tanganyika	Uganda
1880	10.4	10.8				
1890	10.4	10.9				
1900	10.4	10				
1915	12.7	10	4.3	3.3		4.8
1930	15	13.9	7.1	4.2	8.9	9.9
1945	22	20.8	15	5.7	6.2	9.2
1951	34.5	40.2	28.4	16.1	25.5	16.8
1959	56.3	80.4	55.2	21	32.8	29.2

Source: Frankema and Waijenburg (2011), Appendix, Table 1a: Nominal wage rates of urban unskilled labor.

The picture in nominal wages does not immediately cohere with the GDP estimates. First, we only have wage data from 1880 onwards, but on the other hand we do have wage data for more countries. It is striking that while GDP increased 78 percent in the Gold Coast from 1870 to 1913, nominal wages did only increase 22 percent from 1880 to 1913. Between 1913 and 1960 GDP increased another 76 percent, meanwhile wages increased 343 percent. Of course, with nominal wages, most of the work is done by prices. In table 3, the wages are deflated using the GDP deflator from Feinstein (1976: Table 61).

Table 5: Wages (1913 British Pence per day)

	Gold Coast	Sierra Leone	Kenya	Nyasaland	Tanganyika	Uganda
1880	11.0	11.4				
1890	11.6	12.2				
1900	11.0	10.6				
1915	11.4	9.0	3.9	3.0		4.3
1930	8.6	8.0	4.1	2.4	5.1	5.7
1945	8.3	7.9	5.7	2.2	2.4	3.5
1951	9.9	11.5	8.1	4.6	7.3	4.8
1959	11.5	16.5	11.3	4.3	6.7	6.0

Source: Table 5 and own calculations.

With the wages deflated, it seems clear that if there was GDP growth in the Gold Coast it was not benefitting urban unskilled workers. The only colony where were increasing, was in Kenya. Note that while this increase mainly occurs between 1945 and 1959, this finding is counterintuitive. The intuition of the Lewis model (as clearly laid out in Mosley 1983 and Bowden et al. 2008) we would

expect urban unskilled wages to be lower there because land supply was constrained as part of the policies of a settler economy. The differences in levels (between West Africa and East and South Africa) seem to coherer, but the trend in Kenya does not. In order to confidently compare wages across countries it is however not enough to deflate by currency, the wages should be expressed in purchasing power parity. Frankema and Waijenburg (2011) provide an attempt of doing this. They adopt Allen’s (2009) subsistence basket methodology and collect urban retail prices to calculate how much the annual price of the family subsistence basket would cost. Thus one can create a measure of comparison, namely how many days one urban skilled workers have to work to finance one family. Table 6 and 7 show that the data necessary to compile the baskets are a bit spotty, and Frankema and Waijenburg further note that not all observations are urban retail prices, but import prices with a 20 percent mark up. Note that Nyasaland is an outlier, and this is not because of price levels, but because of low nominal wages.

Table 6: Cost of Subsistence Baskets (British Pence per year)

	Gold Coast	Sierra Leone	Kenya	Nyasaland	Tanganyika	Uganda
1880	596.7	722				
1890	529.4	642.1				
1900	484.3					
1915		1051.2	492	455.2		537.2
1930	453.4	982.6	527.3	578.1	507.2	832.2
1945	803.7	1434.6	982.0		902.7	873.7
1951	1370.9	2090.6	1831.5		1751.2	1282.7
1959	1459.0	2742.0	2780.4	1746.0	2136.4	1437.8

Source: Frankema and Waijenburg (2011), Appendix, Table 1b: Nominal wage rates of urban unskilled labor.

Table 7: Days of work required to satisfy the Subsistence Baskets

	Gold Coast	Sierra Leone	Kenya	Nyasaland	Tanganyika	Uganda
1880	57.4	66.9				
1890	50.9	58.9				
1900	46.6					
1915		105.1	114.4	137.9		111.9
1930	30.2	70.7	74.3	137.6	57.0	84.1
1945	36.5	69.0	65.5		145.6	95.0
1951	39.7	52.0	64.5		68.7	76.4
1959	25.9	34.1	50.4	83.1	65.1	49.2

Source: Table 6 and 7, Own calculations.

Table 8: Real Wages (1930 British Pence deflated by Subsistence Basket)

	Gold Coast	Sierra Leone	Kenya	Nyasaland	Tanganyika	Uganda
1880	7.9	14.7				
1890	8.9	16.7				
1900	9.7					
1915		9.3	4.6	4.2		7.4
1930	15.0	13.9	7.1	4.2	8.9	9.9
1945	12.4	14.2	8.1		3.5	8.8
1951	11.4	18.9	8.2		7.4	10.9
1959	17.5	28.8	10.5	7.0	7.8	16.9

Table 4 and 6, Own calculations.

Real wages deflated by the subsistence basket shows that the currency deflation understated welfare gains among urban wage earners in the Gold Coast, and elsewhere. How did these trends cohere with what we know of export, imports and government expenditures and revenues? Frankema (2011) has provided an overview of colonial taxation, and gives a comparative picture of the relationship between taxes and wages. In table 8 these data are reproduced.

Table 9: Number of working days required to equal annual average per capita tax revenue, 1910-38

	Gambia	Sierra Leone	Gold Coast	Nigeria	Nyasaland	Kenya	Uganda	Mauritius
1910/13	7.8	5.4	10.2	3.9	7.2	6.9	3.3	12.3
1919/21	6.5	4.5	12.7	3.1	12.1	-	6.1	12.4
1925	9.5	6.9	14.5	3.7	13.5	16.1	5.9	16.1
1929	8.7	6.8	13.0	2.6	13.3	21.8	9.1	14.2
1934	-	5.4	11.4	3.8	10.4	18.2	11.8*	26.8
1938	9.7	9.2	14.4	4.7	12.6	23.3	14.5	28.4

Frankema (2011) Table 1, p.141. *Uganda from 1933.

Table 10: Number of working days equal per capita tax revenue, excluding custom duties, 1910-38

	Gambia	Sierra Leone	Gold Coast	Nigeria	Nyasaland	Kenya	Uganda	Mauritius
1910/13	1	1	1	1	5	5	3	6
1919/21	1	1	1	1	8	-	5	7
1925	2	1	1	1	10	9	4	7
1929	2	2	2	1	9	11	7	8
1934	-	2	2	1	6	11	8	15
1938	3	4	3	1	7	13	9	16

Frankema (2011) Table 2, p.142

In essence Tables 8 and 9 captures different taxations systems. In particular, it is clear that in the Gambia, Sierra Leone and the Gold Coast revenue from custom duties were very important. Government revenues and urban wages were higher in both real and nominal terms. Foreign trade for all of Sub-Saharan Africa grew at rate of 3.64 per annum between 1897 and 1960. Population estimates are not very reliable, but according to the Maddison dataset, it was averaging just short of 1.5 percent per annum between 1900 and 2000, thus continent wide, foreign trade grew 2 percent. Between the averages, there is a wide spatial and temporal variation.

Growth in trade was uneven, and foreign trade contracted during the world wars and depression. In Western Africa world trade was more important than in other areas. It has been observed that throughout the period this was correlated with higher real wages, and a relative higher importance of duties on trade in revenue collection. GDP per capita growth in total Africa was according to the available just above a half percent per annum between 1870 and 1913 and then just above one percentage between 1913 and 1960. In the Gold Coast GDP per capita growth was quicker than the average (1.35 and 1.2 percent between 1870 and 1913 and 1913 and 1960 respectively). Did this growth fall unequally on governments, wage earners and exporters for imports? These questions can only be answered with respect to a handful of British Colonies.

Table 11: Real wage growth

	Gold Coast	Sierra Leone	Kenya	Nyasaland	Tanganyika	Uganda
1880-1890	1.20	1.27				
1890-1900	0.89					
1900-1915						
1915-1930		2.68	2.92	0.01		1.93
1930-1945	-1.26	0.16	0.84		-6.06	-0.81
1945-1951	-1.39	4.82	0.25		13.34	3.70
1951-1959	5.49	5.42	3.14		0.66	5.64

Source: Table 7, Own calculations. Gold Coast 1900-1930: 1.45 Sierra Leone 1890-1915: -2.29 and Nyasaland 1930-1959: 1.75.

Real wages, as measured by the changes in nominal wages paid for urban unskilled workers deflated by the price changes in the subsistence basket do show that urban wage earners in Accra had their incomes increase marginally slower than estimated GDP growth until 1900 and growing with an annual rate of 1.45 per cent between 1900 to 1930 (which was quicker than GDP per capita growth). Note that this increase was not reflected in nominal prices, the wage was unchanged at 10.4 pence between 1880 and 1900 (Table 4) and then only increased to 12.7 and 15 pence in 1915 and 1930 respectively. Deflated to 1913 British Pounds as per Feinstein Index, the wages remained virtually unchanged from 1880 to 1960, falling in the interwar period, but for the rest of the period they behave as if they were pegged to the British GDP deflator (Table 5). When domestic prices (or in some cases the prices of imported consumer goods) are added (as in Table 6 and 7), there is more movement in urban wages. If we trust these data, one would conclude that the domestic price of subsistence decreased quicker in the Gold Coast than in Britain from 1880 to 1930 and therefor

urban unskilled workers experienced faster growth in real living standards. This trend is probably overstated, or rather misstated, because of the missing observation in 1915. In comparison, Sierra Leone records negative real wage growth between 1890 and 1915.

The general pattern seems to point towards growth across the board between 1915 and 1930. This change is concomitant with increases in nominal wages, but real growth arises as the domestic price of the urban subsistence basket. Average foreign trade growth in this period was 9.9 percent (measured at constant prices). Real wage growth was only shared across the countries again in the post war period. It is again driven in part by nominal wage increases (that this time is higher than the Feinstein GDP deflator for the period) and in part by the subsistence basket's price falling. The positive development is underpinned by strong foreign trade growth post 1945.

World Trade, Poverty, Growth and Africa: Can we get more and better numbers?

How close are we to saying something definite about GDP growth in the period? The data in the Maddison dataset have too few observations from too few countries. According to the dataset the GDP per capita growth in Ghana averages 1.35 percent between 1870 and 1913 and then slows down to 1.2 percent between 1913 and 1960. The main cause for the slowdown in per capita growth is an increase in population growth – and we know that the population data is too weak to make this assertion. Jerven's alternative estimates (2011c), which adopts a version of Szereszewski's (1965) methods to estimate annual growth between 1890 and 1954 shows a slightly higher average growth. A few annual observations are shown in table 12. In addition, these estimates show that growth was more rapid until 1913. Both the 1920 and the 1930 are odd years in the Jerven dataseries, reflecting that the tons of cocoa exports fell 30 percent and 20 percent compared to the previous year in 1920 and 1930 respectively. The Jerven series picks up annual changes in physical exports, and thus there is more annual variation. The general pattern shows a more rapid pre 1913 growth, a more pronounced 1920s boom, with a mirrored deep 1930s recession, a similar growth into the WW2, but with a stronger post-war growth in the Jerven dataset.

Table 12: Ghana: GDP per capita estimates, selected years.

	1891	1900	1913	1920	1930	1940	1945	1950
Maddison	581	656	781	836	922	1,017	1,068	1,122
Jerven	581	639	833	646	778	989	1,040	1,311

Source: Total GDP growth from Jerven (2011), using interpolations from Maddisons population data to create GDP per capita estimates. Maddison's year estimates are made using interpolated annual growth between his 1870, 1913 and 1950 estimates.

To enrich the study of economic growth in colonial Africa, these time series data can be expanded further. As reviewed here, the basic components do exist. We know a little bit about wages and population, we know less about production, while we know considerable more about exports,

imports and government revenue and expenditures. Thus making up some estimates will involve some deal of guessing.

The underlying database for this project collects time series data on Imports, Exports (Quantities and Values), Government Expenditures and Revenues, Wages, Prices and a set of quantitative indicators (pupils enrolled, km road, KWh consumed etc.). Data collection for Botswana, the Gambia, Ghana, Kenya, Malawi, Nigeria, Sierra Leone, Tanzania, Zambia and Zimbabwe is ongoing. The colonial data has been collected using primarily the Colonial Blue Books. Some gaps in the post-colonial data, collected from national statistical offices, still remain. A pilot study for construction of parsimonious national accounts based on physical indicators for Ghana (1891-1954) has been completed (2011c), and the difficulties of creating a coherent dataset, focusing on the case of Nigeria have been discussed at length in a different working paper, and will not be repeated here. Here some preliminary estimates using data for the Gambia, the Gold Coast, Nigeria, Kenya, Tanganyika, Uganda and Nyasaland.

Table 13: Colonial Population (000s) and Per Capita estimates (£) 1931

	Gambia	Gold Coast	Nigeria	Kenya	Tanganyika	Uganda	Nyasaland
Population	200	2950	19200	3040	5063	3553	1630
Revenue	0.92	0.77	0.25	0.72	0.30	0.39	0.27
Expenditure	1.14	0.96	0.32	1.01	0.35	0.41	0.31
Imports	1.26	1.63	0.34	1.89	0.84	0.37	0.46
Exports	2.58	2.57	0.45	1.48	0.84	0.56	0.31
G/X-M	0.5	0.4	0.7	0.5	0.4	0.9	0.8

Source: Colonial Reports and Blue Books (Various Years), Population Kuczynski (1937), Own calculations.

According to this quick snapshot it seems that in 1931, the Gambia, the Gold Coast and Kenya were colonies where revenues and expenditures were as much as between 3 and 4 times higher than Uganda, Nyasaland and Tanganyika. The ratios are similar for per capita Exports and Import, except in Tanganyika where exports and imports were relatively high compared to the level of revenues and expenditures. The last column provides a measure of the role of the expansive nature of the colonial government. The average of per capita revenues and expenditure over the average of per capita import and exports show that in Nigeria, Uganda and Nyasaland the size of government revenue/expenditure is close to total export earnings/import expenditure, whereas in the Gambia, Gold Coast and Kenya the share is about half that. Again, as in comparing the levels of wages, these results can in part be different colonial government strategies, as much as be an expression of different levels of development. If we can create growth estimates of different components of GDP the measures may shed light on this particular problem. Tables 14 to 17 display selected years of total revenue, expenditure, import and export data in fixed 1913 values (£ 000's).

Table 14: Total Revenue (1913 £ 000's)

	Gambia	Gold Coast	Nigeria	Kenya	Tanganyika	Uganda	Nyasaland
1895	30.6	269.1	166.1	-	-	-	-
1903	-	630.5	992.4	-	-	56.2	82.9
1914	86.3	1335.7	2948.8	979.0	-	283.7	118.9
1930	122.0	1970.4	3165.5	1700.8	984.8	795.2	225.4
1950	-	5842.9	9168.0	3702.5	2906.6	3085.5	767.2
1965	-	18652.3	21139.5	4084.5	5516.9	6340.3	985.3

Table 15: Total Expenditure (1913 £ 000's)

	Gambia	Gold Coast	Nigeria	Kenya	Tanganyika	Uganda	Nyasaland
1895	29.3	310.3	168.4	-	-	-	-
1903	-	648.4	1397.4	-	-	203.9	111.9
1914	121.3	1761.1	3606.8	848.6	-	290.1	143.6
1930	142.6	2108.1	3564.2	1376.6	1033.2	795.2	241.5
1950	-	3954.0	8495.4	3495.6	2272.0	2236.6	1005.9
1965	-	19788.0	11559.2	4335.0	8367.3	-	2344.2

Table 16: Total Imports (1913 £ 000's)

	Gambia	Gold Coast	Nigeria	Kenya	Tanganyika	Uganda	Nyasaland
1895	-	961.3	-	-	-	-	-
1903	-	2339.9	2392.1	-	497.8	138.4	248.0
1914	384.1	4408.5	6208.7	1453.2	-	582.5	200.6
1930	458.4	7562.3	10657.9	6831.9	3142.7	1363.3	645.6
1950	962.7	14107.3	18190.5	8869.3	7107.6	4619.9	2228.7
1965	-	30802.5	58722.2	10281.4	15415.7	-	4700.2

Table 17: Total Exports (1913 £ 000's)

	Gambia	Gold Coast	Nigeria	Kenya	Tanganyika	Uganda	Nyasaland
1895	-	1104.2	-	-	-	-	-
1903	-	1131.4	2718.6	-	304.5	61.0	55.9
1914	914.2	4879.2	6072.1	991.9	2863.8	563.7	180.1
1930	614.6	6935.4	10341.5	3024.6	2594.8	1441.9	464.3
1950	573.9	20266.4	23508.8	2734.1	6169.2	3041.4	1884.1
1965	-	17415.1	49251.8	5699.2	13701.8	-	2533.1

The easiest way to compute GDP from these data is to use the expenditure method ($Y = C + I + G + (X - M)$). Previous estimates have made use of a base year with sector shares in GDP and let volume indices proxy for growth (Jerven 2011d). The dataset has sufficient coverage of values and volumes of exports and imports that income term of trade can be calculated. The same approach would let us create chain indices (changing weights each year) for imports and exports in both prices and volumes. Meanwhile, either import price indices or consumer price indices can be used to complement existing GBP deflators to express Revenues and Expenditures in constant values. This work is in progress.

The problematic entities are 'Investment' and 'Consumption'. The typical assumption is to let population growth proxy for consumption – but that still leaves the question of guessing the right level open. Is personal consumption 95 percent, 85 percent, 65 or lower? How much of this consumption is accounted for by recorded imports and recorded urban retail prices? These assumptions will affect pace of growth significantly. The assumption of letting traditional consumption grow with population growth assumes zero elasticity between the two sectors – whereas we would that expect consumers, wage earners and export producers actively engage in both sectors, as indeed our models of the relationship between export and development rightly assumes. As economic history research has shown markets and sectors were sometimes also politically controlled (thus decisions to participate in say, tobacco exports in Nyasaland when maize prices were low was not a feasible alternative).

Investment on the other hand is often considered to entail only modern sector growth – thus assuming that capital formation grows in accordance with capital goods imports seems reasonable. However, this neglects the importance of land improvement and planting required for export growth of products such as tea, cocoa and coffee. Here lagged models can be employed, assuming that change in exported output 'today' is a result of planting 'yesterday' (where the timing of yesterday will depend on the crops (Szereszewski 1965: 138-139)).¹² This leaves the perhaps the biggest stock item still unaccounted for roads and dwellings. Estimates for these important items is further problematic because the 1953 Standard of National Accounts did actually not provide provisions for how to account for them (Seers 1976). In the 1968 National Accounts they were

¹² The used for cocoa production was to assume a constant relationship between cocoa output and capital formation, where output is a function of past labour used in planting, assuming a constant per acre yield and using prevailing daily wages from the Blue Books. It was assumed that it takes 170 labour days to bring an acre to the bearing age and that each acre bears 420 lbs of cocoa.

introduced, but it still varies how these are measured on the country level. Per capita allowances, observed outcomes in roads and railroads as well as the imports of cement, iron and wood may be feasible proxies.

Rather than introducing any more data I will attempt a few preliminary GDP estimates using the data that has already been present. The easiest start is to make a level estimate for 1931. Population estimates from 1931 from Kuczynski (1937) and Frankema and Waijenburg (2011) provide data for the per capita local price of subsistence. Multiplying the two provides a lower end estimate for Consumption. Allen (2009) and Frankema and Waijenburg (2011) both assume that there are 3 baskets per household, so larger family size will bias this estimate upwards. On the other hand, recall that these are bare-bone subsistence, and anthropometric evidence from the same period indicate that living standards were higher, and were indeed increasing (Moradi 2009). For capital formation we have no good level data, and in the absence of any better estimate, it is simply assumed that Investment equals to 25 percent of export value. This is higher than the share of exports that were financing capital goods imports, but was the average ratio of capital formation and exports in Szereszewski level estimates the Gold Coast 1891, 1901 and 1911. One would be better off trying to get a sense of the share of savings in household budgets, calculate share of investment in government expenditure and similarly to Szereszewski gauge the investment required to support the observed export growth – but that remains work in progress. The other three items are straightforward.

Table 18: 1930 GDP estimates: Gold Coast, Kenya, Tanganyika, Uganda & Nyasaland

	Gold Coast	Kenya	Tanganyika	Uganda	Nyasaland
C	5,573,042	6,681,199	10,700,956	12,321,879	3,926,263
G	3,744,010	2,444,793	1,835,000	1,412,241	428,901
I	2,477,672	1,080,534	927,000	515,113	165,857
X	9,910,688	4,322,136	3,708,000	2,060,453	663,426
M	7,562,306	6,831,882	3,142,736	1,363,314	645,636
GDP	14,143,106	7,696,780	14,028,220	14,946,372	4,538,810

Table 19: 1930 Share in GDP estimates. Gold Coast, Kenya, Tanganyika, Uganda & Nyasaland

	Gold Coast	Kenya	Tanganyika	Uganda	Nyasaland
C	0.39	0.87	0.76	0.82	0.87
G	0.26	0.32	0.13	0.09	0.09
I	0.18	0.14	0.07	0.03	0.04
X	0.70	0.56	0.26	0.14	0.15
M	0.53	0.89	0.22	0.09	0.14

Table 20: 1930 GDP per capita estimates: Gold Coast, Kenya, Tanganyika, Uganda & Nyasaland

	Gold Coast	Kenya	Tanganyika	Uganda	Nyasaland
C	1.9	2.2	2.1	3.5	2.4
G	1.3	0.8	0.4	0.4	0.3
I	0.8	0.4	0.2	0.1	0.1
X	3.4	1.4	0.7	0.6	0.4
M	2.6	2.2	0.6	0.4	0.4
GDP	4.8	2.5	2.8	4.2	2.8

Table 21: GDP per capita, 1950 and 1965: Gold Coast, Kenya, Tanganyika, Uganda & Nyasaland

The subsistence baskets for Uganda, Tanganyika and Nyasaland, are comparatively high. This result may reflect prices in the basket are not representative of the prices (or the opportunity cost of the prices) paid for subsistence in these economies. Thus total value of consumption is overestimated, and therefore also GDP. In absence of better subsistence data this cannot be readily changed. Note however, that the percentage share of Consumption in GDP is consistent with other estimates for other economies. Okigbo found it to be varying between 86 and 88 percent for Nigeria between 1950 and 1957 (1962). Whereas Szereszewski found traditional consumption to be 82, 74 and 57 percent of GDP in 1891, 1901 and 1911 respectively, and thus bearing in mind the rapid economic growth in the Gold Coast after WW1 a reduction towards 39 percent does not seem completely out of bounds. It should also be noted that in these very open economies, GDP is very likely to be

highly volatile, and thus we may get different ratios for different years. Nevertheless, the Maddison estimates (in 1990 Geary Khamis Dollars), seem to bring further support to these 1930 levels.

	Gold Coast	Kenya	Tanganyika	Uganda	Nyasaland
1950	1,122	651	424	687	324
1965	1,393	743	497	779	397

Source: Maddison

Using these benchmark years, real change in GDP per capita can be computed. When the dataset is complete with annual data supporting the annual observations reported in table 15, 16 and 17 can be used to compute real annual change in Exports, Imports and Government Expenditure. If it is also assumed that growth in Capital Formation is proportional to growth in Exports, and that growth in Consumption is proportional to population growth adjusted by changes in real wages (as shown in Table 8), one will be able to get direct level estimates (in addition to those indirectly imputed using income terms of trade).

Concluding Remarks:

In this exploratory paper I have made the case that for providing some new estimates of GDP growth for some Sub-Saharan African economies in the period 1880 to 1950. These preliminary estimates would allow us to expand the database on African economic growth and thus interpret the expansion of markets and states in Africa in the late 19th and early 20th century. The new database of income terms of trade, real wages, anthropometrics and other measures already indicates a revision of the history of African economic growth as the new estimates shows a long period of sustained growth in the first half of the 20th century until the decline in the 1970s. The preliminary estimates indicate that states benefitting from the growth in external markets did expand quicker than those that did not. Caution should be exercised when interpreting this result because the data does not fully pick up how the internal economies responded to external growth. This paper has also shown that there are benefits to using the GDP metric to gauge the plausibility of measures of trends and levels gained by other methods and observations. The few estimates put forward here already indicate that there were visible patterns of divergence within Sub-Saharan Africa in the early 20th century, and that participation in world trade was a major factor in this. More research is

needed, but the evidence put forward here also suggest that participation in world trade provided the basis for increased living standards. These findings may also suggest that political and geographical constraints for participation in world trade had short and medium term effects on development. It is important to study these patterns of divergence on the country macro level as well as continue to analyse the political economy of growth in these economies.

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