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Economic growth in Sub-Saharan Africa, 1885–2008: Evidence from eight countries

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ABSTRACT

Sub-Saharan Africa (SSA) has been absent from recent debates about comparative long-run growth owing to the lack of data on aggregate economic performance before 1950. This paper provides estimates of GDP per capita on an annual basis for eight Anglophone African economies for the period since 1885, raising new questions about previous characterizations of the region's economic performance. The new data show that many of these economies had levels of per capita income which were above subsistence by the early twentieth century, on a par with the largest economies in Asia until the 1980s. However, overall improvements in GDP per capita were limited by episodes of negative growth or "shrinking", the scale and scope of which can be measured through annual data.

1. Introduction

Over the past several decades, research on African economic performance has often focused on the question of what went wrong. Collier and Gunning (1999: 64) begin a survey of this literature by observing that 'African economic performance has been markedly worse than that of other regions.' Sachs and Warner (1997: 336) also note that 'as a result of slow growth, African countries today are vastly poorer than the rest of the developing world', and describe their focus as being 'sources of slow economic growth in Sub-Saharan Africa'.

The questions asked by these authors and others have been shaped by the limited availability of data on the long-run performance of African economies. Most studies of African growth use data beginning in 1950 or even 1960, which show little improvement in per capita incomes during the second half of the twentieth century, a period when at least some other developing economies were converging with Europe and North America. In other regions, new contributions to historical national accounting have provided insights into patterns of growth and development over centuries, rewriting the history of economic divergence and convergence since before the industrial revolution (Broadberry 2021).

At the same time, however, the field of African economic history has experienced a 'renaissance' based on newly digitized sources of data and the application of innovative techniques (Austin and Broadberry 2014; Fourie 2016). This work has shed new light on the patterns of trade, living standards, inequality, and institutions of African countries over the course of the nineteenth and twentieth centuries, and in some cases for even earlier periods. These have generated new insights into how Africans responded to changing market conditions and the impact of historical economic change in Africa. Still missing, however, are annual estimates of the economic performance of African countries over this period which would allow for more systematic comparisons across space and time. As a result of this absence, Africa remains largely absent from discussions of long-run growth.

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This paper addresses this gap by providing a quantitative overview of economic growth in eight former British colonies in Sub-Saharan African (SSA) over the long twentieth century, encompassing the colonial era as well as the post-independence period. It presents annual estimates of GDP per capita in countries spread across the major regions of southern, west, east and central Africa for the period 1885–2008. Reconstructing GDP from disaggregated sectoral output data, it is possible to reconstruct the path of economic activity during the colonial period. These estimates can then be linked to postwar data to provide annual series, presented in Appendix 1, rather than estimates for selected benchmark years only. We then use this database to show that while Africa's performance compares more favorably to that of other developing regions before 1950 than current literature would suggest, the 'lost decades' of the 1980s and 1990s were also not the only period of shrinking which limited overall gains in per capita income. This indicates that the focus of current literature on the specific circumstances of that period may be misleading in terms of understanding Africa's long-run performance.

The data also show considerable heterogeneity in the growth experience of individual African countries. Although the Cape Colony provided high living standards for a small number of European settlers from the eighteenth century, GDP per capita in South Africa as a whole was no higher than in the richest West African economies as late as 1900. South Africa forged ahead decisively only with industrialization after World War I. Zimbabwe (formerly Southern Rhodesia) had similar levels of GDP per capita during boom periods, but has also experienced severe growth reversals, most recently since the late 1990s while much of the rest of Sub-Saharan Africa has experienced a growth boom. In Nigeria and Ghana, both commercial leaders of West Africa, episodes of sustained shrinking have been linked to both declining prices for exports and political instability. In Kenya and Uganda, episodes of growing have more than outweighed episodes of shrinking, although most of the long run gain occurred before World War II. In Zambia, a dramatic copper boom between the 1930s and 1970s was followed by a severe case of shrinking which saw it converge with its once-poorer neighbor, Malawi (formerly Nyasaland).

This is not yet a comprehensive picture of Africa's long run growth, since it covers only countries that were British colonies. Colonization was not random, and there has long been speculation that Britain 'ended up with the plums' in the European scramble for territory in Africa (Burbank and Cooper 2010: 315). Thus the story of these eight countries may not be representative of the continent as a whole, or of the regions in which each country is located. However, our sample does cover a large share of the GDP and population of Sub-Saharan Africa: in 1950, these eight countries accounted for around 50 per cent of the GDP of the region and 40 per cent of the population.

The estimates presented here are also based on partial data, which was collected for purposes far removed from the calculation of national accounts. However, this is the case for all historical national accounting, and it is not clear why the problems should be any more severe for Africa than for other regions. Furthermore, there is a high degree of continuity between the data sources available during the colonial and early post-colonial periods. And although the postwar African data have at times been severely criticised, alternative indicators such as satellite maps of night lights tend to produce results broadly in line with the patterns of economic activity suggested by modern GDP per capita data (Jerven 2013; Henderson et al., 2011). This paper is intended to inspire further studies on other parts of the continent, so as to bring Africa as a whole into narratives of long-run growth previously confined to other regions, as well as to raise new questions about Africa's growth which look beyond the post-war era.

2. Historical national accounting for Sub-Saharan Africa

Despite its central importance in the modern economic history of most regions, there has until recently been relatively little use of national accounting in the economic history of Africa (Manning 1987: 51). This has had the unfortunate consequence of limiting the extent to which Africa appears in comparative historical work on economic growth and development. However, recent work in African economic history has demonstrated the availability of large amounts of economic data for the colonial era, as well as for the period since independence (Austin and Broadberry 2014). Those data are used here to provide historical national accounts for eight Sub-Saharan African economies in the main regions of southern, west, east and central Africa. The sample of countries illustrates the diversity of Africa's economies: they include resource-rich mineral producers as well as agricultural economies, and countries which had extensive European settlement during the colonial period as well as those which had none. The estimates of GDP per capita derived in this way can be linked up to the postwar national accounts developed during the final years of the colonial era and built upon in the years after independence. Details of the reconstruction of national income are provided in Appendix 2 for the colonial period before 1950 and Appendix 3 for the post-1950 period. The basic approach is set out below, providing summary information on the economies analysed and also addressing some of the critiques of African GDP data.

2.1. Historical national accounts for South Africa

South Africa is the only one of the eight countries for which it is possible to draw on existing estimates, produced by Fourie and van Zanden (2013) for the Cape Colony over the period 1701–1910 and for the whole of South Africa from 1910. This GDP per capita series is plotted here in Fig. 1 and highlights a number of key themes for this paper. First, it indicates that the Cape Colony provided high living standards for a small number of European settlers in the eighteenth century, while it acted as a victualling station for the Dutch East India Company (VOC) (Fourie, 2013). Maddison (2010) worked with a subsistence GDP per capita of $400 in 1990 international prices, equivalent to most people living at the World Bank poverty level of $1 per day with a small, rich elite on top. Per capita incomes of three or four times subsistence in the eighteenth century Cape Colony are on a par with the richest European economies at that time (Broadberry, 2021). This runs counter to the traditional view of South Africa as an economic backwater exhibiting no economic growth before the mineral boom of the late nineteenth century (Feinstein, 2005: 2–3). Second,

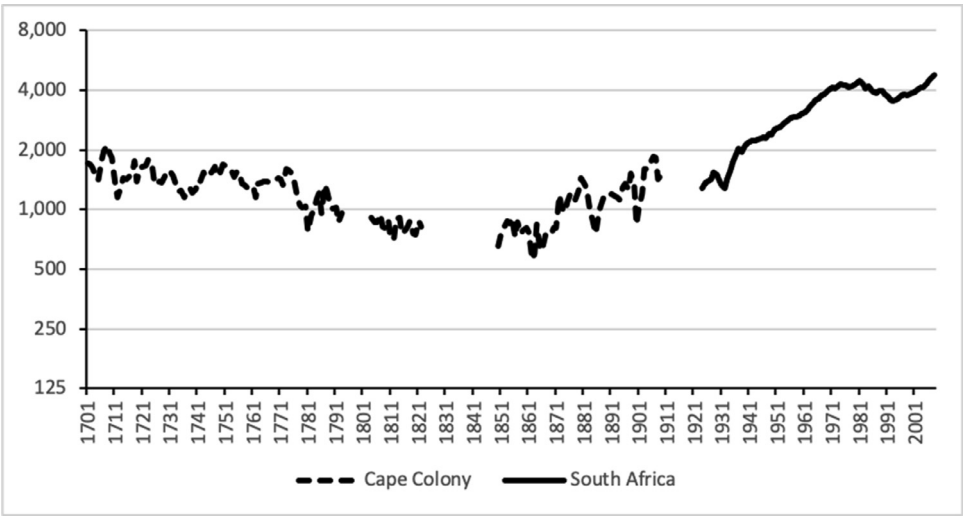

Fig. 1. Per capita GDP in Cape Colony, 1701–1910 and South Africa, 1910–2008 (1990 international dollars, log scale). Source: Fourie and van Zanden (2013).

there are recurrent episodes of positive growth, interspersed with periods of negative growth or "shrinking", as in pre-industrial Europe (Broadberry and Wallis, 2017). The problem was not the absence of growth, but rather the lack of resilience, which continued to be a problem in Africa into the twentieth century.

2.2. Historical national accounts for the colonial era

For the other seven economies considered here, it has been necessary to reconstruct historical national accounts from primary and secondary sources, detailed in Appendix 2. For the colonial era, GDP has been estimated from the output side, dividing the economy into three main parts covering the export sector, government and the traditional sector.

2.2.1. The traditional sector

It has been conventional in African national income accounting to assume that outside the modern export sector, there is a large traditional sector, where most people live at bare bones subsistence, eking out a living from the land, producing their own food, clothing and shelter, as well as providing basic services such as security, health and education. Although much of the activity takes place outside the market, the need to pay taxes in cash ensures some contact with the market economy. This sector accounted for a large share of total economic activity in colonial Africa. Traditional sector output is often assumed to grow in line with population, with no improvement in living standards over time. This view can be seen in the work of Szereszewki (Szereszewski, 1965), who provided estimates of GDP in Ghana for the benchmark years of 1891, 1901 and 1911 and compared them with 1960. It is also implicit in the work of Deane (1953), who prepared estimates of GDP for Northern Rhodesia (Zambia) and Nyasaland (Malawi) in the 1940s. Furthermore, Deane went on to apply this approach to the estimation of agricultural output in Great Britain during the eighteenth century, thus making it a standard tool of early historical national accounting in Europe, as well as Africa (Deane and Cole 1962). In Europe, however, the assumption of constant per capita consumption over long periods of time has increasingly been challenged, particularly where there are good reasons to believe that there were significant changes in real income (Crafts 1976; Malanima, 2011; Álvarez-Nogal and Prados de la Escosura 2013).[1]

Rather than assuming constant per capita consumption, output of the traditional sector can be estimated from data on population and the real wage using an assumed income elasticity to derive demand within the traditional sector. The population data in Table 1 are taken from Frankema and Jerven (2014b), who refine the pathbreaking attempt by Manning (2010) to project backwards from a firm census benchmark in the postwar period, taking account of population growth estimates of countries with similar levels of development, as well as situational modifications informed by region-specific conditions and developments. Frankema and Jerven (2014a) suggest two adjustments to Manning (2010), affecting both the level of the 1950 benchmark and the rate of population growth before 1950. This results in two important modifications of Manning's estimates. First, there is an upwards adjustment of the population level in 1950 by around 10 per cent, derived from an examination of the bias in African censuses before and after 1950. Second, whereas Manning applied a growth rate derived from India as the starting point for African population growth before 1950,

[1] Note than an income effect is to be expected even where the traditional sector had little interaction with the market, as in much of colonial Africa, since a good harvest would be enjoyed by peasants whether or not they participated in the market economy. However, we have not allowed for a relative price effect, which would require market participation. In the case of an income elasticity of demand of 0.5, this implies a cross-price elasticity of zero and an own-price elasticity of −0.5 (Bassino et al., 2019: 8).

Table 1
Population of African countries, 1870–1950 (millions).

	S. Africa	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
1870	3.7	0.8	2.2	14.7	3.8	3.2	1.6	2.1
1880	4.1	0.9	2.4	15.5	4.1	3.4	1.6	2.1
1890	4.5	1.0	2.6	16.5	4.3	3.5	1.7	2.1
1900	5.0	1.1	2.8	17.4	4.1	3.5	1.7	2.0
1910	5.9	1.3	3.1	19.1	3.8	3.2	1.6	1.9
1920	6.8	1.5	3.3	20.9	3.7	3.2	1.5	1.8
1930	8.4	1.9	3.8	24.5	4.4	3.8	1.8	2.1
1940	10.3	2.3	4.4	28.4	5.1	4.3	2.0	2.4
1950	12.4	2.7	5.2	34.0	6.1	5.2	2.4	2.9

Sources: Frankema and Jerven (2014b).

Table 2
Real wage in African countries, 1885–1950 (1950=100).

	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Malawi
1885		65.7	72.2			
1911	98.0	78.7	84.9	67.1	74.6	68.3
1926	57.8	90.9	74.5	99.6	120.1	72.0
1929	70.5	118.0	66.4	74.0	86.4	82.2
1933	72.5	108.3	59.0	116.3	65.7	153.4
1938	80.4	108.4	87.8	94.8	78.0	145.3
1943	73.5	105.8	47.6	76.7	108.9	
1950	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Derived from Frankema and van Waijenburg (2012); Mosley (1983).

together with situational modifications, Frankema and Jerven point to tropical land-abundant economies in Southeast Asia as a more appropriate comparator than India for the tropical regions of Africa.

Presented in absolute terms, the population estimates in Table 1 demonstrate the relative size of each economy at every point in time, as well as the growth of population over time. Population grew quite rapidly at around 1.1 per cent per annum over the period 1870–1950 in the two West African countries of Ghana and Nigeria, with Nigeria remaining Africa's most populous country. Population growth was more modest at an annual rate of 0.6 per cent in the East African economies of Kenya and Uganda, and slower still in the Central African countries of Zambia and Malawi. The most rapid population growth during this period was in South Africa, at an annual rate of 1.5 per cent, making South Africa one of the continent's most populous economies. Zimbabwe also shared in this rapid rate of population growth.

The real wage data in Table 2 are derived mainly from Frankema and van Waijenburg (2012). The nominal wages are those of unskilled urban workers, available from the *Blue Books* for the period before World War II and from other official sources for later years.[2] The weights for the items in the price index are based on an adaptation of Allen's subsistence basket to African circumstances (Allen, 2009). The cost of the basket is very heavily dependent on the price of grain (generally maize or millet), so that the real wage computed using this price index is close to a grain wage. For Zimbabwe, Mosley's (1983) composite money wage index has been used. This is based on the money wages of agricultural workers and miners, deflated with a price index that again relies heavily on grain, but combined with import prices for products that featured heavily in the consumption basket of African workers. The real wage trended upwards in all countries, but there was also a high degree of volatility, with alternating periods of positive and negative growth.

These trends in population and real wages are converted into the output of the traditional sector via a demand function. Here, we follow Allen (2000) in starting with the identity:

$$Q = rcN \tag{1}$$

where Q is real output of the traditional sector, r is the ratio of production to consumption, c is consumption per head and N is population. Real consumption per head is assumed to be a function of the real wage (w/p), assuming a log-linear specification:

$$ln\, c = \alpha_0 + \alpha_1 ln(w/p) \tag{2}$$

where α_0 is a constant and α_1 is the income elasticity of demand. Drawing on the evidence from developing countries, a common value for the income elasticity of demand is 0.5 (Deaton and Muellbauer 1980: 15–16, 60–82; Allen, 2000).[3] Allen assumes that traditional consumption is equal to traditional production, an assumption which has also been followed here. Although there were

[2] Although Frankema and van Weijenburg also provide data on nominal wages of rural workers, price data are only available for urban areas.

[3] The results are not very sensitive to this assumption. We considered the effects on traditional sector output of allowing the income elasticity to vary between 0.3 and 0.6, the range considered by Bouis (1994) for poor countries. In the case of Ghana, increasing the income elasticity of demand

Table 3
Export volumes in African countries, 1885–1950 (1950=100).

	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
1885		6.0	2.1				
1911	32.3	19.3	19.7	12.5	3.6	0.04	8.3
1926	37.5	73.0	51.5	69.9	40.2	2.6	31.0
1929	46.1	74.6	62.3	68.6	45.3	5.5	33.2
1933	40.7	75.1	59.9	105.8	67.2	41.4	37.3
1938	65.0	98.2	73.5	132.7	96.5	71.8	73.3
1943	62.9	73.5	77.9	92.4	45.8	77.6	78.0
1950	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Derived from *Blue Books* and *Trade Reports* for each country, listed in Appendix 2.

Table 4
1950 weights of key products in national export volume indicators (%).

	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
Cocoa		86.0	25.4				
Gold	21.0	13.7					
Palm products		0.25	38.4				
Rubber		0.05	3.8				0.1
Groundnuts			20.4				
Tin			8.0				
Cotton			4.0		70.5		7.3
Coffee				37.2	29.5		
Tea				14.2			35.1
Pyrethrum				3.5			
Sisal				42.4			
Maize				0.7			
Wool				2.0			
Blister copper						68.5	
Electrolytic copper						20.8	
Chrome	5.4						
Asbestos	17.0						
Tobacco	56.6					2.2	57.5
Lead						2.9	
Zinc						5.6	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Derived from *Blue Books* and *Trade Reports* for each country, listed in Appendix 2.

significant exports of food crops, these are accounted for separately in the export sector. A detailed division of imports between traditional and modern goods would be beyond the scope of this exercise, but it is possible to check the sensitivity of the results to relaxing the assumption that all imports were consumed outside the traditional sector. The most likely imports to have displaced traditional production were cotton textiles, which in the case of Ghana accounted for an average 19 per cent of the value of imports between 1924 and 1950. Rounding this up to 20 per cent of imports consumed in the traditional sector creates an average difference of just 1.7 per cent between real demand and real output in the traditional sector.[4] There remains considerable work to be done on African consumption of imported goods during the colonial period, but a substantial literature focusing on cloth imports during the nineteenth century has argued that the relationship between imports and domestic production was more complex than simple stories of de-industrialization might suggest (Shea 2006; Frederick 2017).

2.2.2. The export sector

The data on production for the export sector are much more abundant than for the traditional sector, where participation in the market was more limited. Table 3 sets out indices of export volumes for each country, constructed with weights for three or four benchmark years.[5] The weights for 1950, based on export value shares, are shown in Table 4 and indicate a high degree of specialization. In West Africa, Ghana focused increasingly on cocoa and gold as the previously dominant exports of palm products and rubber declined, while Nigeria specialized in palm products and groundnuts as well as cocoa. In East Africa, Kenya focused on

to 0.6 (an increase of 20 per cent) increases traditional sector output by an average of just one per cent over the period 1885-1950, while decreasing the income elasticity of demand to 0.3 (a decrease of 40 per cent) increases traditional sector output by an average of only three per cent. In both cases, the pattern of short run fluctuations is almost identical.

[4] For Kenya and Uganda, which also had a high degree of openness to international trade, the average share of textiles in total imports was substantially lower than in Ghana at 13.5 per cent.

[5] Deflating the value of exports with an export price index calculated using the unit values of the export commodities produces almost identical results.

Table 5
Real government expenditure in African countries, 1885–1950 (1950=100).

	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
1885		2.6	0.5				
1911	18.9	21.5	31.2	23.0	13.2	6.6	12.2
1926	23.4	59.1	49.5	38.3	32.1	8.5	17.6
1929	30.7	44.0	41.5	56.2	40.2	10.5	22.9
1933	31.6	28.2	34.8	54.5	34.3	15.8	31.6
1938	42.0	40.0	44.3	60.8	49.5	26.3	44.2
1943	41.8	35.3	45.3	74.9	36.9	34.6	33.6
1950	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Derived from nominal government expenditure reported in *Blue Books* for each country, listed in Appendix 2, deflated by the UK price index for government expenditure from Feinstein (1972).

coffee, tea and sisal, while Uganda specialized in cotton and coffee. In Central Africa, Zambia's key exports were blister copper from the 1920s and electrolytic copper from the 1930s, while Malawi developed a specialization in tobacco and tea. Exports grew very rapidly in all these countries, but the upward trend was stronger in East Africa than in West Africa, and stronger still in Central Africa.

2.2.3. Government

The government sector is measured by nominal government expenditure deflated by Feinstein's (1972) price index for UK public authorities' goods and services, which is often used in the African economic history literature (Gardner 2012; Jerven 2014b). The main rationale for this is that much of the expenditure was on civil servants, whose salaries were set in London, and stores purchased in Britain. In practice, however, since Feinstein's UK government deflator is highly correlated with the local price indices used to calculate real wages, its use makes little difference to the overall trend. Comparing Table 5 with Table 3, it is clear that in each country, real government expenditure grew very rapidly together with the growth of the export sector, thus outstripping the growth of the traditional sector by a large margin. Compared with the export sector, however, government was less volatile than exports, thus acting as a stabilising force. Because the colonial administration tried to maintain budget balance, this indicates the stability of revenue over the international business cycle and difficulties in cutting expenditure during downturns (Gardner 2012: 133).

2.2.4. Economic structure and the path of GDP

To calculate GDP, it is necessary to apply an appropriate weighting scheme to the production series for the traditional sector, the export sector and government.[6] Sectoral value added weights for all the economies considered here, circa 1950, are shown in Table 6C, derived from early national accounting sources. In all cases, this involved rearranging information on sub-sectors, relying particularly on distinctions made by early national accounting statisticians between domestic and export agriculture and classifying mining as an export sector. It is important to realise that the use of 1950 value added weights together with volume indices does not mean that the share of each sector is held constant over time. This issue arose in debates over British economic growth during the Industrial Revolution, where Crafts and Harley (1992) pointed out that projecting back from base year value added weights using volume indices leads to changing sectoral shares as growth rates differ between sectors. In the case of the African economies under consideration in this paper, the shares of the faster growing export and government sectors are increasing over time.

With exports growing substantially faster than the traditional sector in our data, the weight of exports in the years before 1950 is therefore correspondingly smaller, as can be seen in Tables 6A and 6B. Note that the share of the traditional sector declined in all economies between 1910 and 1929, and again between 1929 and 1950 in all cases apart from Kenya. However, in all economies apart from Zambia, the export and government sectors together still accounted for less than 36 per cent of GDP by 1950, which means that the trend in aggregate GDP was driven largely by the slower growing traditional sector.[7] However, the much greater volatility of the export sector, which was subject to sharp booms and busts, meant that short run fluctuations in GDP tended to be driven by the export sector.

2.2.5. Comparison with prior estimates

We can compare our series with prior estimates based on the work of Jerven (2014a) and Prados de la Escosura (2012). For the case of Ghana, Jerven (2014a) presents annual estimates of GDP per capita growth covering the period 1891–1950. In Fig. 2, we plot Jerven's series in level form by chaining the annual growth rates back from the same 1950 benchmark of Maddison (2010), a procedure which is also used by Jerven (2014a: 978) in comparing his estimates of GDP with those of Maddison. Both series are in broad agreement for the period 1920–1950, but Jerven's series shows a much faster growth between 1891 and 1920, when too much

[6] We have estimated Gross Domestic Product rather than Gross National Product. The difference between the two is that GDP is earned by domestic residents, while part of GNP is earned abroad. In the case of African countries, for example, mining profits transferred abroad belong in GDP but are not part of GNP.

[7] Note that the traditional sector still dominated the Zambian economy in 1929, before the dramatic structural change introduced by the copper boom of the 1930s.

Table 6
Economic structure of African countries, 1910–1950 (% of value added in constant 1950 prices).

A. 1910							
	Zimbabwe*	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
Traditional sector	77.6	84.7	89.7	91.9	97.7	98.8	96.3
Export sector	19.2	8.6	5.3	4.2	1.5	0.1	1.2
Government	3.2	6.7	5.0	3.9	0.8	1.1	2.5
GDP	100.0	100.0	100.0	100.0	100.0	100.0	100.0
B. 1929							
	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
Traditional sector	69.7	68.2	79.9	70.4	81.0	93.2	91.0
Export sector	25.8	24.6	13.6	22.0	17.3	4.9	5.1
Government	4.5	7.2	6.5	7.6	1.7	1.9	3.9
GDP	100.0	100.0	100.0	100.0	100.0	100.0	100.0
C. 1950							
	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
Traditional sector	64.6	67.8	78.6	71.5	74.2	54.6	81.2
Export sector	28.1	21.5	12.3	20.0	23.3	37.7	9.0
Government	7.3	10.7	9.0	8.5	2.5	7.7	9.8
GDP	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes and sources: 1950 shares are derived from national accounting sources for each country, listed in Appendix 2. 1929 and 1910 shares are obtained by projecting the 1950 shares with time series for individual sectors. * For Zimbabwe, the 1910 shares are based on data for 1914.

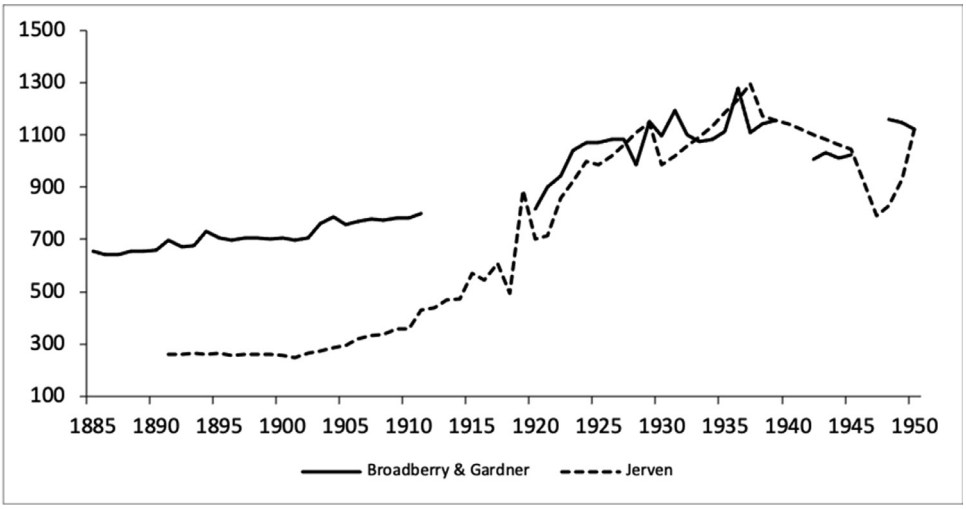

Fig. 2. Alternative estimates of Ghana's GDP per capita (1990 international dollars).
Sources: Broadberry & Gardner: Appendix 1; Jerven: derived from Jerven (2014: 975,978).

weight seems to be given to the rapidly growing sectors. Jerven's series produces a GDP per capita figure of around $260 for the 1890s, compared with a figure of around $700 using the Broadberry and Gardner series. Our series is thus consistent with the Gold Coast as an important commercial centre before colonisation.

Prados de la Escosura (2012) provides GDP per capita estimates for a number of benchmark years between 1870 and 1950, covering all the African countries that are included in the Maddison dataset. Here, we compare his estimates with ours in Fig. 3. Prados de la Escosura derives his estimates of output per head from data on the income terms of trade, using the parameters from an econometric relationship between GDP per capita and the income terms of trade, estimated over the period 1950–1990. The regressions include a number of dummy variables to allow for resource endowments (rich versus poor), colonial legacy (British or French versus neither) and location (north, central, east, west and southern). On the assumption that the relationship derived from the period 1950–1990 remained stable over the period 1870–1950, the parameters can be used together with the income terms of trade data to derive the GDP per capita estimates for the earlier period. Whilst we see Prados de la Escosura's (2012) estimates for all African countries as an important early contribution to the recent wave of quantification in African economic history, we also believe that they can be improved upon for individual countries through a careful consideration of primary sources.

In terms of the level of GDP per capita, his figures for Nigeria, Uganda and Zambia, are fairly similar to ours, but for the other countries there are substantial differences. For Ghana and Kenya, Prados de la Escosura's estimates before 1950 are generally lower than ours, while for South Africa, Zimbabwe and Malawi, they are generally higher. The most obvious difference is that by focusing

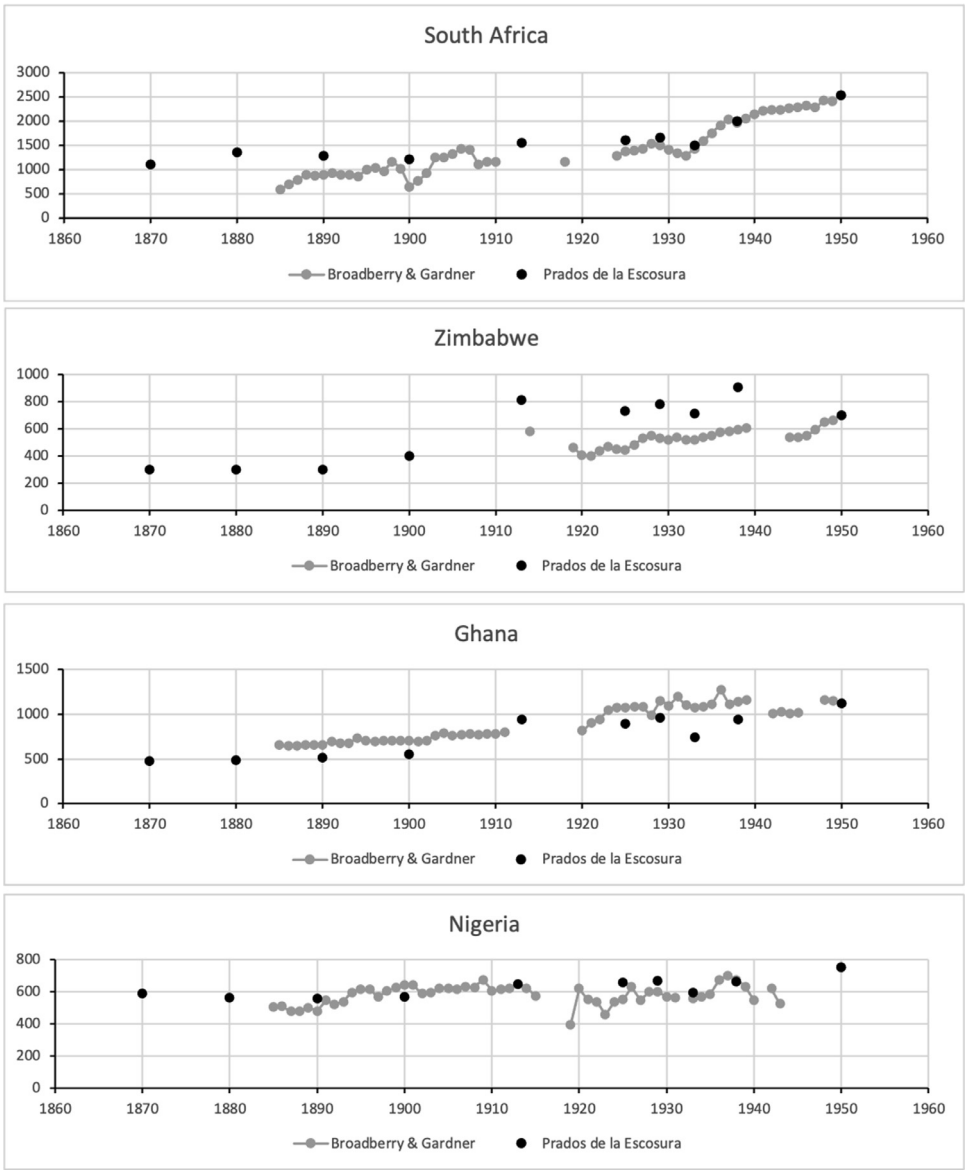

Fig. 3. Alternative estimates of GDP per capita in Sub-Saharan Africa, 1870–1950 (1990 international dollars).
Alternative estimates of African GDP per capita, 1870–1950 (1990 international dollars).
Sources: Appendix 1; Prados de la Escosura (2012).

on a small number of benchmark years, Prados de la Escosura misses the inherent volatility of GDP per capita, which is captured in our annual series. Based on his benchmark year figures, he argues that 'the quantitative conjectures support the view that the Golden Age is the culmination of a phase of sustained growth that can be traced back to 1900' (pp. 22–3). While we agree that there was rapid growth during this period, our data show that it was not sustained but rather interrupted by periods of shrinking.

2.3. National accounts for the post-1950 period

In this paper, we link our new estimates of pre-1950 GDP per capita to the early national accounting series begun in the final years of the colonial period and built on by newly independent governments in the post-colonial period. It has long been common for economists to point to shortcomings in these national accounts produced by African statistical offices (Samuels 1963; Lury 1964). More recently, however, Jerven (2013; 2014a) has argued stridently that the errors are so large that they systematically distort the picture of African growth and cannot be used to support the common perception of poor economic performance in Africa since World War II. Since these data form the basis of the post-1950 GDP per capita estimates used in this study, a consideration of Jerven's arguments is called for.

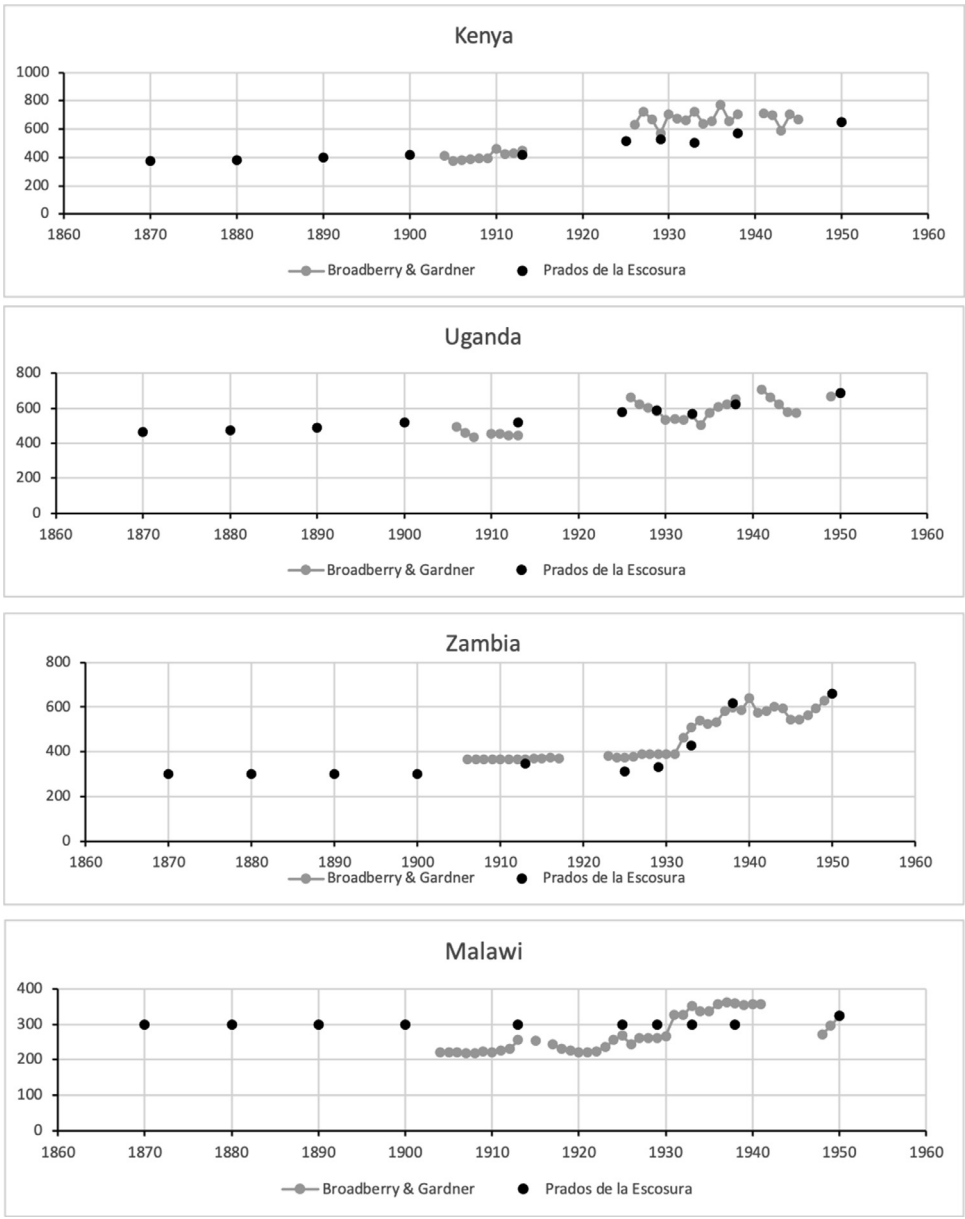

Fig. 3. Continued

Our conclusion is that although Jerven is correct to call for more resources to be made available to statistical offices, this is more likely to lead to better data for future years than to any radical revision of the past. For the period 1950–2008, economic historians will have to live with the data collected at the time, as new surveys cannot be conducted in the past. The only existing study that provides a consistent set of estimates based on these data and covering the complete period 1950–2008 is that of Maddison (2010). As for other countries around the world, including OECD economies, the creation of Maddison's database for this period involved splicing series produced for short periods with changing base years and frequent methodological updates. In addition to the annual official national accounts, Maddison made use of periodic studies by economists with local knowledge to provide consistent studies over longer periods.

However, given the possibility that different decisions over when and how to splice series may result in significant cumulated differences in levels of GDP per capita, we decided to go back to the original national accounting sources for the post-1950 period and conduct a cross-check on the Maddison (2010) series. The results are shown in Appendix 3 in Figure A3.1, labelled as "official series" and plotted together with the Maddison (2010) series. In all cases, the two series agree very closely over the long run, and in most cases the agreement is also close even over the short run. There is certainly nothing in the case of these countries, at least,

to warrant Jerven's (2014a) suggestion of a major disagreement between Maddison and the official series over the long run growth performance of Sub-Saharan Africa. We therefore decided to use the Maddison (2010) series.

It is worth noting, finally, that some economists have responded to the allegations of an African "statistical tragedy" by suggesting the use of other data to track African economic growth in recent decades (Devarajan, 2013). Henderson *et al.* (2011) suggest using satellite maps of lights at night, but they find that the GDP per capita data neither overstate nor understate economic growth consistently. Although Young (2012) claims that indices of asset ownership from the World Bank's Demographic and Health Survey (DHS) have grown much more rapidly than GDP per capita in African countries in recent years, Harttgen *et al.* (2013) find no evidence of a recent African growth miracle beyond that which is visible in the GDP per capita data, once account is taken of the weakness of the relationship between growth in assets and growth in income.

3. Economic growth in Sub-Saharan Africa

The estimates of GDP and population from the colonial and post-independence periods can be put together to construct a quantitative analysis of economic growth in Anglophone Sub-Saharan Africa since 1885. The data are presented in 1990 international dollars in order to facilitate comparisons with historical national accounts for other countries (Section 4). These figures provide a stronger empirical foundation for some aspects of Africa's long run growth performance while suggesting some new hypotheses for other aspects.

First, considering long run trends, our data confirm the view that African economic growth did not begin with the European 'scramble for Africa' in the late nineteenth century. This is contrary to the view expressed in early economic histories of Africa, which assumed that any economic growth above subsistence resulted from European colonial interventions. Allan McPhee (1926), for example, claimed that economic growth in West Africa was due to railways, malaria prophylaxis and the rule of the British. Such sentiments were not only a product of the colonial period. During the 1960s, the heyday of modernization theory, a World Bank (1963: 15–16) report on Kenya claimed that 'static' indigenous economies where 'both cultivators and pastoralists lived close to starvation' were 'transformed' with the beginning of British rule. Such ideas remained sufficiently prominent that when A. G. Hopkins published the first edition of his now-classic *Economic History of West Africa* in 1973, arguing for the centrality of the market in pre-colonial economies, he faced severe criticism from a range of sources (Hopkins 2019). However, in common with subsequent research which stresses the dynamism of precolonial economies (Law 1992; Rönnbäck 2014) and with the estimates of Prados de la Escosura (2012), we find that most of the countries studied here had per capita incomes above the subsistence level of $400 in 1990 international prices at the beginning of the colonial period.

Second, our annual data allow us to shed new light on the links between long run trends and short run developments, by noting that in addition to periods of growing, all eight countries also experienced significant periods of negative growth or shrinking. We draw here on the approach of Broadberry and Wallis (2017), which will be analysed in more depth in Section 4.3. These patterns of growing and shrinking were in most countries tied tightly to foreign trade and the market for exports, as the above figures show. The timing and scale of growth in export production varied both between and within countries owing to a range of factors, from local endowments to transport costs and political institutions (Tosh 1980; Frankema et al., 2018). Although Jerven (2010) has used qualitative evidence to note the existence of boom and bust episodes in African economic history, there has been no previous attempt to measure them, which requires the annual frequency national accounting approach adopted here.

To gain an overview of SSA during the long twentieth century, we offer a regional perspective, beginning with southern Africa, which contains the only large Sub-Saharan African economy to have had a relatively high level of GDP per capita throughout the period since 1885, South Africa. South Africa is compared with Zimbabwe and then used as a benchmark in other regional comparisons involving West Africa (Ghana and Nigeria), East Africa (Kenya and Uganda) and Central Africa (Zambia and Malawi).

3.1. Southern Africa

Fig. 4 shows the path of GDP per capita in Zimbabwe in comparison with South Africa. In southern Africa, gold was the foundation for the early growth of both South Africa and Zimbabwe, but was eventually displaced by other products. In Zimbabwe, tobacco became the most important export crop produced by settler farms during the interwar period, although it came to dominate gold exports only after World War II (Table 4; Frankema et al., 2016: 253–256). Owing to the comparatively slow growth of other sectors combined with the stagnation of the mining industry, Zimbabwe fell behind South Africa between 1914 and 1945. In South Africa, the 1920s marked the beginning of a long period of both growth and structural change linked to the rapid growth of the manufacturing sector behind tariff barriers, as a deliberate policy aimed at providing employment for poor white workers (Feinstein 2005: 116–121).

Both countries experienced downturns linked to global conditions, as for example during the two World Wars and the Great Depression. Other periods of shrinking resulted from internal instability. In Zimbabwe, the breakup of the Central African Federation and the sanctions which followed the Unilateral Declaration of Independence by Ian Smith's government punctuated a period of post-war growth. In South Africa, after a phase of comparatively slow post-war growth, the unravelling of the apartheid system coincided with a phase of absolute shrinking which ended only with the transition to majority rule in 1994. By 2008, South Africa had attained a GDP per capita approaching $5000 in 1990 international prices. In Zimbabwe the optimism that came with the achievement of independence in 1980 was undermined by a period of economic stagnation until the mid-1990s. As most of SSA boomed from the mid-1990s, Zimbabwe suffered a further period of negative growth as internal conflict worsened under the increasingly autocratic Mugabe regime (Mlambo 2014; Nugent 2004: 291–294). The postwar period has thus seen a widening of the gap between Zimbabwe and South Africa.

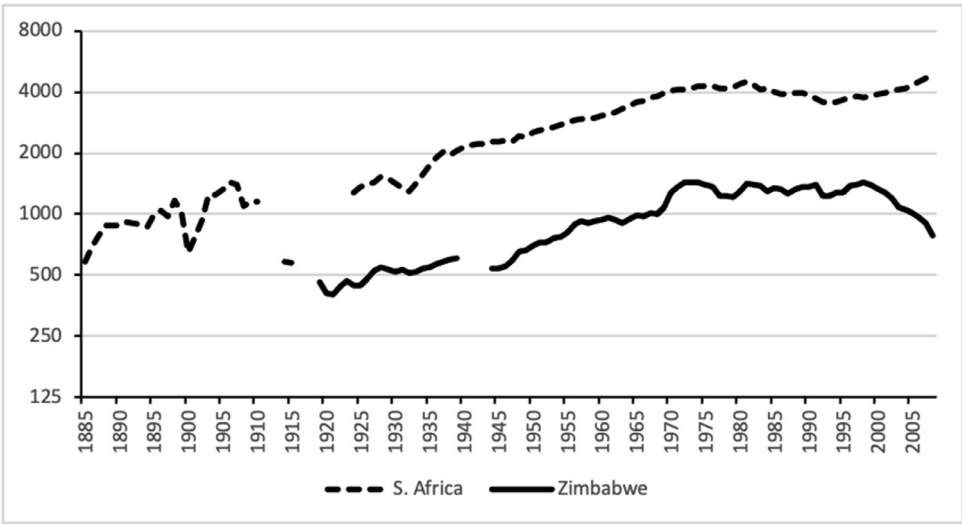

Fig. 4. Per capita GDP in Southern Africa, 1885–2008 (1990 international dollars, log scale).
Sources: See Appendices 1 and 2.

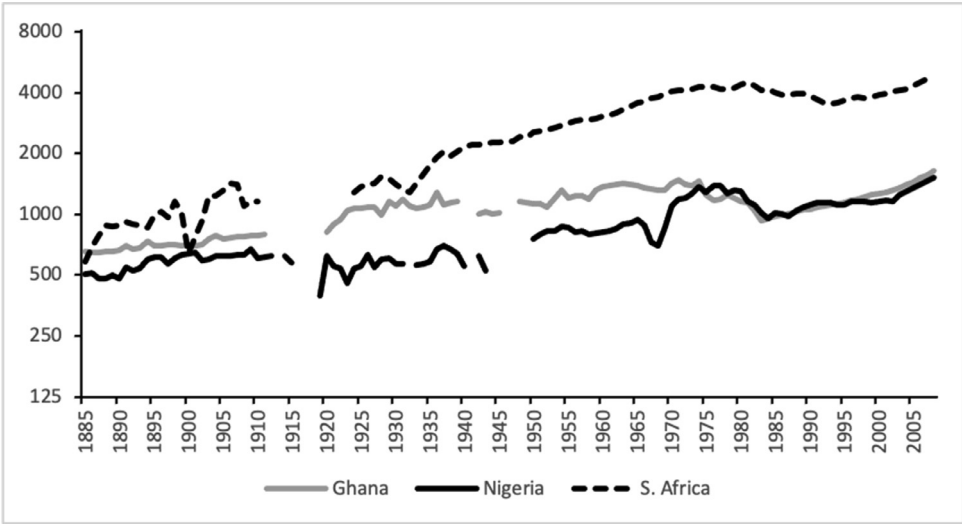

Fig. 5. Per capita GDP in West Africa compared with South Africa, 1885–2008 (1990 international dollars, log scale).
Sources: See Appendices 1 and 2.

Southern Africa, like all four of the regions highlighted in this paper, is extremely diverse, and a different set of countries would no doubt paint a different picture of the region's growth over this period. The same region is also home to Botswana, often described as Africa's growth miracle, which has enjoyed sustained gains in per capita income since at least the 1960s, if not before (Hillbom and Bolt 2018). The regional comparisons offered in this paper are intended to illustrate the range of different patterns of development in evidence even among former British colonies.

3.2. *West Africa*

Turning to West Africa, Fig. 5 indicates that levels of GDP per capita in Nigeria and Ghana were comparable to those of South Africa before World War I, reflecting growing trade during the nineteenth and twentieth centuries (Frankema 2015: 277; Law 1995). Ghana became the world's largest cocoa exporter within 20 years of the crop being first introduced to the region by African entrepreneurs (Austin 2014: 1035). In Nigeria, the extension of the railway network to the north allowed for the expansion of the groundnut industry, which increasingly became one of the country's most important exports during the colonial period (Table 4; Hogendorn 1978; Salau 2010). Oil subsequently transformed the structure of Nigeria's economy, as well as increasing per capita GDP (Teal 1988: 72).

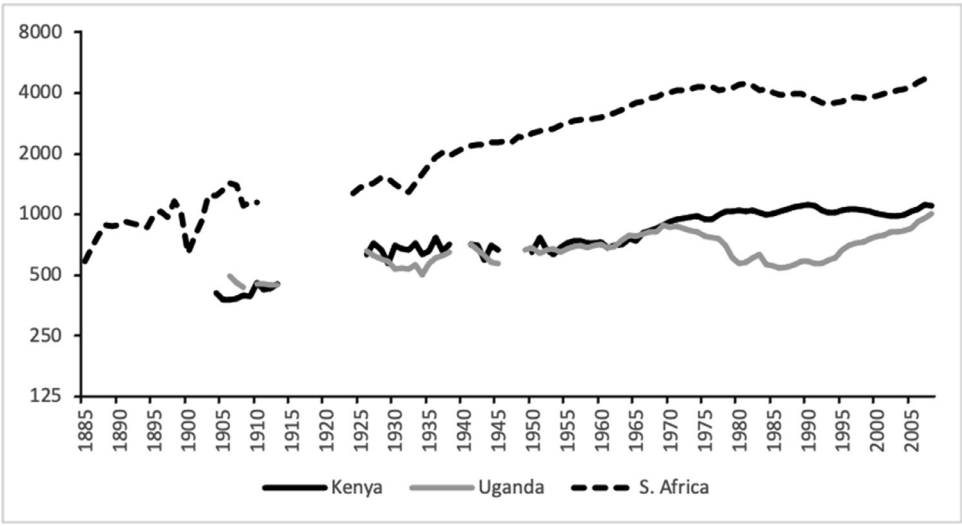

Fig. 6. Per capita GDP in East Africa compared with South Africa, 1885–2008 (1990 international dollars, log scale).
Sources: See Appendices 1 and 2.

Specialization in the production of a few exports had its costs. Volatility in the cocoa price beginning in World War I caused significant hardship for producers who had invested in cocoa trees during periods of high prices, and was also behind the long-term stagnation in Ghana's GDP per capita which persisted from around 1930 through the 1970s (Austin 1988).

Political instability also led to periods of shrinking of varying levels of severity. In Ghana, Kwame Nkrumah was overthrown in a coup in 1966 and it was not until 1984 that Ghana's economy began to grow again (Nugent 2004: 175–178). Nigeria experienced a short, sharp drop during the Nigerian Civil War (1967–70) which began with the attempted secession of Biafra from the new federation of Nigeria (Achebe 2012: Osaghae 1998: 1–12). This volatility meant that long-run growth was modest, at around 0.8 per cent over the period, slower than the growth achieved by South Africa, so that both Nigeria and Ghana ended up with per capita GDP slightly above $1500 by 2008. Still, as a result of the volatility of GDP per capita in all three economies, a clear gap between these West African countries and South Africa only opened up in the mid-1930s.

3.3. East Africa

Relative to West and Southern Africa, Kenya and Uganda were both very poor in the early years of the twentieth century, as can be seen in Fig. 6. In 1911, GDP per capita measured in 1990 international dollars was $422 in Kenya and $453 in Uganda, above subsistence but not as far as the other regions. Export growth led to an increase in living standards during the interwar period. Uganda, in particular, experienced a massive increase in exports of cotton, the farming of which was often paired with banana production to ensure the efficient utilization of scarce labor (de Haas 2017: 606). Kenya's exports grew less dramatically, but comprised a greater diversity of crops, including coffee, tea, maize and sisal (Table 4).

However, as in other countries, the path of per capita GDP growth was far from smooth. Uganda suffered a particularly severe growth reversal during the late 1920s and early 1930s as the cotton price declined. Kenya had a less dramatic period of shrinking during the Great Depression, perhaps because of its more diverse export base. Political instability was another source of vulnerability for both economies. After remaining relatively stable during the 1930s and World War II, Kenya's GDP per capita declined sharply during the Mau Mau uprising of the 1950s. After that, it enjoyed relatively steady growth through the 1990s, but suffered setbacks due to disputed elections in the twenty-first century (Cheeseman et al., 2014: 2). Uganda experienced a catastrophic growth reversal during Idi Amin's presidency between 1971 and 1979, though it is worth noting that rural incomes had begun to lag even before Amin came to power, and continued to stagnate in the period of political instability that followed the end of Amin's erratic dictatorship (de Haas 2017: 607). Uganda recovered from the mid-1990s to reach a per capita GDP of just over $1000 by 2008, more or less on a par with Kenya. Both Kenya and Uganda already lagged a long way behind South Africa on the eve of World War I, and have since fallen further behind.

3.4. Central Africa

Fig. 7 plots GDP per capita in Zambia (Northern Rhodesia) and Malawi (Nyasaland) since the early twentieth century. Both countries were even poorer than Kenya and Uganda on the eve of World War I, with per capita GDP in 1913, measured in 1990 international dollars, at $367 in Zambia and $312 in Malawi, right at the level of bare bones subsistence. From the late 1920s, Zambia diverged from Malawi with the opening of the first copper mine in 1928 (Butler 2007). After this, its growth was highly dependent on the copper price. When Northern Rhodesia became independent Zambia in 1964, copper comprised some 90 per cent

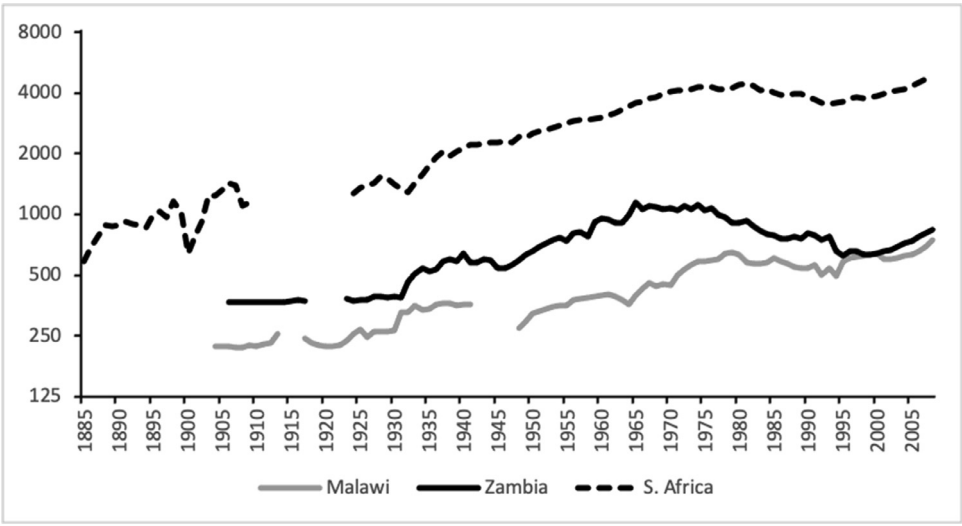

Fig. 7. Per capita GDP in Central Africa compared with South Africa, 1885–2008 (1990 international dollars, log scale).
Sources: See Appendices 1 and 2.

of its total export values (Table 4; Juif and Frankema 2018: 315). In turn, the copper mines were a crucial market for agricultural producers in both Zambia and, before 1964, Zimbabwe. Malawi also experienced a boom during the 1930s, based on tobacco and tea, but the relatively small export sector was unable to overcome the dominant effects of a weak domestic economy. Even after the construction of railway links to the coast, the cost of exporting from Malawi remained high. In the 1930s, one calculation suggested that sending tea to the closest port (Beira in Mozambique) cost four times more than in India (Bolt and Green, 2015: 223).

The nationalization of Zambia's copper mines by Kenneth Kaunda's government was followed by a period of sustained shrinking during the 1970s and 1980s as the global copper boom faded. This had severe consequences not just for the government treasury but also had spillover effects into other sectors that had come to rely on demand from the mines and their workers (Ferguson 1999: 7–12). After a period of renewed growth in Malawi between the 1950s and the 1970s, and enduring less shrinking during the 1980s, Malawi had almost caught up with Zambia by 2008 (McCracken 2012: 238). Both economies remained poor, however, with GDP per capita just $750 in Malawi and $850 in Zambia in 2008, measured in 1990 international dollars. Both Zambia and Malawi fell further behind South Africa over the period as a whole, although Zambia did briefly narrow the gap during the 1950s.

4. Sub-Saharan Africa in a wider comparative perspective

So far, the paper has focused on comparisons within Sub-Saharan Africa. However, it is also instructive to examine how the region performed relative to the rest of the world. One natural comparator is the United Kingdom, since all the economies here were British colonies. As a result, the colonial period data were collected on a consistent basis and British accounting methods continued to influence the statistical offices in the post-colonial period. Also, since the United Kingdom was the world's leading economy in the late nineteenth century but was subsequently overtaken by many other Western economies, this does not set too stringent a benchmark against which to measure Sub-Saharan African economic performance over this period. SSA has declined relative to the UK and other western economies since 1885, which can be seen as disappointing given the catching-up possibilities for economies starting at relatively low levels of per capita income. However, our data suggest that for most of this period, African per capita income levels were not systematically lower than in all other developing regions, and it is surely not correct to draw the conclusion that SSA has consistently been the world's poorest region since at least the early modern period, as implied by the recent literature on the persistence of poverty in Africa.[8]

4.1. Anglo-African comparisons

Fig. 8 charts the level of GDP per capita in three leading African economies as a percentage of the UK level. South Africa succeeded in narrowing the gap with the United Kingdom substantially during the late nineteenth century and in the first half of the twentieth century, increasing its GDP per capita from under 20 per cent of the UK level in the 1880s to over 35 per cent by the 1950s. But the catching-up process then stalled until the 1970s, before going decisively into reverse during the 1980s and 1990s. Although there are signs of a return to catching up in the 2000s, South Africa's level of GDP per capita in 2008 was only just about back to 20 per

[8] See Frankema (2021) for a review of 'persistence papers' dealing with Africa.

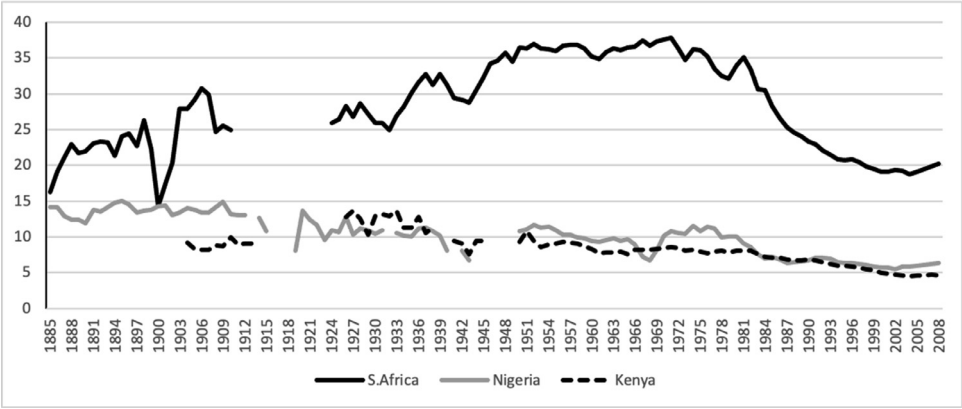

Fig. 8. GDP per capita in leading African economies as a percentage of the UK level.
Sources: See Appendices 1 and 2.

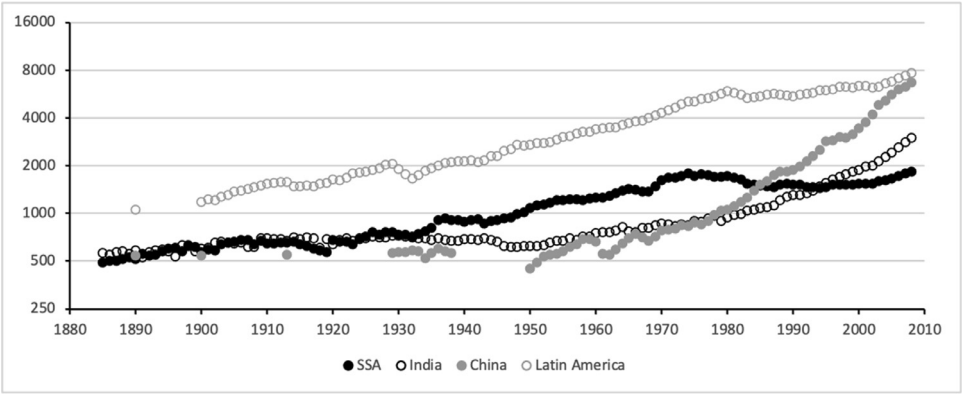

Fig. 9. GDP per capita in developing countries (1990 international dollars, log scale).
Sources: Sub-Saharan Africa derived from Appendices 1 and 2, weighted by population from Frankema and Jerven (2014) and Maddison (2010), with missing observations interpolated; India, China and Latin America from Maddison (2010).

cent of the UK level, where it had been in the 1880s. The long run comparative position was even more disappointing in Nigeria and Kenya, where the gap with UK GDP per capita increased substantially over the twentieth century.

4.2. Africa in the world economy

Compared with the United Kingdom and other western economies, African economic performance has clearly been disappointing over the long twentieth century. However, this is also true of most non-western economies, as the world economy was characterised by "divergence big time" for most of this period (Pritchett, 1997). For a more balanced evaluation of African economic performance, it is therefore necessary to also compare African economies with other developing countries. For this purpose, we have constructed a series for Sub-Saharan African GDP per capita based on a population-weighted average of the eight economies considered in this study.

The comparison with India and China in Fig. 9 is quite revealing. India is one of the world's largest economies, was a British colony until 1947 and has experienced rapid catch-up growth since the 1980s. However, GDP per capita in India was no higher than in Anglophone Sub-Saharan Africa before the 1990s, and indeed was substantially lower between the 1930s and 1980s. Compared with China, the other Asian giant, the performance of Sub-Saharan Africa before the 1980s appears even better for much of the period, since China was also generally poorer in the late nineteenth and early twentieth centuries as well as from the 1930s to the 1980s. These findings are in line with those of Frankema (2021: 575). Adding Latin America to the picture, however, is less favourable to SSA. Although the eight Latin American economies included in Maddison's (2010) sample continued to experience significant episodes of negative growth throughout the period, the level of GDP per capita was substantially higher.

Table 7
Average rate of change of per capita income in growing years and shrinking years in Africa and the United Kingdom, 1885–2008 (% per annum).

		1885–1910	1926–1938	1950–1980	1980–2008
South Africa					
	Growing	10.49	7.92	2.37	2.15
	Shrinking	−11.06	−4.37	−0.89	−2.53
Zimbabwe					
	Growing		3.41	4.50	4.26
	Shrinking		−3.29	−2.86	−4.70
Ghana					
	Growing	2.69	7.33	4.08	2.28
	Shrinking	−1.69	−6.55	−4.44	−7.17
Nigeria					
	Growing	3.59		5.28	3.33
	Shrinking	−5.36		−6.20	−3.73
Kenya					
	Growing		11.89	3.73	1.93
	Shrinking		−9.95	−4.28	−1.89
Uganda					
	Growing		5.28	3.09	3.32
	Shrinking		−5.55	−3.85	−3.95
Zambia					
	Growing		5.59	5.70	3.08
	Shrinking		−1.40	−4.23	−4.73
Malawi					
	Growing		4.42	3.75	3.88
	Shrinking		−2.67	−2.83	−4.49
UK					
	Growing	2.54	3.07	2.67	2.56
	Shrinking	−1.69	−3.43	−0.88	−1.09

Sources: Derived from Appendix 1 and Maddison (2010).

4.3. Growing and shrinking

An important factor behind the disappointing long run economic performance of Sub-Saharan Africa and other non-western economies during the twentieth century has been the continued importance of shrinking or negative economic growth. Not only have African economies typically experienced much higher rates of shrinking when they experience negative economic growth, but they have also tended to shrink more frequently than developed economies such as the United Kingdom. Here, we apply the analysis of Broadberry and Wallis (2017) to the eight Sub-Saharan African economies and the United Kingdom to shed light on this issue.

Broadberry and Wallis (2017) make use of an identity for establishing the contributions of growing and shrinking to long run economic performance, which can be measured by the rate of change of per capita GDP over a number of years. Economic performance over the long run is the aggregation of short run changes measured annually. Long run economic performance, g, is a combination of four factors: first, the frequency with which an economy grows, $f(+)$; second, the rate at which it grows when growing, or the growing rate, $g(+)$; third, the frequency with which an economy shrinks, $f(-)$; and fourth, the (negative) rate at which it grows when shrinking, or the shrinking rate $g(-)$. Thus:

$$g = \{f(+)g(+)\} + \{f(-)g(-)\} \tag{3}$$

We can use this identity to decompose long run economic performance into shrinking and growing components.

The first point to note in Table 7 is that when African economies have experienced positive growth, they have typically grown faster than the United Kingdom in all periods for which we have continuous data. During 1885–1910 and 1926–1938, all the African economies for which we have data experienced much more rapid growing rates than the United Kingdom. For most African economies this continued to be the case after 1950, with only South Africa experiencing slower average growing than the UK during 1950–1980, and 5 of the 8 African economies experiencing faster growing than the UK during 1980–2008. Second, however, rates of growing and rates of shrinking tended to move together, so that high rates of growing were accompanied by high rates of shrinking and low rates of growing were accompanied by low rates of shrinking. This meant that although most African economies in most periods grew faster than the United Kingdom, they also shrank more rapidly.

Turning to Table 8, we see a third significant finding: despite having faster rates of growing, most African economies typically experienced positive growth in fewer years than the United Kingdom. Whereas the United Kingdom shrank in just 17 per cent of years in 1926–1938 and 1950–1980, falling to 11 per cent of years between 1980 and 2008, most African economies continued to shrink in a much higher proportion of years throughout the period. As a result, the long run economic performance of most African economies in all years, which can be seen in Table 9, was disappointing across all four sub-periods. This was the case even compared with the United Kingdom, which was far from a stellar performer over this period. The problem was that although the African economies grew at least as rapidly as the United Kingdom when they were growing, they experienced more years of shrinking with higher rates

Table 8
Frequency of growing and shrinking of GDP per capita in Africa and the United Kingdom, 1885–2008.

		1885–1910	1926–1938	1950–1980	1980–2008
South Africa					
	Growing	0.64	0.58	0.83	0.61
	Shrinking	0.36	0.42	0.17	0.39
Zimbabwe					
	Growing		0.75	0.67	0.32
	Shrinking		0.25	0.33	0.68
Ghana					
	Growing	0.56	0.50	0.53	0.89
	Shrinking	0.44	0.50	0.47	0.11
Nigeria					
	Growing	0.68		0.70	0.61
	Shrinking	0.32		0.30	0.39
Kenya					
	Growing		0.50	0.73	0.54
	Shrinking		0.50	0.27	0.46
Uganda					
	Growing		0.50	0.47	0.82
	Shrinking		0.50	0.53	0.18
Zambia					
	Growing		0.75	0.53	0.57
	Shrinking		0.25	0.47	0.43
Malawi					
	Growing		0.83	0.77	0.61
	Shrinking		0.17	0.23	0.39
UK					
	Growing	0.64	0.83	0.83	0.89
	Shrinking	0.36	0.17	0.17	0.11

Sources: Derived from Appendix 1 and Maddison (2010).

Table 9
Contributions of growing (frequency*rate) and shrinking (frequency*rate) to long run economic performance (average rate of change of per capita income in all years) in Africa and the United Kingdom, 1885–2008.

		1885–1910	1926–1938	1950–1980	1980–2008
South Africa	All years	2.73	2.80	1.83	0.31
	Growing	6.71	4.62	1.98	1.31
	Shrinking	−3.98	−1.82	−0.15	−0.99
Zimbabwe	All years		1.74	2.05	−1.82
	Growing		2.56	3.00	1.37
	Shrinking		−0.82	−0.95	−3.19
Ghana	All years	0.76	0.39	0.10	1.27
	Growing	1.51	3.66	2.17	2.04
	Shrinking	−0.74	−3.28	−2.07	−0.77
Nigeria	All years	0.72		1.83	0.55
	Growing	2.44		3.69	2.02
	Shrinking	−1.72		−1.86	−1.46
Kenya	All years		0.97	1.60	0.16
	Growing		5.94	2.74	1.04
	Shrinking		−4.97	−1.14	−0.88
Uganda	All years		−0.14	−0.61	2.02
	Growing		2.64	1.44	2.73
	Shrinking		−2.78	−2.05	−0.70
Zambia	All years		3.84	1.07	−0.27
	Growing		4.19	3.04	1.76
	Shrinking		−0.35	−1.97	−2.03
Malawi	All years		3.24	2.22	0.59
	Growing		3.68	2.88	2.36
	Shrinking		−0.45	−0.66	−1.76
UK	All years	1.02	1.99	2.07	2.17
	Growing	1.63	2.56	2.22	2.29
	Shrinking	−0.61	−0.57	−0.15	−0.12

Sources: Derived from Appendix 1 and Maddison (2010).

of negative growth. Hence even if the contribution of growing (the frequency of growing multiplied by the rate of growing) was greater than in the United Kingdom, this was typically offset by an even greater contribution of shrinking (the frequency of shrinking multiplied by the rate of shrinking).

This has important implications for understanding the transition to sustained economic growth, which has still not been achieved securely in much of Sub-Saharan Africa. First, the pattern of growing and shrinking in African economies in the long twentieth century has much in common with the experience of European economies in the pre-modern period, when growing and shrinking occurred in roughly equal proportions of years and average rates of both growing and shrinking were often of the order of 5 to 10 per cent per annum (Broadberry and Wallis 2017). Second, only in the nineteenth century did the frequency of growing in Europe rise to about two-thirds of years, and only after World War II to around 85 per cent. Third, prosperity came about in Europe without an increase in the rate of growing. Rather, the increase in the frequency of growing, or reduction in the frequency of shrinking, was accompanied by a sharp fall in the rate of growing, but accompanied by an even bigger fall in the rate of shrinking.

All this suggests that improving long run performance in Africa will require a reduction in the rate and frequency of shrinking rather than an increase in the rate of growing. However, most work on institutions and economic performance examines incentives for investment and innovation, which focuses on the link to growing (North and Thomas, 1971; North, 1990). By contrast, the link between institutions and shrinking has received much less attention. The first shift of attention in this direction can be seen in North et al. (2009), where economic development is linked to the move towards an "open access" society. This is a society where access to economic rents is not limited to a small elite, but rather open to all. In such a society more individuals have the possibility of looking after their own economic interests, which is especially important when an economy is hit by negative shocks. Open access societies allow more people agency, making the economy more resilient. Recent work by Andersson (2018) has applied this approach to the case of developing countries since 1950, arguing that resilience to economic shrinking depends on five inter-related social capabilities: inclusive and broad-based economic growth; engagement in more complex and transformative economic activities; generation of social arrangements for conflict resolution; the state's autonomy against vested interests; and the state's accountability in delivering public goods. A detailed case study of Indonesia has been published by Andersson et al. (2021), while Lange (2019) has produced a case study of Nigeria.

5. Conclusions

This paper has shown that, despite doubts expressed about the quality of African data which have hindered such research in the past, it is possible to construct GDP per capita for countries in all major regions of the continent, based on primary sources, dating back to the nineteenth century. Our estimates are based on eight economies in Anglophone Sub-Saharan Africa, but the method proposed here could also be extended to other African countries, using colonial data for French, Belgian, Portuguese and German colonies, to build a more comprehensive picture of African economic performance across the colonial and post-independence periods. This approach allows African countries to be compared not only to each other but to others around the world.

The construction of annual GDP per capita series for eight African countries since 1885 makes possible a systematic quantitative overview of economic growth in Sub-Saharan Africa across the long twentieth century. Our first finding is that most of the countries studied here were already above subsistence levels of income at the beginning of the colonial period. This shows that African growth started long before the European scramble for Africa in the late nineteenth century. Indeed, relatively high levels of per capita income in the late nineteenth century were not confined to South Africa, which only pulled decisively ahead of the West African economies of Nigeria and the Gold Coast (Ghana) from the 1930s, despite high living standards for a small group of European settlers in the Cape Colony since the eighteenth century. Such measures, particularly when placed in comparative perspective, can help put the final nail in the coffin of descriptions of 'primitive' pre-colonial economies which remained influential in economic history until the later decades of the twentieth century.

Second, making use of the annual frequency data, we show that although all eight economies experienced several periods of significant economic growth, these were typically followed by periods of shrinking, which inevitably limited the increase in per capita incomes over the long run. These swings in GDP per capita were driven largely by exports, which could therefore have both positive and negative consequences: rising prices and demand for African commodities could lead to periods of relatively rapid growth, but this growth was vulnerable to changing global conditions, as both Ghana and Zambia learned to their cost. Periods of stagnation or shrinking were also exacerbated by political instability. The South African War (1899–1902), the Mau Mau rebellion of the 1950s, and the Nigerian Civil War (1967–1970) all coincided with sharp declines in the level of GDP per capita. Though levels often recovered relatively rapidly after these declines, this inevitably limited the overall increase in levels of per capita income across this period.

Third, in arriving at an assessment of the economic performance of Sub-Saharan Africa over the long twentieth century, account must also be taken of the level of GDP per capita in other regions. On the one hand, the gap between SSA and the United Kingdom and other western economies has widened since 1885, which suggests a disappointing African economic performance, since faster growth may have been expected, given the relatively low level of per capita income and the consequent catching-up possibilities. On the other hand, performance relative to the rest of the developing world was not notably different for most of the period, in contrast to the observations cited in the introduction based only on more recent data. Although Latin America was richer throughout the period, African per capita incomes remained at least on a par with the large Asian economies India and China until the 1990s, and was even substantially richer between the 1930s and 1980s. It is only since the 1990s that Sub-Saharan Africa has emerged as the world's poorest region.

These data allow for the contextualization of the recent period of growth which began for most African countries in the middle of the 1990s. They show that the growth experienced during the past two decades is not unprecedented in African history. Rather, most countries have experienced similar periods of rapid growth before. To know whether this growth provides a path to convergence, however, requires understanding the extent to which there are still risks of the shrinking which has undermined economic progress in the past. Assessing those risks is beyond the scope of this paper, and there remain debates about whether the changes undergone by many African economies during this period are sufficient to shift towards a path of sustained growth (Frankema and van Waijenburg 2018; Harchaoui and Ungor 2018). A longer term perspective also suggests that reducing sources of such risk should perhaps be a greater focus for policy-makers and aid agencies, rather than increasing the rate of growth during boom periods (Anderson et al. 2021; Lange, 2019; African Development Bank 2019).

Aggregate economic performance is one of several areas of African economic history where the calculation of estimates over longer periods of time has begun to revise what were previously seen as consensus views about the continent. Several papers have recently revisited earlier conclusions about the universal failure of structural adjustment programs, arguing that, with the benefit of a longer view, the reforms did actually contribute to growth in some economies, prompting new questions about the relationship between policy changes during the 1980s and 1990s and the growth boom of the 2000s (Easterly 2019; Archibong *et al.*, 2021; Grier and Grier 2021). Estimates of inequality showing that it had begun to increase even before the end of the colonial period have nuanced our understanding of colonial economies (Bolt and Hillbom 2016; Aboagye and Bolt 2021; de Haas 2021; Alvaredo *et al.*, 2021). Similarly, estimates of GDP per capita over a longer period can bring Africa into a wider comparative literature on long-run growth and open the door to new questions about the patterns of African development.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.eeh.2021.101424.

APPENDIX 1. Annual GDP per capita in Sub-Saharan Africa, 1885–2008 (1990 international dollars)

Table A1

Table A1

	S Africa	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
1885	582		654	508				
1886	687		644	512				
1887	784		644	480				
1888	884		655	480				
1889	875		654	503				
1890	881		661	480				
1891	918		698	546				
1892	895		672	523				
1893	887		678	539				
1894	862		732	596				
1895	993		704	617				
1896	1037		698	617				
1897	970		706	572				
1898	1164		706	605				
1899	1022		703	629				
1900	642		707	643				
1901	774		696	643				
1902	924		706	589				
1903	1238		759	595				
1904	1238		788	620	409			272
1905	1321		759	623	375			271

(*continued on next page*)

Table A1 (*continued*)

	S Africa	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
1906	1426		770	619	378	493	365	271
1907	1400		780	631	384	460	366	267
1908	1099		773	629	395	434	365	267
1909	1151		782	675	394		365	274
1910	1151		781	609	460	454	365	272
1911			798	615	422	453	366	277
1912				620	431	447	366	281
1913					450	444	367	312
1914		578		624			368	
1915				576			371	309
1916							374	
1917							372	297
1918	1163							281
1919		460		396				275
1920		404	815	620				270
1921		401	900	553				268
1922		438	944	540				271
1923		470	1041	456			381	287
1924	1278	446	1072	537			373	311
1925	1362	443	1072	552			374	326
1926	1398	482	1085	631	629	661	377	296
1927	1425	527	1082	551	724	622	389	317
1928	1533	548	987	600	670	601	391	317
1929	1497	530	1151	604	569	585	387	317
1930	1413	516	1094	569	704	535	390	322
1931	1335	535	1195	565	676	540	388	395
1932	1284	514	1100		664	535	461	395
1933	1423	520	1075	560	723	562	507	429
1934	1577	536	1083	570	635	503	538	408
1935	1747	547	1115	587	658	574	524	408
1936	1912	571	1276	674	772	608	532	430
1937	2038	580	1111	702	654	624	582	436
1938	1956	594	1142	676	707	650	597	434
1939	2053	606	1156	635			584	429
1940	2145			551			638	431
1941	2202				708	707	576	430
1942	2226		1006	620	698	665	580	
1943	2232		1031	526	591	622	600	
1944	2265	537	1011		702	577	593	
1945	2278	536	1022		666	572	542	
1946	2311	551					543	
1947	2288	592					564	
1948	2414	650	1158				592	323
1949	2396	662	1147			665	628	352
1950	2535	701	1122	753	651	687	661	324
1951	2591	722	1134	792	771	642	688	332
1952	2619	724	1084	830	667	664	715	339
1953	2675	760	1202	831	633	675	743	347
1954	2763	772	1317	867	687	648	772	355
1955	2830	808	1200	865	718	672	736	354
1956	2914	892	1236	821	736	690	803	376
1957	2951	924	1241	830	738	700	817	383
1958	2939	906	1187	797	725	685	776	388
1959	2995	925	1321	808	720	700	915	393
1960	3042	938	1378	820	726	713	960	394
1961	3092	956	1388	824	686	686	938	404
1962	3179	939	1416	846	701	694	905	393
1963	3321	901	1424	899	714	751	902	376
1964	3450	953	1414	910	758	785	996	359
1965	3559	984	1393	944	743	779	1147	397
1966	3615	967	1354	887	812	803	1056	426
1967	3760	1015	1339	728	826	822	1107	455
1968	3819	999	1318	699	857	818	1092	437
1969	3946	1086	1325	861	881	881	1056	453
1970	4045	1282	1424	1094	915	867	1073	447
1971	4135	1353	1491	1188	941	869	1042	498
1972	4109	1423	1402	1197	956	856	1105	534
1973	4175	1432	1397	1262	970	835	1062	562
1974	4299	1427	1455	1367	981	817	1114	582

(*continued on next page*)

Table A1 (*continued*)

	S Africa	Zimbabwe	Ghana	Nigeria	Kenya	Uganda	Zambia	Malawi
1975	4271	1402	1247	1287	942	780	1041	586
1976	4267	1357	1178	1385	943	765	1071	591
1977	4155	1221	1181	1393	991	757	990	603
1978	4174	1232	1260	1272	1039	697	967	637
1979	4232	1211	1210	1320	1036	606	910	646
1980	4390	1295	1157	1305	1051	572	911	630
1981	4481	1407	1142	1164	1033	579	936	580
1982	4323	1405	1042	1119	1054	610	877	567
1983	4112	1374	933	1023	1021	636	828	573
1984	4186	1297	960	958	1000	563	796	580
1985	4007	1335	978	1017	1006	556	784	606
1986	3912	1322	988	1010	1040	538	762	587
1987	3897	1257	1007	976	1065	550	755	568
1988	3964	1326	1034	1046	1092	566	777	547
1989	3956	1368	1057	1085	1105	583	762	542
1990	3834	1355	1062	1112	1117	585	806	540
1991	3716	1391	1087	1149	1097	570	783	564
1992	3566	1233	1099	1150	1049	567	749	504
1993	3534	1220	1119	1146	1021	593	779	543
1994	3584	1278	1122	1111	1023	609	658	496
1995	3646	1272	1141	1113	1042	663	627	582
1996	3752	1385	1168	1156	1059	701	653	611
1997	3801	1403	1192	1161	1056	716	660	618
1998	3777	1427	1221	1154	1049	728	633	622
1999	3808	1401	1247	1139	1038	759	632	631
2000	3890	1320	1265	1161	1013	773	640	639
2001	3950	1279	1289	1170	998	787	656	599
2002	4048	1203	1317	1161	982	815	665	597
2003	4130	1082	1354	1258	983	823	689	607
2004	4156	1048	1400	1305	1000	835	715	623
2005	4316	1015	1452	1346	1030	856	742	628
2006	4503	958	1514	1400	1066	916	776	655
2007	4689	900	1568	1468	1110	958	812	694
2008	4793	779	1650	1524	1098	1008	845	744

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