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MEASURING AND EXPLAINING POVERTY IN SIX AFRICAN COUNTRIES: A LONG-PERIOD APPROACH

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Abstract: In this paper, we create the beginnings of a database on indicators of poverty and deprivation in six African countries over the last 100 years, with the intention of explaining the long-term trend of policy. We argue that an important key to those trends is provided by the decision during the first decades of the twentieth century to allow, or not to allow, the occupation of agricultural land by European settlers. If allowed (as in the white settler—controlled economies of South Africa, Zimbabwe and Kenya, where Africans were squeezed out of income-earning opportunities by competition and prohibition until the 1960s at least) the legacy, we show, was a lack of bargaining power by Africans in the labour market, a real wage static at the subsistence level until late in the century, a highly unequal income distribution, and a small asset base from which to reduce poverty during the liberalisations of the 1980s and 1990s. If forbidden, as in the peasant-export economies of Ghana and Uganda (and to some extent Ethiopia), the legacy was a floor under the labour market, from the 1920s on, which could serve as a basis for poverty-reducing reforms in later years. Thus the potential for poverty reduction during the current 'poverty reduction wave' was indeed determined by the historical inheritance of institutions and policies, in particular settlement policies; but in a quite different way from that adumbrated by the recent analysis of Acemoglu *et al*. (2001). In their analysis, colonies with a high density of European occupation in colonial times persistently generate higher growth potential in later years; we argue the reverse. Copyright © 2008 John Wiley & Sons, Ltd.

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1 INTRODUCTION

Over the last 20 years, international financial institutions, non-governmental organisations and governments have placed emphasis on poverty reduction as a target of policy, as

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encapsulated, for example, in the Millennium Development Goals.[1] In the process, there has been an upsurge of research designed to understand the causes of such poverty.[2] Most of this research has adopted a cross-sectional approach, comparing country experiences across short and recent spans of time; for data on poverty, in the sense of reliable, comparable long run measures of material deprivation, however defined (see Section 4 below), have existed only for the last decade or so in most developing countries. We can, in other words, measure and begin to explain poverty dimensions and causes in the developing world with some quantitative degree of certainty—but only from around the 1990s.

This is unfortunate, because the problem of poverty has existed, in every country, for as long as anyone can remember: the proposition that 'the poor you have always with you' is neither a recent cliché nor one confined to any specific country.[3] It has a long history and long run historical roots (Iliffe, 1987).[4] The escape from poverty achieved by many developing countries in the later part of the twentieth century, we would argue, should be understood not only in terms of the quality of actions taken in the last 20 years, but also as an escape from the historical roots of poverty, which are determined by the national and global forces governing access to resources by Africans and the citizens of other developing countries over a much longer period. It follows that we cannot understand the causes of and the possibilities of escape from, poverty if we do not have reliable data which truly capture the dimensions, and long-term dynamics, of poverty. In these terms, our paper reflects a common theme in the papers in this volume: namely how do we measure and capture well-being and poverty.

In this paper, we report our work on creating a database on indicators of poverty and deprivation in Africa over the last 100 years. Whereas other papers in this volume rely on single barometers of well-being, be it heights (Moradi), infant mortality (Clayton) or morbidity and mortality from a specific disease (Bowden *et al.*), we seek to encompass different dimensions of well-being and poverty. The frame of reference for this research is sub-Saharan Africa, still the poorest and worst-performing region in the developing world, even allowing for some improvement in the early 2000s.[5] Specifically, we compare the performance, from the 1920s to the present, of six African countries whose institutional heritage and whose experience in terms of economic development indicators (mortality, real wages and headcount poverty) has been very diverse, in order to try and understand what the lessons for public action may be.

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[1]The Millennium Development Goals relate to various indicators of poverty, including number of persons below the poverty line, health and educational deprivation and environmental stress. The Goals are displayed in World Bank (2000), box 2, page 5. For a short history of the Millennium Goals see the essay by Hulme (2008).

[2]See for example World Bank (2000) for a recent overview of ideas and data on global poverty reduction.

[3]For an excellent exposition of 'the idea of poverty' during the period of the first industrial revolution, see the essay by Himmelfarb (1984).

[4]Particularly valuable for our investigation has been the emphasis in Iliffe's study (Iliffe, 1987, p. 4) on the multiplicity of varieties of African poverty—and in particular on the distinction between *structural* poverty caused by interpersonal differences in access to resources and *conjunctural* poverty caused by over-time variations in the economic cycle. In this essay and our companion study (Bowden and Mosley, 2008) we focus on the policies determining structural poverty—in particular the policies which historically have governed access to land, labour and human capital.

[5]An improvement, in terms of GDP per capita. which has merely restored Africa to the income levels of the 1980s. See, for example, Abdoulague Bio-Tchane and Etiene B Yehoue, 'Africa's Missing Ingredients', International Monetary Fund, *Finance and Development*, December 2007, Vol. 44 Number 4.

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Section 2 explains the choice of sample economies. Section 3 sets out the explanatory framework which underpins this research. Section 4 considers how poverty may be measured and presents our findings for a variety of indicators of poverty over the long run. Section 5 compiles the findings for these indicators for our six economies. Section 6 discusses the implications of our findings on poverty in terms of the difference in the institutional heritage of our six economies. Section 7 concludes.

2 ECONOMIES STUDIED

We explore poverty dynamics and their causes, differentiating between three countries which experienced widespread European settlement through the late nineteenth and much of the twentieth century (South Africa, Zimbabwe and Kenya) and three countries which did not (Ethiopia, Uganda and Ghana). The first three were wholly or partly dominated by white-settler political interests (South Africa, Zimbabwe and Kenya), and the last three were principally African 'peasant-export' economies lacking white settlement in colonial times (Uganda, Ghana and Ethiopia). This choice is motivated by a desire to understand the causal influence of political systems on economic structure, and thence, following Baldwin (1963)[6] on the 'externalities' which particular economic structures were able to provide to the development process.

In this respect, we follow the approach adopted by Acemoglu *et al*. (2001), who have argued that different patterns of colonisation adopted across the world exerted a strong and persistent influence on the character of economic institutions, and thence on the potential for economic growth. In particular, they have argued that 'colonies of settlement' tended to give rise to institutions which protected private property rights. Such conditions, they argue, were positive for economic growth, and thereby, by implication, for poverty reduction, by contrast with 'colonies of exploitation' with a high risk of expropriation, which exhibited persistently poor growth performance.[7]

Table 1 outlines land tenure regimes and recent poverty (headcount) trends for our six economies. At this point, our approach diverges from that of Acemoglu *et al*., since we find, by contrast with their approach, that it was the colonies of intensive European settlement which experienced the more adverse poverty trend from the 1920s onwards. In contrast to their argument, we find that it was the 'peasant-export economies' (i.e. the colonies which did not experience European settlement and were able to build up an African smallholder-based export trade from the first half of the twentieth century onward), which experienced more favourable poverty trends in recent years.

We wish to understand why this was so. In what follows, we examine two possible explanations. First, given the wider diffusion of peasant agricultural production (both cash-crop and for export) within the peasant-export economies since colonial times, the distribution of income was more equal than in settler economies. This provided, in peasant economies, a stimulus to demand and to smallholder technical development, and reduced

[6]As discussed below, Baldwin's paper was the first, to our knowledge, to examine the influence of choice of product on the production function, and thence on the externalities (Baldwin used the term 'spin-offs') which each sector was able to provide to the development process.

[7]Dollar and Kraay (2003) and World Bank (2006), among other commentators, show that the change in poverty, across a sample of countries, is negatively associated with the growth rate of GDP. The impact of the second variable on the first (the so-called 'poverty elasticity') and the extent and causes of deviations from this pattern continue to be the subject of severe controversy—see the discussion at page (6) below.

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Table 1. Poverty and land tenure regimes in the six-country sample

	S. Africa	Zimbabwe	Kenya	Ethiopia	Uganda	Ghana
	Principally 'colonies of settlement'			Principally 'peasant-export economies'		
Land tenure regime	1913–1994: 87% of land reserved for European producers	1920s–1980s: 49% of land (much of high-potential areas) reserved for large-scale European farmers	1929–1961: 7% of land (much of high-potential areas) reserved for large-scale European farmers	Until 1974, most land in large estates belonging to church or large (African) landowners. Thereafter all land in state hands, with extensive 'land to the tiller' reforms since 1991	Most land in communal African tenure in colonial times; no alienation to expatriate producers except for sugar and tea estates. Some individualisation of land since 1987	Most land in communal African tenure in colonial times; no alienation to expatriate producers. Some individualisation of land since 1990s
Poverty trend: before 1990	Rising continuously from 1940s (possibly earlier) through 1980s	Rising from 1950s through 1970s, falling through 1980s	No data	No data	No data	Rising from early 1970s through early 1980s
After 1990	Almost static (but data ambiguous)	Rising sharply	Rising slightly	Falling from 51 to 45%, 1992–2000	Falling from 50 to 32%, 1992–2000	Falling from 51 to 39%, 1992–2001

Sources: (Headcount, $/day) poverty data from World Bank, *World Development Reports*, various, with additional data from Besley and Cord (2007). Data arrays available from p.mosley@sheffield.ac.uk or chiripanhura@yahoo.co.uk; see also Table 2 below.

the inherent propensity to conflict, both of which helped to underpin recent patterns of pro-poor growth. Second, the pro-African ethos during colonial times of the 'protectorates' (essentially the peasant-export economies) induced them to invest in the human capital base of low-income Africans inside and outside agriculture, much more than in settler economies. This institutional base provided a springboard in modern times for pro-poor growth.

Our argument, as in Acemoglu *et al*. (2001), is therefore that institutional patterns established in colonial times tended to persist and to determine the possibilities for economic development in post-colonial times. Our interpretation of the institutional patterns which matter, however, is different from theirs. Whereas they emphasise one (institutional) independent variable only, that is, *protection of private property rights against expropriation*, we consider two others: the access of the African poor to high-yield technologies in agriculture, and secondly and more broadly their access to poverty-reducing public goods in support of those high-yield technologies, in particular health, education and social infrastructure. We see these institutional characteristics as providing Africans, especially in peasant-export economies, with a long-term asset which, when the time came in the 1990s, could be converted readily into a pro-poor growth pattern.

3 EXPLANATORY FRAMEWORK

We seek to understand the rate at which poverty (P) falls over time, which by definition is the product of the rate of growth of income and the rate at which this economic growth converts into poverty reduction

$$\frac{\mathrm{d}\log P}{\mathrm{d}\log t} = \frac{\mathrm{d}\log P/\mathrm{d}\log Y}{\mathrm{d}\log Y/\mathrm{d}\log t} \tag{1}$$

where Y is the income and t time. The first component of the expression on the right-hand side ($\mathrm{d}\log P/\mathrm{d}\log Y$) is the *poverty elasticity*, or the proportionate rate at which poverty falls per unit increase in income. The poverty elasticity is a valuable indicator of the 'quality' of growth—the extent to which growth impinges on different income groups. A number of estimates of the size of this parameter have been made, usually in the form of global cross-section estimates, in the context of recent debates about poverty reduction and the 'pro-poor' content of growth (Dollar and Kraay, 2002; World Bank, 2006; Besley and Cord, 2007). This debate has not been conclusive. Dollar and Kraay (2002) argue that poverty (using data for the 1980s and 1990s) falls *pari passu* with growth, with a uniform elasticity of minus one. However, a simple examination of any scatter of cross-country observations shows that, for any historical period one may choose to examine, country experiences are far from uniform. Indeed, in some countries, poverty—or at any rate the poverty of some income groups—has a tendency to increase with growth. For developing countries, the first systematic demonstration of the point was made by Fishlow (1970) using Brazilian data in the 1960s,[8] but in industrialised countries a strong body of opinion also argues that the standard of living of the majority of the population did not rise during rapid periods of historical growth, such as the industrial revolution period (1760–1830) in

[8]Chenery *et al*., (1975, page xiii) argues that 'It is now clear that more than a decade of rapid growth in underdeveloped countries has been of little or no benefit to perhaps a third of their population'.

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Britain, or the second half of the nineteenth century in Italy and Russia (see Crafts, 1997; Feinstein, 1998; Maddison, 1995).

On the question of what determines these long-period variations in poverty elasticity, one recurrent theme has been *the inequality of income distribution*. The empirical evidence, however, has not been conclusive. From a theoretical perspective there have been four key arguments. First, Alesina and Perotti (1996) argued that inequality of income constrains growth insofar as highly unequal societies create resentment of perceived injustices and incentives for individuals to engage in activities outside normal markets, such as crime, whilst socio-political instability discourages accumulation because of current disruptions and future uncertainty. Second, in a closed economy output is likely to be higher where the distribution of income is more equal (Murphy *et al*., 1989) since only in cases of equitable income distribution is a mass market for manufactures likely to emerge (a comparison between South-east Asia on the one hand, and South Africa on the other, makes the point vividly). Third, Aghion *et al*. (1999) argued that inequality of income leads to credit constraints, which deter both investment and the benefits accruing to the poor.[9] But fourth, against this, is Kaldor's famous dictum that the greater marginal propensity of the rich to save means that inequality will lead to greater economic growth. The empirical evidence is also unclear. Whilst Forbes (2000) found a positive relationship between income inequality and economic growth, Alesina and Rodrik (1994) and Perotti (1996) reported a negative relationship from inequality to growth, whilst Barro (2000) and Lopez and Serven (2004) argued there was no statistical relationship.

On balance, we incline to the view that income distribution does matter; indeed the historical evidence, on our view, tips the balance on this point. In March 1933, in the depths of the inter-war depression, the Governor of Southern Rhodesia (Zimbabwe), then as now one of the highest-inequality countries in Africa, lamented:

> Of the West Indian colonies perhaps Jamaica affords the most interesting comparison. The population of Jamaica, which is 98 per cent coloured and black, is almost the same in numbers as our native population. But the landed cost of imports into Jamaica was something like £4 million, whereas the corresponding figure for this colony was about £1 210 000 which with the addition of local purchases represents a purchasing power of about 30 shillings per head. Now supposing that only 25 per cent of our native population increased their purchasing power from 30 to 70 shillings per head, the Jamaican level, this would mean an increase in the value of the native trade of at least £500 000 per annum. . .Surely then, on commercial grounds alone, apart from any moral obligation, it should be the policy to encourage the native in the attainment of higher standards.[10]

The implication is that the key to poverty reduction is increased demand for labour, because labour is the only resource which the poorest people can sell and the key to increased labour demand, as was beginning to be intuitively understood during the 1930s global depression, is higher expenditure in labour-intensive sectors. This in turn is facilitated by the more equal income distribution which the Governor (quoted above) so much envied.

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[9]See also Hanmer and Naschold (2003), World Bank (2006).

[10](National Archives of Zimbabwe: S1216/SC1/100/110, Governor of Southern Rhodesia to Associated Chambers of Commerce, 10 March 1933).

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It was the merit of Baldwin's paper *Export Technology and Growth from a Subsistence Level* (Baldwin, 1963) to show that different product-mixes generate different technologies (i.e. production functions or input combinations), and that each country-specific input combination generates different levels of external benefits into the development process. Baldwin was mainly thinking of technological externalities, such as new techniques that increase productivity; but the argument extends to *any* externality into the development process, including in particular changes in product-mix which increase the demand for low-income labour and thus have the effect of reducing poverty, which we may refer to as *poverty externalities*. In particular, the development of smallholder export agriculture (and other informal-sector activities) is positive for the expansion of the market for low-income labour.[11] So is investment in the health and education of the poor and in the infrastructure to which they have access, since those also raise their productivity. Thus we may expect that a country in which smallholder agricultural exports are a large, fast-growing share of output will have a high and negative poverty elasticity. By contrast, a sector in which the dominant sectors are capital-intensive (such as, in most economies, oil and gas production or military expenditure), or a country in which the production is labour-intensive but has been repressed by policy, will have a much lesser response of poverty to growth.

More generally the poverty elasticity, d log P/d log Y, may be decomposed as

$$\frac{\mathrm{d}\log P}{\mathrm{d}\log Y} = \frac{\partial \log P}{\partial \log(e_i A_i(\sigma)/Y)} \cdot \frac{\partial \log(e_i A_i(\sigma)//Y)}{\partial \log Y} \tag{2}$$

where, as before, P is poverty, Y is income, and also σ is the measure of vertical inequality of income distribution (e.g. Gini coefficient); A_i is the leverage (share in output) of any sector i within the economy; and e_i is the 'poverty externalities' provided by that sector (is the propensity to reduce poverty attached to each of the sectors A_i).

Finally, it will be noted that government is able, through its allocation of expenditure between income strata and sectors, to influence income distribution (σ), the sectoral mix of production (A/Y), and thereby the poverty elasticity. Political forces, of course, influence and constrain these expenditure choices. One particularly important historical influence helping to determine the balance of political forces in Africa is the decision made, between the 1890s and the 1920s, about whether to establish colonies (which all of these countries examined here were during their formative stages) as *settler* or as *peasant-export* economies, in the terminology of Myint (1976). Settler economies are those in which the land was appropriated by European settlers, often operating as agriculturists in competition with African farmers. Peasant-export economies are those in which Europeans were not allowed to own land and agricultural production and exports were in the hands of African smallholders. We argue that the latter strategy placed in the hands of lower income groups a cluster of assets, not only permanent export crops but also the infrastructure and training required to produce and export them, which were to be important in determining the dynamics of poverty reduction processes in later years.

[11]The South Africa Economic and Wage Commission of 1923 noted that poverty and inequality were driven by the level of the wage rate, and that wage rates were driven by the levels of agricultural productivity in African 'traditional' agriculture: 'the reserve thus meets the same need in the life of the Native in European employment as the strong trade union meets in the life of the European wage-earner' (South Africa, *Economic and Wage Commission 1925*, para. 281). As the South African Economic and Wage Commission also noticed, the productivity of small-scale agriculture also has a multiplier effect on wages, which is a component of its effect on poverty.

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In the next section, we present alternative indicators of poverty and deprivation, from 1914 to the present, for a range of peasant-export and settler economies. These indicators are our best estimate of the dependent variable *P*, representing indicators of poverty and deprivation, in Equation (2).

4 MEASURING POVERTY

The scholarly literature has used four distinct dimensions and measurements of poverty and deprivation. All have their own specific insights and hence contributions to our understanding of poverty. The literature has tended to concentrate on each in isolation and, as such, never to evaluate the relative merits of different measures. We depart from this approach by using the insights and data available from each approach to compile a comprehensive series of poverty indicators for our six economies. We explore these indicators below in terms of the available evidence and their relevance for any long-period interpretation of the experience of poverty in Africa.

4.1 Headcount Poverty

Data on *headcount poverty* have been popular of late. For example, the World Bank, in their *World Development Indicators* and *Reports*, has presented comparative estimates of those falling below a standardised level of income such as, in low-income countries, $1 a day at 1990 prices. The information has been crucial to our understanding of changes in poverty in terms of income in the recent past. From our perspective, however, such data are a luxury, useful for interpretation of recent history, but not—given their absence—for long run analysis. In South Africa and Zimbabwe, Commissions of Enquiry into poverty and African living standards (often motivated by awareness that mass poverty was a political threat to the state) were taken from the 1920s onward.[12] These commissions, and the evidence presented to them, are important insofar as they offer both the first statistical estimates of poverty, and also ideas concerning the causal processes involved. There are also, in more industrialised African countries such as South Africa and Zimbabwe, occasional household budget surveys from the 1950s onwards.

Although these facilitate an estimate of headcount poverty, they have significant limitations because invariably the surveys were taken for specialised groups of people only, often those living in urban areas. And for no country do we begin to get a continuous run of data on headcount poverty until the late 1980s and early 1990s.[13] The available data on

[12]For example (1) 'It is essential to the preservation of the European civilisation that the African should be advanced. No country can prosper with its masses living in ignorance and poverty' and (2) 'the persistence of this low standard of health must necessarily retard an increased effort by the Natives to improve their social and economic conditions. . .Tuberculosis is increasing to an extent which in the medical view is ominous. Owing to want of suitable accommodation, Natives with this disease are being sent to the Reserves [African rural areas] where they are likely to share a windowless hut with several others. Drastic and immediate action is not only humane, *it is mere self-protection*'. (Emphasis added) (*both these from Southern Rhodesia, Report of the Native Production and Trade Commission 1944, pp.9, 19).*

[13]For the countries in our sample, the date when (World Bank) headcount poverty data first become available is: Ethiopia, 1981; Ghana, 1987; Uganda, 1989; Zimbabwe, 1991; Kenya, 1992; South Africa, 1995.

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Table 2. Poverty: headcount (P_0) trends

	Rural	Urban	Rural/urban ratio	Overall
Ethiopia				
1977–1987 (UN)	*65*	*60*		
1980–1989 (UN)	*65*	*60*	1.50	
1989–1995	61.3	40.9		51(1)
1992				
1994–1997	45.8	38.7	1.19	
2000				44(1)
Kenya				
1977–1987 (UN)	*55*	*10*		
1980–1989 (UN)	*55*	*10*		46
1992	46.4	29.3	1.58	
1994	46.7	28.9	1.62	
				52
Uganda				
1992	59.4	29.4		56
1997	48.6	16.3		
2000				35.0
2003				38.0
Ghana				
1980				
1990				51(2)
2000				39(2)
Zimbabwe				
1990				25
1992				
1997				35(1996)
2000				>60

Source: IFAD *Rural Poverty Report 2002*, p. 42, annex Table 2.1.
In italics: UN State of the World's Children 1990, Table 6.
Other sources: (1) Dercon (2) from Besley and Cord (2007), introductory chapter.

headcount poverty are set out in Table 2. The earliest information relates to the late 1970s for Ethiopia and Kenya. For Uganda and Zimbabwe, the earliest information relates to 1990.

4.2 Real Wages

A second dimension concentrates on real wages. This is the dimension which has attracted the attention, in particular, of scholars debating whether industrialisation led to amelioration or a decline of living standards during the British industrial revolution as per Crafts (1997), Feinstein (1998) and Linder and Williamson (1999). It is, however, a dimension fraught with data availability issues, as the debate between the aforementioned scholars testifies. There are problems of aggregation between money wages for representative workers of males and females, in different sectors and skill levels, with different ratios between waged and unwaged income, with differences in hours worked, and finally differences in cost of living estimations. Real wage estimates, difficult though

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they may be to compute, nevertheless have the attraction of constituting measures of true changes over time in what people earned in relation to how they were employed at specific skill levels and the hours they worked.

In general, real wage estimates for the populations of African economies over the long run are sparse and problematic. It is possible, however, to compute a time-series index of *real rural wages* from data on agricultural money wages for African countries (which in conditions of labour surplus link directly to living conditions in the subsistence sector, by an argument going back to Lewis (1954)). Our index depends on estimations of money wages and the cost of living. A discussion of the manner in which they were computed in the African countries we examine is provided in the Appendix. We present our overall findings in Table 3 below.

As is apparent from Table 3, there is a strong contrast between the trend of real wages in the settler economies, Kenya, Zimbabwe and the black population of South Africa, which oscillated around a static trend from 1914 to the 1960s, and the trend in the peasant-export economies, Uganda and Ghana, which rose from the subsistence floor in the 1920s and, despite several subsequent relapses, especially in the 1940s, has never fallen back to that subsistence level and indeed has widened since the end of the colonial period the gap between them and the settler economies.

4.3 Heights and Weights

Third, the scholarly work on heights and weights has provided an important alternative method of gauging standards of living over time which moves away from an input (wages and cost of living approach) to an output approach (height and weight) of standards of living. Heights and weights data as such present a new and important biological approach to the measurement of poverty and the standard of living insofar as height captures both the quantitative monetary and qualitative environmental conditions of the determinants and

Table 3. Real wages (10-year averages; 1914 = 100): African population

	'Settler economies'			'Peasant-export economies'	
	(1) South Africa *African population only*	(2) Zimbabwe	(3) Kenya	(4) Uganda	(5) Ghana
1911–1920	100	73	100	77	84
1921–1930	52	69	80	117	139
1931–1940	64	88	76	369	148
1941–1950	73	88	87	213	150
1951–1960	85	112	109	226	172
1961–1970	92	148	130		
1971–1980	109	150	150		
1981–1990	149	180	164		
1991–2000		121			
2001–2006		88			

Sources: See Appendix.

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expression of living standards from birth to given ages.[14] To date, the literature has been dominated by research conducted in the developed economies and in particular the USA, UK and Europe.[15] More recently an exciting new agenda as per Austin *et al*. (2007) and the essay by Moradi (2008) in this volume has developed in the pursuit of data and interpretation of findings in terms of developing economies in general and of Africa in particular.

We acknowledge that the heights and weights literature has not been without its critics. Height data, for example, are normally recorded for military recruits rather than for the general population, are problematic in terms of controlling for genetic inputs and can be difficult to interpret in specific time frames insofar as height is a function not only of the individual's environmental and nutritional well-being but also of that of the individual's parents and grandparents.[16] However, height data does make a contribution to the measurement of poverty when taken in conjunction with other indicators, a view we explicitly encompass in this research. Such data can provide a crucial and important additional data tool in our understanding of poverty trends over time, but are not without problems. For Ghana and Kenya and owing to the work of Austin *et al*. (2007) and Moradi (2007, 2008) there exist anthropometric data (i.e. heights and weights) derived from the measurement of the heights of soldiers from the 1920s onward. Thus for Kenya we use the average height in centimetres of army recruits in birth cohort specified, from Moradi (2007).[17] For Ghana, Austin *et al*. (2007) provide data measuring the average height of women in different birth cohorts. Taken together with other indicators, the anthropometric evidence makes an important contribution towards creating an overall index of poverty for our six countries which is incorporated into our overall findings reported below.

4.4 Human Development

A fourth dimension of well-being is embodied in the Human Development Index and its subsequent progression, the Human Poverty Index, which between them have presented new approaches to the measurement and understanding of poverty. In these terms, both human development and human poverty are defined in terms of the abilities of the population to *acquire and use* capabilities.[18] The Human Development Index measures deprivation in terms of the absence/prevalence of the capabilities to acquire and use three essential elements of human life: longevity, knowledge and a decent standard of living. Data on longevity, knowledge and a decent standard of living for Africa are, however, limited in terms of the historical past. Information on capabilities received and used is in essence a function of the period after 1990—and even for that period the availability of data is incomplete.

In 1996, the Human Development Report produced a new dimension of capabilities—differentiating between the developed and developing world.[19] This gave us new measures of poverty for peoples in the developing world, the constituent elements being (a) the percentage of people not expected to survive to the age of 40, (b) the illiteracy rate and (c) deprivation in economic provisioning as measured by the percentage of people without

[14]As indeed, in the initial work by Fogel on slave heights (Fogel and Engerman, 1974; Fogel, 2004) and the work of Floud *et al*. (1990) in relation to standards of living in Britain over the long industrial revolution.
[15]*Ibid*.
[16]See for example, Voth (2004), pp. 273–276.
[17]Table 4 p.28.
[18]See Klamer (1989) and Desai (1991).
[19]http://hdr.undp.org/reports/global/1997/en/: 1997 Report on Poverty.

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access to water and health services and the percentage of underweight children under 5 years of age. The Human Poverty Index provided crucial and insightful information—but of limited application for a long period assessment given the available data.

The Human Development and Human Poverty approaches to defining and measuring poverty embrace life expectancy, as well as mortality, as demographic indicators. In the historical past, life expectancy was largely a function of prevailing child and infant mortality (Fogel, 2004, Chapter 1; Livi-Bacci, 1991, Chapters 2 and 3, 2007; Riley, 2001, Chapters 1 and 4). The link to poverty derives from the work of demographers in their work on the demand for *surviving* children. A supply side approach argues that fertility falls once infant and child mortality falls (the so-called fertility transition) and the demand for surviving children is achieved without multiple pregnancies.[20]

It is also the case that empirically, for the years and countries for which both mortality and headcount poverty data exist (see Figure 1 below) the two series are closely correlated. To that extent, poverty may be approximated by prevailing levels of infant and child mortality. Hence, as our best available measure of human development for periods prior to the 1990s, we have accessed data on mortality over the historical past, which for our six African economies, are available from 1914 onward (from censuses and health department reports). In Table 4, we present these mortality data series side by side with the much shorter run of poverty data previously discussed in Table 2.

These mortality series are open to a range of criticisms: (i) throughout the colonial period they are based on the memory of interviewees, not observation by doctors; (ii) registration of interviewees was for many periods incomplete, so that what appear to be sharp changes in mortality are actually in whole or in part changes in the extent to which deaths were registered;[21] (iii) in particular, registrations often omit the births and deaths of children whose lives were very short and (iv) there are gaps in the mortality series, especially during the war years. They are, however, best estimates and as we demonstrate in the following section, they provide a strong indication of poverty trends over time.

5 A COMPOSITE VIEW OF POVERTY

Other papers in this volume have concentrated on single measures of well-being. In contrast, a key theme of this paper has been the compilation and hence evaluation of different measures. Somewhat in the spirit of other standards-of-living debates, including that related to standards of living in the British industrial revolution,[22] we seek to triangulate across these different measures by presenting them side-by-side. Our findings are presented in Table 4. The critical finding is the importance of mortality as a barometer of poverty.

Thus, we observe from Table 4 a reasonably strong statistical relationship, for the years where we have data, between mortality and headcount poverty, and between both variables and the growth rate of GDP: mortality, in that table, falls quite rapidly in Uganda and Ghana where poverty was falling fast, is near-static and by the early 2000s rising in Kenya

[20]The demand side of this work emphasises the cost benefit ratio of having children and the opportunity costs of a woman's time.
[21]For three of the countries in our sample—Uganda, Kenya and especially the Gold Coast (Ghana)—this is magisterially analysed in the two-volume study by Kuczynski (1948).
[22]As most recently summarised by Voth.

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Table 4. Infant and child mortality in relation to poverty

	1910–1920	1920–1930	1930–1940	1940–1950	1950–1960	1960–1970	1970–1980	1980–1990	1990–2000	2000–2006
Zimbabwe										
Infant (under 1) mortality per 1000 live births)	220	246	267	264	178	140	120	110	106	126
Under 5 mortality (per 1000 live births)				*182*	123	94 *132(1980)*				123
Headcount poverty index								25	35	60+
Ethiopia										
Infant (per 1000 live births)					85	68				78
Under 5 (per 1000 live births)				*294*	136	106 *260*				122
Headcount poverty index									51	45
Kenya										
Infant (per 1000 live births)		300–500(4)	287	182	145	120	85	71	68	78
Under 5 (per 1000 live births)				*208*		*133*				
Headcount poverty index									46	52
Ghana										
Infant (per 1000 live births)	295	206	110	106	115	120	105	86	80	65
Under 5 (per 1000 live births)								157	96	97
Headcount poverty index									51	39
Uganda										
Infant (per 1000 live births)		245	171	126	126	104	109	104		79
Under 5 (per 1000 live births)				*223*	183	173 *190*				124
Headcount poverty index									56	34
South Africa (African population only)										
Infant (per 1000 live births)	254	281	302			170 *130*	130 *90*	89 *55*	77 *47*	85 *54*
Under 5 (per 1000 live births)				*192*	103	75 *95*				71
Headcount poverty index									*11.5*	*10.7*

Sources for Table 4: (1) Under 1 mortality, before 1950: from Kuczynski (1948), Vol. 1 for Ghana and Vol. 2 for Kenya and Uganda. For Zimbabwe (Southern Rhodesia) data are from Mosley (1983), Appendix to Chapter 3 and sources presented there; for South Africa they are estimates for the African population only from Knight and Lenta (1980) and Simkins (1981). Under 1 mortality, 1960–2001: World Bank, *World Development Indicators* (CD-ROM), various issues. Data in *italics* for South Africa represent data for the population as a whole, data in roman type represent estimates for the African population, drawn from mortality rates published in South Africa, *Statistical Abstracts on self-governing territories in South Africa*, Halfway House: Development Bank of Southern Africa, 1992; (2) Under 5 mortality, 1960–2001: estimates in roman type are from World Bank, *World Development Indicators* (CD-ROM) and estimates in *italic* are from UNICEF, *The State of the World's Children*, various issues; (3) Headcount poverty index, 1960–2001:World Bank, *World Development Indicators* (CD-ROM), various issues, data as presented in Table 2.

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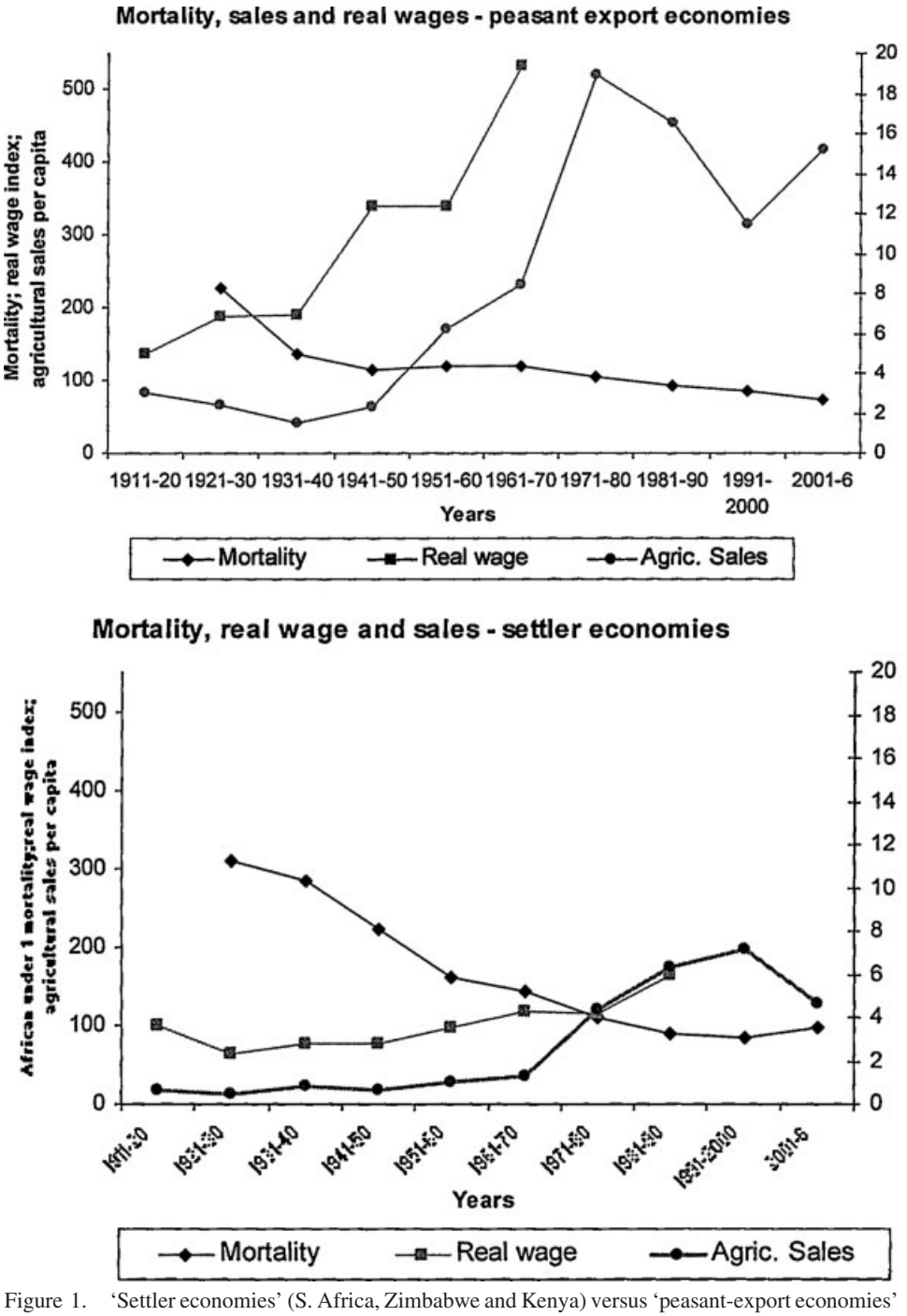

Figure 1. 'Settler economies' (S. Africa, Zimbabwe and Kenya) versus 'peasant-export economies' (Uganda and Ghana): mortality trends and their possible causes 1910–2007. This figure is available in colour online at www.interscience.wiley.com/journal/jid

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and South Africa where poverty was rising slowly, and rises fast in Zimbabwe where poverty was rising fast.

Indeed, when we blend together the data from all the different well-being indices across the years for which we have data, in Table 5,[23] we see that mortality began to fall as early as the 1920s in Ghana, in the 1930s in Uganda, but not until the 1950s in the African populations of Zimbabwe and South Africa, Kenya representing an intermediate case in which death rates were definitely falling by the 1940s but not as fast nor to such a low level as Uganda. Mortality appears to be the critical barometer of poverty both over time and indeed over place.

We also observe from Table 5 that real wage trends, broadly speaking, mirror these trends in infant mortality: the real wage began to rise from its 1914 = 100 subsistence floor in the 1920s in Ghana, in the 1930s in Uganda and Ghana, and never fell back to that floor. By contrast, the South African black real wage remained chained to its subsistence floor until the 1970s; in Zimbabwe, also it fell back to that point and indeed remains there today in 2008, following prolonged periods above the 1914 = 100 level especially during the 1930s and 1980s. The 'pure settler' economies, South Africa and Zimbabwe, are the only ones where one can observe a decline in African rural living standards over long periods (more than 15 years) within the twentieth century.[24]

The hypothesis which we shall now seek to examine is that there may be a causal connection between the earlier onset of poverty reduction (in the sense of falling mortality) in the peasant-export economies and the higher levels of real wages and indeed smallholder agricultural productivity in those economies, linked to the political decision to facilitate smallholder production for export in the peasant-export economies at the beginning of the twentieth century. The key decade, we shall argue, was the 1920s.

6 DISCUSSION

We now seek to understand the living-standards trends summarised in Table 5. Our initial explanation of these, summarised in Equation (2) above, as that poverty levels are driven by the ability of the dominant economic sectors in a country to give an impulse to the livelihoods of the poor: the 'poverty elasticity' is the product of the share of output accruing to a given sector (A_i) and the 'poverty externalities' (e_i), or spillovers accruing to poor people within that sector. In very poor countries (i.e. the whole of Africa, except white South Africa, during the twentieth century), agriculture is inevitably a dominant sector: moreover, we surmise that it has a greater ability than other sectors to generate poverty externalities, because it is more intensive than other sectors in labour and in capacity to reduce food prices, both of these crucial factors of production in the process of poverty reduction. A first approximation to (2) is therefore to relate the measures of well-being of Table 5 to a measure of agricultural production per capita. This is done in Table 6.

As we see in Table 6, the trend in agricultural sales per capita begins to rise sharply in Ghana before 1914 and in Uganda during the 1920s; in other words, it leads, and in our

[23]Agricultural sales referred to in Table 5 are discussed below in Section 6.

[24]In South Africa, the 1920s through the 1970s; in Zimbabwe the trend of African rural living standards is more erratic but there are definitely declines during the periods 1913–1922, 1940–1948 and 1992 onward.

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Table 5. Alternative measures of well-being

	'Settler economies'									'Settler economies' (average 1 + 2 + 3)		'Peasant-export economies'						Peasant-export economies (average 4 + 5)	
	(1) South Africa *African population only*		(2) Zimbabwe			(3) Kenya						(4) Uganda		(5) Ghana					
	M	*W*	*M*	*W*	*P*	*M*	*W*	*P*	*H*	*M*	*W*	*M*	*W*	*M*	*W*	*P*	*H*	*M*	*W*
1911–1920	254	100	225	73			100		168		100		77	295	84				136
1921–1930	281	52	246	69		400	80			309	64	245	117	206	139			227	189
1931–1940	302	64	267	88		287	76			285	77	171	369	110	148			136	190
1941–1950		73	264	88		182	87			223	77	126	213	106	150			115	341
1951–1960		85	178	112		145	109			161	97	126	226	115	172		159.9	120	341
1961–1970	170 (130)	92	(140)	148		120	130		170	143 (130)	117	104		120			160.8	119	534
1971–1980	130 (90)	109	(120)	150		85	150		171	111 (98)	114	109		105			159.7	104	
1981–1990	89 (55)	149	(110)	180	35	71	164		171	90 (78)	164	104		86			158.4	93	
1991–2000	77 (47)		(106)	121	46	68		46		84 (73)				80		51	159.2	85	

Notes for Table 5: Throughout this table: *P* is the poverty indicator (unless otherwise specified, headcount of individuals below the international poverty line of $1 per today at 1990 prices; *M* the mortality indicator (unless otherwise specified, infant mortality rate, that is mortality rate per thousand of those below 1 year of age); *W* the index of real wage; *H* the index of height.

Sources for Table 5: *Poverty indicator (P)* Headcount of individuals below the international poverty line of $1 per day at 1990 prices, from World Bank, *World Development Indicators*, CD-ROM and available online since 2006.

Mortality indicator(M) Infant mortality rate, that is mortality rate per thousand of those below 1 year of age; principally from World Bank, *World Development Indicators*, and from Kuczynski (1948), supplemented by sources listed in Table 4 above.

Real wage indicator (W) 1914 = 100 in all cases. From sources provided in Appendix below.

Height indicator (H) Kenya: Average height in centimetres of army recruits in birth cohort specified, from Moradi (2007, p. 28), Table 4. Ghana: average height of women in birth cohort specified, from Austin *et al*. (2007).

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Table 6. Mortality, real wage and agricultural sales: African population

	'Settler economies'										'Settler economies' (average 1 + 2 + 3)			'Peasant-export economies'							Peasant-export economies (average 4 + 5)		
	(1) South Africa *African population only*			(2) Zimbabwe			(3) Kenya							(4) Uganda			(5) Ghana						
	M	*W*	AS	*M*	*W*	AS	*M*	*W*	AS	*H*	*M*	*W*	AS	*M*	*W*	AS	*M*	*W*	AS	*H*	*M*	*W*	AS
1911–1920	254	100	1.72	225	73	(0.102)		100		168		100	0.63		77	0.39	295	84	2.67			136	3.06
1921–1930	281	52	1.15	246	69	(0.118)	400	80	0.1		309	64	0.45	245	117	0.91	206	139	3.89		227	189	2.36
1931–1940	302	64	0.65	267	88	0.095	287	76	0.09		285	77	0.83	171	369	1.19	110	148	2.28		136	190	1.54
1941–1950		73	1.46	264	88	0.215	182	87	0.28		223	77	0.64	126	213	1.26	106	150		159.9	115	341	2.28
1951–1960		85	1.81	178	112	0.444	145	109	0.69		161	97	1.01	126	226		115	172		160.8	120	341	6.18
1961–1970	170 (130)	92	1.53	(140)	148	0.73	120	130	1.7	170	143 (130)	117	1.32	104			120			159.7	119	534	8.41
1971–1980	130 (90)	109		(120)	150	2.38	85	150	6.39	171	111 (98)	114	(4.38)	109			105			158.4	104		18.95
1981–1990	89 (55)	149		(110)	180		71	164	9.89	171	90 (78)	164	(6.37)	104			86			159.2	93		16.5
1991–2000	77 (47)			(106)	121	2.37	68		11.88		84 (73)		(7.12)				80				85		11.5
2001–2006	85			126	88	0.14	78		9.24		97		(4.62)	79			65				73		15.2

Sources for Table 6: Mortality (*M*) and real wage (*W*) as for Table 5 above.
Agricultural sales (AS) are agricultural sales of African origin per head of African population. These are defined as sales within the following categories:
South Africa: maize, wheat, other grains, fruits, vegetables, livestock products. *Zimbabwe*: maize, 'small grains' (finger and bulrush millet), groundnuts, cotton, smallholder tobacco, fruits, vegetables. *Kenya*: maize, smallholder coffee, smallholder tea, smallholder pyrethrum, fruits, vegetables, sugar. *Uganda*: maize, coffee, cotton, cocoa, hides, chillies, sugar, fruits, vegetables, sugar. *Ghana*: maize, cocoa and derivatives, kolanuts, fruits, vegetables, sugar. African population is derived from figures used to compute mortality, as in Table 4 above.

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view helps to cause, the rise in real wages and hence the fall in mortality that we have observed in Table 4.[25] In South Africa and Zimbabwe, the settler economies, there is at no point any dynamism in African sales per capita, which represents the main alternative income opportunity for them; hence they have no bargaining power with which to push up their wage from the subsistence floor, except for short periods; and because neither their wage nor their crop production is able to increase, there is little scope, until better health services and education begin to arrive in the 1960s, to bring down mortality and take Africans out of poverty. Kenya represents an intermediate case, in which some peasant exports are achieved from the 1920s on, and then decolonisation is anticipated via the development of smallholder production schemes for tea, coffee and pyrethrum in the 1950s: thus wage increases and falls in mortality are observable from the 1930s onward. This is illustrated in Figure 1, which plots the trend of agricultural production, real wages and mortality separately for the settler group (Kenya, Zimbabwe and South Africa) and for the peasant-export group (Ghana and Uganda), as an illustration of the central story, which is that in all types of African economy poverty and deprivation indices are driven by agricultural production per capita—operating both through the incomes of cultivators and through labour markets. Agricultural productivity in turn derived its impulse from policy trends which we now, in conclusion, examine.

6.1 Systems of Governance

During colonial times, the peasant-export economies were administered, much more than the settler economies by indirect rule systems in which—especially in the heartlands of export cash-crop production (Ashanti in Ghana and Buganda, plus the eastern provinces of Uganda) much fiscal and judicial power lay with chiefs rather than with the colonial authorities; the chiefs, in turn, were represented in national legislatures. This greater African stake in the allocation of expenditure enabled a greater rate of plough-back of revenues into the improvement of African smallholders' productivity, especially in these regions, than in the settler economies, where the improvement of African agriculture rested with massively under-resourced 'funds for the improvement of native agriculture' which were almost entirely dedicated to subsistence farming, rather than cash-crop development and which were subjected to persistent sniping from European farmers' associations who perceived their livelihoods as threatened every time there was a fall in the price of maize, as especially during the inter-war depression and the 1940s (Mosley, 1983, Chapter 2). Within the peasant-export economies, there was no settler interest, and nothing to prevent

[25]OLS regressions of (under 1) mortality on sales per capita on mortality for the economies under review give:

Settler economies:

Zimbabwe: mortality = 77.93^{**} (10.97) − 2.83 (1.19) sales/capita, $r^2 = 0.16$, $n = 52$

Kenya: mortality = 107.6^{**} (15.34) − 3.24^{**} (3.94) sales/capita, $r^2 = 0.64$, $n = 65$

Peasant export economies:

Uganda: mortality = 183.4^{**} (16.17) − 6.92^{**} (3.89) sales/capita, $r^2 = 0.39$, $n = 68$

Ghana: mortality = 139.8^{**} (15.38)** − 3.31^{**} (3.38) sales/capita, $r^2 = 0.17$, $n = 57$

Data in parentheses after coefficients are student's t-statistics; **denotes significance of a coefficient at the 1% level.

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agricultural support services from being oriented towards the needs of smallholder African producers, to a greater degree than in the settler economies;[26] but there was stratification within the peasant-export regions. Political power and agricultural productivity were greater, and as a consequence the real wage in the heartlands of cash-crop production was, throughout the colonial period, approximately double that prevailing in poor, labour-exporting regions such as the Upper Region of Ghana, West Nile in Uganda and indeed neighbouring Rwanda.[27] This in turn had its influence on mortality levels, which throughout the colonial period were significantly lower in the regions of indirect than of direct rule.[28] However, as we move into the 1940s the balance of power shifts. As the economy diversifies, commercial urban (import–export and service sector) interests gain ground at the expense of agricultural interests, and the consequence is the establishment of schemes which enrich the former sectors at the expense of the latter. The classical example is the 'price stabilisation funds' which from the 1940s onward, pay the Ghanaian cocoa farmer and the Ugandan coffee farmer only a part—often less than a quarter—of the export price, the remainder being diverted into a slush fund which can be allocated at government's discretion (Bates, 1981). It is because of the diminution of incentive to peasant-export producers during the time of these stabilisation funds, from the 1940s to the 1980s, that the large increase in commodity export proceeds during this time does not, during this period feed through to any substantial improvement in living standards: mortality at this time falls much more slowly than before in the peasant-export economies (see Figure 1). And it is as a consequence of these price stabilisation funds (a.k.a. export taxes) being suddenly wound up during the era of structural adjustment in the 1980s and the early 1990s that Ghanaian and Ugandan farmers experience a widespread release from poverty, as the barriers limiting their access to the fruits of their labour are suddenly removed.

In the 1970s, and extending through the whole of the 1980s in the case of Ethiopia, a convulsion overcame post-colonial politics in all of the peasant-export economies considered here, causing a decline in the quality of services which impacted on the performance of the agricultural sector. However, out of the resulting chaos there emerged, in all three states, an administration whose pro-poor orientation was stiffened both by a productive dialogue with aid donors and, in Uganda and Ethiopia, by the fact that the centre of gravity of government was located in a victorious rural-based guerrilla army.

Through the whole of Africa, as noted by Lewis (1965) many years ago, political parties do not represent the interests of social classes, so that a pro-poor politics has to be constructed by assembling coalitions in support of policies favourable to lower income groups. But the ruling groups established in Ghana, Uganda and Ethiopia in the 1990s certainly met this criterion, to a greater degree than any previous post-colonial African state with the exception of Nyerere's Tanzania, whose economic philosophy was wholly different.

[26]The difference was one of degree. In Kenya, in the wake of Winston Churchill's declaration of 1923 that 'primarily, Kenya is an African country' European plantation farmers could only exercise political influence as a pressure-group within the colony, rather than expect the UK Government to underpin that influence or provide subsidies in case of economic distress, as occurred in Zimbabwe and South Africa.
[27]See Powesland (1954), the best source on the inter-war labour market in Uganda.
[28]See Kuczynski (1948), volume 1, pp 522–527; volume 2, pp 304–306.

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6.2 Infrastructure

As Myint (1976, p. 30) emphasised, the cocoa farms of Ghana, the cotton shambas of Uganda and the coffee smallholdings of Uganda, Kenya and Ethiopia, like their counterparts in Asia (Sri Lanka, Burma and Malaysia) were not established with foreign capital. For the most part, they were self-financing. The capital constraint did not, in these countries, bite so as to exclude participation by the African poor. However, without one complementary input they could not have become established: this was the infrastructure required to transport the crop to the coast. From 1905s to the 1920s, with a break during the first world war, this was laid in the shape of railway lines into the main regions of smallholder cocoa production (in Ghana) and cotton and coffee production (in Uganda), whereas in South Africa, Southern Rhodesia and Kenya the main railway lines and all but a few of the branch lines traversed only zones of white settler production. Thus in the settler economies the export infrastructure supported only the rich, whereas in the peasant-export economies it also supported (and still to some extent supports) the poor. This difference in infrastructural policy was a crucial one in determining the inter-ethnic equity of income distribution.

At two points in the colonial period, in the peasant-export economies only, the infrastructural plan for the colony is expanded into a conscious and deliberate development plan in support of all social groups. These are the governorship of Sir Gordon Guggisberg (1919–1927) in Ghana and the post-second World War period in both Ghana and Uganda. The Guggisberg administration consciously focussed on 'the general progress of the people of the Gold Coast towards a higher state of civilisation, and the keystone of the progress is education',[29] and ploughed the proceeds of the 1919–1920 cocoa boom, and of its revival in 1923–1927, not only into the pro-poor physical infrastructure previously described, but into the makings of a pro-poor educational infrastructure. In its conscious emphasis on investment in the human capital of the poor, the 10-year development plan of the Guggisberg administration anticipates the thinking of the World Bank's (1990) first World Development Report on poverty. And with much less rhetoric, the colonial administration of Uganda achieved, in the 1920s, a 200-mile railway line stretching into the smallholder cotton areas on the west bank of the Nile and, in the 1940s, a similarly smallholder-centred infrastructure development plan (Hall, 1952) based on hydro-electric power from the Owen Falls dam, much criticised at the time for its fiscal over-reach (e.g. Lury, 1963), but nonetheless a foundation of the pro-poor smallholder development that was to occur in the 1990s.

6.3 Educational and Other Social Policies

From the beginning, the peasant-export economies had a greater propensity to invest in the human capital of the poor. This had various dimensions, of which the easiest to measure is the level of investment in African education. As one measure, in 1950, at a time when Southern Rhodesia (Zimbabwe) had only one African secondary school, and Kenya only three, Ghana (the Gold Coast) had 20 (together with three teacher-training colleges and a university college), and Uganda six (together with one teacher-training college and a

[29]Governor's address to the Legislative Council, 1 March 1923, *Gold Coast Gazette* (17 March 1923), p.349.

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university college). Investment in the African labour force was, until the middle of the twentieth century, not part of the settler-colony vision.

7 SUMMARY AND CONCLUSIONS

In the absence of historical data on conventional poverty measures, we have created a new index of poverty using a number of surrogate indicators of well-being, including mortality measures, real wage rates and anthropomorphic measures. Using this new index, we present new estimates for six economies (three 'settler' and three 'peasant export') of the dynamics of African poverty, using the mortality measure as dependent variable, over the period 1914 to the present. Our argument, supported by the empirical data of Figure 1 and Table 6, is that this measure of poverty is strongly responsive to equity of income distribution, which in turn reflects the salience of smallholder agriculture in the production pattern and the effects of this on the labour market. Infrastructural, pricing and educational policies and financial institutions, in their turn, exercise an important influence on the pro-poor impact of agriculture and other sectors, extending from colonial times into the present. Thus institutional persistence, as argued by Acemoglu *et al*. is indeed important in explaining present-day economic performance; but the institutions which are important in determining that performance go far beyond the 'protection against expropriation' variable identified by them, and indeed identify the peasant export mode of production as historically a greater asset to pro-poor development in the tropics than the settler mode.[30] Our hope is that this approach can provide a way forward in understanding the long-run dynamics of poverty in Africa, and towards providing a clearer picture of what can and cannot be done in the present to alleviate that poverty.

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[30]We would argue that this is also the case in non-African peasant export-based colonies such as Malaysia (Malaya), Sri Lanka (Ceylon) and Thailand.

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APPENDIX. THE LABOUR MARKET: ESTIMATES OF MONEY AND REAL WAGES

In terms of money wages, until 1935 in Kenya, government estimates of African employment were calculated from Monthly Labour Returns, which had a maximum response rate of 65 per cent and from which resident labourers and daily-paid casual labourers were excluded, and from Agricultural Censuses which had a response rate of 95 per cent on average[31] and *included* estimates for resident and casual labour. From 1936 to 1947 there were a series of Special Labour Censuses, which excluded male juveniles, female employees, resident labourers, daily-paid casual labourers and those in the armed services. From 1948 onwards, the enumeration of employees was taken over by the Kenya unit of the East Africa Statistical Department.[32]

In Zimbabwe, until 1937, information derives from what was intended to be a comprehensive enumeration of all employees, conducted by the Native Department. Although there was during this period no regular enumeration of African farm-workers on European large farms, we can however use data taken from the decennial census of the African population. After 1937, there were in Zimbabwe regular monthly enumerations of African employees in all sectors. After 1951, the published figures, contrary to previous practice, include female and registered juvenile labour. Information on employment in European agriculture also became more reliable due to an increase in the scope and staffing of the European (later, 'commercial farm' agricultural census in 1951; non-response rates fell dramatically after this date, and overall were down to less than 3 per cent from 1960 onwards).

Estimates of wages for Kenya and Zimbabwe are less reliable than estimates of employment for two reasons. First, the estimates of monthly agricultural wages are based not on a complete enumeration of employees but on an estimate of the modal wage of unskilled labour in given farming districts, as reported by the local Native (District) Commissioner. Second, they abstract from changes in hours worked and in non-cash benefits apart from a notional (in practice almost universal) maize ration of 2 lbs per diem. Benefits provided, often on 'efficiency wage principles', including meat rations, housing, training, are therefore excluded. Documentary evidence suggests that between the 1930s and the 1950s the average working day of unskilled labour came down considerably.

After 1946 in Zimbabwe, and after 1951 in Kenya, the monthly enumeration of employees undertaken by the central statistical office included a question about the total wage bill. This gives us an 'average African earnings' figure which is more soundly enumerated than the pre-1939 data, but less well targeted on African unskilled labour, because it is an average which includes the earnings of the skilled and semi-skilled. Non-response rates for these data are of the same order of magnitude as those for employment, that is about 5 per cent from the 1960s onward.

The cost of living component is complicated by the fact that no estimate of the household budgets of rural Africans was made before 1939; hence any attempt to estimate movements in prices of goods consumed by Africans must depend on prices of maize (the main food item) and of imports.

[31]Interview with author with V. Liversage, 24 November 1979.

[32]The returns from this point included in the estimated total figures for female, juvenile and resident labour. The overall non-response rate was15–20 per cent in the immediate post-war years but had by 1960 been brought down to about 10 per cent.

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We can however use the evidence of district commissioners and traders who gave evidence to the various commissions such as the Southern Rhodesia Native Production and Trade Commission. From these commissions, we find that the following short list of items were the key components of African consumption: cotton piece goods, cotton blankets, cigarettes and manufactured tobacco, soap, sugar, salt, matches, boots and shoes. From this, we created an index of the import parity prices of these goods, weighted by expenditure shares with the weights updated in the first year of every decade. We present our findings for real wages in Table 7. *For price indices used to convert nominal to real magnitudes go to* Table 8.

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Table 7. Kenya, Zimbabwe, Uganda and Ghana: indices of agricultural employment and real wages 1900–1997

Kenya			Zimbabwe			Uganda			Ghana		
Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:	
	Cash	Real (1914 = 100)		Cash	Real (1914 = 100)		Cash	Real (1914 = 100)		Cash	Real (1914 = 100)
1903										10d.	
1912							5.00				
1913							6.00–8.00				
1914	18.6	100	14	18	100		6.65	100	14	1s.	100
1915				21.8	81						
1916	16.0	62		18.2	74						
1917	15.0	51			70			81			
1918					64						
1919					63					9d.	68
1920	15.0	80					4.67 – 8.00	51			
1921	17.0	91		21.0	45						
1922				22.0	57		11.00–14.00				
1923	18.0	50		23.3	65						
1924	20.0	50		21.3	55		11.50	82		1s.6d.	122
1925				19.3	51		18.00–22.00	153		1s.6d.	129
1926	23.0	65		25.2	74					1s.6d.	148
1927	23.0	75		26.3	89					1s.6d.	148
1928	23.0	74					13.54	173		1s.6d.	141
1929	21.0	68		25.0	94					1s.6d.	118
1930	21.0	76		22.5	91					1s.6d.	
1931	18.0	81		18.0	92					1s. 2d.	147
1932	15.0	68		17.3	83		12.00	288		1s. 4d.	

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1933	13.0	66				17.50	432					
1934	14.0	64							1s. 2d.			
1935	14.0	69		15.3	78				1s.–1s. 9d.			
1936	14.0	77										
1937	16.5	80				18.50	388		1s. 2d.			
1938	16.2	78		17.0	86	21.00						
1939									1s.6d.	150		
1941									1s. 10d.	150		
1942												
1943						21.00	161		1s. 10d.	150		
1944												
1945	24.0	67								149		
1946	28.0	77		26.0	72		164		2s. 1d.	151		
1948	36.0	96		36.0	96				2s. 9d.	150		
1949									2s. 9d.	149		
1950	73.5	109		73.5	97	33–34			3s. 3d.	154		
1951	50.5	98		50.7	98							
1952	58.0	99		58.0	99	25–39	308		4s. 6d.	151		
1953	62.3	106		62.1	106							
1954	64.3			64.3								
1955						38–44	368					
1956						41–49	345		5s. 2d.	144		
1957	86.6	126		86.5	126	71			5s. 2d.	146		
1958				82.5					5s. 6d.	147		
1959	86.9	120		86.5	120	54–107	314		5s. 6d.	151		
1960				88.1	121	(90)			6s. 6d.			
1961	90.0	140		90	140							
1962	92.5	121		92.5	142	81–159						
1963	100.8	128		100.8	149							
1964	128.3			131.3	161	104–183						

(*Continues*)

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Table 7. (Continued)

Kenya			Zimbabwe			Uganda			Ghana		
Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:	
	Cash	Real (1914 = 100)		Cash	Real (1914 = 100)		Cash	Real (1914 = 100)		Cash	Real (1914 = 100)
1965	134.5			132.6							
1966	142.8			135.2							
1967	140.7			132.6							
1968	146.9			132.6			127–224				
1969	151.1			132.6							
1970				137.5			146–335				
1971	163.5			141.9							
1972	194.5			144.0							
1973	192.5			153.8							
1974	198.7			156.0 = $18.3	146		170 min wage				
1975	302.1			179.0 = $21.3							
1976	469.7			205.3 = $24.1							
1977	483.0			$26.8			240 min wage				
1978	541.1			$29.3							
1979	564.4			34.2							
1980	431.6			38.1	154.0		400 min wage				
1981	479.7			62.0	250.7						
1982	499.6			76.5	247.4						
1983	536.1			88.3	231.9						
1984				98.0	213.9						
1985	549.4			103.8	208.3						
1986	619.1			114.5							
1987				122.1							
1988	768.5										
1989	846.6			150.6			6800				

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Table 7. (Continued)

Kenya			Zimbabwe			Uganda			Ghana		
Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:		Agricultural employment ('000s)	African wage levels:	
	Cash	Real (1914 = 100)		Cash	Real (1914 = 100)		Cash	Real (1914 = 100)		Cash	Real (1914 = 100)
1990	946.2			182.8	201.2		6500				
1991	1074.0			203.3			6600				
1992				171.5			16 000				
1993	Sh/m			243.8							
1994	1500			286.9			20 000				
1995				295.7							
1996	1950			401.3	108.4		26 500				
1997	2325						34 000				

Sources for Table 7: *(For price indices used to convert nominal to real magnitudes go to* Table 8).
Zimbabwe: to 1946: *Annual Reports of the Chief Native Commissioner*; thereafter, *Monthly Statistical Digests*, various. For price indices used to lead to real wage index, see this Appendix, Table 8. 1946–1960: Southern Rhodesia, *Statistical Yearbook*; after 1960, World Bank, *World Development Indicators*.
Kenya: to 1946: *Blue Books*, supplemented by manuscript sources as listed in Mosley (1983, p. 157); thereafter, *Statistical Abstracts* with interpolations from Labour Department archives, also after 1960,World Bank, *World Development Indicators*.
Uganda: Wages and employment generally from *Blue Books*, supplemented until 1980 by data from Powesland (1954) and Jorgensen (1981), especially his Table 2.3, also by data from Uganda, Labour Department, *Annual Reports*, and Bank of Uganda, Agricultural Secretariat, *Economics of Crop Production*, 1993 and 1997, Annex 8 and Table 3.4(a). Also after 1960,World Bank, *World Development Indicators*.
Ghana: To 1945, wage rates and employment from Gold Coast, *Social and Economic Progress; Annual Reports*, section on 'wages and cost of living'. 1945–1960 from Birmingham *et al*. (1965); after 1960 from World Bank, *World Development Indicators*.

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Table 8. Price indices used to compute real wages, 1914–2004

	Kenya	Zimbabwe	Uganda	Ghana
Our estimates for the period 1914–1939[1]				
1914	100	100	100	100
1915	148		107	
1916	117		110	
1917	145		129	
1918	195			
1919	254			265
1920	226	161	258	
1921	306			
1922	226			
1923	211			
1924	233		218	123
1925	224		195	124
1926	202	109		118
1927	173	109		124
1928	166	112	173	
1929	158	111		
1930	158	103	80	112
1931	122	98	78	
1932	120	94	72	90
1933	111	92	59	
1934	121	91		
1935	108	91		
1936	105	89		
1937	104	95	63	
1938	108		55	
1939	101			100
After 1939, indices of the prices of imported goods 'mainly consumed by Africans become more generally available, as indicated below. The value of these indices is as follows:[2]				
1939	100	100	100	100
1941				122
1943			161	122
1944				
1945			178	122
1946				139
1947	198	198		183
1948	207	213		183
1949	215	224		211
1950				211
1951	289	261		217
1952	325	272	308	300
1953	324	285		
1954			446	
1955	390	296	368	
1956	379	310	345	344
1957	380	320	338	344
1958	400	331		367
1959	400	340		367

(*Continues*)

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Table 8. (Continued)

	Kenya	Zimbabwe	Uganda	Ghana
1960	404	348	314	433
1961	416	357		
1962	424	365		
1963	436	369		

[1]*Source*:
Kenya: *Index of import prices of goods consumed by Kenyan Africans CIF Mombasa*, derived from Kenya Blue Books and reported in Mosley (1983), Chapter 4 Appendix.
Zimbabwe: Mosley (1983), Chapter 4 Appendix, supplemented by *Index of retail prices of foodstuffs consumed by Zimbabwe Europeans: source:* Annual Yearbook of Southern Rhodesia, 1938.
Uganda: money wages and deflator prices are from *Blue Books*, 1928, 1938 and 1944, sections on prices and wages, and imports: the items of consumption used to compile the deflator prices are cotton piece goods, kerosene oil, bicycles, sugar, soap, maize flour and bananas (*matooke*).
Ghana: Gold Coast, *Social and Economic Progress; Annual Reports*, section on 'wages and cost of living' and imports; items of consumption used to compile the deflator prices are as for Uganda, with the addition of wheat flour and minus bananas.
[2]*Sources for 1939–1963*:
Kenya, East Africa Statistical Bulletin, various issues.
Zimbabwe:
Uganda: Kampala African price index, as reported in *Statistical Abstracts*, various issues, Sections UD and UO.
Ghana: wage index for unskilled workers in Accra 1939–1963, as recorded in Birmingham *et al*. (1965), Table 6.12. After 1960, our price indices are derived from the World Bank *World Development Indicators*.

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