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# **The colonial legacy: Income inequality in former British African colonies**

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## 1. The colonial legacy of inequality

This paper is concerned with the distribution of top incomes in former British colonies in Africa. While narrow in focus, it illuminates a broader set of issues of both historical and contemporary interest. The first issue is the position of colonial elites during the period of British rule and the extent to which resources were appropriated by the ruling class. Just how unequal were incomes? What was the distribution among the rich, mainly non-African, elite population? How did the position of the rich in the colonies compare with that of the rich in the United Kingdom? Secondly, how did colonial income concentration evolve in the twentieth century? Did inequality fall in the latter years of colonial rule, as the British government became more concerned with economic and social development? The third set of questions concerns the degree of inequality at independence. How far were there differences across different former colonies? Did some countries inherit a much more concentrated distribution, with implications for subsequent development? How far did colonial inequality persist post-independence? Finally, evidence about the past leads one to ask about the distribution of top incomes in these countries today. There is little information for recent decades (the latest estimates presented here relate to 1984), but it is hoped that the analysis of the historical results will stimulate the assembly and publication of data on top incomes in the present day.

These issues feed in turn into a wider debate. Recently economists have become interested in the history of colonisation and its legacy on terms of current economic performance. In *Why nations fail*, Acemoglu and Robinson (2012) argue that there is a great difference between countries that developed inclusive political and economic institutions, which pave the way for economic growth, and those whose colonial institutions were extractive, and which acted as impediments to growth in the subsequently independent nations. The authors contrast in this respect the success of the “Western offshoots” of the United Kingdom (Australia, Canada, New Zealand and the United States) with the failure of other British colonies. In this explanation of failure, an important role is played by elites: “European colonists imposed a new brand of extractive institutions, or took over whatever extractive institutions they found, in order to be able to extract valuable resources, ranging from spices and sugar to silver and gold. ... Most of these places would be in no position to benefit from industrialization” (Acemoglu and Robinson, 2012, page 299). As it has been put by Rodrik, extractive institutions “entailed vast inequalities in wealth and power, with a narrow elite, typically white and European, dominating a vast number of natives or slaves. ... Studies by economists and economic historians have established that this early experience with institutional development - or lack thereof - have produced a debilitating effect on economies in Africa and Latin America that is still felt today” (2011, page 140), citing the research of Acemoglu, Johnson and Robinson (2001) and Engerman and Sokoloff (1997).

There is however relatively little firm empirical evidence about the inequality of colonial societies. Just how “vast” were the inequalities? Were the “narrow elite” a homogeneous group? How very different were the African colonies in their income distribution from the Western offshoots? Figures from the World Top Incomes Database show the top 0.1 per cent as receiving 40 times their proportionate share in Australia in

1921, a figure that rises to some 55 times in Canada, and was as high as 86 times in the US in 1913. How did the top income shares differ in the African colonies? Was Southern Rhodesia (Zimbabwe) much more unequal? Was inequality particularly associated with white settler colonies such as Kenya? Was, in contrast, the Gold Coast (Ghana) relatively egalitarian, as claimed by Kwame Nkrumah? How did top incomes change when British rule ended? The aim of this paper is to provide - within the constraints of the available data - some answer to these questions. While each African colony was under British rule, and there were considerable similarities in the policies pursued by the authorities, the colonies differed in many respects. To highlight the extent of diversity, the paper covers ten sub-Saharan former British colonial territories. It does not cover South Africa,<sup>1</sup> which is the subject of a separate paper (Alvaredo and Atkinson, 2012), nor Mauritius, which is the subject of Atkinson (2011).

The research reported in this paper has been possible because the colonial administrators were assiduous in their record-taking - even when faced with arduous conditions - and their published reports contain a wealth of information. Nonetheless, the first challenge in writing the paper has been the location of the underlying data, which are drawn from published income tax records. The tracking down of the published data, the subject of section 2, has been a time-consuming and difficult task. It was first necessary to establish the scope of the possible data - which turned out to be much richer than anticipated - and then to identify where copies of the relevant publications were held. Once located, the statistical material needs to be interpreted. In using income tax data, the paper follows long-established precedents in OECD countries, notably in the World Top Incomes Database, but administrative sources of this type have evident limitations. As is discussed here, the limitations are even more serious in the colonial context.

The second challenge has been setting the distributional data in the wider context of the total population and total income, which is the subject of sections 3 (total population) and 4 (total income). There has been much discussion of the limitations in the contemporary measurement of these aggregates, and we have to ask how far these apply to the historical African data employed here. There are undoubtedly major problems. In the 1930s, the League of Nations noted in its statistical yearbook that "the population of Africa is only known very roughly" (1938, page 15). At the same time, the African economies were the subject of pioneering research on national income accounting in the 1940s, on which the paper draws extensively, notably the research carried out by Frankel (1945) for Southern Rhodesia and by Deane (1948 and 1953) on colonial national accounts in general.

The reader may be tempted to go straight to sections 7 to 10 where the main results are presented for the ten former colonies, but it is important to understand what lies behind the income distribution estimates. The estimates are not simply the mechanical application of the techniques developed for OECD countries. In section 5, we ask who were the income taxpayers who form the basis for the statistical estimates. From what groups were they drawn? How did the composition differ across colonies? Section 6 raises methodological concerns regarding the study of the upper tail of the distribution.

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<sup>1</sup> The present paper also omits Southern Africa (Botswana, Lesotho and Swaziland) and the mandated territory of South-West Africa. In the former three, good distributional data exist (see Table 1), but it is not easy to separate their economies from that of South Africa.

Focus on the very top - a small economic elite - highlights issues that have been insufficiently aired in the recent literature on top incomes.

In presenting the results, a clear distinction is drawn between those in sections 7 and 8 that rely solely on control totals for population and the income share analysis of sections 9 and 10 that requires the income control totals described in section 4. For the reasons set out in section 4, the estimated income shares are surrounded by a greater margin of error. Sections 7 and 8 are organised chronologically. Section 7 covers the period up to 1945 and is much more limited in its geographic coverage, drawing heavily on the rich data for Southern Rhodesia commencing in 1917. (Where the evidence relates purely to the colonial period, the colonial name is used; when describing the country as a whole, the modern name is used. The colonial and modern names are summarised in Table 1.) Section 8 considers the much fuller evidence for the post-Second World War period and the years up to independence. In section 9, the income of the top taxpayers is related to the estimated country totals to examine their share in the total. Just how much did the top x per cent receive? Finally, Section 10 examines the evidence about the upper tail at the point of independence and the years following. The conclusions are summarised in section 11.

## 2. Creating a new dataset

The raw materials employed in this study are published tabulations of income taxpayers by ranges and amounts of gross income. (No micro-data are employed in the paper.) These tabulations, scarcely used in the past, form the basis for the new data set presented here.

### *Obtaining the data*

The first pre-requisite for constructing the new dataset is that a graduated personal income tax be in existence. This limits our coverage to the later years of colonialism. Income tax was first introduced in colonial Africa after the First World War: in 1918 in Southern Rhodesia, followed shortly by Northern Rhodesia and Nyasaland. (See Table 1.) In Kenya there was an Income Tax Ordinance of 1920, but this “was soon repealed on account of strong opposition” (Vallibhoy, 1965, page 9). A graduated Non-Native Poll Tax was passed in 1933 (*Report of the Commission appointed to enquire into and report on the financial position and system of taxation of Kenya*, 1936, para 87), to be replaced by the income tax as such in May 1937. It was superseded in April 1940 by the Income Tax Ordinance, 1940, which introduced the income tax in the three other East African territories. The same year saw the introduction of the income tax in the Gambia, to be followed in 1944 by the Gold Coast and Sierra Leone. Since the Gold Coast became independent as Ghana in 1957, this means that the potential coverage of the colonial period is shortest in this case (14 years), whereas for Southern Rhodesia (now Zimbabwe) there is nearly a half century of data (48 years).

The second factor determining the feasibility of the research is that the tax authorities, or the statistical office, assemble and publish statistics on the taxpaying

population. These statistics may take a variety of forms. At their most limited, they may simply record the total taxpayers and their total taxable income. (In all cases, “income” refers to income before deduction of tax.) In Ghana in 1944, for example, when the income tax was introduced, there were 3,329 taxpayers, who constituted 0.23 per cent of the estimated total number of tax units (see section 3). Tax was paid in 1944 on the basis of incomes in the previous year. For this reason, we refer to the data as relating to the “income year” (IY) 1943.

The main data employed are those that show the distribution of taxpayers by ranges, giving the numbers in the range and their total income. The existence of such “distributional data” cannot be taken for granted. The colonial power, the United Kingdom (UK), only began to publish distributional tabulations covering all income taxpayers in 1918-9 (apart from data for a single year in 1801) and the publication of annual data commenced in the UK as recently as 1962-3. Prior to 1962-3, there were data for only six years.<sup>2</sup> What has made this project possible is that the colonial administrators published richer data than were available for the UK. In the Gold Coast, for example, the first *Report on the Income Tax Department for the years 1944-45 and 1945-6*<sup>3</sup> contained a tabulation of income in IY1943 by seven ranges from £150-£499 to £10,000 and upwards, the last of these containing 8 taxpayers with an average annual income of £18,764. On the basis of the estimated total income (see section 4), it can be calculated that the top 0.05 per cent received some 2 per cent of total income, or 40 times their proportionate share.

For how many countries do such distributional data exist? No definitive answer is given here to this question. While the form of the income tax was broadly similar across countries, the location of published information varied a great deal across countries and over time. If every colony had published an annual report of the income tax department, then the search would have been relatively straightforward, although the location of the publications has itself proved a major challenge, since no complete collection appears to exist and little of the material appears to be available on line. It proved necessary to draw on the Rhodes House Library in Oxford, the British Library of Politics and Economic Science at the London School of Economics, the British Library, the Senate House Library of the University of London, the Royal Commonwealth Society Library in the University Library Cambridge, and the Official Documents section of the Lamont Library at Harvard. These have been invaluable sources, but it has been necessary to consult all of them. If, moreover, attention had been limited to the annual reports of income tax departments, then the coverage would have been significantly less complete than shown in Table 1. In some cases, the alternative sources were obvious, such as the *Statistical Yearbooks* published by the colonial authorities, but in other cases it was necessary to go through documents such as the annual *Financial Report* (the Gambia). It also turned out that data for isolated years could be found in one-off reports, such as the *Report of the Taxation Enquiry Committee* in 1947 in Kenya (Colony of Kenya, 1947), or were supplied to individual researchers such as Deane (1948 and 1953).

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<sup>2</sup> The years covered by the UK data for all taxpayers were 1918-19, 1919-20, 1937-38, 1949-50, 1954-55 and 1959-60. There were also data, from 1908, on surtax payers but these covered only a small fraction of taxpayers.

<sup>3</sup> Regular official reports and statistical publications are not listed separately in the bibliography.

The end product of these laborious library searches is summarised in Figure 1 and Table 1, which show the coverage of the income tax distributional data for fourteen African countries, grouped into West, East, Central and Southern Africa. In the analysis that follows, attention is focused on ten of the fourteen countries. Nigeria is an important country but use of the income tax data is greatly complicated by the move in the 1960s to a regional base for taxation and it has therefore been dropped. The three Southern countries have income tax data for a long run of years, but pose particular problems with regard to the construction of control totals, in view of their inter-linkages with the economy of South Africa. The paper therefore considers ten colonies.

For the ten countries, the coverage is extensive. In the Gambia, for example, the data span the period from 1944 to 1974, with the exceptions of 1960-1962. In Kenya, there are data for 1936, 1943 and then annually from 1948 to 1970. From 1948, the income tax was administered by the East African Income Tax Department for all of the East African territories. The annual departmental reports provide annual data for all four countries from 1948. For Zambia we have data for 1929 to 1937, and then again from 1943 to 1961, 1963 and 1968, giving a total of 30 observations. For Zimbabwe, the coverage is even longer: from 1917 to 1984 (except for 1981 and 1982). In all cases, the publication of income tax tabulations appears to have come to an end. There is here a sharp contrast with other former British colonies that continued to provide this information, such as Hong Kong, Malaysia, Mauritius, Singapore, and Sri Lanka. The last years covered were 1960 in Ghana and Sierra Leone, the 1970s in the Gambia and East Africa, and the early 1980s in Malawi and Zimbabwe. This limits what we can say about the post-independence period, but there is information post-independence for eight of the ten countries.

To summarise, the analysis here is based on more than 250 observations for 10 countries. In addition, there are a number of years for which there is information on the total number of taxpayers, and these are also used in section 5.

### *Analysis of the data*

Since the basic income tax data are in the form of grouped tabulations, and the intervals do not in general coincide with the percentage groups of the population with which we are concerned (such as the top 0.1 per cent), we have to interpolate in order to arrive at the shares of total income. In the results presented here, the interpolation is based on the mean-split histogram. The rationale is as follows. Assuming, as seems reasonable in the case of top incomes, that the frequency distribution is non-increasing, then restricted upper and lower bounds can be calculated for the income shares (Gastwirth, 1972). These bounds are limiting forms of the split histogram, with one of the two densities tending to zero or infinity - see Atkinson (2005). Guaranteed to lie between these is the histogram split at the interval mean with sections of positive density on either side. For example, in Kenya in 1949, taxpayers above £1,000 constituted 0.172 per cent of total tax units and received 9.7 per cent of total income, and those above £1,500 were 0.075 per cent of taxpayers and received 6.2 per cent of total income. These bracket the top 0.1 per cent. If we make no assumption about the distribution, then the "gross" bounds for the share of the top 0.1 per cent are from 7.08 to 7.30 per cent (these are calculated by assuming the extremes: *either* that all incomes

are equal to the mean for the range *or* that people are concentrated at the end points). If we assume that the frequency distribution is non-increasing (which rules out both of the bounds just described), then the restricted bounds give a range from 7.20 to 7.24 per cent, which are quite close. The mean-split histogram method gives a value for the share of the top 1 per cent of 7.23 per cent. With the data at our disposal, errors of interpolation are probably the least of our worries, and they are not further discussed.

The paper is not however only concerned with top income *shares*. As is explained in section 4, these depend crucially on the estimated control totals for income, and for this reason we begin in sections 7 and 8 with analyses of the shape of the distribution that do not depend on the income totals. It was the shape of the distribution that concerned Pareto (1896), and the functional form that he proposed for the distribution of income provides a natural starting point, not least because it is widely assumed today that income distributions tend to towards a Pareto upper tail. In order to understand more fully the distribution among the tax paying elite, section 6 makes use of an approach not commonly employed, referred to as the “mountain curve”, which shows at different percentile points the upward slope of the income mountain. Mountains have different shapes, and the same applies here. With the Pareto distribution, the curve is constant. But the evidence for the African colonies suggests that this not generally the case, and that in a number of countries the structure of incomes has changed over time to a significant degree. Elites can have different “shapes”.

The paper is concerned with the distribution of income among *residents*. In some cases, it is not possible to distinguish non-resident taxpayers, but in most cases they are shown separately, and the estimates are in all these cases based on residents only. In the same way, the population totals relate to the resident population, and the income total to national income rather than to domestic product. The distinction is most important in the case of the company sector, which does not form part of the analysis. For individuals, it means that we are likely to be excluding, for example, absentee landlords/estate owners, some employees on short term contracts, and some pensioners. In that sense we are not measuring the extraction of resources; rather we are asking about the economic advantage of the elite engaged in the colonial society.

The analysis of income tax data is affected by the structural features of the tax. Three in particular should be highlighted here. First, there have been two instances where several colonies were taxed under the same or co-ordinated laws: the Federation of Rhodesia and Nyasaland, created in 1954 and operating until independence, and the East African Income Tax Department, created at the beginning of the 1950s and abolished in 1973, involving Kenya, Tanganyika, Uganda and Zanzibar.<sup>4</sup> Secondly, there have in some colonies been at times both income tax and supertax. In the case of the Federation of Rhodesia and Nyasaland, a key difference was that supertax, but not income tax, was levied on dividends received. This is discussed in the case of those countries, where there can be significant differences in top income shares in certain years. Thirdly, many countries adopted in the 1960s a system of Pay as You Earn (PAYE), typically covering employment income, which led in some cases to no tax assessments being levied. Again this is discussed where relevant,

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<sup>4</sup> As explained by the East African Income Tax Department, it was “agreed in principle to introduce separate laws in each East African territory which would be for all practical purposes identical and which would allow for the taxation in one territory only of the whole East African income” (*Annual Report of the Department for 1950*, page 1).



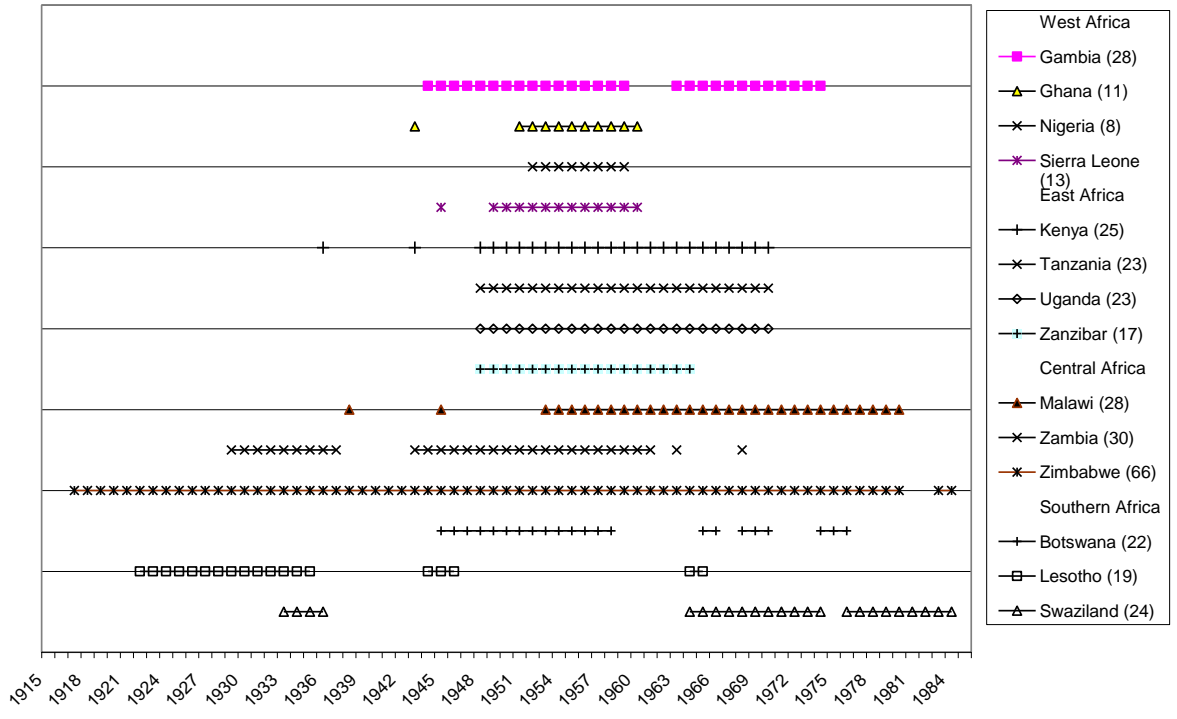
although in most cases estimates can still be made for the upper ranges of the income distribution.

In using income tax data, the research reported here is following a long line of enquiries, including the original Pareto curves. The strengths and weaknesses of the source have been extensively discussed in the recent literature initiated by Piketty (2001). The data are drawn from an administrative process and reflect in their definitions of income and the tax unit the underlying legislation rather than any concept of equity. The administrative process doubtless had many shortcomings, and tax data are affected by avoidance and evasion. One has only to read the reports of the tax administrators to realise that the limits to the coverage. The data must therefore be treated with considerable caution. As Pareto himself remarked, “taxpayers’ income tax returns should always be taken with a pinch of salt” (1896 (2001), pages 236-237). At the same time, they provide an insight into the distribution of income in countries and periods about which we have no other empirical information.

Table 1: Income tax data for former British colonies

Modern name (colonial name) and date of independence	Income tax introduced (IY denotes first income year)	Coverage of data
<i>West Africa</i>		
The Gambia 18 February 1965	1940	1944 to 1959, 1963 to 1974
Ghana (Gold Coast) 1957	1944 (IY1943)	1943, 1951 to 1960
Nigeria	1943	1952 to 1959
Sierra Leone 1961	1944 (IY 1943)	1949 to 1960
<i>East Africa</i>		
Kenya 1963	1921 then 1937 (IY1936)	1936, 1943, 1948 to 1970
Tanzania (Tanganyika) 1961	1940	1948 to 1970
Uganda 1962	1940	1948 to 1970
Zanzibar 1963	1940	1948 to 1964
<i>Central Africa</i>		
Malawi (Nyasaland) 6 July 1964	1921 (IY1920)	1938, 1945, 1953-1980
Zambia (Northern Rhodesia) 1964	1919 (IY1918)	1943 to 1961, 1963 and 1968
Zimbabwe (Southern Rhodesia) 1980	1918 (IY1917)	1917 to 1980, 1983 and 1984
<i>Southern Africa</i>		
Botswana (Bechuanaland) 1966	1921 (IY1920)	1945 to 1958, 1965 and 1966, 1968 to 1970, 1974 to 1976
Lesotho (Basutoland) 1966	1920 (IY 1919)	1922 to 1935, 1944 to 1946, 1964 and 1965
Swaziland 1968	1920 (IY1919)	1933 to 1936, 1964 to 1974, 1976 to 1984

Figure 1 Availability of tax data on income by ranges



### 3. Putting the data in context: total population

In order to put the income tax data in context, we need information about the total population of potential taxpayers. More precisely, where the income tax is levied on a tax-paying unit, we need the total number of *tax units*, defined as the adult population minus dependent adults. The total is reached by three steps. The first is the total population; the second is the proportion aged 15 and over; the third is the subtraction for the proportion who are married women and assumed to be dependants. (In the case of the Gold Coast, where there was separate taxation of husbands and wives, the total is taken as that of total adults.)<sup>5</sup> Each of these steps poses major problems in colonial Africa, and the last step is based on very little evidence. It should be stressed that, in this calculation, we are imposing an administrative definition and not seeking to consider the definition of the household unit that might be appropriate when assessing the living standards of the taxpayers in question. A taxpayer may have obligations that extend far beyond the narrow administrative definition; and the boundaries may be drawn in quite different ways in different societies.<sup>6</sup> The tax unit control total should be seen simply as a scaling factor.

The essential source is provided by the population censuses that were carried out with varying degrees of regularity and effectiveness in the different colonies. The early history of such censuses is described at length by Kuczynski (1948 and 1949). As he had commented in an earlier study “official data on the total population are available for every colony in the world. Some of the figures are fairly accurate while others may be wide of the mark” (1937, page vii). The accuracy of the census clearly depended on the resources allocated to the task, and in many cases this was extremely limited. Kuczynski cites the example of the 1931 census for Northern Rhodesia (a country with more than a million inhabitants), where, according to the official report, “The Census Office Staff consisted of the Director. One Lady Clerk and one (native) office boy. ... Neither of the two European members of the staff have had previous experience of census duties” (1937, page x). But the task itself was a daunting one even with greater resources. The reach of the colonial administration was geographically limited; the purpose of the census was not evident or was distrusted; the population was often highly mobile. In this context, it is not surprising that the scope of the population census was often restricted to the white population. Writing in the late 1940s, Kuczynski opened his chapter on the demography of Kenya by saying that “no census of the whole population has yet been taken. All censuses effected prior to 1931 comprised only the non-native population, while the census of 1931 included also a small fraction of the native population” (1949, page 127).

In the light of this, the approach adopted has been to work backwards. To anchor the total population series, I have used for all countries the series starting in 1950 given by US Census Bureau International Database (the source is that employed by Maddison, 2003), referred to as USCB.<sup>7</sup> (The link is

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<sup>5</sup> “In Ghana ... husband and wife are not required to combine their incomes and may be treated as separate taxpayers” (Due, 1963, page 37).

<sup>6</sup> An example given by Ady (1963, page 53n) from West Africa is of the Akan, where a man lives with his mother and sisters, while his wife lives with her own siblings. The wife has the obligation of sending part of any meal cooked to her husband, who has to share it with his blood relations.

<sup>7</sup> With the exception of Zanzibar, since this is not covered by the US Census Bureau series.

<http://www.census.gov/population/international/data/idb/informationgateway.php>. This series was then linked backwards to the available useable figures from censuses and from other official population estimates. For example, in the Gambia, figures for earlier years are obtained using the 1947-48 enumeration of the Colony and Protectorate, extrapolated backwards linearly on the basis of the increase since the census of 1931.

Backward linkage for the pre-1950 period is not straightforward. For example, in the case of Nyasaland we can have recourse to the 1945 and 1931 census figures, but these cannot be used without adjustment. The 1945 population census figures (Kuczynski, 1949, page 534) indicate that there was a de facto population of 2,044,707 Africans and 5,207 non-Africans. The total of 2,049,914 may be compared with the figure of 2,816,600 for 1950 from the USCB. However, the implied increase in the 5 year period seems unrealistic. An increase of 37 per cent is the same magnitude as the increase shown between the 1931 and 1945 censuses. The 1950 USCB figure is also 14 per cent higher than the estimate for 1950 in the long series from 1901 to 1950 given by the Central African Statistical Office (CASO) in the *Statistical Handbook of Nyasaland 1952*, Table III. Part of the difference may be due to that between de facto and de jure counts, but this can only explain some part. Much more probable is that the earlier figures were under-stated. Indeed, regarding the earlier period, Kuczynski had concluded that the 36 per cent increase between 1931 and 1945 was itself “most unlikely” (1949, page 637), and that the earlier figure was under-stated. In view of this, the USCB figures have been used, and the higher figure for 1950 linked proportionately to the CASO series for years before 1950.

Under-enumeration is a recurring theme. In Gold Coast, the results of the 1948 census were called into question by the subsequent 1960 census for Ghana, since the implied growth rate of the population (4.2 per cent per year) appeared implausible (see Birmingham, Neustadt and Omaboe, 1967, page 22). As is explained in the 1960 report, there are good reasons to believe that the findings in that year were more reliable: it was “the first real application of modern census techniques” (*1960 Population Census of Ghana*, volume I, page v). It noted that “previous censuses suffered partly from lack of support from the public and this resulted in considerable under-enumeration in certain areas of the country” (page v).

The total population figures are clearly surrounded by a large margin of error. The uncertainty surrounding the population numbers was indeed well illustrated by the broad statement in the Colonial Annual Report *Gold Coast 1946* that “the population is between 4 and 4½ millions” (Colonial Office, 1947, page 13). A margin of 12½ per cent appears in fact rather modest, and when examining the distributional estimates a wider range, such as +/- 20 per cent is considered. Moreover, there are some grounds, as indicated above, to expect the error to be in the direction of under-statement.

#### *From total population to total tax units*

The next two steps place even more strain on the available sources, requiring information on the age distribution of the population and on the marital status of women. The 1931 Census for the Gold Coast noted that “the grouping of the population by ages is difficult since the estimates of Age are almost impossible to ascertain with any degree of

accuracy” (1931, volume 1, page 166). Moreover, the distinction between children (under 15) and adults in this and other earlier censuses “was not carried through in the same manner for both sexes since, as in many other African countries, females who should have been counted as children were considered to be adults” (Kuczynski, 1948, page 435).

Here I have again anchored the series in a source common across countries: the estimates of population aged 15 and over given by the United Nations (UN) in *The Size and Age Distribution of the World Populations 1994*. The UN proportions are given at 5 year intervals from 1950 and have been interpolated linearly. The 1950 proportions have been in most cases been extrapolated back to earlier years: for example, in the Gold Coast the 1950 figure was extrapolated back to 1943 linearly on the basis of the change between 1950 and 1955. In the case of Southern Rhodesia, the adjustment varied according to the African/non-African composition of the population as indicated in the population censuses.

If information on age was difficult to obtain in earlier censuses, that on marital status was non-existent. According to the 1931 Census, “statistics concerning the marital condition of the inhabitants of the Gold Coast are not obtainable” (Cardinall, 1932, volume 1, page 168). The collection of data on marital status in Ghana was taken up in the Post Enumeration Survey carried out following the 1960 Population Census. Marriage is, according to the report, a “very complex” factor in African society, governed by tribal rules and local customs. It warns that “one cannot pretend that a statistically adequate picture of marriage and cohabitation has been given by the material presented”, but goes on to say that “it may nevertheless be considered as a major statistical contribution, rarely encountered in census-type enquiries” (*1960 Population Census of Ghana*, volume VI, page xiv). The results (Tables C1 and A3) show that in 1960 there were 1,374,180 married women out of a total population of 6,632,990, or a ratio of 20.7 per cent. This may be compared with the ratio of all women aged 15 and over to the total population, which in 1960 was 27.6 per cent. From limited evidence of this kind, it appears that an allowance of 20 per cent would not be unreasonable, and this has been applied in most cases for all years and countries. In some cases, a higher figure may be appropriate. In the case of Nyasaland, for example, a sizeable proportion of married African women had husbands who were employed outside the country. The 1945 Census recorded 495,000 married women but only 367,000 married men (source: Kuczynski, 1949, page 591). The earlier 1931 census had recorded 409,521 married women and 352,147 married men (Kuczynski, 1949, page 587). In this case, it may be better to subtract the number of married men, since those married women with absent husbands do constitute tax units. Applying the 1945 figures, this would reduce the adult population by a factor of 27 per cent. To this extent, the number of tax units may be over-stated.

### *Conclusion*

The population figures for colonial Africa are at best approximate, and should be interpreted with great care. But it should be remembered that they are only being used here for a limited object. They are designed to provide a sense of scale, and for this purpose they seem adequate. When, for instance, considering the 2,189 income taxpayers in Kenya in 1936, then it is enough to know that they constitute between 0.08 and 0.12 per cent of all tax units.

#### 4. Putting the data in context: total income

If the population totals pose problems, then control totals for household income take us into still more treacherous territory. Such income totals, based largely on national accounts, have been the cornerstone of many of the recent studies of top incomes for OECD countries (Atkinson and Piketty, 2007 and 2010). The adoption of such an approach is usually attributed to Kuznets (1953) in his celebrated study of top incomes in the US, but the method had already been employed some ten years earlier in the study of the European income distribution in South Africa by Frankel and Herzfeld (1943). As they say, “by combining the national income and income tax statistics ... it is possible to obtain a more general picture” (1943, pages 121-122).<sup>8</sup>

We have however to ask whether an approach based on national accounts makes any sense in the context of African colonies. Do national accounts exist for the countries and periods with which we are concerned? Surely this is a hopeless quest? In fact, the situation is not that desperate. Work on national accounts in a number of African colonies developed at much the same time as official national accounts were coming into use in OECD countries. This owed much to two pioneers: Herbert Frankel (and his colleague, Herzfeld) and Phyllis Deane. Already in 1945, Frankel (1945) published estimates of national income for Southern Rhodesia covering the years 1924 to 1943 (cited in Shaul, 1960). Deane (1948 and 1953) produced income totals for two of the colonies studied here: Northern Rhodesia and Nyasaland (the other colony covered by her was Jamaica). This meant that, by the time of the Second Conference of Colonial Government Statisticians in 1953, they could report (Colonial Office, 1954, page 41) estimates of national income for Gold Coast, Kenya, Nigeria, Northern Rhodesia and Uganda.

These early studies of colonial national income met strong criticism. In his review of Deane (1953), Jones noted that “the book itself speaks with two voices: the straight face with which the estimates are presented is disturbingly inconsistent with the bewilderment expressed in later chapters over the problem of evaluating native activities in units commensurable with those used for the European part of the economy” (1955, page 665). He goes on to say that Chapter IX of Deane (1953) “contains enough arguments *against* the use of national income accounting in primitive communities to stop all but the most enthusiastic devotees” (1955, page 674). His main concern is with the treatment of the subsistence economy, and this is discussed in the next paragraph. A related but different criticism is that of Seers (1952-3 and 1959), who argues strongly that statisticians should focus on sector accounts rather than national aggregates. However, as observed by Ady, “the abandonment of aggregates is not in my view a solution. No matter how detailed and how accurate the figures for the few key industries of the economy, it is difficult to interpret their significance without the context supplied by a set of national accounts” (1963, page 57). She goes on to show how the sector information supplied by Seers (1959, Table VI) can be re-arranged to yield national income on a production basis.

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<sup>8</sup> For early estimates of national income in South Africa, see Frankel and Neumark (1940), covering years from 1927/28.

The many problems of measuring and valuing subsistence output should evidently give us pause. Subsistence agricultural output is a major element in the national income calculation. In Kenya, for example, in 1951 it accounted for 22 per cent of the total. In Uganda it was 24 per cent. In Nyasaland in 1945, it accounted for 40 per cent (Deane, 1953, page 98). However, these are, to quote Ady, “very ‘soft’ figures” (1963, page 55). After rehearsing the many steps involved in the estimation, Jones concludes that “it is difficult to appraise the possible error in the estimate of native agricultural output ... That the true value is twice as great [as in Deane, 1953] is not at all unlikely” (1955, page 670). He goes on to commend the position taken by the Central African Statistical Office of concentrating solely on the monetary economy, quoting their statement that “it was felt advisable to omit any statement of the value of subsistence output as it could only be a notional figure that could not be checked or corrected in any way” (Jones, 1955, page 667).

The problems outlined above are ones that change in significance over time for two different reasons. First, the structure of the economy evolves in a direction that reduces the weight of the subsistence sector and renders national accounting methods more appropriate. Secondly, the capacity of statistical offices may increase. Here however a major caveat must be entered. One of the important points made by Jerven (2013) is that progress in statistical capacity is not always in the right direction. As he notes,

“The statistical capacity of African states was greatly expanded in the late colonial and early postcolonial period, but it was greatly impaired during the economic crisis of the 1970s. The importance [of] the statistical offices was neglected in the decades of policy reform that followed - the period of ‘structural adjustment’ in the 1980s and 1990s” (2013, page 5).

It is this neglect that has led to the criticisms levelled against contemporary national accounts estimates for Africa. According to Devarajan, for example, Africa today “is facing a statistical tragedy, in that the statistical foundations of the recent growth in per-capita GDP ... are quite weak” (2013, page S9). He notes the fact that in 2012 no fewer than 20 out of 48 countries were still using the 1968 UN SNA (System of National Accounts), the most recent being the SNA 2008.

If progress in developing statistical capacity was first positive and then reversed, then the period considered here - ending in the early 1980s - may represent a relative high water mark in the quality of national accounts. It is certainly true that the early studies described above by academic researchers were taken over and developed by official statisticians. In the case of Kenya, the Second Conference of Colonial Statisticians in 1953 reported that official estimates of national income for Kenya were in regular production (Colonial Office, 1954, page 41). The methods were frequently revised. In 1959, a major revision of national accounts in Kenya was carried out, leading to an upward revision of the series from 1954 to 1958 (East African Statistical Department, 1959). A new set of calculations, incorporating more up-to-date basic data, were made from 1967, with a revised series from 1963. A further major revision was undertaken in 1976. Here it is important to note that the effect of national accounts revisions is typically to raise national income by a significant amount. In the case of Kenya, the link at 1973 to an earlier series involves up-rating the earlier estimates by a factor of 1.089. There is a



further link at 1963 which involves an up-rating by a factor of 1.175; and at 1954 there is a link to the first official series (involving an up-rating by a factor of 1.248). The combined effect of the up-rating factors is to raise the earlier estimates by some 60 per cent.

The substantial work on national income conducted in the Rhodesias and Nyasaland is described by Shaul (1960). During the period of the Federation of Rhodesia and Nyasaland, estimates were produced for the three constituent countries: Southern and Northern Rhodesia and Nyasaland for the period 1954 to 1963. Following independence of Nyasaland in 1964, the newly established National Statistical Office of Malawi began the preparation of estimates, and these are available on a comparable basis up to 1972. Again revisions involved significant up-rating. The base data are linked at 1970 to earlier estimates for 1964 to 1973; these were on the former SNA basis, and the linking involves a large upward adjustment by some 35 per cent.

In Tanganyika, the systematic construction of national income series was begun by Peacock and Dosser (1958), who made estimates for 1952-1954. Their work was continued by the East African Statistical Department, published as "The Gross Domestic Product of Tanganyika 1954-57". The next set of estimates, *National Accounts of Tanganyika, 1960-62* was published in 1964 based on the 1953 SNA. In 1968 the Bureau of Statistics embarked on a comprehensive revision of the national accounts, published successively in the *National Accounts of Tanzania*.

Not all colonies were in the same position. In the case of the Gambia, the Colonial Office stated in its 1951 *An economic survey of the colonial territories* that "the data available for the calculation of the national income of the Gambia are inadequate for any correct assessment". Such information as exists, however, indicates that the national income of the territory in 1948 might have been of the order of £2½ to £3 million (of which at least half was derived from the groundnut trade)" (1952, page 9). More than thirty years later, the Central Statistics Department in the Gambia wrote that "the history of preparation of national accounts in The Gambia is of very recent origin. The first series of gross domestic product for the country was prepared in late sixties by the staff members of World Bank who worked out GDP estimates for the years 1963/64 to 1966/67. Comparable figures for the subsequent years were prepared annually by the Statistics Department. However, on account of the very scanty statistical information available at the time, these figures continued to be extremely weak. These figures were regarded to have limited utility and as such have not been published by the Statistics Department so far" (1985, para 1.4). For this reason, no estimates of income shares are given below for the Gambia for years before 1970. In his *Economic survey of Sierra Leone*, Jack (1958, page 66) refers to the tentative estimates of national income in 1956 published in the *Colonial Digest of Statistics*, November/December 1957. It was only some ten years later, in September 1966, that the Central Statistics Office in Freetown published the first detailed estimates of national income in Sierra Leone. For this reason, the only estimate of income shares for Sierra Leone is that for 1956 (the income tax data stop in 1960). For Zanzibar, the East African Statistical Department published estimates of the national income in 1963 with this caution:

"The set of accounts put forward here are not the first which have been drawn up by the East African Statistical Department for Zanzibar. They are, however, the

first to be published and are considered to be an improvement on previous estimates. Even so, largely because of the limited nature of the statistics available, it is improbable that they are completely accurate and it is likely that when more statistics become available the estimates shown will need revision. Thus these figures are presented merely to provide some indication of the orders of magnitude involved in the economic structure of Zanzibar” (1963, page 1).

### *Way forward*

In seeking to employ national accounts totals, we are therefore faced with two major issues - the treatment of subsistence agriculture and the variation across countries in data availability - offset by one mitigating feature - that the period studied may have represented a temporary high point in statistical capacity. Two responses seem possible. The first is to abandon the use of income control totals. This means that income shares cannot be estimated, but, using the population totals, frequencies can be calculated and the shape of the distribution can be summarised. In sections 7 and 8 this is the approach followed.

The findings with regard to income shares will however attract a lot of attention, and for this reason we make use of income control totals in sections 9 and 10. In so doing, we again focus on the limited purpose for which the total is being employed, which is to provide a measure of scale. At the same time, the possible margins of error are larger for income totals than for the population totals. For example, the effect of the revisions to national accounts in Malawi, carried back to the earlier estimates, leads to a total for 1945 which is some 46 per cent higher than the figure originally estimated by Deane (1953). This means that the estimated share of the top 0.1 per cent in Nyasaland in 1945 was 7.6 per cent, whereas the estimate of Deane would have led to a figure of 11.1 per cent. In considering the results using control totals the effect of such error margins needs to be borne firmly in mind.

### *From GDP to household income*

Starting from the estimates described above for GDP at factor prices, a total for household income is reached by making adjustments for net factor paid abroad, for depreciation, for retained corporate profits, for non-profit institutions, and for government interest and transfers received by households. Total household income is typically less than measured national income, but it is not straightforward to separate out the retained profits of corporations, corporate taxes and factor income received by the government, and to add debt interest and transfers received by households. This is particularly the case where the national accounts are constructed from either an expenditure or output basis, rather than from an income basis. In the case of Ghana, for example, according to Birmingham, Neustadt and Omaboe, “national accounting in Ghana has traditionally been based on expenditure” (1966, page 39). As such, the national income figures for the period covered here are not easily related to the income side of the accounts.

Where there are income-based accounts, a breakdown can be made. In the case of Tanzania, for example, the United Nations *Yearbook of National Accounts Statistics* for 1969 included a table for Tanzania showing the “distribution of the national income” (volume 1, page 694). Over the period from 1960 to 1967, the sum of compensation of employees, income from unincorporated enterprises, property income and corporate transfer payments varied between 79 and 84 per cent of net national product at factor cost. In view of the omission of certain items, such as debt interest paid by the government, I have taken total gross household income as being 85 per cent of GDP at factor prices throughout the period considered. In Zambia, the early national accounts included tables for personal incomes. From *The national income and social accounts of Northern Rhodesia, 1945-1953*, it can be calculated that personal income, including transfer incomes, averaged some 64 per cent of net national income over the period 1945 to 1953. A less complete calculation, not including transfers for the period 1954 to 1964 gives an average of 67 per cent (Republic of Zambia, *National accounts and balance of payments of Zambia 1954-1964*, Table 2). The latter figure is too low, since transfers are omitted, and the former figure may understate the value of subsistence production. In view of this, a figure of 70 per cent of GNI is employed here as the income control total.

For each colony a calculation was made of the ratio of household income to GDP and applied (typically as a constant percentage). It should be noted that the resulting total is likely to exceed the hypothetical amount that would have been reached if every citizen had been assessed for income tax, in view of the differences in definition between taxable income and income as recorded in the national accounts. Taxable income is almost certainly smaller, and, to this extent, the shares of the top income groups are under-stated.

### *Conclusion*

The income control totals for the colonial period provide a broad measure of scale, but need to be treated with considerable caution. The early estimates of national income in Northern Rhodesia were accompanied by an evaluation of their “assessed accuracy” (Irvine, 1955, page 366). The gradings were attached to individual items, and not to the total, and ranged from a) believed to be accurate within 5 per cent, for wages and salaries, to d) accuracy  $\pm$  25 per cent, for African income from unincorporated enterprise, and e), denoting a “nominal estimate with unknown error”, in the case of African subsistence income. The potentially large errors in the control totals for income are important. For example, with the totals constructed here, the 2,189 income taxpayers in Kenya in 1936 (broadly the top 0.1 per cent of tax units) were estimated to receive 6.1 per cent of total income, a figure not far short of the 6.6 per cent found for the top 0.1 per cent in the UK in 1937/8 (Atkinson, 2007, page 93). But if the income control total for Kenya were under-stated by 40 per cent, for example because subsistence activities were under-valued, then the share in Kenya would be 4.4 per cent, or only two-thirds, suggesting that the colonial inequality was distinctly less than at the home of the Empire.

## 5. The colonial income taxpayers

The empirical evidence presented here is based on the recorded incomes of those assessed for income tax. We begin by asking: who were the income taxpayers? From the level at which the tax threshold was set, it is evident that they were a small extremely well-off minority. In Northern Rhodesia, for example, the threshold was £250, which was fourteen times the estimated average income. In East Africa, the threshold in 1951 was £200, which was some four times average income in Uganda and Zanzibar, and seven times that in Tanganyika. But what else do we know about the people who paid the colonial income tax? The statistical information about the operation of the income tax is limited, but provides some clues.

### *A Non-African tax?*

First of all, were the taxpayers all Europeans? In principle, the tax was levied on all, Africans as well as non-Africans. According to the Colonial Office, “with the following exceptions the Income Tax applies in theory to African and non-Africans alike, within of course the prescribed limits of taxable income” (African Studies Branch, 1950, page 10). The exceptions cited are Northern Rhodesia and Nyasaland. Interestingly, no reference is made to Uganda, which was also an exception. In Uganda, but not the other three East African territories, Africans liable to pay poll tax were exempted from income tax (East African Income Tax Department, *Annual Report for the year 1950*, page 3, and Colonial Office, 1961, pages 26 and 45). The Ugandan exception continued until 1961 (Due, 1963, page 34). For the seven other countries, the income tax applied generally.

It was however the non-African population that constituted the vast bulk of taxpayers. This population was in all cases small, but varied considerably across the ten colonies. It was most significant in the settler colonies, and in Zanzibar, where 17 per cent of the population in 1948 was Arab. In Southern Rhodesia, the 1946 Census recorded the non-African population as 89,856, which was some 5 per cent of the estimated total population of 1.8 million (Southern Rhodesia, 1949, page 3). The figure of 5 per cent stands out. Next at that time come Kenya and Northern Rhodesia, with figures between 2 and 3 per cent - see Table 2, which shows the position around 1950. In 1948, of the recorded population in Kenya of 5.4 million, 154,846 were classified as non-African (or 2.9 per cent). The Kenyan figure may be contrasted with that in Tanganyika, where there were 70,160 non-Africans out of 7.5 million and in Uganda where there were 40,965 out of 5.0 million (source: *Digest of Colonial Statistics*, September-October 1953, page 87). Both these figures were less than 1 per cent. It should be noted that in East Africa, Europeans were a minority among the non-African population: in Tanganyika there were 10,648 Europeans and in Uganda 3,448. In Sierra Leone in the 1947-8 enumeration of population, Europeans and Americans accounted for 964 out of 1,858,275 people recorded as living in Sierra Leone (0.05 per cent); there were a further 2,074 Asians (0.11 per cent) (source: Colonial Office *Report on Sierra Leone for the year 1949*, page 11).

A similar picture emerges if we look at total tax units. There are again marked differences. In Northern Rhodesia in 1931, there were 13,846 Europeans, of whom 10,644 were aged 17 and over (Kuczynski, 1949, page 480). Subtracting 2,653 married women

gives a total of 7,991 tax units, out of an estimated total of 896,000: i.e some 1 per cent. This may be contrasted with Nyasaland in 1945, where there were 1,948 Europeans, of whom 1,614 were aged 15 and over (Kuczynski, 1949, page 599). Subtracting 493 married women gives a total of 1,121 tax units, out of a total of 983,000, or 0.1 per cent. In the Gold Coast, the 1948 Census showed that there were 6,770 non-Africans, of whom 665 were aged under 15, so that the total of non-African tax units was 6,105. They accounted for 0.2 per cent of total adults (which was the tax unit in the Gold Coast). Again there is a sharp contrast with Southern Rhodesia, where the 1946 census reported 41,998 Europeans in receipt of incomes (Southern Rhodesia, 1949, page 104). They constituted 4.0 per cent of the estimated number of tax units. By 1961, the number of non-Africans had reached 107,440 and the percentage of tax units was 6.3 per cent (Federation of Rhodesia and Nyasaland, 1962, Table 15).

It is not therefore surprising that the percentage of income taxpayers is both small and varies across the ten colonies. The proportion of taxpayers was highest in Southern Rhodesia, where in 1950 they constituted some 2 per cent of all tax units - see the final column of Table 2. By 1960 this figure had risen to 3½ per cent. From a comparison with the figure for the size of the European population, it is clear that at most a half of the European population were subject to the income tax. The same is true in Northern Rhodesia, where the proportion of taxpayers was 1 per cent. For the other colonies, the proportion of taxpayers exceeded the proportion of Europeans. The tax was not just a tax on Europeans, some of whom were certainly not receiving sufficient income to be liable.<sup>9</sup> In East Africa and Nyasaland, the proportion fell short of the total non-African population, so are consistent with the tax being paid essentially by non-Africans. This was legally the case in Nyasaland and Uganda, and in Kenya it was noted that in 1948 “very few Africans paid income tax because the number of those who could afford to pay was too small to justify the employment of staff to carry out the exercise” (Tarus, 2004, page 29). In contrast, in West Africa there were broadly the same number as (Sierra Leone) or more (Gold Coast) taxpayers than non-Africans. For Sierra Leone, there are figures on the composition of taxpayers for IY1948, which show that Africans accounted for 480 out of 2,093 individual taxpayers (Colonial Office, 1952, volume III, page 88). This provides some evidence in support of the statement in Lord Hailey’s *African Survey* concerning the number of Africans who pay income tax “that the total number is much higher in West than in East Africa” (Hailey, 1957, page 646).<sup>10</sup>

In the early years of the East African Income Tax, information was provided about the breakdown between European and “Asians and others”, where the latter included Africans in the case of all except Uganda. For four of the ten colonies, this provides an insight into the composition. The first column of Table 3 shows the breakdown by numbers of East African resident taxpayers assessed in IY1949. There are large differences. Europeans predominate in Kenya and Tanganyika, but there are more or less equal numbers of Europeans and Asians in Uganda, and in - the much smaller - Zanzibar, Europeans are a minority.

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<sup>9</sup> The 1931 Census in the Gold Coast, for example, showed that there were 167 missionaries (Cardinall, 1932, page 258), making them the fifth largest of some 30+ occupational groups.

<sup>10</sup> If one goes back to the original source for this statement, one finds the less definite “the proportion is almost certainly higher in West than in East Africa” (African Studies Branch, 1950, page 10). This appears to be an example of magnification in transmission.

### *Sources of income*

The East African tabulations in Table 3 distinguish between employees and “individuals”, where the latter refer to self employed professionals and businessmen. Employees account for the majority of taxpayers, although in Zanzibar the figures are nearer parity. Among employees, Europeans predominate, particularly in Kenya and Tanganyika, so that in Kenya nearly two-thirds of all assessments are accounted for by European employees. The proportions of Europeans are smaller in Uganda (less than half) and Zanzibar (around one third). Among the self-employed, Asians (and others) predominate, with the proportions varying from 55 per cent in Kenya to over 90 per cent in Uganda and Zanzibar. At the same time, it should be noted that, with the exception of Zanzibar, the average incomes of the self-employed Europeans are higher: in Kenya, they accounted for 27 per cent of the taxpayers but received 41 per cent of the assessed income.

In taxing salaries, public employees were a natural target group, as were the employees of large companies such as mining corporations, but it would be wrong to see the income tax as simply a payroll tax on employees. In Nyasaland in the 1930s, there were more or less equal numbers of civil servants, of company employees, and of planters and self-employed (Nyasaland Protectorate, *Financial Report 1932*, Appendix XII). In Sierra Leone in IY1950, for example, 513 government employees were assessed and 356 non-government employees, but there were 651 assessments on trades and professions (non-company) and 23 pensioners (*Annual Report of the Income Tax Department for the year ended 31<sup>st</sup> March 1952*, page 11). Trades and professions accounted for 48 per cent of the total assessable income (excluding companies). Table 4 shows the composition of gross income assessed for income tax in Northern Rhodesia from IY1925 to IY1932. Until the Depression, around a quarter to a third of taxable income came from trades and professions, and some 5 per cent came from investment income.

### *The growth of the income tax*

Up to 1945, the proportion paying income tax, in the countries for which there were data, was typically less than 0.5 per cent, but it may be seen from Figure 2 that the proportion of taxpayers was increasing over the rest of the colonial period. Between 1945 and 1960 the proportion increased in all colonies and doubled in four of them. In Zanzibar, the proportion rose from 0.26 per cent to over 1 per cent. In Kenya, the proportion rose from 0.28 to 1.58 per cent. In this context, it is worth remembering that in the early days of the US personal income tax (1913-1915), the corresponding proportion of taxpayers was 0.9 per cent (Piketty and Saez, 2007, page 171).

There was greater tax effort. At a time when there is much discussion of the erosion of income taxation, it is important to stress that this was a period when income taxation was acquiring greater significance. What is more, during this period the number of Africans paying income tax is likely to have increased. By IY1957, nationals of Ghana accounted for 42 per cent of taxpayers (*1961 Statistical Yearbook*, Table 149).

## *Conclusions*

The colonial income taxes in British Africa differed in their history, in their institutions, and in the way they interacted with the societies on which they were imposed. At this distance in time, their effects can only be dimly glimpsed. At the same time, their statistical residue provides one way of learning about the distribution of elite incomes in countries and at a time about which we have little evidence. In the rest of the paper, we examine what can be said about the distribution.

Table 2 Non-African population and taxpayers in British colonies around 1950

	Non-African population as % total	European population as % total	Taxpayers as % total tax units 1950
Gambia			0.25
Gold Coast 1948	0.16	0.10	0.26
Sierra Leone 1947-8	0.16	0.05	0.15
Kenya 1948	2.86	0.55	0.71
Tanganyika 1948	0.94	0.14	0.29
Uganda 1948	0.83	0.07	0.20
Zanzibar 1948	24.30	0.11	0.46
Southern Rhodesia 1946	5.00	4.59	2.01
Northern Rhodesia 1951	2.12	1.93	1.01
Nyasaland 1945	0.25	0.10	0.14

Sources: *Digest of Colonial Statistics*, September-October 1953, page 87), Colonial Office *Report on Sierra Leone for the year 1949*, page 11), and Southern Rhodesia (1949, page 3). No figures are available covering the whole of the Gambia.



Table 3 Composition of East African resident taxpayers assessed in IY1949

	TOTAL	Individuals			Employees		
	Number	Number	% total	Income as % total	Number	% total	Income as % total
KENYA							
Europeans	12,056	1,793	44.8	52.6	10,263	82.4	86.7
Asians and others	4,410	2,213	55.2	47.4	2,197	17.6	13.3
TANGANIKA							
Europeans	5,037	365	26.8	41.2	4,672	85.6	87.6
Asians and others	1,787	998	73.2	58.8	789	14.4	12.4
UGANDA							
Europeans	1,677	67	8.2	12.2	1,610	62.8	62.0
Asians and others	1,705	752	91.8	87.8	953	37.2	38.0
ZANZIBAR							
Europeans	147	6	3.2	2.9	141	61.6	63.7
Asians and others	268	180	96.8	97.1	88	38.4	36.3

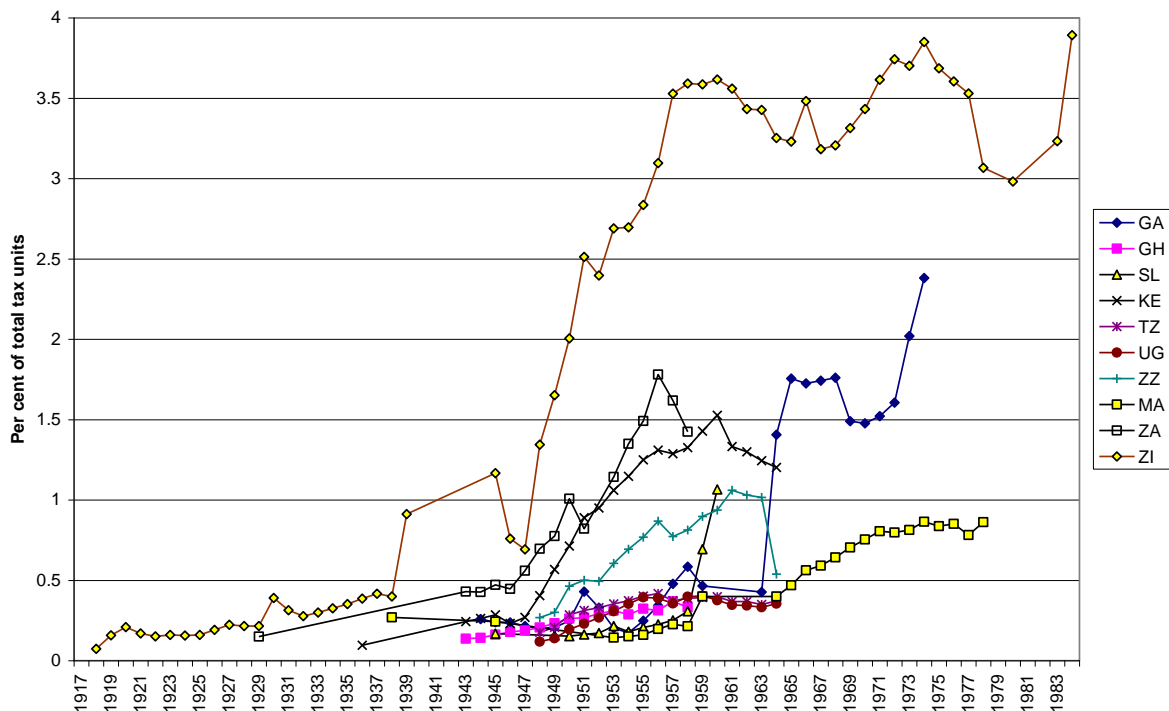
Source: *East African Income Tax Department Annual Report 1953*, Appendix A.

Table 4 Percentage of total income assessed by source Northern Rhodesia 1925 to 1932

	1925	1926	1927	1928	1929	1930	1931	1932
Public employees	17.5	13.6	14.0	12.7	10.0	8.5	13.6	23.7
Other employees	34.8	37.6	43.7	49.2	55.5	58.1	54.6	59.4
Trade and professions	34.9	29.9	30.9	30.5	28.2	28.0	25.0	10.9
Farming	8.2	13.1	6.5	2.6	1.9	0.9	1.0	1.1
Property income	4.7	5.0	5.0	5.0	4.3	4.3	5.8	4.6

Source: Report of the Income Tax Department for the nine months ended 31st December, 1933, Schedule A.

Figure 2 Taxpayers as % total tax units in ten colonies



GA: the Gambia; GH Ghana (Gold Coast); SL Sierra Leone; KE Kenya; TZ Tanganyika; UG Uganda; ZZ Zanzibar; MA Malawi (Nyasaland); ZA Zambia (Northern Rhodesia); ZI Zimbabwe (Southern Rhodesia)

## 6. Studying the shape of the distribution

Income taxpayers were a small group, but what can we say about the distribution of income among them? Just how concentrated were incomes at the top?

### *Pareto in Africa*

In his celebrated account of the curve that bears his name, Pareto used income tax and other data to investigate the shape of the upper tail of the income distribution, finding values for the Pareto coefficient,  $\alpha$ , that ranged from 1.35 in England in 1879/80 to 1.73 in Prussia in 1881 (Pareto, 1896). The value of  $\alpha$  is most easily interpreted in terms of the upward slope of the logarithm of income line as one moves up the distribution, where a smaller  $\alpha$  indicates a steeper slope. (Plotting  $\log_e y$  against  $\log_e(1/(1-F))$ , where  $y$  denotes income and  $F$  is the cumulative distribution, the slope is  $1/\alpha$ .) Alternatively, the meaning of  $\alpha$  can be seen from the fact that, where the Pareto distribution holds, the mean income of people above  $y$  is given by  $\alpha/(\alpha-1)$ . This expression,  $B = \alpha/(\alpha-1)$ , referred to as the Beta coefficient, or as the inverted Pareto coefficient (see Atkinson, Piketty and Saez, 2011, page 13), will feature in the analysis that follows. So that in Prussia in 1881, a person looking up the distribution would have seen that the average income of those above was some  $B = 1.73/0.73 = 2.37$  times his or her own income. In the more unequal nineteenth century England, with  $\alpha = 1.35$ , the  $B$  ratio would have been 3.9 times.

What would Pareto have found if he had looked at the African data? He was indeed still alive when the first statistics were published for Southern Rhodesia in 1917. These statistics were later used by Shaul (1941), who fitted the Pareto curve to the cumulative distribution of taxpayers for Southern Rhodesia for 1936 and found a value for the Pareto coefficient of 2.127 when using ordinary least squares. This value is significantly higher than those reported by Pareto and implies that, within the top income group in Southern Rhodesia at that time, there was less concentration. The Beta coefficient is 1.89.

This is not however the end of the story. We need first to clarify the method by which the Pareto coefficient is calculated and what it tells us about the shape of the upper tail of the distribution. There are several different approaches, as may be seen if one lists the three pieces of information that are typically available concerning the cumulative distribution of income:

- The range of income: from  $y$  upwards (e.g. above £2,000);
- The proportion of tax units with incomes of  $y$  or higher, denoted by  $1-F(y)$ ;
- The total income received by these units, divided by the total population, denoted by  $\Omega(y)$ .

It should be noted that these use the control total for population but not that for total income.

The standard method for many years (see for example Bowley, 1906 and 1914), used by Shaul in his estimates for Southern Rhodesia (among other methods)) is based on the first two pieces of information, fitting a linear relation

$$\log_e(1-F) = A - \alpha \log_e(y) \quad \text{where } y \geq 1 \quad (6.1)$$

by ordinary least squares (OLS). This is illustrated in the top right hand quadrant of Figure 3, where the variables for Southern Rhodesia in 1936 are plotted on a logarithmic scale. The estimated value of  $\alpha$  is 2.10, or essentially the same as that found by Shaul. The method does however completely ignore the third piece of information: the amounts of income in each range of the tax data. This point was emphasised by Champernowne (1973), who distinguishes between (a) the standard approach - which he refers to as “people-ratio curves” - where  $\log_e(1-F)$  declines with  $\log_e y$  with slope  $\alpha$  and (b) curves based on the first and third pieces of information - which he refers to as “income-ratio curves” - where  $\log_e(\Omega)$  declines with  $\log_e y$  with slope  $(\alpha-1)$ . Again this does not use the control total for income. In Figure 3, the income curve is shown in the bottom right hand quadrant, where income is measured downwards (normalised so that the top total income is unity). The estimated value of  $\alpha$  at 2.24 is now higher, and the corresponding Bet lower at 1.81.

In the recent studies of top incomes, a third approach has been adopted, making use of the second and third pieces of information: by eliminating  $y$ , the term  $\log_e \Omega$  is expressed as a function of  $\log_e(1-F)$ . An estimate of  $\alpha$  is then obtained by simply comparing the shares for two different values of  $(1-F)$ .<sup>11</sup> Since this defines the upper part of the Lorenz curve, the coefficients obtained in this way are referred to as Pareto-Lorenz coefficients. Again this ignores part of the information - the values of the ranges - since we are combining the two curves by eliminating  $\log_e y$ . This third approach is shown in the top left hand quadrant, in inverse form, since  $\log_e(1-F)$  is plotted against  $\log_e \Omega$ ; the slope is therefore equal to  $\alpha/(\alpha-1)$ , which has been defined as  $\beta$ . The value of  $\beta$  is 1.68 and the implied  $\alpha$  is 2.46.

We are therefore faced with the problem of having three rather different estimates of the Pareto parameter, reflecting the fact that the distribution is only approximately Pareto in form. Indeed, this is evident from inspection of Figure 3. In the case of the people curve, for example, there is a distinct downward curvature. The straight line over-predicts at the outset and at the peak, but under-predicts in the middle. The same applies to the (inverted) income curve. (The fit appears rather better in the case of the Lorenz curve.) This problem makes it difficult to draw comparisons across time and across countries. But it is also an opportunity, since it suggests that the shape of the upper tail is potentially more interesting than the simple Pareto form. In order to explore this, an alternative representation is proposed.

### *Mountain curve*

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<sup>11</sup> The formula is given by  $\log\{\Omega(y)\} = (1-1/\alpha)\log\{1-F(y)\} + \log\{(1-1/\alpha)\}$ .

The alternative starts from the Beta coefficient but recognises that it is not necessarily a constant. Rather, the ratio to  $y$  of average income above  $y$  is a function of  $(1-F)$ : defined as  $M$ , where

$$M(1-F) = \{\Omega(1-F)/(1-F)\} / y(1-F) \quad (6.2)$$

Departures from the Pareto now take the form of curves that are non-horizontal.<sup>12</sup> I refer to this as a “mountain curve”. I have used the phrase “mountain” because it involves looking all the way to the top of the distribution. But it also conveys a sense of the different possible shapes of the upper tail of the distribution. Some mountains have an immediate slope that is daunting, but later progression gets easier (“dome mountains”); in other cases (“volcanic mountains”), it is the final climb that is the steepest. In human terms, where the curve turns up, the most of the income above you accrues to those at the very top, as with a powerful emperor surrounded by a less well-off supporters; where the curve turns down, it is the surrounding barons who have secured most of the income.

How does the  $M$  curve behave? Differentiating with respect to  $F$ ,

$$(1-F) dM/dF = M[1-1/\kappa(F)] - 1 \quad (6.3)$$

where  $\kappa(F) = f[y(F)]$  divided by  $(1-F)/y(F)$

$M$  is greater than 1 and the square bracket less than 1 (and may be negative). It is clear that the derivative can take either sign and may well change sign. Whether at a given  $F$ , and the corresponding  $M$ , the curve rises or falls, depends on  $\kappa(F)$ . This is the absolute value of the elasticity of  $(1-F)$  with respect to  $y$ , but another way of thinking about it is to compare  $f[y(F)]$  with  $F/y(F)$ . We are then comparing the current frequency with the average frequency over the range of income from zero. If the frequencies are tending to fall away, then  $\kappa$  is small and  $M$  is likely to fall. Where  $M$  is rising, then  $\kappa$  must be large and the frequency high by the standard of the past.

Figure 4 shows the mountain curve for Southern Rhodesia in 1936, where  $(1-F)$  is plotted (in percentage points) from right to left, so that  $F$  increases as one moves to the right. The first conclusion is that  $M$  is definitely not constant. Beta goes from over 2 to under 1.7. Secondly,  $M$  falls, so that we have a domed mountain: the frequencies are tending to fall away. Although the fit is less than perfect, it is sometimes convenient to summarise the  $M$  curve in terms of the OLS fit: the 1936 limiting value (1.65) is in fact very close to that given by the Beta coefficient (1.68) in Figure 3. But the rate of fall is also important. In Southern Rhodesia in 1936, a person at the 0.1 per cent point, looking up, sees that on average the people above earn 1.9 times as much; when one reaches the 0.05 per cent point, it is some 1.78. The climb becomes less daunting. In passing, it may be noted that if one constructs an  $M$  curve from the data on wealth provided in the Forbes

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<sup>12</sup> In terms of a point  $P$  on the generalised Lorenz curve, it is the ratio of the slope of the line joining  $P$  to the endpoint to the slope of the tangent. This shows the use of all three pieces of information. It also shows that a ranking according to  $M$  can depart from one according to Lorenz dominance. For a given top  $x$  per cent, a country can have a larger income share but have a higher income, and hence the same  $M$ .

List of world-wide billionaires, taking the top 150 in 2010, then it shows a rather similar pattern, starting at around 2.2 and falling more or less linearly to 1.4 (with a limiting value of 1.38). There is nothing peculiarly colonial or African about the pattern shown in Figure 4.

Figure 3 Three different curves for Southern Rhodesia 1936

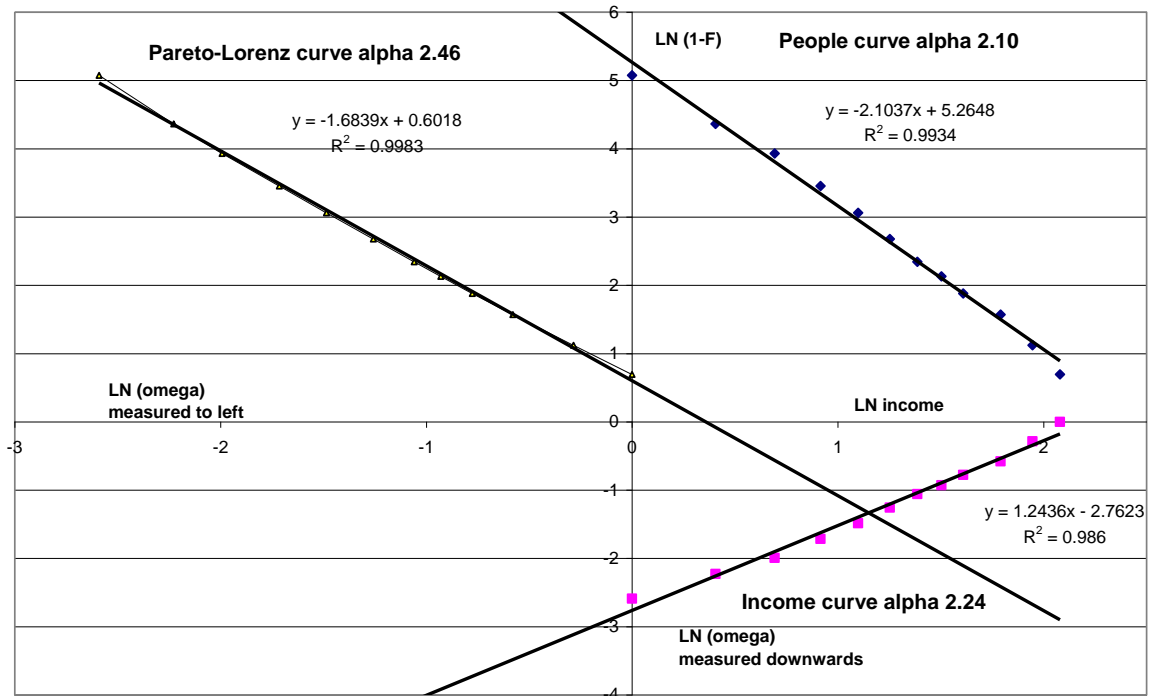
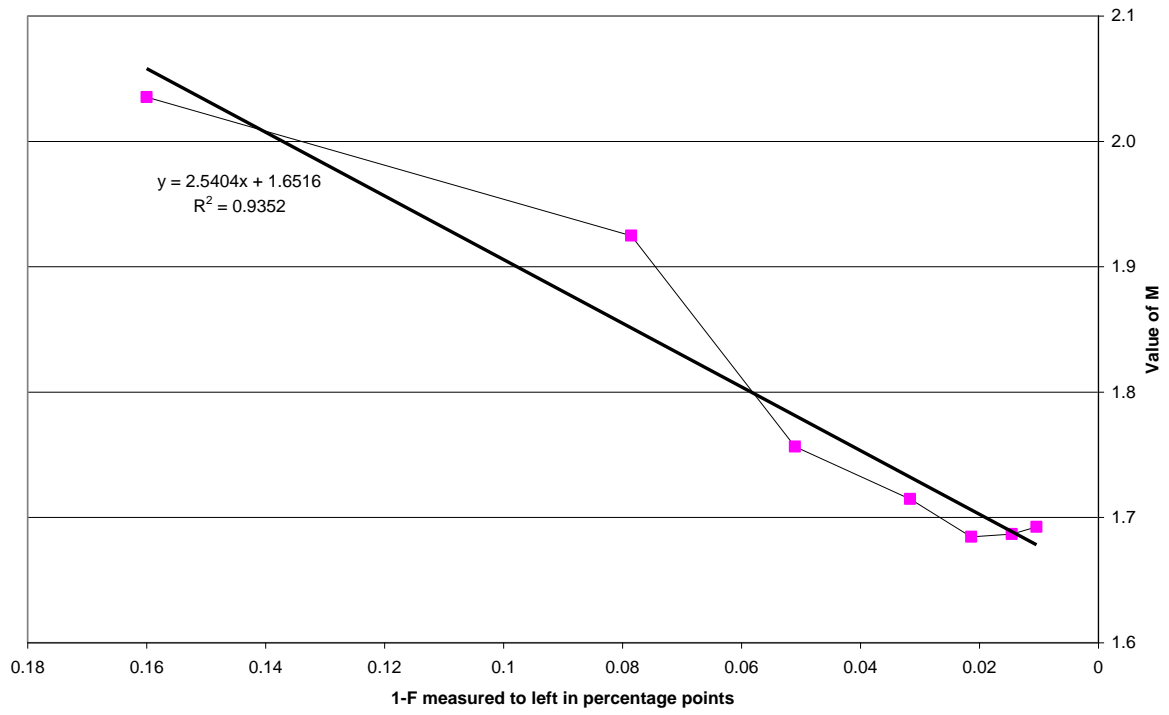


Figure 4 Mountain curve for Southern Rhodesia 1936





## *Conclusions*

We owe a great deal to Pareto, both for his theoretical insights into functional forms and for his willingness to look for real data. But if the Pareto distribution is at best an approximation to the upper tail - and in this respect Southern Rhodesia is not exceptional - then we cannot simply talk about *the* Pareto coefficient without specifying how it has been calculated. Is it based on people curves or income curves or on the Lorenz curves? All of these are legitimate, but we have also seen that one has to be careful to ensure that like is being compared with like. In what follows, in the interests of comparability with other recent studies of top incomes, the main results are presented in terms of the Beta coefficients obtained applying the Pareto-Lorenz approach, but these are supplemented by the M curve, which provides a richer description of the shape of the way in which the distribution changes as the summit is approached.

## **7. Central Africa pre-1945**

British imperialism influenced Africa for centuries. Trading companies were established in the seventeenth century: the Royal African Company in 1660. The colony of Gambia dates back to 1783; Freetown in Sierra Leone became a colony in 1808. (South Africa - evidently an important part of the story - is being left out of this account.) By this time scale, the period for which we have distributional evidence is but a fraction of the colonial experience. At the same time, the full occupation of territory and the emergence of governmental structures were much more recent. The Gold Coast may have been formed as a colony in 1867, but the Ashanti and Northern Territories only became protectorates in 1902. From incorporation to independence was only 55 years. The East African Protectorate was formed in 1895, and that in Zanzibar in 1890. Northern territories administered by the British South Africa Company became a protectorate in 1891, and formed Northern Rhodesia in 1911. Southern Rhodesia became a self-governing colony in 1923. Tanganyika became a British mandated territory in 1922. In the colonies studied here, the period of colonial governance, more strictly defined, was less than a century.

Focusing on the period of colonial governance, we can still see from Figure 1 that the evidence falls well short of complete coverage. For this reason, the present section on the pre-1945 period concentrates on Central Africa, income taxes only being introduced in the 1940s in East Africa (apart from Kenya) and West Africa.

## *Shares within shares*

As we have seen, income taxpayers were a small minority. We now ask how incomes were distributed among this small group. If the top 0.1 per cent receive  $x$  per cent of total income, can we say how much of this  $x$  per cent goes to the top half of this group? (As stressed earlier, this calculation does not make use of the income control totals.) As we have seen in the previous section, if the distribution were strictly Pareto in

form, then the answer would be given by the Pareto coefficient, and it would not matter where the distribution is sliced. Since the Pareto form may only hold approximately, Table 5 shows for three Central African countries the Beta coefficients based on three different groups: the share of the top 0.05 in the total income of the top 0.1 per cent, the share of the top 0.01 per cent in the share of the top 0.05 per cent, and the share of the top 0.005 in the share of the top 0.01 per cent. It needs hardly be pointed out that the last of these groups may relate to very small numbers of taxpayers: for example, some 50 taxpayers in Nyasaland in 1945.

The data for the war years exhibit greater variability (particularly the 1945 estimates for Nyasaland (Malawi)) and attention is focused on the period up to 1939. Over the period up to 1939 as a whole, the Beta coefficients for Southern Rhodesia average 1.91, 1.88 and 1.64.<sup>13</sup> These indicate that, looking up the distribution, the people above you have on average less than double your income. Indeed for the smallest group, based on the share of the top 0.005 in the share of the top 0.01 per cent, the advantage is only some two-thirds. These are averages over time, and there were years in the 1920s when the Beta coefficients exceeded 2 - to which we return below. For Northern Rhodesia, where there is only evidence for the smallest group, the coefficients average 1.74. These values are well below 2, as is also the case in Malawi in 1938 when the estimated Beta coefficients are around 1.4, and in Kenya in 1936 (not shown in Table 5) where the coefficient based on the share of the top 0.005 in the share of the top 0.01 per cent is 1.50.

For these colonial countries as a whole, therefore, the Beta coefficients are in general less than 2 during much of the inter-war period. Pareto would have considered these values low, but what are we to make of them in the present context?

### *Comparison with the UK*

A natural standard of comparison is with the United Kingdom (UK), and this comparison is itself of historical interest. Did the administrative and economic structures set in place in the colonies reproduce the income hierarchy of the old world? Or did the colonies attract those who wished to live in a less class-driven society? Or, in the opposite direction, did African natural resources offer opportunities for enrichment that were no longer possible in the UK?

Figure 5 shows the Beta coefficients for the UK (source: Atkinson, 2007, Table 4.1) over the period 1917 to 1939 obtained from the share of the top 0.01 per cent in the share of the top 0.05 per cent. The corresponding coefficients are plotted for Zimbabwe and Zambia, together with the coefficients for Malawi based on the share of the top 0.005 per cent in the share of the top 0.01 per cent. Whereas we have seen the colonial values to lie generally below 2, it may be seen immediately from Figure 5 that the UK coefficients exceed 2 for all years up to the outbreak of the Second World War. With a couple of exceptions, there is clear water between the UK series and the coefficients for Central

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<sup>13</sup> The estimates do of course depend on the control total for total tax units. The results are not however particularly sensitive to variations in the total. For Southern Rhodesia in 1939, for example, a 20 per cent increase in the total raised the estimate of Beta from 1.89 to 1.92.

Africa. The UK numbers are closer to those found by Pareto for the “old world” than those we have found for central African colonies. Nor was the UK exceptional. In France, the Beta coefficient in 1919 was 2.67 and in 1939 it was 2.35 (source: World Top Incomes Database).<sup>14</sup> What about the “Western offshoots” that are often contrasted with the African and other colonies? In 1920, the Beta coefficient in the US was 2.32, virtually identical to that in Canada (2.33), and in Australia the coefficient was 2.14 in 1921. By 1939, these values had become 2.22, 2.06 and 2.05, respectively. Only in New Zealand was the coefficient less than 2: 1.79 in 1921.

The first conclusion is that - in Central Africa at least - the top of the colonial income distribution was less concentrated than in the imperial powers or in the “Western offshoots” (apart from New Zealand). But it is also clear from Figure 5, and the figures just cited, that the distribution was changing over time: the Beta coefficients were falling and, in this sense, the distribution at the top was becoming less concentrated. What is more, we have to bear in mind the qualification that the value of the Beta coefficient as a summary measure depends on how closely the Pareto assumption holds. Looking across the columns of Table 5, we can see that the values depend on the points chosen on the distribution. Both of these aspects are taken up below with specific reference to Southern Rhodesia, for which there is the longest time series.

#### *Changes over time in the shape of the upper tail in Southern Rhodesia*

The beauty of the Pareto distribution is that, wherever one stands, the gradient (in logarithmic terms) is the same. It is always the case that the average income of people above you is a constant multiple of your own income. The mountain curve defined in the previous section would be a horizontal line when plotted against the cumulative frequency. In fact, as may be seen from Figure 6 (and as we saw for 1936 in Figure 4 earlier), the mountain curves for Southern Rhodesia are far from horizontal.

Figure 6 shows the mountain curves for a selection of years in the 1920s and 1930s. Only points are shown where there were at least 50 observations. The first conclusion is that the curves have moved down over time. Income concentration decreased between the 1920s (shown by dashed lines) and the 1930s (shown by solid lines). This may be summarised in terms of the limiting values of M as F tends to 1 in linear regressions fitted to each curve:

1925: 1.90	1926: 1.94	1927: 1.90	1928: 1.86		
1934: 1.70	1935: 1.72	1936: 1.64	1937: 1.66	1938: 1.57	1939: 1.62

A fall from 1.90 in the late 1920s to 1.65 in the late 1930s is a major reduction. To put it in perspective, it corresponds to broadly the difference between the US and Sweden in 1949 (Atkinson, Piketty and Saez, 2011, page 45). The second observation is that there has been a change in the shape of the M curve. The curves for the second half of the 1920s

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<sup>14</sup> In terms of absolute shares of total income, it is a remarkable fact that, despite the French Revolution, the share of the top 1 per cent in total gross income in France in 1919 (130 years later) was exactly the same - at 19 per cent - as that in the UK.

are slightly U-shaped, but are fairly flat. There is a distinct contrast with the curves for the period 1934 to 1939, which fall in a much more marked fashion. The later curves depart much more from the Pareto distribution. So that in 1934, the average income of those above the top 0.14 per cent was some 2.05 times that percentile (£1,000 per year); the ratio falls to 1.92 for the top 0.07 percent (above £2,000); to 1.82 for the top 0.025 per cent, and has a limiting value of 1.70. The climb left to the top is becoming easier. It would be interesting to explore how far this change in the shape of the upper tail can be related to structural changes in the Rhodesian economy, such as the large increase in the proportion of exports accounted for by gold production, and the corresponding decline in tobacco and other agricultural exports (Frankel, 1945, pages 21 and 22).

### *Conclusions*

The data for the pre-1945 period are limited but suggest that - in Central Africa at least - the top of the colonial income distribution was less concentrated than in the imperial powers or in most of the "Western offshoots". There was a less steep mountain to climb. In the case of Southern Rhodesia there is clear evidence that the degree of concentration fell between the 1920s and the 1930s. The colonial distribution of income was not static in the inter-war period. Indeed, the mountain curves show that the shape of the distribution changed over this period, becoming less well approximated by the Pareto distribution in the 1930s. No attempt is made here to explain this change, but it would be interesting to see how it can be related to the economic and social history of the period.

Table 5 Pre-1945 income distribution in Central Africa: Beta (Inverse Pareto-Lorenz) coefficients based on shares within shares

Beta coefficient based on	Share of top 0.05 in top 0.1			Share of top 0.01 in top 0.05			Share of top 0.005 in top 0.01		
	MA	ZA	ZI	MA	ZA	ZI	MA	ZA	ZI
1917									1.85
1918									2.63
1919						2.14			
1920						2.29			
1921						2.01			2.07
1922									1.97
1923						1.90			2.04
1924						2.01			2.17
1925						1.87			2.05
1926						1.93			
1927						1.95			
1928						1.94			
1929						1.94		1.78	1.87
1930			1.84			1.81		1.70	1.81
1931			1.88			1.85		1.85	1.97
1932			1.94			1.86		2.04	1.91
1933			1.95			1.83		1.68	1.91
1934			1.92			1.80		1.65	1.66
1935			1.93			1.79		1.68	1.75
1936			1.86			1.70		1.48	1.61
1937			1.91			1.74		1.76	1.66
1938	1.44		1.93	1.38		1.67	1.38		1.52
1939			1.89			1.67			1.56
1940									
1941									
1942									
1943		1.65			1.73				
1944		1.71			1.70				
1945	2.04	1.71	1.97	1.48	1.71	1.80	1.57		

MA Malawi (Nyasaland)  
 ZA Zambia (Northern Rhodesia)  
 ZI Zimbabwe (Southern Rhodesia)

Figure 5 Beta (Inverse Pareto-Lorenz) coefficients in Central Africa 1917-1939 compared with United Kingdom

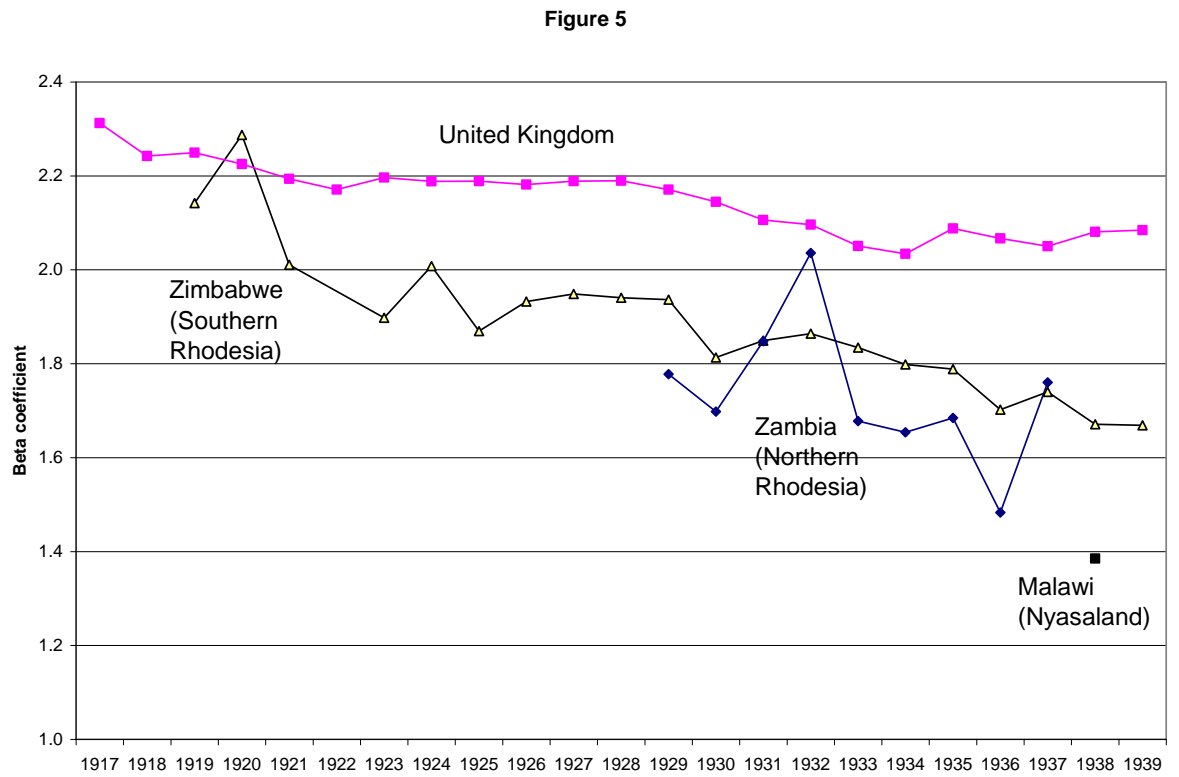
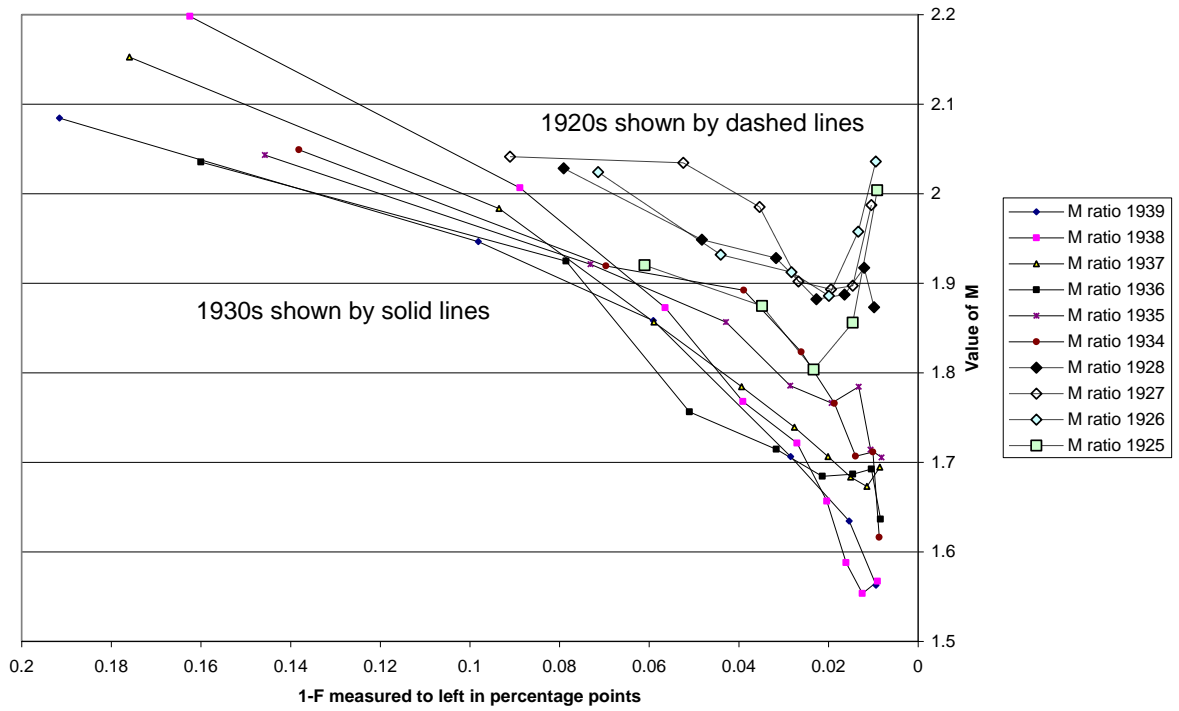


Figure 6 Southern Rhodesia mountain curves 1920s and 1930s compared

Figure 6



## 8. Post-war colonialism

The post-war period saw a shift in British policy towards the colonies. There had for a number of years been concern on the left of British politics, engaging such bodies as the Fabian Colonial Bureau, about the need for a development policy. These concerns had been given urgency by the experience of unrest and the findings of commissions of inquiry revealing the extent of poverty, disease and neglect. Already embodied in the 1940 *Statement of Policy on Colonial Development* (Cmd 6175), this was taken further by the 1945 Labour Government. As described by Darwin, the Labour Government was “at pains to promote a new social democratic ideology of empire. Pre-war anxiety about social crisis in the colonies (where depression had bitten deep), and growing belief in the urgency of ‘colonial development’ [had given rise] to a new ideology of ‘partnership’, in which empire was the instrument of social, economic and political uplift, the imperial counterpart to the welfare state at home” (2009, pages 545 and 546). It did feed through to the local level. According to the *Colonial Report on the Gambia for 1952 and 1953*, for example, “never in a similar period has so much been attempted, and brought towards completion, in the way of improving public services The stream of development, which started as a modest trickle in the immediate post-war years, reached its full flood” (Colonial Office, 1954a, pages 1 and 2).

As Darwin observed, this new high-minded policy could “cover a multitude of colonial sins”. Faced with the losses elsewhere in the Empire, the post-war UK government saw the African colonies as a replacement source of resources within the sterling area. Gallagher argued that “not until the nineteen-forties was there a serious version of imperialism in tropical Africa. ... there had been slight economic development, little capital investment. ... it was the Second World War which shook Africa out of its economic stagnation. ... What was new was the weight of intervention by the colonial regimes working at the behest of the embattled government in London” (1982, pages 145-146).

Whatever the reason, the period is of considerable interest, leading as it does to independence of all the colonies studied. Here we consider the impact of the post-war agenda solely from the perspective of distributional change, examining in this section the experience of the ten colonies over the years from the Second World War to independence. Table 6 shows the Beta coefficients based on the share of the top 0.05 per cent in the income of the top 0.1 per cent for the period from 1945 to the most recent years for which data have been located. Figure 7 depicts the evolution up to the year before independence for the period from 1950 (1953 in the case of Nyasaland). The year of independence varies from 1957 (Ghana) to 1965 (Gambia and UDI in Rhodesia).

The first over-riding impression from Figure 7 for the ten colonies is that, with the exception of Ghana, the Beta coefficients fell after 1950, implying reduced concentration. At the outset, the majority were above 1.8; from 1957 onwards (leaving aside Ghana) all were below. Typical are the Gambia, Uganda and Zambia, where the coefficients began around 2 and ended around 1.5. The major part of the decrease appears to have taken place in the 1950s, and in Kenya, Tanzania and Zanzibar there are signs of an increase in the value of beta in the years immediately before independence. It remains however the case that at independence, income concentration was less than in 1950, as is highlighted



in the left hand part of Figure 8, which shows in the darker bars the Beta coefficient in the year immediately prior to independence (1958 in the case of Nyasaland), compared with that in 1950 (1953 in the case of Nyasaland). There is a major decrease in all cases.

The second conclusion concerns the comparison with the UK and the Western Offshoots. On the right hand side of Figure 8 are shown the Beta coefficients (typically based on the share of the top 0.1 per cent in the income of the top 1 per cent) for the UK, France and the “Western Offshoots” in 1950 and 1960 (source: World Top Incomes Database). In 1950 these lay, apart from New Zealand, in the range from 1.8 to 2.0. In this sense, they were similar to the colonies, of which 7 out of 9 lay in that range. (This reflects the reduction in concentration that took place in these countries during the Second World War.) But when we compare the values in these countries in 1960 with the pre-independence colonies there is no overlap apart from Australia and New Zealand, and only Tanganyika had a higher value for Beta than found in those two countries. Put another way, the lowest value of M recorded in the US at the top 0.1 percentile is 1.71 (in 1974). At independence only Ghana had a coefficient as high as this; all other colonies had lower values. The situation described in the previous section, where there was less concentration in the colonies, had been re-established. At the time of independence, the British African colonies had less income concentration at the top than the UK or France or the North-American Western Offshoot countries.

### *Differences between colonies*

To this point, attention has been focused on the common experience, but there were significant differences among the ten colonies. From the darker bars in Figure 7, it may be seen that there were three colonies with Beta coefficients at independence that were 1.4 or below (Sierra Leone, Zambia and Zanzibar), but in Malawi and Tanzania, it was 1.5 or higher. It is therefore useful to examine the experience of individual colonies, by considering the evolution of the M curves over the period from 1950 to independence. In most cases, the range considered is from the top 0.25 per cent upwards.

In some cases, the decline in concentration over the post-war colonial period was a steady process over time. In the case of Zimbabwe, Figure 201 (in Appendix 1) shows the M curves up to 1964 the year before UDI (the points shown are based on 75 observations or more). 1964 is marked with bold diamonds. The M curves are generally downward sloping and concave. Over time, there was a continuing fall in the value of M, illustrated in the graph by the results for even-numbered years from 1948 onwards. (There had been some increase in concentration in the immediate post-war years (1945 to 1947.) The fall is substantial: at the 0.15 per cent point, the 1948 value was in excess of 2, by 1964 it was close to 1.4. There was also a noticeable tendency for the M curve to become less steep; by 1964 the distribution was much closer to the Pareto form. At the same time, there remains a tendency for the curves to fall away at the highest points of the distribution. The findings described above are based on the income tax data. In addition, there are data from the Supertax, where the definition of income includes dividend income received. (Supertax was introduced in 1948/9 and applied from IY 1947 onwards (Southern Rhodesia, *Report of the Commissioner of Taxes for the year ended 31<sup>st</sup> March*,

1954).) More detail on the upper tail is shown in Figure 201A (in Appendix 1), where the supertax data show a similar decline and flattening of the M curves.

Moving from Southern to Northern Rhodesia, we can see from Figure 202 that Zambia shows a similar pattern of fall over the 1950s. The fall is again substantial: at the 0.15 per cent point, the 1950 value was around 1.8; by 1958 it was close to 1.45. There was also a tendency for the M curve to become less steep; by 1958 the distribution in Zambia, as in Zimbabwe, was much closer to the Pareto form. There is however one striking difference. The M curves for Zambia are generally upward sloping, indicating that the mountain was volcanic in form rather than dome-shaped. The higher one climbs in the distribution, the greater the advantage of those above you. At the 0.25 percentile, the people above had, in 1950, an advantage of 70 per cent; by the time you reached the 0.05 percentile, the advantage had increased to 100 per cent. In Zambia, there was no Supertax until the Federation of Rhodesia and Nyasaland Income Tax Act of 1954, affecting IY 1953 onwards. The supertax data, which cover the very top of the distribution, are shown in Figure 202A, and show also a fall in the level of the M curves over the 1950s and a tendency for the curves to become flatter.

In the case of Malawi, we have data (shown in Figure 203) covering the period 1953 to 1958. In all years, the M curve was decreasing with F but at a reducing rate until it turned up around the top 0.05 per cent. In that sense, the mountain was initially domed but had a volcanic peak. But at all points there was a clear downward shift in the M curve over the 1950s.<sup>15</sup> In contrast to the case of Zimbabwe, there is no tendency for the M curves to become horizontal. Interestingly, the pattern in Malawi is similar to that found in West Africa. In the case of Ghana (Figure 204), the M values tend to be rather lower, although the limiting values at the end of the period were quite similar at around 1.7. But there is a general downward shift in the M curve during the 1950s (up to the year of independence in 1957). In Ghana, the M curve is broadly convex, with diminishing slope as F increases, and the same is true of Sierra Leone (Figure 205), where the M curve at the end of the 1950s was considerably below that for 1949 (compare the points marked in bold). At the same time, the slope has fallen, and the limiting values are in both years close to 1.5. In the Gambia, the pattern is less evident. The M curve for 1952 is close to that for 1958 (no data are available for 1960 and 1961, and the data for 1963 and 1964 differ on account of changes in the tax system). But the overall trend is a downward movement; indeed there is a large difference. At the 0.15 percentile, for example, in 1948 the value of M was 2.3 and in 1958 it was 1.6 - a fall comparable in magnitude with that which took place in the US between 1930 and 1945.

In East Africa, Figure 207 shows the M curves for Kenya up to independence (the points shown are based on 75 observations or more). The M curves are relatively flat and became more so over the 1950s. There was a continuing fall in the value of M: at the 0.15 per cent point, the 1951 value was close to 2, by 1962 it was close to 1.5. In the more detailed data for later years, there is a distinct tendency for the frequencies to fall away at the highest points of the distribution. In Uganda, shown in Figure 209, there was

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<sup>15</sup> The results described above are all based on the income tax data. The number of Supertax taxpayers in Malawi was small (122 in 1958) and use of the supertax data for the upper ranges would lead to small differences in the results: for example, in 1955 a value of 1.71 for the end point of the M curve became 1.73.

equally a fall in the M curve. The values were initially higher than in Kenya - around 2.4 or higher at the 0.15 percentile - and they fell very markedly to around 1.6. This fall exceeds that between 1930 and 1945 in the US (at the 0.1 percentile). The picture for Uganda differs from that in Kenya, however, in that the fall took place in the first half of the 1950s and did not continue so strongly after 1955, as may be seen from the curve for 1961, which intersects the curves for earlier years. We may also note that the more recent years indicate that the M curve had begun to turn up at the highest percentiles, indicating the development of a volcanic peak. Tanzania (Figure 208) is different again in that there is clear evidence of the M curve turning up from 1950 onwards. Tanzania is however similar to Uganda in the magnitude of the downward shift and in this having taken place in the first half of the 1950s. In Zanzibar (Figure 210) the time pattern is again different, with M rising from 1950 to 1952, then falling to 1955, after which the curves are close, apart from a distinct move upwards in 1964.

### *Conclusions*

The post-war colonial period as a whole saw after 1950 a distinct fall in the degree of income concentration in the British colonies. The downward shift in the M curve was in most cases a sizeable one, comparable with the fall that took place in the US between 1930 and 1945. As a result, at the time of independence, the British African colonies had less income concentration at the top than the UK, France and the North American "Western Offshoots". At the same time, there are distinct differences in the time paths. In Central Africa and West Africa, the fall in the degree of income concentration continued over the period; in East Africa it was confined to the early 1950s, and there are signs of reversal towards the end of the period.

There is also evidence that the shape of the upper tail differed across colonies. The M curves were generally falling in the case of Zimbabwe, the Gambia, Kenya and Zanzibar, indicating that the relative advantage of those higher-up was becoming less as one approached the top of the distribution. These were domed mountains. In contrast, in Zambia the M curve sloped upwards, indicating that the climb became steeper. In between, were Malawi, Ghana, Sierra Leone, Tanzania and Uganda, where the M curves fell but then turned upwards at the end. In these cases, there was a volcanic peak to the mountain.

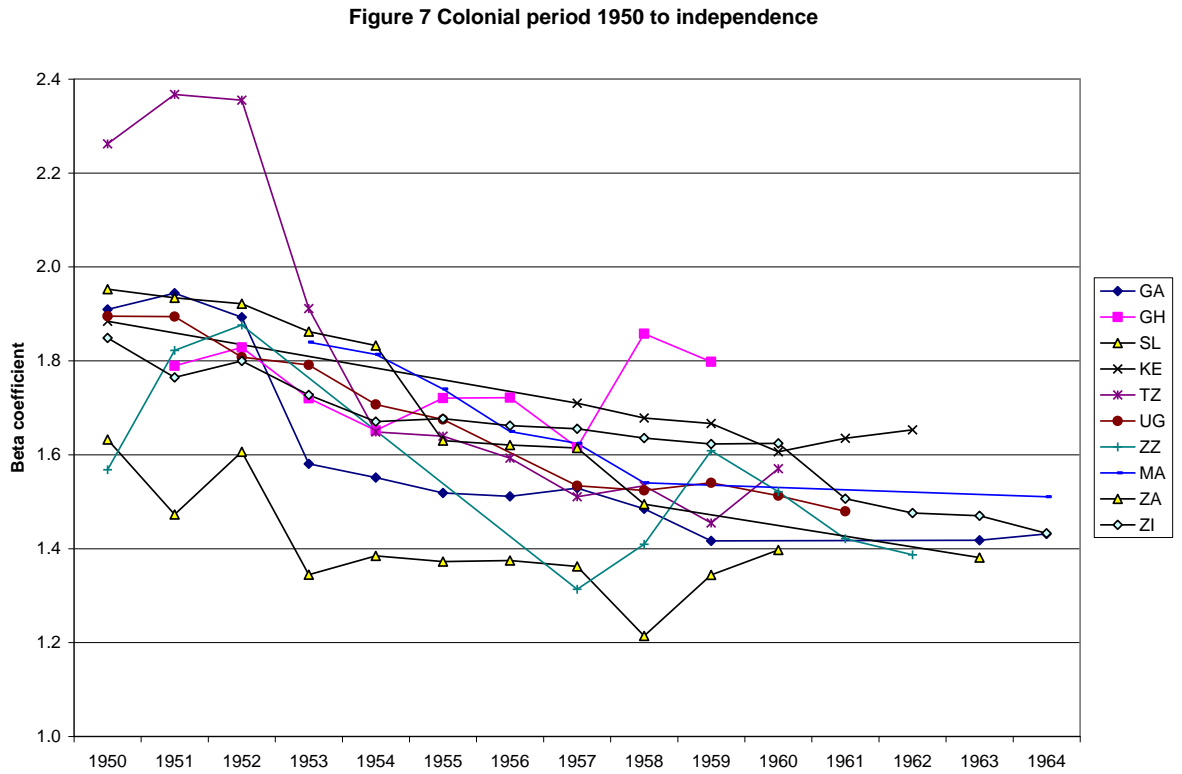
Table 6 Post-1945 income distributions: Beta (inverse Pareto-Lorenz) coefficients based on share of top 0.05 per cent within share of top 0.1 per cent

Beta coefficient based on	Share of top 0.05 in top 0.1									
	GA	GH	SL	KE	TZ	UG	ZZ	MA	ZA	ZI
1945	2.45							2.04	1.71	1.97
1946	2.27								1.80	2.05
1947	1.91								1.83	2.19
1948	2.06			1.93	2.12	2.18	1.58		1.85	1.98
1949	2.08		1.69	1.81	2.22	1.92	1.95		1.91	1.89
1950	1.91		1.63	1.88	2.26	1.90	1.57		1.95	1.85
1951	1.94	1.77	1.47		2.37	1.89	1.82		1.93	1.76
1952	1.89	1.87	1.61		2.36	1.81	1.88		1.92	1.80
1953	1.58	1.73	1.34		1.91	1.79		1.84	1.86	1.73
1954	1.55	1.68	1.38		1.65	1.71		1.81	1.83	1.67
1955	1.52	1.76	1.37		1.64	1.68		1.74	1.63	1.68
1956	1.51	1.73	1.37		1.59			1.65	1.62	1.66
1957	1.53	1.65	1.36	1.62	1.51	1.53	1.31	1.62	1.61	1.66
1958	1.48	1.61	1.21	1.56	1.53	1.52	1.41	1.54	1.49	1.64
1959	1.42	1.78	1.34	1.52	1.45	1.54	1.61			1.62
1960			1.40	1.51	1.57	1.51	1.52			1.62
1961				1.47	1.53	1.48	1.42			1.51
1962				1.44	1.55	1.49	1.39			1.48
1963	1.42			1.47	1.59	1.48	1.31		1.38	1.47
1964	1.43			1.44	1.59	1.46	1.49	1.51		1.43
1965	1.33			1.48		1.51		1.53		1.41
1966	1.38			1.42		1.46		1.55		1.43
1967	1.42			1.44		1.51		1.57		1.46
1968	1.53			1.44		1.50		1.59		1.55
1969	1.57			1.44		1.51		1.52		1.51
1970	1.83			1.47		1.56		1.70		1.57
1971	1.76							1.72		1.58
1972	1.81							1.75		1.51
1973	1.64							1.84		1.51
1974								1.85		1.53
1975								1.90		1.49
1976								1.85		1.51
1977								1.99		1.50
1978								1.85		1.53
1979								1.96		
1980								2.16		1.54
1981										
1982										
1983										1.52
1984										1.43

GA The Gambia  
GH Ghana  
SL Sierra Leone  
KE Kenya  
TZ Tanzania

UG Uganda  
ZZ Zanzibar  
MA Malawi  
ZA Zambia  
ZI Zimbabwe

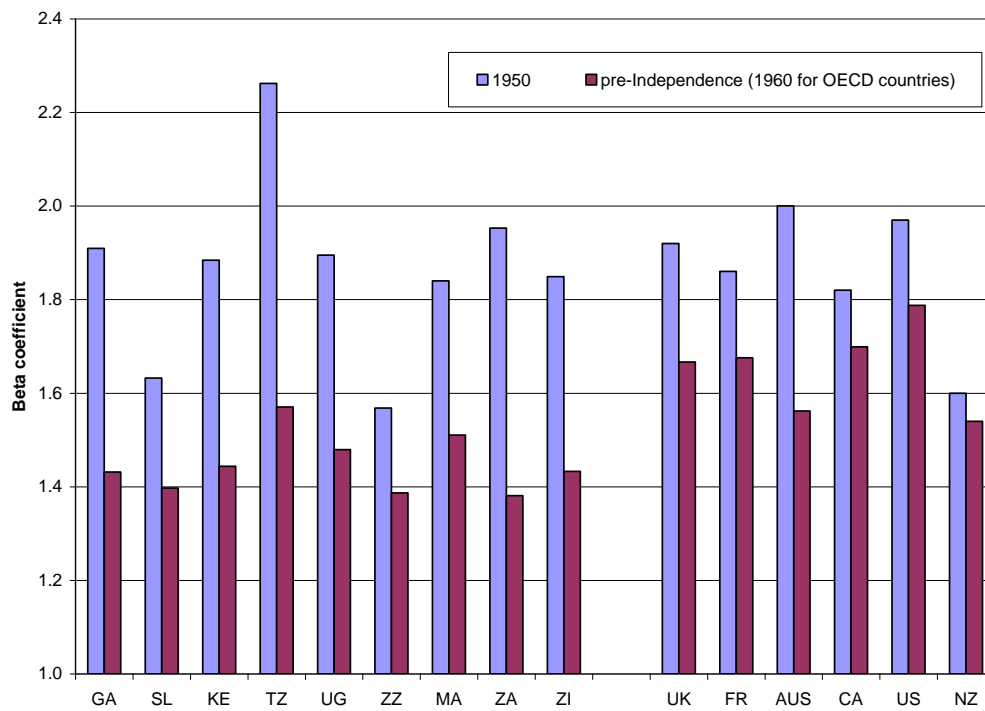
Figure 7 Beta (Inverse Pareto-Lorenz) coefficients in ten colonies from 1950 to independence



GA: the Gambia; GH Ghana (Gold Coast); SL Sierra Leone; KE Kenya; TZ Tanganyika; UG Uganda; ZZ Zanzibar; MA Malawi (Nyasaland); ZA Zambia (Northern Rhodesia); ZI Zimbabwe (Southern Rhodesia)

Figure 8 Comparison 1950 with year pre-independence, and with UK, France and Western Offshoots

Figure 8



GA: the Gambia; GH Ghana (Gold Coast); SL Sierra Leone; KE Kenya; TZ Tanganyika; UG Uganda; ZZ Zanzibar; MA Malawi (Nyasaland); ZA Zambia (Northern Rhodesia); ZI Zimbabwe (Southern Rhodesia)

## 9. Top income shares in British African colonies

To this point the analysis has been concerned with the shape of the distribution among the upper tail. It is however quite possible that a relatively even distribution among the elite (a low value of  $M$ ) may be associated with a high degree of overall inequality where this group have a large share of total income. The affluence among top income receivers may be more generally shared, but as a group they may be much more privileged. Indeed there is a widely held belief in the “vast inequalities” of colonial regimes.<sup>16</sup>

To investigate how far this was true, we have to introduce the control totals for total income, represented here by the mean income of the total population, denoted by  $\mu$ . The share,  $S$ , of the top  $(1-F)$  per cent of the population, commencing at an income  $y$ , is then equal to

$$S = (1-F) M (y/\mu) \quad (9.1)$$

To give a concrete example, in Southern Rhodesia in 1936 the value of  $M$  is approximately 2, but the income required to enter the top 0.1 per cent is around £1,300 a year, which is about 50 times the estimated mean income of all tax units. Multiplied together, 50 and 2 give 100, and multiplied by  $(1-F)$ , which is 0.001, we have an income share of some 10 per cent. In contrast, in the UK in 1937/8, the top 0.1 per cent begins at some 30 times average income, so that, even though  $M$  is larger (at 2.2), the share of the top 0.1 per cent at 6.6 per cent is smaller than in Southern Rhodesia.

From this arithmetic, it appears that the last term in (9.1) is likely to dominate, but it is also clear from section 4 that it is equally surrounded by a great deal of uncertainty. If the income total for Southern Rhodesia were to be under-stated by 40 per cent - well within the possible margin of error - then the first term would become 35 times, and the estimated shares much closer. This should be borne firmly in mind when considering the results presented in Tables 7 to 10, which give the estimated top income shares for the top 0.25 per cent, top 0.1 per cent, top 0.05 per cent and top 0.01 per cent. It should also be remembered that the smallest groups are based on a small number of taxpayers. In a population of a million tax units, the last of the groups contains 100 taxpayers.

### *The pre-1945 situation*

As we have seen, the evidence for the period before 1945 is limited to a subset of colonies, and largely refers to Central Africa. The first point to be noted from Table 8 is that these shares are large. As we have just seen, the top 0.1 per cent in Southern Rhodesia in the 1930s received around one tenth of total income - or a hundred times

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<sup>16</sup> Just to give one example, in his book on *The economy of Kenya*, Hazlewood wrote that “there are no data of the racial distribution of money income, but it is clear that, despite the overwhelming numerical preponderance of Africans, non-Africans received a high proportion of the total” (1979, opening the chapter on “The colonial inheritance”).

their proportionate share. The shares were not constant, falling over the 1930s, but remained around 9½ per cent in 1939. From Table 8, it may also be seen that the 1938 figure for Nyasaland is similar to that in Rhodesia at a multiple of 84, although not too much reliance should be placed on a single figure. These findings may be compared with those for the UK, where the corresponding figure in 1939 was a multiple of 64. In the “Western offshoots”, the corresponding figures in 1939 were some 55 in the US and Canada, 35 in Australia and 19 in New Zealand. In South Africa, the series including dividend income gives figures for the 1940s around 70 (Alvaredo and Atkinson, 2013, Table A.4B). So that Central Africa appears to stand out: the top income groups had a very large share.

The first impression bears out therefore the view that colonial Africa was highly unequal. There are however several reasons for caution. The pre-1945 evidence cited does relate to Central Africa, and the 1943 top 0.1 shares for the Gold Coast (3.6 per cent) and for Kenya (6.1 per cent) are lower. Secondly, if, as is quite possible, the income control totals are under-estimated, then the difference would be reduced. If there is an under-estimate of 40 per cent, then the figure for the top 0.1 per cent in Southern Rhodesia would be 70 times their proportionate share, which would place them just ahead of the UK. It should also be borne in mind that the fact that the distribution within the top group is less unequal in the colonies means that the difference in the shares narrows as we move up the scale. From Table 10, it may be seen that the share of the top 0.01 per cent was around 3 per cent in Southern Rhodesia in the 1920s and 1930s, with a similar figure in Northern Rhodesia in 1937. This gave the group some 300 times their share. This figure was certainly higher than in the Western offshoots, where the 1920 figures were 124 in Australia, 167 in the US and 210 in Canada. They were however similar to the UK figure of 332 in 1918/19 and the French figure of 286 in 1920. Again too, the figures for the Rhodesias were much higher than those in the Gold Coast, Sierra Leone, Kenya and Nyasaland. The diversity of experience becomes even clearer when we turn to the post-war period.

### *Post-war colonialism*

Figure 9 shows the evolution of the share of the top 0.1 per cent for nine colonies from 1950 to independence (the missing colonies are the Gambia, for which the income totals start in 1970, and Sierra Leone, for which there is only an income total for 1956). At the outset, as just described, the shares in Southern and Northern Rhodesia were above 10 per cent; in Kenya, Gambia and Tanganyika the shares were between 6 and 8 per cent, and the shares were around 4 per cent in Uganda and Zanzibar. At that time, there was clear water between all the colonies (apart from the Gold Coast) and the imperial powers and Western offshoots, where the shares in 1950 were 3.6 in the UK and 3.5 in the US, 3.1 in Canada, around 2.5 in France and Australia, and 2.0 in New Zealand (averaging 1949-1951). This reflected the major fall in top income shares that had taken place between 1939 and 1950 in the imperial powers and Western offshoots. The share of the top 0.1 per cent had been 6.4 per cent in the UK in 1939. For France, the corresponding figure in 1939 was 5.0; for the US and Canada it was around 5.5.



If we look at other income groups, we find a similar pattern. The share of the top 0.25 per cent in 1950 was 10 per cent or more in Kenya, Tanzania, Zambia and Zimbabwe. At this time, 10 per cent was the share of a much larger group - the top 1 per cent - in the UK, France, the US and Canada. For Zimbabwe, we can estimate the share of the top 1 per cent, and in 1950 this was 34.8 per cent (and the share of the top 0.5 per cent was 25.8 per cent). While a number of countries recorded values for the top 1 per cent share of around 20 per cent in the early years of the previous century, a figure of 34.8 per cent stands out. In South Africa, the estimated share, based on the series including dividend income, in the late 1940s reached some 24 per cent. Only if the income total in Zimbabwe were under-stated by 40 per cent would the top share be reduced to this level.<sup>17</sup>

When examining the shape of the upper tail, we found that over the period as a whole there was a general move in the direction of less concentration: the Beta coefficients tended to fall. The income shares, however, do not show such a general tendency. There were falls in top shares in Central Africa. In Zimbabwe, the fall was marked: the share of the top 0.25 per cent more than halved between 1950 and 1964; the share of the top 0.05 per cent fell from 5.5 per cent in 1953 to 2.7 per cent in 1964. The latter figure is based on the income tax data, but the supertax data show almost as large a fall from 5.7 per cent to 3.3 per cent. In Zambia, the top shares more than halved. The share of the top 0.25 per cent was 17.7 per cent in 1950 but had fallen to 7 per cent by 1963; the share of the top 0.05 per cent was 7.4 per cent in 1950 but had fallen to 2.2 per cent by 1963. (Again the supertax figures show a slightly smaller fall, but the results are similar: the supertax figures for 1961 give a share of 2.8 per cent.) In Malawi,<sup>18</sup> in contrast, there is evidence of a fall in the early post-war years, but not of a continuing downward trend. In Kenya, the share of the top 0.25 per cent fell from 12.5 per cent in 1950 to 11.3 per cent in 1957, but then fell no further. The other colonies differed even more strongly. In Ghana, the top shares were broadly stable over the 1950s, and the top income shares rose in Tanganyika, Uganda, and Zanzibar.

The differing time paths of top income shares in different colonies meant that there was convergence. From Figure 9, it may be seen that, whereas the range of the share of the top 0.1 per cent had been from 4 to 12 per cent in 1950 (leaving aside Ghana), by the late 1950s the range was from 5 to 7 per cent. As is brought out by Figure 10, the extent of top income inequality at the point of independence was relatively similar across the different colonies; they were in this respect more similar than they had been in 1950.

The figures for the shares of the top 0.1 per cent in Figure 10 also show that the colonies became independent with levels of inequality at the top that were (apart from Ghana) around double those ruling at the time in the UK, France and the Western offshoots. (The income shares for the latter are the averages for the years 1960 to 1965.)

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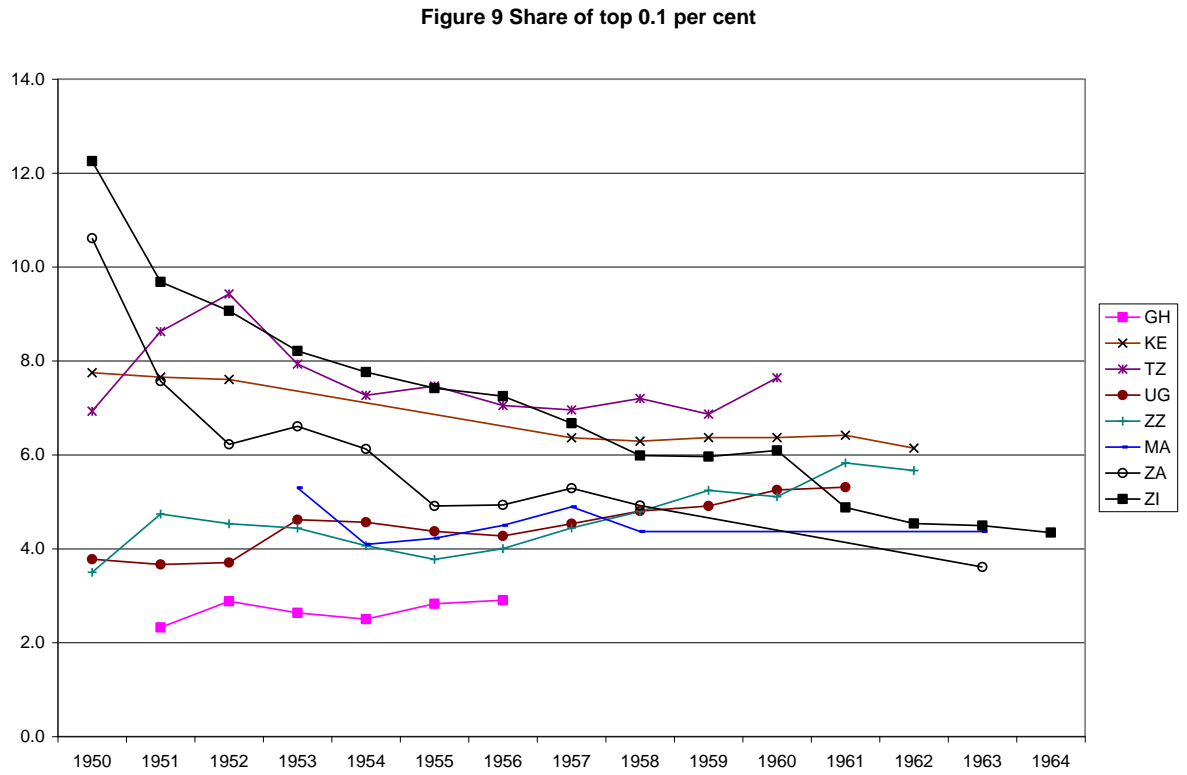
<sup>17</sup> The estimates are potentially affected by errors in the control total for tax units, but the impact is relatively modest. If the total were to be increased by 20 per cent, the estimated share of the top 1 per cent in 1950 would rise from 34.8 to 37.6 per cent.

<sup>18</sup> The number of supertax taxpayers in Malawi being small, the difference in the results is small. The share of the top 0.1 per cent in 1955 would be 1.18 per cent in place of 1.03 per cent, in 1956 1.14 per cent in place of 1.12 per cent and in 1957 1.23 per cent in place 1.21.

Even if the income totals for the colonies are substantially under-stated, a clear difference would remain. In the case of Uganda, for instance, a 40 per cent increase in the income total would reduce the share of the top 0.1 per cent to 3.8 per cent, compared with 2.3 per cent in the UK. The shares of the top 0.01 per cent were also higher. In the UK, France, US and Canada, the shares were between 0.55 and 0.6, but exceeded 1.1 in East Africa and Zimbabwe (supertax data).

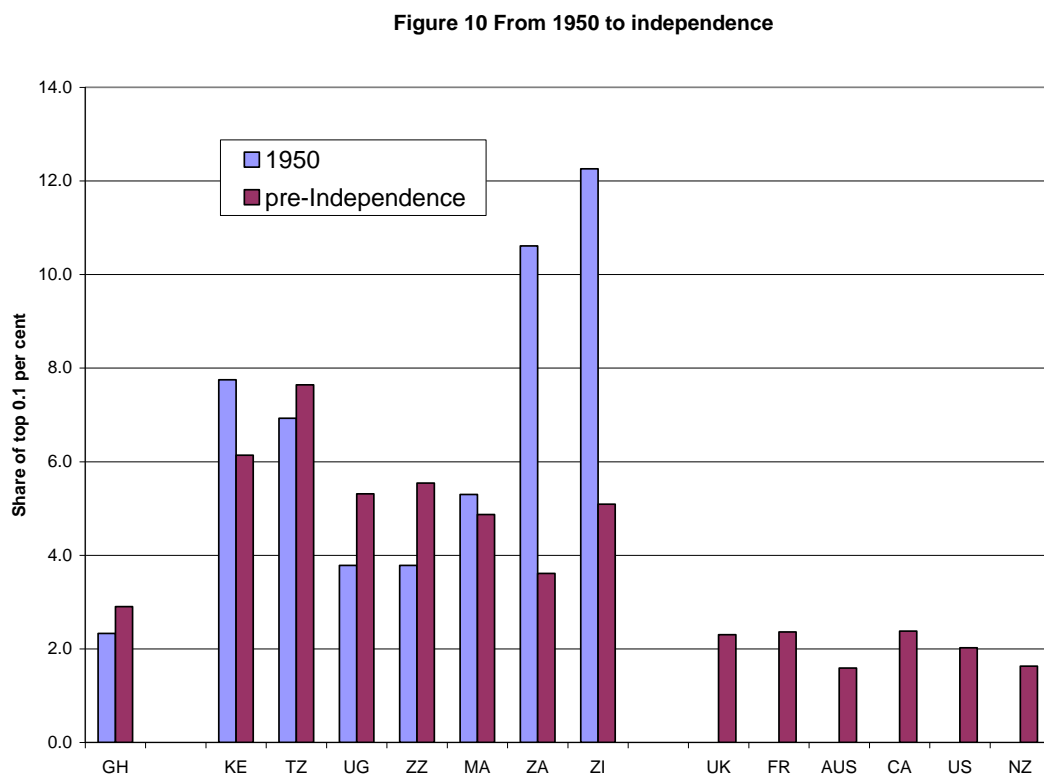
Pre-independence colonies had higher top income shares than those found at the time in the comparator countries. Viewed from today, however, the shares appear less high. We have to remember that the top shares have increased markedly in the comparator countries since 1960. The top 0.1 share in Canada today exceeds that in pre-independence Zambia; and the share in the UK exceeds that in pre-independence Kenya. The latest 2012 estimate for the share of the top 0.1 per cent in the US, at 8.8 per cent, would make it more unequal than any of the eight African colonies at independence.

Figure 9 Share of top 0.1 per cent from 1950 to independence



GH Ghana (Gold Coast); KE Kenya; TZ Tanganyika; UG Uganda; ZZ Zanzibar; MA Malawi (Nyasaland); ZA Zambia (Northern Rhodesia); ZI Zimbabwe (Southern Rhodesia)

Figure 10 Shares of top 0.1 per cent compared 1950 and pre-independence



GH Ghana (Gold Coast); KE Kenya; TZ Tanganyika; UG Uganda; ZZ Zanzibar; MA Malawi (Nyasaland); ZA Zambia (Northern Rhodesia); ZI Zimbabwe (Southern Rhodesia)

Table 7 Share in total income of top 0.25 per cent

Table 7 Top 0.25 per cent

	GA	GH	SL	KE	TZ	UG	ZZ	MA	ZA	ZI
1930										
1931										
1932										
1933										
1934										
1935										
1936										
1937										
1938										
1939										
1940										
1941										
1942										
1943		4.87								
1944										
1945									20.95	19.10
1946									21.66	20.97
1947									21.13	18.50
1948				11.15			4.60		19.68	22.21
1949				11.72			5.97		17.18	19.26
1950				12.45	10.23		5.94		17.69	19.11
1951				12.14	12.61		7.66		12.79	15.67
1952		4.62		12.39	13.86	5.51	7.31		10.51	14.35
1953		4.29		12.97	12.53	7.13	7.70		11.38	13.47
1954		4.15		12.10	11.97	7.35	7.28		10.62	12.94
1955		4.68		11.12	12.36	7.17	6.81		8.96	12.41
1956		4.82		11.04	11.86	7.22	7.23		9.02	12.24
1957		4.73		11.26	11.92	7.67	8.28		9.70	11.37
1958				11.27	12.32	8.24	8.81		9.34	10.31
1959				11.45	12.00	8.41	9.14			10.32
1960				11.68	12.85	8.87	9.04			10.51
1961				11.87	12.92	8.89	10.61			8.88
1962				11.38	12.59	9.29	10.21			8.44
1963				11.38	11.88	8.47	9.48		6.98	8.40
1964				11.18	10.19	8.22	5.48	8.03		8.28
1965				11.95				7.92		8.39
1966				10.54				8.10		8.29
1967				10.70				8.46		8.52
1968				10.75				8.98		8.83
1969				10.04				8.61		8.99
1970	2.30			10.13				8.14		9.96
1971	2.98							6.92		10.44
1972	2.44							6.70		10.25
1973	2.21							7.56		10.41
1974	1.81							6.86		10.11
1975								6.64		9.68
1976								6.18		9.66
1977								5.82		9.15
1978								5.66		9.25

1979	6.19	
1980	4.53	8.80
1981		
1982		
1983		7.72
1984		7.47

GA The Gambia  
 GH Ghana  
 SL Sierra Leone  
 KE Kenya  
 TZ Tanzania  
 UG Uganda  
 ZZ Zanzibar  
 MA Malawi  
 ZA Zambia  
 ZI Zimbabwe

Table 8 Share in total income of top 0.1 per cent

Table 8	Top 0.10											
	GA	GH	SL	KE	TZ	UG	ZZ	MA	ZA	ZI	ZI supertax	
1930											8.97	
1931											12.42	
1932											11.79	
1933											11.31	
1934											10.80	
1935											10.49	
1936											9.77	
1937											9.82	
1938								8.44			9.25	
1939											9.35	
1940												
1941												
1942												
1943		3.63		6.05								
1944												
1945								7.59	11.97		12.41	
1946									12.80		13.98	
1947									12.49		12.78	
1948				7.09	4.74	2.74	2.89		11.52		14.60	
1949				7.18	5.68	3.01	3.89		10.19		12.27	
1950				7.75	6.93	3.78	3.50		10.61		12.26	
1951		2.33		7.65	8.63	3.66	4.74		7.57		9.68	
1952		2.88		7.60	9.43	3.70	4.53		6.22		9.06	
1953		2.64			7.93	4.62	4.44	5.30	6.61		8.21	8.48
1954		2.50			7.27	4.57	4.07	4.09	6.13		7.76	8.08
1955		2.83			7.46	4.37	3.77	4.22	4.91		7.42	7.69
1956		2.90	7.51		7.05	4.27	4.00	4.50	4.93		7.25	7.58
1957		2.80		6.36	6.96	4.53	4.45	4.89	5.29		6.67	6.95
1958		2.32		6.29	7.20	4.80	4.79	4.37	4.92		5.99	6.91
1959		2.02		6.37	6.87	4.91	5.24				5.96	6.24
1960				6.37	7.64	5.25	5.11				6.10	6.40
1961				6.42	7.70	5.31	5.83				4.88	5.63
1962				6.14	7.54	5.54	5.67				4.54	
1963				6.22	7.29	5.07	5.12		3.61		4.49	5.28
1964				6.10	6.31	4.92	3.15	4.87			4.35	5.09

1965		6.63	4.79	4.80	4.38	5.20
1966		5.71	4.70	4.86	4.35	5.25
1967		5.84	4.63	5.04	4.52	5.46
1968		5.87	4.60	5.35	4.44	5.68
1969		5.53	4.49	5.03	4.87	
1970	1.38	5.64	4.27	4.94	5.54	
1971	1.84			4.23	5.88	
1972	1.53			4.16	5.67	
1973	1.31			4.81	5.75	
1974	1.06			4.43	5.58	
1975				4.39	5.27	
1976				4.13	5.23	
1977				4.02	4.92	
1978				3.82	4.97	
1979				4.32		
1980				3.29	4.84	
1981						
1982						
1983					4.12	
1984					3.94	

GA The Gambia  
GH Ghana  
SL Sierra Leone  
KE Kenya  
TZ Tanzania

UG Uganda  
ZZ Zanzibar  
MA Malawi  
ZA Zambia  
ZI Zimbabwe

Table 9 Share in total income of top 0.05 per cent

Table 9	Top 0.05										ZI supertax	
	GA	GH	SL	KE	TZ	UG	ZZ	MA	ZA	ZI		
1917												
1918												
1919											7.85	
1920											8.94	
1921											6.60	
1922												
1923											6.26	
1924											6.78	
1925											7.22	
1926											7.22	
1927											7.33	
1928											6.85	
1929											6.63	
1930											6.16	
1931											8.59	
1932											8.24	
1933											7.93	
1934											7.53	
1935											7.33	
1936				4.34							6.73	
1937											6.83	
1938								5.22			6.45	
1939											6.48	
1940												
1941												
1942												
1943		2.61		4.15								
1944												
1945								5.41	7.98		8.73	
1946									8.72		9.97	
1947									8.56		9.31	
1948				4.94	3.42	1.99	1.86		7.93		10.29	
1949				4.89	4.16	2.10	2.73		7.09		8.50	
1950				5.36	5.10	2.62	2.25		7.44		8.42	
1951		1.58			6.44	2.54	3.24		5.29		6.54	
1952		1.97			7.02	2.52	3.13		4.34		6.17	
1953		1.76			5.52	3.14		3.63	4.55		5.50	5.68
1954		1.64			4.77	3.04		2.79	4.20		5.13	5.36
1955		1.89			4.89	2.89		2.84	3.21		4.91	5.10
1956		1.94	4.54		4.56			2.95	3.22		4.78	5.04
1957		1.82		4.15	4.40	2.88	2.62	3.19	3.44		4.39	4.61
1958		1.60		4.03	4.58	3.05	2.93	2.79	3.10		3.92	4.12
1959		1.37		4.04	4.26	3.13	3.41				3.89	4.08
1960		1.07		4.02	4.91	3.32	3.24				3.98	4.21
1961				4.01	4.90	3.33	3.58				3.08	3.64
1962				3.80	4.82	3.48	3.44				2.84	3.12
1963				3.89	4.71	3.17	3.01		2.18		2.80	3.41
1964				3.77	4.08	3.06	1.98	3.08			2.68	3.27
1965				4.15	4.49	3.02		3.05			2.68	3.27
1966				3.50	3.87	2.93		3.11			2.68	3.34
1967				3.61	3.95	2.92		3.24			2.81	3.52



1968		3.63	3.86	2.90	3.46	2.84	3.66
1969		3.42	3.88	2.84	3.19	3.08	
1970	0.95	3.51	3.92	2.73	3.29	3.56	
1971	1.24				2.82	3.79	
1972	1.05				2.80	3.58	
1973	0.86				3.30	3.63	
1974					3.04	3.55	
1975					3.05	3.31	
1976					2.83	3.31	
1977					2.83	3.10	
1978					2.62	3.16	
1979					3.03		
1980					2.38	3.09	
1981							
1982							
1983						2.62	
1984						2.42	

GA The Gambia  
GH Ghana  
SL Sierra Leone  
KE Kenya  
TZ Tanzania

UG Uganda  
ZZ Zanzibar  
MA Malawi  
ZA Zambia  
ZI Zimbabwe

Table 10 Share in total income of top 0.01 per cent

Table 10	Top 0.01 per cent									ZI supertax	
	GH	SL	KE	TZ	UG	ZZ	MA	ZA	ZI		
1917										2.49	
1918										3.74	
1919										3.70	
1920										4.43	
1921										2.96	
1922										2.47	
1923										2.68	
1924										3.04	
1925										3.05	
1926										3.14	
1927										3.21	
1928										2.99	
1929										2.89	
1930										2.53	
1931										3.60	
1932										3.48	
1933										3.30	
1934										3.08	
1935										2.98	
1936			1.55							2.62	
1937								3.27		2.71	
1938							1.63			2.46	
1939										2.47	
1940											
1941											
1942											
1943	1.20								3.32		
1944									3.28		
1945							1.83	3.11		3.58	
1946											
1947										4.09	
1948				1.69	0.85						
1949					0.82						
1950								3.28		3.24	
1951	0.64							2.29		2.39	
1952	0.84							2.02		2.28	
1953	0.70						1.45	1.88		2.01	2.10
1954	0.63						1.11	1.70		1.80	1.93
1955	0.76						1.07	1.24		1.77	1.88
1956	0.77	1.36					1.12	1.24		1.74	1.91
1957	0.69			1.50	1.03	0.71	1.21	1.27		1.60	1.71
1958	0.56			1.62	1.09	0.90	1.01	1.09		1.38	1.49
1959	0.55			1.63	1.14	1.38		0.94		1.38	1.47
1960	0.47		1.36	1.81	1.19			0.88		1.40	1.53
1961			1.34	1.73	1.13			0.98		1.00	1.28
1962			1.23	1.65	1.16					0.93	1.15
1963			1.28	1.68	1.01			0.67		0.93	1.24

1964	1.25	1.44	0.96	0.60	1.01	0.86	1.16
1965	1.36	1.64	0.99		1.07	0.84	1.12
1966	1.08	1.28	0.93		1.09	0.86	1.14
1967	1.14	1.29	0.94		1.18	0.92	1.24
1968	1.13	1.26	0.93		1.24	0.97	1.33
1969	1.08	1.26	0.92		1.10	1.06	
1970	1.13	1.35	0.91		1.35	1.29	
1971					1.11	1.43	
1972					1.13	1.22	
1973					1.41	1.24	
1974					1.25	1.20	
1975					1.28	1.12	
1976					1.15	1.12	
1977					1.25	1.06	
1978					1.04	1.09	
1979					1.16		
1980					0.87		
1981							
1982							
1983							
1984							

GA The Gambia  
GH Ghana  
SL Sierra Leone  
KE Kenya  
TZ Tanzania

UG Uganda  
ZZ Zanzibar  
MA Malawi  
ZA Zambia  
ZI Zimbabwe

## 10. At and after independence

The distribution of top incomes in the ten colonies at the time of independence is summarised in Table 11. This shows the position in the year before the country became independent (year of independence in the case of Malawi).

There were considerable differences between colonies. The share of the top 0.1 per cent differed by a factor of more than two, ranging from 2.9 per cent (Ghana) to 7.6 per cent (Tanganyika). In contemporary terms, this is much the same as the difference between Italy (3.1 per cent in 2007) and Colombia (7.8 per cent in 2007). The share of the top 0.25 per cent ranged from 4.8 per cent to 12.9 per cent, and the share of the top 0.01 per cent from 0.77 to 1.81 per cent. The value of the Beta coefficient, measuring the relative advantage of those higher up the scale, evaluated by comparing the top 0.05 and top 0.1 per cent, ranges from 1.31 in Zanzibar to 1.73 in Ghana. The difference of 0.42 is again more or less comparable with that between Italy and Colombia today.

Is there a clear ranking of the colonies? Was East Africa more unequal than Central Africa? In terms of income shares, this does seem to be the case, with the share of the top 0.1 per cent in East Africa ranging from 5.3 per cent in Uganda to 7.6 per cent in Tanganyika, whereas the range in Central Africa is from 3.6 per cent in Zambia to 5.1 per cent in Zimbabwe (using the supertax data). And the income share in Ghana was lower still. But the picture is more complicated. The fact that Ghana scores top in terms of income shares and bottom in terms of the Beta coefficient demonstrates that in fact there is not a simple hierarchy. Both the level of incomes and the shape of the distribution come into play, and these may point in different directions.

The M curves at the point of independence are compared in Figure 11, which covers the top 0.3 per cent of the distribution. It may be noted that the top three countries (Uganda, Ghana and Malawi) at the start of the curves are drawn from all three regions; and, although there is some crossing, the end ranking also involves a mix of regions. The M curves are lower in Zambia, Kenya, the Gambia and Zanzibar. In general the M curves slope downwards, indicating that the climb becomes less steep, but in the case of Tanganyika, Uganda, Malawi, Sierra Leone and Kenya there is a distinct up-turn within the top 0.05 per cent. In these cases, the mountain became volcanic in shape in the final stages, and this is one reason why the estimated income shares are higher for these countries.

If, therefore, we are seeking to summarise the pre-independence distribution, then both income shares and the shape of the distribution must be taken into account. Viewed this way, then for six of the colonies the position is

	Top income share small (less than 5 per cent)	Top income share large
Beta coefficient low (less than 1.45)	Zambia	Zanzibar
Beta coefficient high	Ghana, Malawi	Tanganyika, Uganda

Kenya and Zimbabwe are less easily classified, and for the Gambia and Sierra Leone we lack share data.

### *After independence*

For eight of the ten colonies, we can examine the evolution of the income distribution after independence. The missing two are Sierra Leone, for which I have been unable to locate any data post independence, and Zanzibar, which merged with Tanzania within months of its independence. It should also be noted that “independence” in the case of Zimbabwe differs from the other seven colonies. Following the dissolution of the Federation of Rhodesia and Nyasaland in 1963, the white minority in Southern Rhodesia unilaterally declared independence (UDI) in 1965 and ruled the country until the end of the 1970s. In 1980, the country became fully independent under majority rule. There are therefore three distinct periods.

In considering the impact of independence on the income tax data, it should be emphasised that this is a rather particular form of natural experiment, which both involved extensive changes in the societies and also had effects that took time to have their full impact (as, for example, functions in the administration were progressively handed over by colonial officers). Interpretation of the results is also complicated in a number of countries by the technical problems arising from the introduction of Pay as You Earn (PAYE) collection of tax at source for employees, which meant that tax returns were no longer filed where there were no other sources of income, although this typically had little impact on the upper ranges and the data could still be employed.

### *West Africa*

In West Africa, there is evidence for the Gambia and Ghana. In the Gambia, the Beta coefficient (measured in this section by the share of the top 0.05 per cent in the share of the top 0.1 per cent) was 1.33 in 1965, the year of independence. As we saw in section 8, there had been a substantial fall in the 1950s: in 1952 the figure was 1.89. In the years immediately following independence the coefficient began to rise: 1.38 in 1966,

1.42 in 1967, 1.53 in 1968 and 1.57 in 1969, reversing quite a lot of the original fall. From 1970, on the other hand, the Beta coefficients began to fall again, although we only have data up to 1974. A move in the 1970s towards less inequality is also indicated by the top income shares. The share of the top 1 per cent fell from 4.6 per cent in 1970 to 3.8 per cent in 1974; the share of the top 0.5 per cent fell from 3.3 per cent to 2.5 per cent; the share of the top 0.25 per cent fell from 2.3 per cent to 1.8 per cent and the share of the top 0.1 per cent fell from 1.4 to 1.1 per cent. The last of these figures means that the top 0.1 per cent received 11 times their proportionate share in 1974, rather than 14 times in 1970. It would be interesting to know what happened next.

The changes in the shape of the upper tail are illustrated by the M curve shown in Figure 301 in Appendix 2, showing how it moved first in one direction (upwards), and then reversed. In all the M curves, the observations for the year of independence are shown by bold triangles and the final year observations by bold squares. There was an upward movement from 1965, the lowest curve of all, to 1970, for the range from the top 0.15 per cent upwards. (There appears to be a particular jump in 1970 that needs explanation.) During this period, the average advantage of people above your income level increased. This was then followed, initially at the top, by a period of reduction in M, which became more general, so that the final year 1974 lies in the middle of the observations. It is also interesting to compare with 1952, shown by bold circles, where the M values are similar in the range from 0.15 per cent upwards, but considerably lower for the next 0.15 per cent downwards. The M curve in 1974 was less steeply declining and closer to a Pareto distribution.

The evidence for Ghana is much more limited, covering only the period from 1957 (independence) to 1960. In 1957, the Beta coefficient was 1.62, having been 1.79 in 1951. In the following years, it rose to 1.86 in 1958, 1.80 in 1959 and then jumped to 2.64 in 1960. This pattern should not however be taken as it stands, since it reflects the limitations of relying on a single summary statistic when the distribution is changing its shape, as is revealed by the M curve (Figure 302). The M curves are indeed a lot higher after 1957 in the range from 0.1 per cent to 0.05 per cent, but above this point they are much closer and indeed the 1960 and 1957 M curves intersect. The M curves became much further from horizontal; there was a “tilt”. This is reflected in the behaviour of the top income shares. The share of the top 0.1 per cent was halved from 2.8 per cent in 1957 to 1.4 per cent in 1960; the share of the top 0.05 per cent fell from 1.82 per cent to 1.07 per cent; and the share of the top 0.01 per cent fell from 0.69 to 0.47 per cent. In these terms, there was a substantial equalisation. At the same time, a share of 1.4 per cent for the top 0.1 per cent was the same as that in the Gambia in 1970. The share of the top 0.01 per cent meant that in 1960 they had 47 times their proportionate share.

### *East Africa*

Uganda became independent in 1962, following a colonial period which had seen a reduction in income concentration in the early 1950s but where this had been reversed in the years leading up to independence. If we look first at the top income shares, then we see that these show a distinct decline in the period from 1962 to 1969. The end year corresponds to the last year for which data for the three East African countries were

published by the East African Income Tax Department, which was abolished on 31<sup>st</sup> December 1973. (There are also data for 1970, not used for reasons explained below.) I have located no subsequent data published by the Uganda government. The share of the top 0.1 per cent went from 5.5 per cent in 1962 to 4.5 per cent in 1969; the share of the top 0.05 per cent fell from 3.5 per cent to 2.8 per cent; and the share of the top 0.01 per cent fell from 1.16 to 0.92 per cent. In these terms, there was definite equalisation, although it should be borne in mind that the figure for the top 0.01 per cent implies that they receive 92 times their proportionate share, which is double that found in Ghana in 1960.

In considering these findings, and those for Tanzania and Kenya below, it should be borne in mind that a PAYE system of deduction of tax from employment income was introduced with effect from 1<sup>st</sup> July 1966. "As a result it has not been possible to analyse incomes on which P.A.Y.E was applied. ... Those intending to use this Report for temporal studies must bear in mind that the figures ... where they relate to or include incomes from employment are not ideal for comparison with earlier years" (East African Income Tax Department, *Report for the period 1<sup>st</sup> July 1966 to 30<sup>th</sup> June 1967*, paragraph 1). However, the additional surtax, chargeable at a graduated scale on chargeable income in excess of £1,000, continued to be assessed and payable after the end of the year. The tabulations used here continued therefore to provide information about the distribution of incomes at higher levels. By comparing the distributions before and after the change, it appears that ranges above £2,000 a year were little affected. The estimates given here for 1965 to 1969 therefore only make use of data from £2,000 upwards. In later years, the higher rates of tax were applied through PAYE, so that, although there are data for 1970, these are not used here: "the figures are not strictly comparable" (East African Income Tax Department, *Report for the period 1<sup>st</sup> July 1971 to 30<sup>th</sup> June 1972*, paragraph 1).

If we turn to the estimates of the shape of the upper tail, which do not depend on the control totals, then we find that the Beta coefficients show relatively little change over the period: starting at 1.49 in 1962 and ending at 1.51 in 1970. This reflects the fact that the M curves, plotted in Figure 304, for 1962 and 1969 cross over around 0.05 per cent from the top. As we have seen in the case of Ghana, the M curve shifted upward in the lower part of the range shown, which begins at the top 0.15 per cent, but downward higher up. At the same time, we should note that the lowest M curves tend to be for the years immediately after independence, and that the 1969 curve lies distinctly above that for 1964. The limiting value given by a linear fit to the M curve is 1.41 in 1969, whereas it is 1.31 in 1964.

Tanganyika became independent in 1961, following a colonial period which had seen a reduction in income concentration in the early 1950s but where this had come to an end in the years leading up to independence. The post-independence data are again limited to a period ending in 1970 with the dissolution of the East African Income Tax Department. A distribution was published by the Tanzanian government for 1974 but I was not confident that it was fully comparable, and no further information has so far been located. In 1964, Tanganyika and Zanzibar combined to form the United Republic of Tanzania. At that time, Zanzibar represented some 3 per cent of the total tax units in Tanganyika, so that the addition in terms of total population was small. The proportion of taxpayers was larger: Zanzibar was some 4.6 per cent. For this reason, and on account of

the introduction of PAYE affecting 1965 and later years noted above, parts of the analysis split the period at 1964/5.

The top income shares in Tanganyika/Tanzania (referred to simply as Tanzania in what follows) show a modest decline in the period from 1961. The share of the top 0.25 per cent went from 12.9 per cent in 1961 to 10.2 per cent in 1964; the share of the top 0.1 per cent fell from 7.7 per cent to 6.3 per cent in 1964. Over the longer run, the share of the top 0.05 per cent fell from 4.9 per cent in 1961 to 3.9 per cent in 1969, and the share of the top 0.01 per cent fell from 1.7 to 1.3 per cent. The decline is described as “modest”, since the last of these figures means that the top 0.01 per cent had 130 times their proportionate share rather than 170 times. To put that in perspective, between 1962 and 1970 the comparable figure in the UK fell from 58 times to 42 times.

The estimates that do not depend on the control totals show that the Beta coefficients altered relatively little over the period from 1961 (1.53) and 1964 (1.59). The M curves are plotted in two parts, so as to allow for the fact that the estimates post-1964 were limited to the very top. Figure 305 shows the position for 1961 to 1965, for 1962 and 1969, for the top 0.25 per cent. The M curves move upwards after 1961 for much of the range, but cross at the very top. The 1961 and 1969 curves do in fact intersect around the top 0.05 per cent. The very top of the distribution - the top 0.1 per cent - is shown in Figure 306. This brings out how the M curve has tilted. At the top 0.1 percentile, the M values rose fairly systematically from 1961 to 1970; as we approach the very top the M values declined in a similar way. The M curves have become steeper.

Kenya became independent in 1963, following a colonial period which had seen a reduction in income concentration, which in contrast to the other East African countries had continued throughout the colonial period leading up to independence. It is therefore an interesting comparison. It is also the case that Kenyan government continued to publish income tax data after the break-up of the East African Income Tax Department. However, as noted above with respect to the data for 1970 in Uganda and Tanzania, with effect from 1<sup>st</sup> January 1971, the PAYE system was extended to cover the higher rates of tax, so that higher incomes were not included in the tabulations where tax was collected entirely by PAYE. As a result, the *Income tax statistics report for the year of income 1974* in Kenya notes that “the statistics presented in this report refer exclusively to Income Tax secured from Assessments. This is obviously a serious limitation in the income tax data since the majority of the taxpayers in Kenya fall under the PAYE system” (page 1). For all that the report draws a Lorenz curve, it is not very meaningful. In the later *Income tax statistics report for years of income 1977 and 1978*, there is reference to information on PAYE being collected for the first time in IY1980, allowing “a more subtle and complete analysis of Kenya’s income tax structure” (1987, page 2). The figures for IY1980 published in the 1989 *Statistical Abstract* (page 207) do not however suggest that there have been substantial additions. The estimates here therefore stop in 1969. The estimates are also limited as a result of the introduction of PAYE and the estimates for 1965 and subsequent years are limited to those with incomes of £2,000 or over.

The top income shares in Kenya show a modest decline in the period from 1963 to 1969. The share of the top 0.25 per cent went from 11.4 per cent in 1963 to 10.0 per cent in 1969; the share of the top 0.1 per cent fell from 6.2 per cent to 5.5 per cent in 1969;



the share of the top 0.05 per cent fell from 3.9 per cent to 3.4 per cent; and the share of the top 0.01 per cent fell from 1.28 to 1.08 per cent. The decline is described as “modest”, since the last of these figures means that the top 0.01 per cent still had more than 100 times their proportionate share.

As far as the shape of the top of the distribution in Kenya is concerned, over the period from 1963 to 1969, the Beta coefficient was essentially unchanged. The M curves in Figure 307 however reveal that there was the same tilt as found for other counties: the M curves for the later years are above those for 1963 and the reverse is true in the upper reaches. The limiting value given by a linear fit to the M curve is 1.36 in 1969, whereas it is 1.48 in 1963. Particularly striking is that the final rise in the M curve for the top 0.01 per cent is replaced by a downturn, suggesting that incomes at the very top had been curtailed. In 1963, the top 184 taxpayers, above £8,000 a year, had an average income 1.5 times £8,000; in 1969 the top 182 taxpayers, above £10,000 a year, had an average income of 1.35 times. The composition of the group had also changed. In 1963, employees accounted for a little under half (89), whereas by 1969 they accounted for 131 out of 182.

### *Central Africa*

Malawi became independent in 1964, following the break-up of the Federation of Rhodesia and Nyasaland. Although the data are not fully comparable with the earlier colonial data on account of the introduction of PAYE, we have statistics covering a longer period after independence, going from 1964 to 1980. Indeed the M curves are based on no fewer than 224 observations.

The top income shares in Malawi show a distinct decline in the period from 1964 to 1980. The share of the top 0.25 per cent went from 8.0 per cent in 1964 to 5.3 per cent in 1978-1980 (a 3 year average has been taken in view of year to year volatility); the share of the top 0.1 per cent fell from 4.9 per cent to 3.8 per cent in 1978-80. The fact that the fall was a third in the case of the share of the top 0.25 per cent, but a quarter for the top 0.10 per cent, suggests that the shape of the distribution has changed at the top. The change in the shape of the upper tail is indicated by the rise in the Beta coefficient, which after being stable in the 1960s, jumped from 1.7 in 1970 to 1.99 in 1978-80. In Figure 303 are shown the M curves for even numbered years (in view of the large number of observations). The M curves have become steeper, although the M values are in general higher than at the time of independence. The limiting value given by a linear fit to the M curve is 1.33 in 1964, whereas it is 1.42 in 1980 (and 1.66 in 1978).

The evidence for Zambia is very limited. A distributional analysis was published for 1968 and for 1970, but the latter contained only frequencies. The 1968 data did not cover those under PAYE and involve adding “actual” and “estimated” assessments. In view of this, not too much weight should be placed on the two-year comparison of 1968 with 1963. It does however show that the share of the top 0.1 per cent was essentially the same: 3.6 per cent in 1963 and 3.5 per cent in 1968. The shares of the top 0.05 and 0.01 per cent each showed an increase. From Figure 310 it may be seen that the M curve tilted and

shifted upward, so that the pattern in Zambia seems to be similar in that respect to be similar to that in Malawi.

The distributional changes in Zimbabwe have to be considered in two stages: the period from the declaration of Unilateral Independence (UDI) as Rhodesia by the white regime in 1965, and the period after Zimbabwe became genuinely independent in 1980. Unfortunately, we have only three observations (1980, 1983 and 1984) for the second period. There are no data for 1979.

Taxpayers constituted a larger proportion of the population than in the other countries examined here, so that we can look first at the share of the top 1 per cent. Over the 1950s and early 1960s the share of the top 1 per cent had been falling: from 34.8 per cent in 1950 to 22.2 per cent in 1965. After UDI, the fall ended and the top 1 per cent share rose slightly over the next decade and a half, reaching 23.8 per cent in 1978. The same applied to the share of the top 0.5 per cent, which rose from 13.7 per cent in 1965 to 14.9 per cent in 1978. When considering the very top of the distribution, we have to take account of the Supertax data, since we have seen that the differences became marked after 1960. In what follows we use the Supertax data for years up to 1968, the income tax data from 1970 appearing to be comparable (1969 is discarded as it appears out of line). Each of these shows an increase between 1965 and 1968. The share of the top 0.1 per cent rose from 5.2 per cent in 1965 to 5.7 per cent in 1968; the share of the top 0.05 per cent rose from 3.3 per cent to 3.7 per cent; and the share of the top 0.01 per cent rose from 1.12 to 1.33 per cent. In contrast in the 1970s, these shares were then reduced by similar amounts. The share of the top 0.1 per cent fell from 5.5 per cent in 1970 to 5.0 per cent in 1978; the share of the top 0.05 per cent fell from 3.6 per cent to 3.2 per cent; and the share of the top 0.01 per cent from 1.29 to 1.09. Over the period of UDI Rhodesia as a whole, therefore, there was no great change in the top income shares.

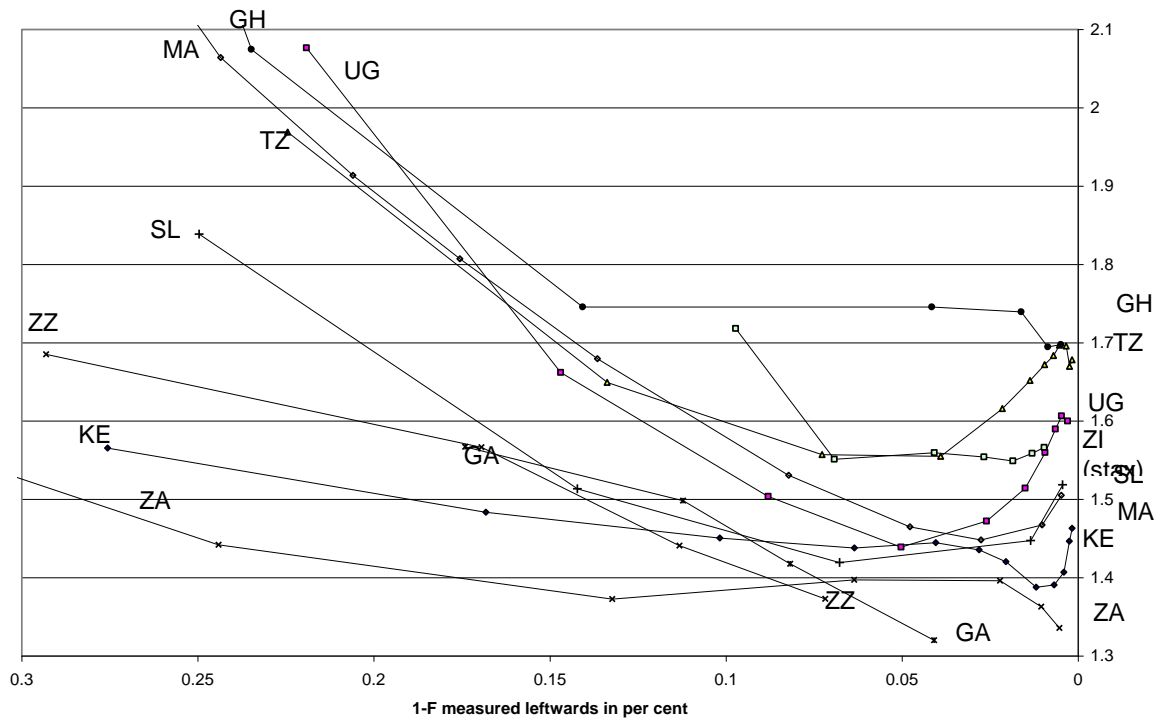
The shape of the upper tail is shown for the top 2 per cent of the distribution in Figure 308. This indicates a distinct change over the 1970s. In 1970, shown by bold diamonds, the M curve was flat, tending to rise in the last 0.25 per cent, but over the 1970s the M curve rose and tilted, so that by 1980 (shown by bold hollow diamonds) the curves intersect. The shape of the mountain was changing. The very top, the top 0.25 per cent, is shown in Figure 309. As this shows, at the very top there was not a great deal of difference between 1970 and 1980, although in the intervening years the pattern is rather different.

What happened after 1980? We have only three years of data, but these show that the share of the top 1 per cent fell from 22.0 per cent in 1980 to 18.5 per cent in 1984, the share of the 0.5 per cent from 14.1 per cent to 12.0 per cent, and the share of the 0.1 per cent from 4.8 per cent to 3.9 per cent. This is clear evidence of equalisation. The Beta coefficient fell from 1.54 to 1.43. Looking at the M curves in Figures 308 and 309 however reveals a more subtle pattern, where the M curves are initially higher in the top 2 per cent, but more steeply sloped, so that they are lower at the very highest incomes. From Figure 309 it may be seen that 1984 (bold solid squares) lies distinctly below all other years for the top 0.25 per cent. As we have seen in other countries, there has been a change in the shape of the distribution following independence.

## *Conclusions*

In terms of top income shares, there was a distinct fall following independence in Uganda and Malawi, and, although the evidence is more limited in time, in Ghana. In the Gambia, there appears to have been a fall after 1970. There was a modest fall in Kenya and Tanzania. In Zimbabwe, the declaration of Unilateral Independence was followed by a rise in top shares that was later reversed in the 1970s; in the early years following independence in 1980 top income shares fell. These falls in inequality in terms of top income shares were accompanied by changes in the shape of the distribution that qualify the conclusions drawn. There was in general a “tilt” in the M curves, meaning that at the very top the advantage of those higher up was reduced but that at lower levels the climb was more daunting. In East Africa, the curves intersected, so that the limiting Pareto coefficient indicated less concentration, but in Malawi the curve everywhere showed increased concentration.

Figure 11 Comparison of M curves at independence



GA: the Gambia; GH Ghana (Gold Coast); SL Sierra Leone; KE Kenya; TZ Tanganyika; UG Uganda; ZZ Zanzibar; MA Malawi (Nyasaland); ZA Zambia (Northern Rhodesia); ZI Zimbabwe (Southern Rhodesia)

Table 11 Top income inequality at independence

Country and date of independence	Share of top 0.1 per cent	Beta coefficient (0.05 in 0.1)	Shape of distribution
<i>West Africa</i>			
The Gambia 1965	n/a	1.43	M curve linear with limit of 1.26
Ghana (Gold Coast) 1957	2.9	1.73	M curve downward sloping and levels off around 1.75
Sierra Leone 1961		1.40	M curve slopes down but then turns up at end, final value around 1.5
<i>East Africa</i>			
Kenya 1963	6.1	1.44	M curve slopes slowly down with upturn at very end (within top 0.01 per cent), final value around 1.45
Tanzania (Tanganyika) 1961	7.6	1.57	M curve slopes down but then turns up in top 0.05 per cent, final value around 1.7
Uganda 1962	5.3	1.49	M curve slopes down but then turns up in top 0.05 per cent, final value around 1.6
Zanzibar 1963	5.7	1.31	M curve linear with limit of 1.29
<i>Central Africa</i>			
Malawi (Nyasaland) 1964	8.0	1.51	M curve slopes down and levels off at 1.4
Zambia (Northern Rhodesia) 1964	7.0	1.38	M curve flat at 1.4
Zimbabwe (Southern Rhodesia) 1980	8.3	1.56	Shares higher with supertax data. M curve flat in upper range at 1.55

## 11. Conclusions

The main purposes of this paper have been to draw attention to a neglected source of evidence about inequality in African ex-British colonies and to marshal the principal findings about top incomes in a form that can be used by scholars interested in the colonial legacy. The statistical series presented here are surrounded by qualifications and they should be employed with these health warnings firmly in mind. Nonetheless, they provide one of the few sources about a period where quantitative information is extremely scarce. The paper makes no attempt to assess the economic and social history of the period, but does serve to bring out some findings that should feature in such a history.

The substantive findings may be summarised in terms of three questions:

- Were colonial societies highly unequal?
- Were there significant differences between colonies?
- Was independence followed by a fall in inequality?

The simple answer to the first question is that there was a high level of inequality at the top of colonial societies. At the time the colonies studied became independent, the levels of inequality at the top that were (apart from Ghana) around double those ruling at the time in the UK, France and the Western offshoots. At independence, the share of the top 0.1 per cent was in excess of 5 per cent in all colonies apart from Ghana. Historically, the African colonies recorded high figures for the top income shares, reaching 35 per cent for the share of the top 1 per cent in Zimbabwe in 1950. While a number of OECD countries recorded values for the top 1 per cent share of around 20 per cent in the early years of the previous century, this figure stands out.

At the same time, the answer should be nuanced in several respects. First, the colonial income distributions were not static. In the case of Southern Rhodesia there is evidence that the degree of concentration fell over the 1930s. In the post-war colonial period, top income shares fell in Kenya, Zambia and in Zimbabwe. By 1964, the share of the top 1 per cent in Zimbabwe had fallen to 22 per cent - still high but less dramatically so. Secondly, when viewed from the perspective of today, the pre-independence levels of top shares do not appear so out of line. In 2007, the share of the top 0.1 per cent exceeded 5 per cent in Canada, South Africa, the UK, US and Colombia. Thirdly, we have to look not just at income shares but also at the shape of the distribution. As we have seen, here the colonies typically exhibited less concentration than the imperial powers and Western Offshoots. If Pareto had examined the data for Southern Rhodesia, he would have found a higher Pareto coefficient (a lower inverse Beta coefficient). What is more, when we allowed for the departures from the steady slope of the Pareto curve, the advantage of those higher up the distribution became less marked. In terms of the mountain analogy, the climb to the top became less demanding.

Were there differences between colonies? The shape of the distribution is the first area where we have found differences between the colonies. The M curves were generally declining as we move up the distribution in the case of Zimbabwe, the Gambia, Kenya and Zanzibar, indicating that the relative advantage of those higher-up was becoming less as one approached the top of the distribution. These were domed mountains. In contrast, in Zambia the M curve sloped upwards, indicating that the climb became steeper. In between, were Malawi, Ghana, Sierra Leone, Tanzania and Uganda, where the M curves fell but then turned upwards at the end. In these cases, there was a volcanic peak to the mountain. From this evidence, it appears that the elites were differently structured in different colonies.

There were equally differences across colonies in the behaviour of top income shares. In the post-war colonial period, there were falls in top shares in Central Africa. In Zimbabwe, the fall was marked and continuing; in Malawi, in contrast, there is evidence of a fall in the early post-war years, but not of a continuing downward trend. In Kenya, the share of the top 0.25 per cent fell from 12.5 per cent in 1950 to 11.3 per cent in 1957, but then fell no further. The other colonies differed even more strongly. In Ghana, the top shares were broadly stable over the 1950s, and the top income shares rose in Tanganyika, Uganda, Zanzibar and Sierra Leone.

What were the consequences of independence? In terms of top income shares, there was a distinct fall following independence in Uganda and Malawi, and, although the evidence is more limited in time, in Ghana. In the Gambia, there appears to have been a fall after 1970. There was a modest fall in Kenya and Tanzania. In Zimbabwe, the declaration of Unilateral Independence was followed by a rise in top shares that was later reversed in the 1970s; in the early years following independence in 1980 top income shares fell. These falls in inequality in terms of top income shares were accompanied by changes in the shape of the distribution that qualify the conclusions drawn. There was in general a "tilt" in the M curves, meaning that at the very top the advantage of those higher up was reduced but that at lower levels the climb was more daunting. In East Africa, the curves intersected, so that the limiting Pareto coefficient indicated less concentration, but in Malawi the curve everywhere showed increased concentration.

It is of course frustrating that the results show only the impact of the early years after independence. As to what happened next, one of the aims of the research has been to stimulate the assembly and publication of data on top incomes in the present day.

Appendix 1: M Curves for colonies from 1950 to independence

Figure 201 Zimbabwe from 1948 min 75 obs

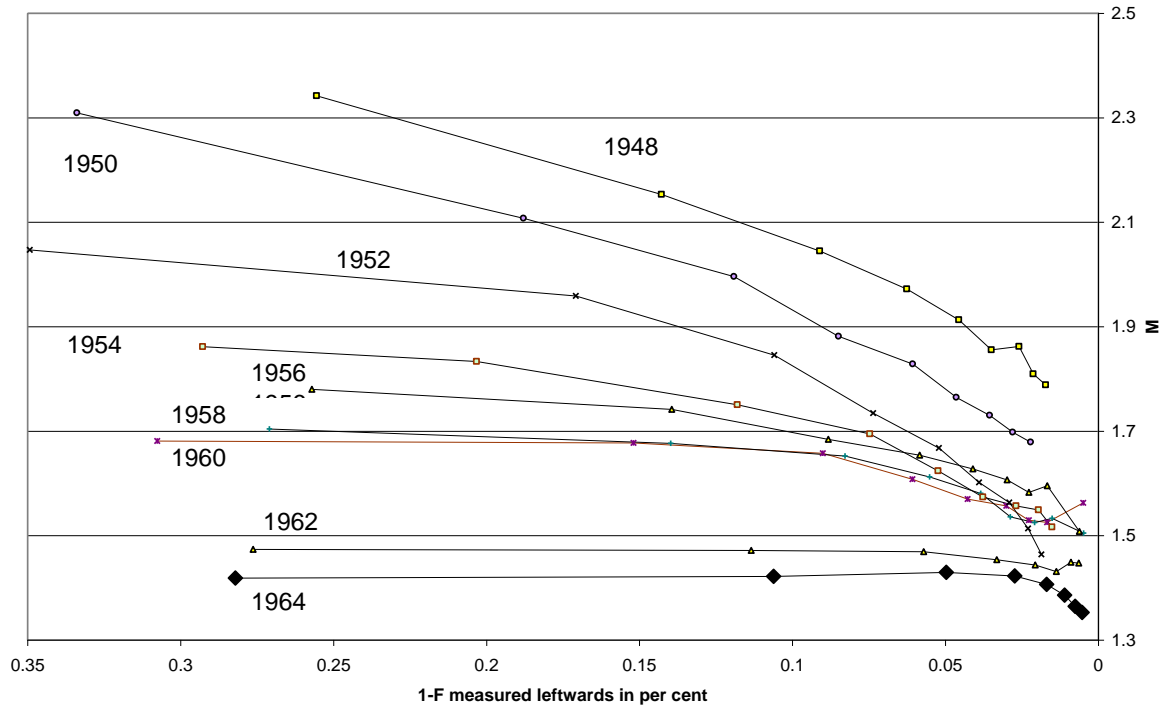




Figure 201A Zimbabwe (min 75 obs) Supertax data

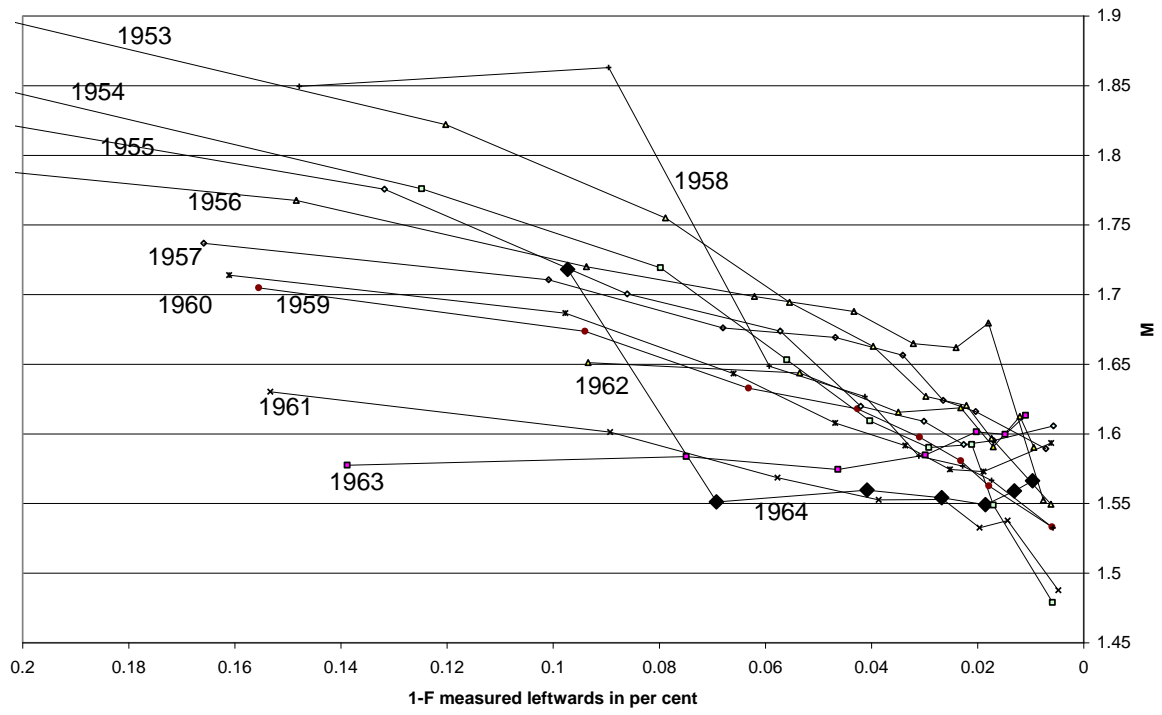


Figure 202

Figure 202 Zambia (min 75 obs)

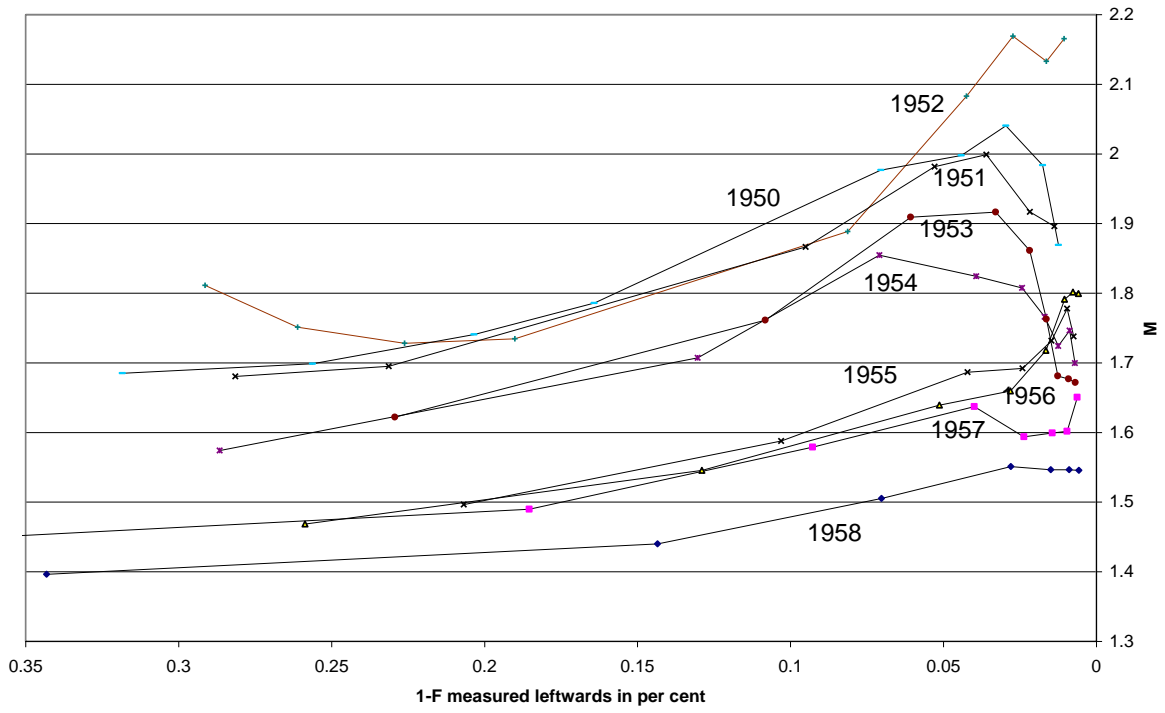


Figure 202A Zambia (min 75 obs) Supertax data

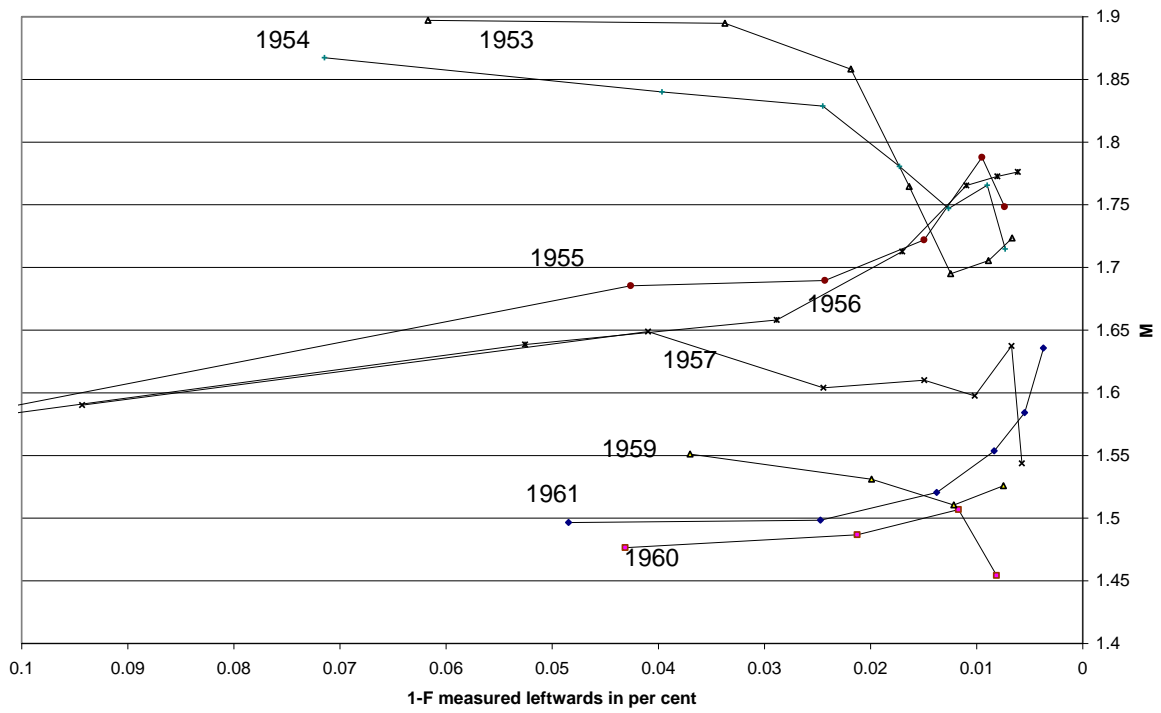


Figure 203

Figure 203 The 1950s in Malawi (min 75 obs)

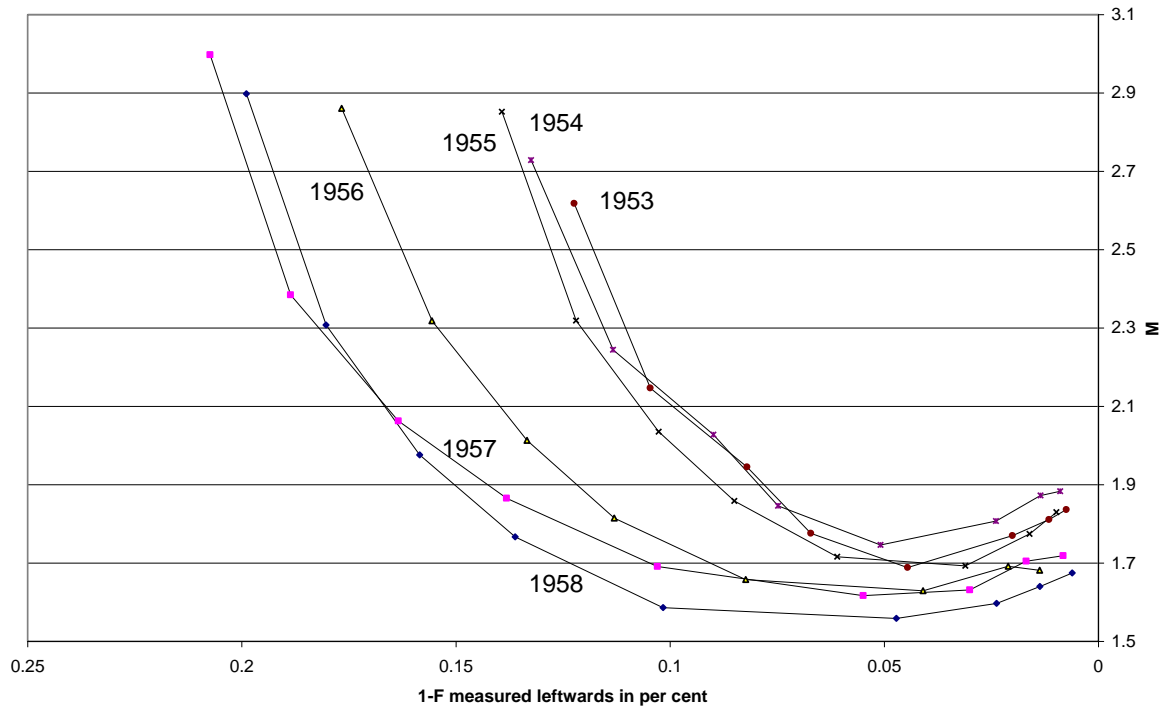


Figure 204 Ghana min 75 obs

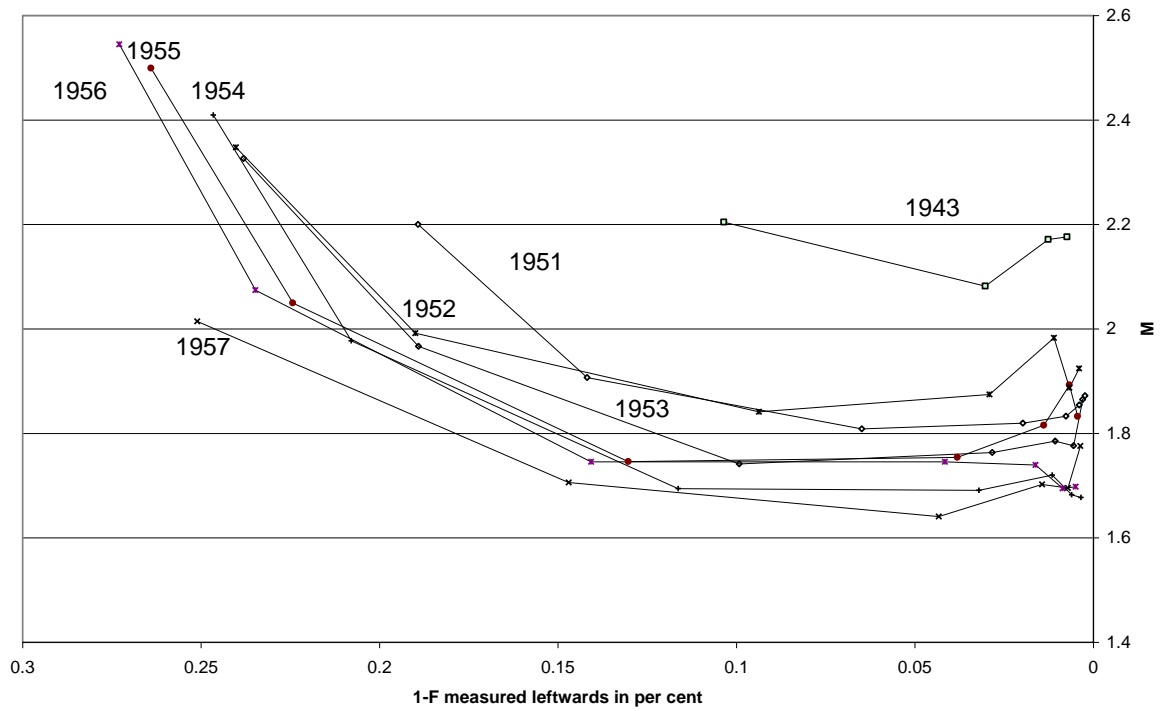


Figure 205

Figure 205 Sierra Leone min 50 obs

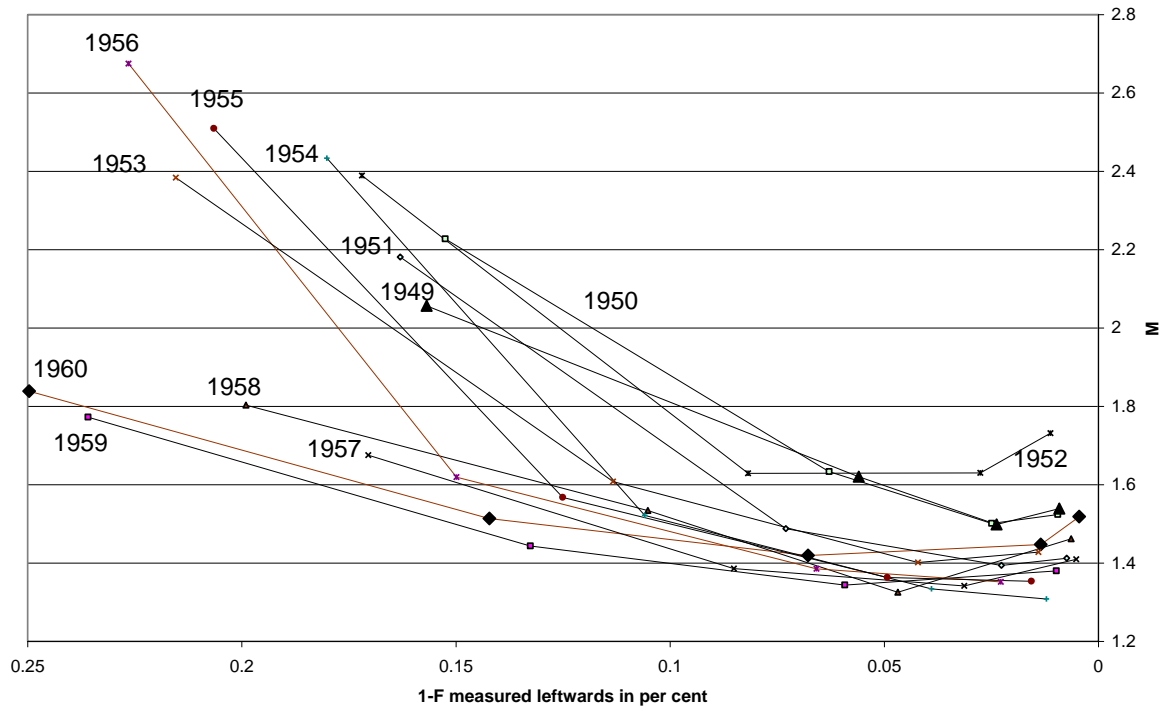


Figure 206 The Gambia (even numbered years) min 40 obs

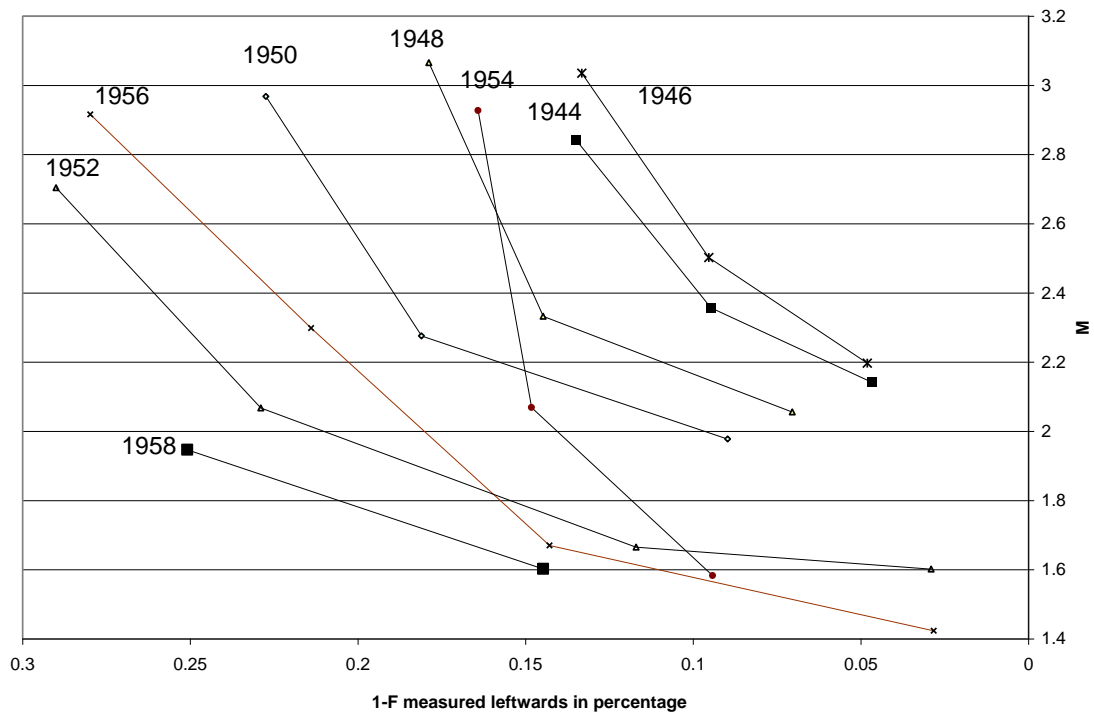


Figure 207

Figure 207 Kenya min 75 obs

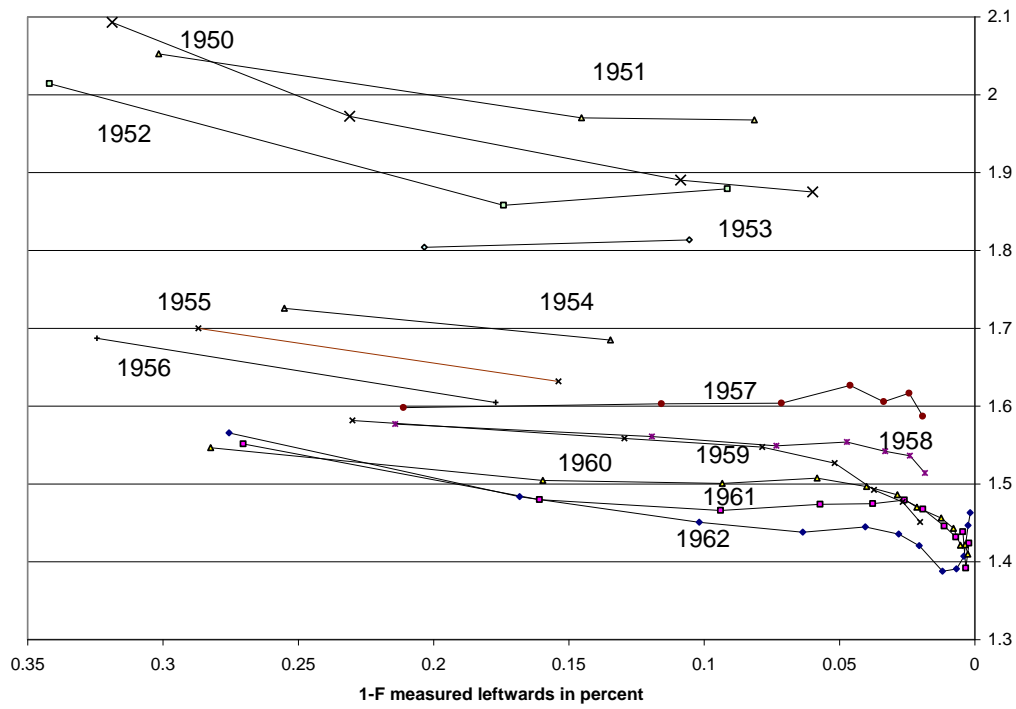


Figure 208 Tanzania (min 75 obs)

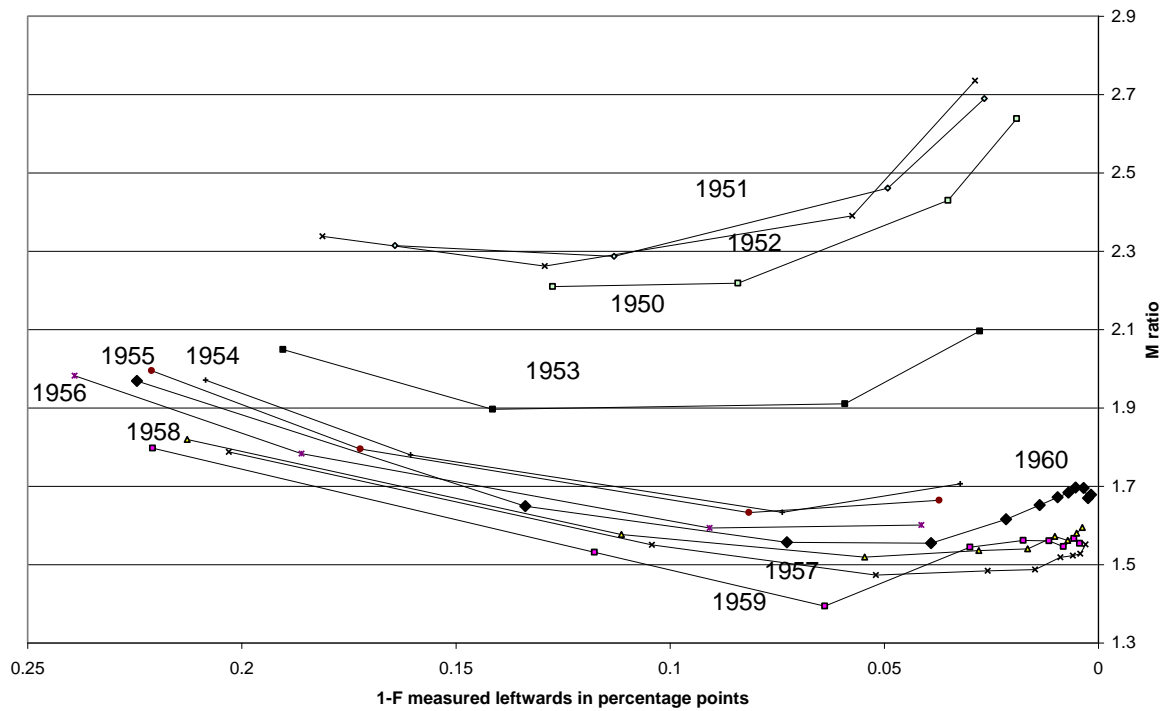


Figure 209

Figure 209 Uganda min 75 obs

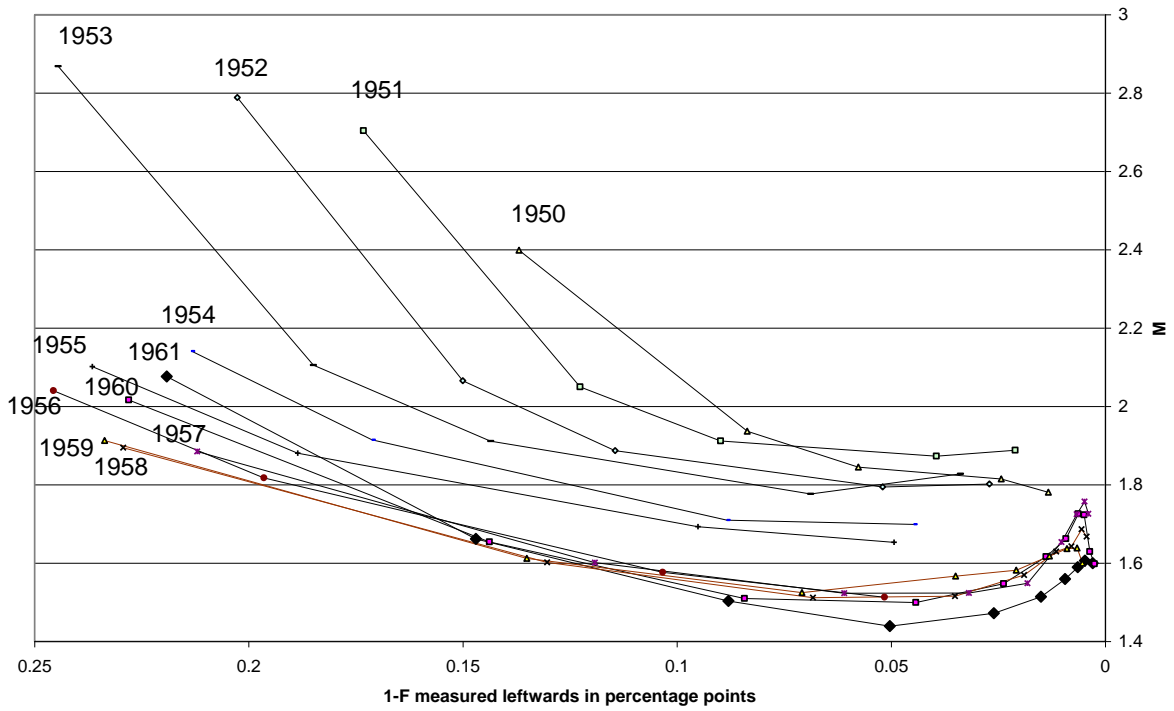
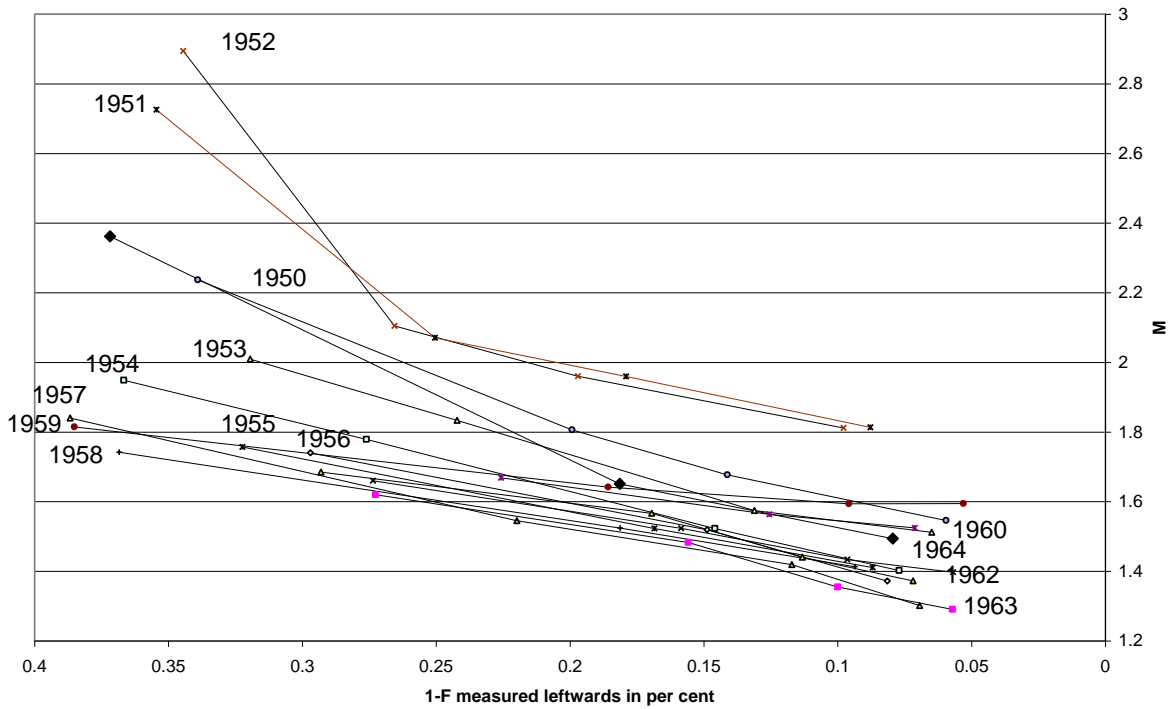


Figure 210 Zanzibar (min 75 obs)



Appendix 2: M curves after independence

Figure 301 The Gambia (min 50 obs) post-Independence

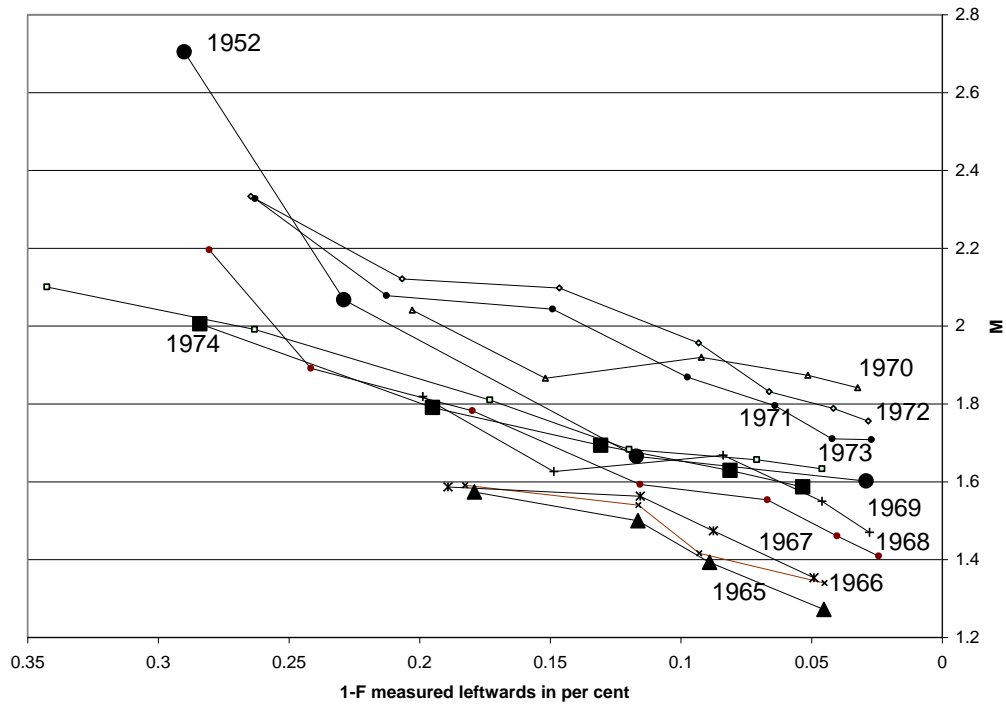


Figure 302

Figure 302 Ghana (min 75 obs) post-Independence

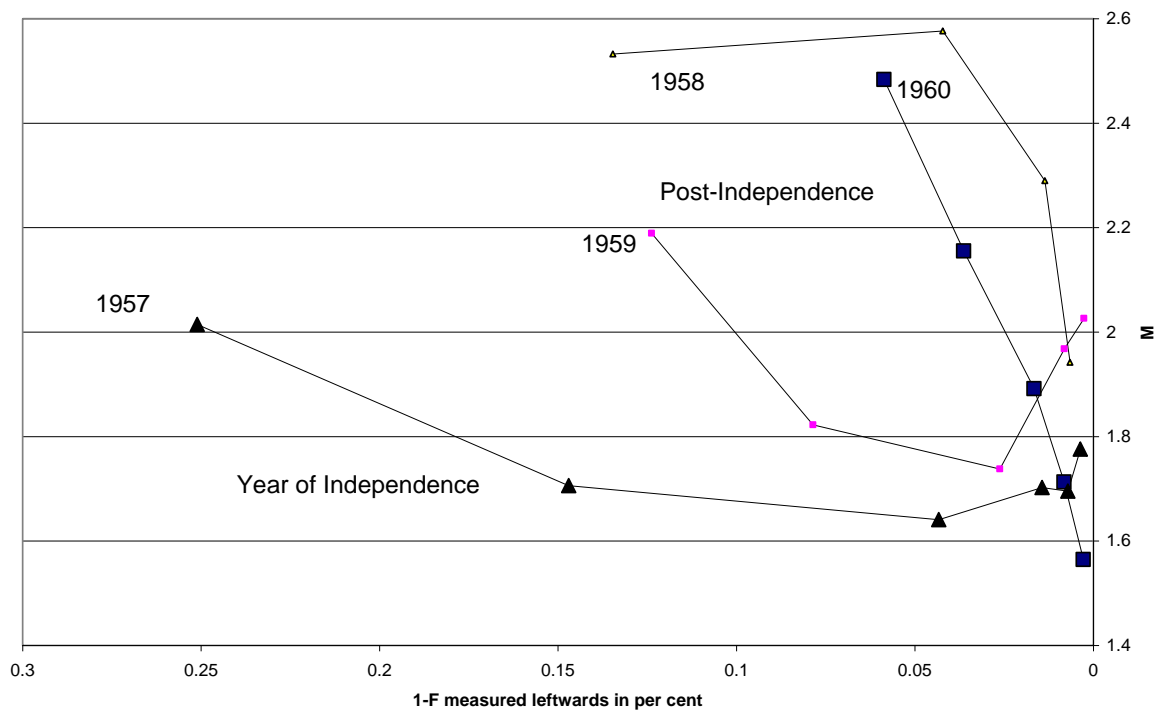


Figure 304 Uganda (min 75 obs) post Independence

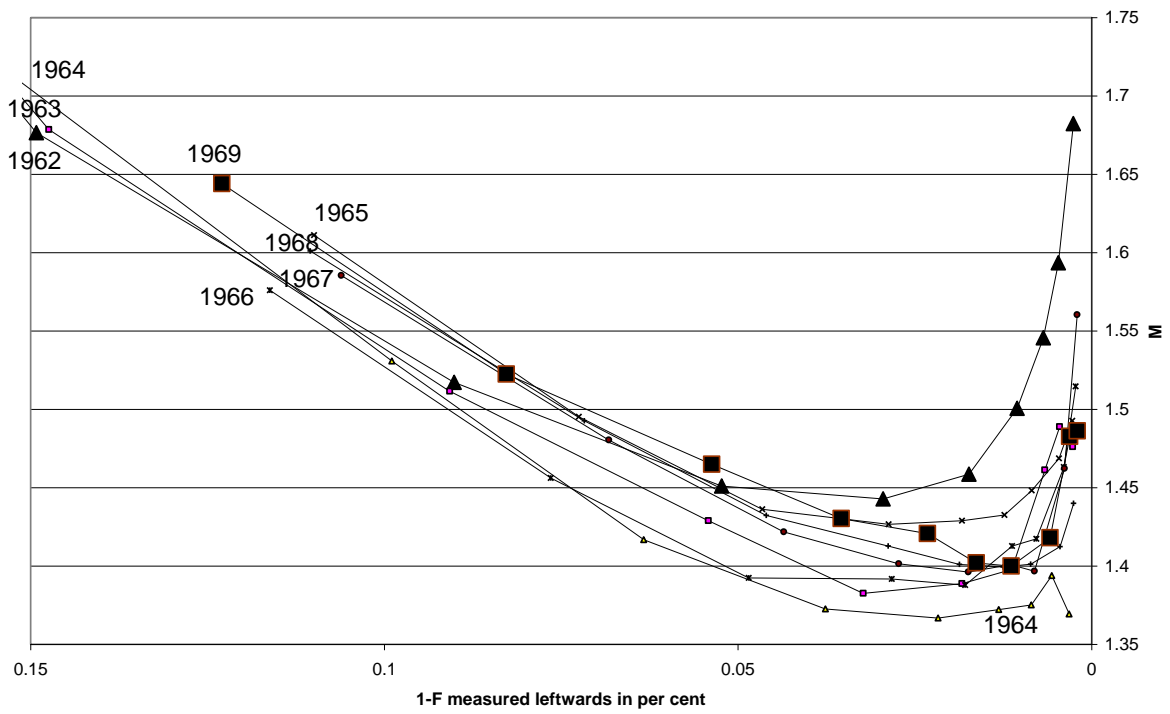




Figure 305 Tanzania (min 75 obs) Post Independence 1961 to 1965 and 1969

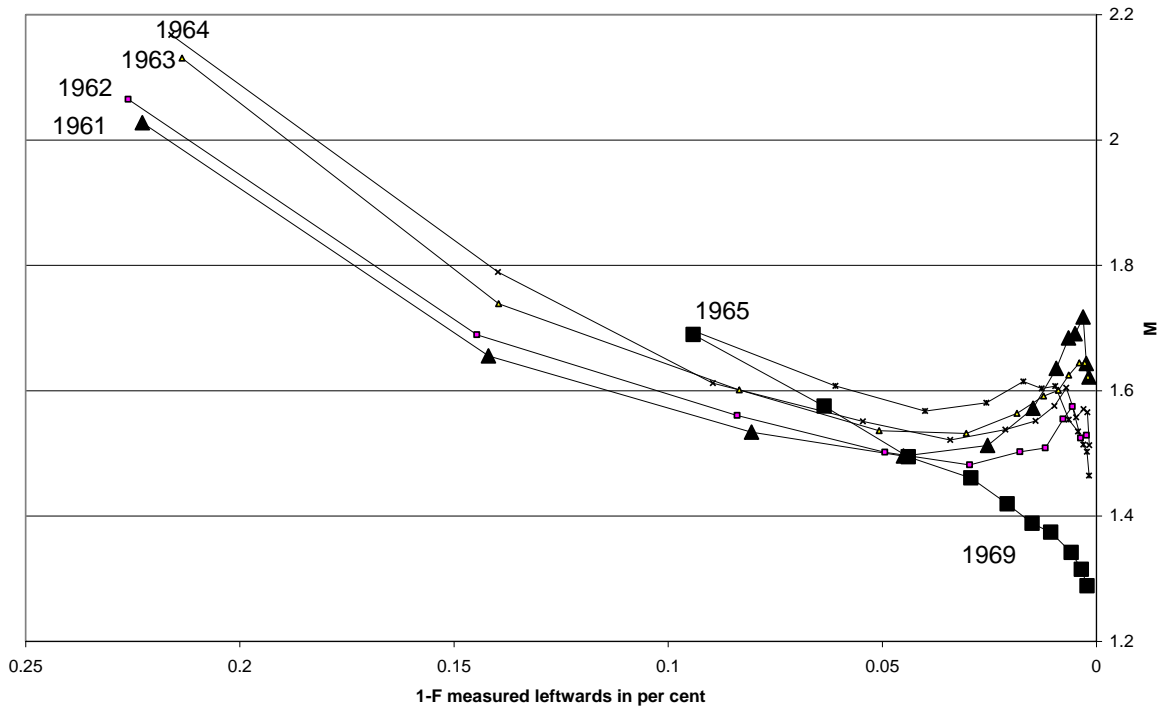
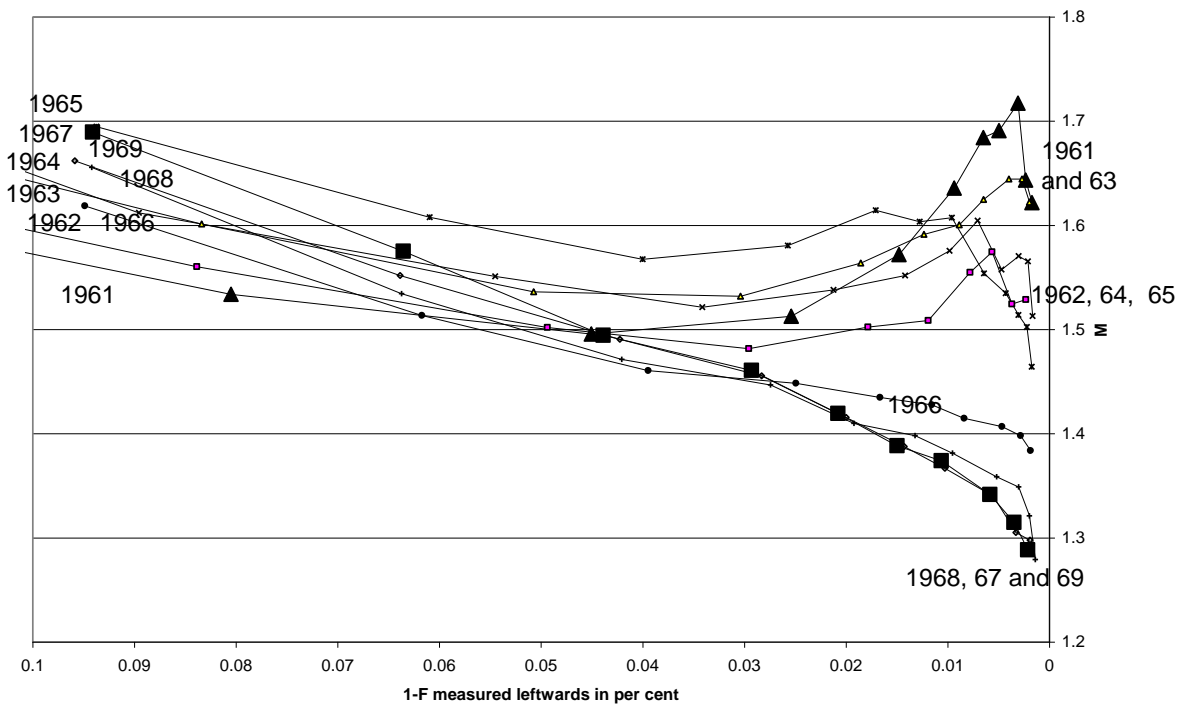


Figure 306 Tanzania (min 75 obs) Post Independence Top 0.1 per cent



Figure

Figure 307 Kenya (min 75 obs) Post Independence

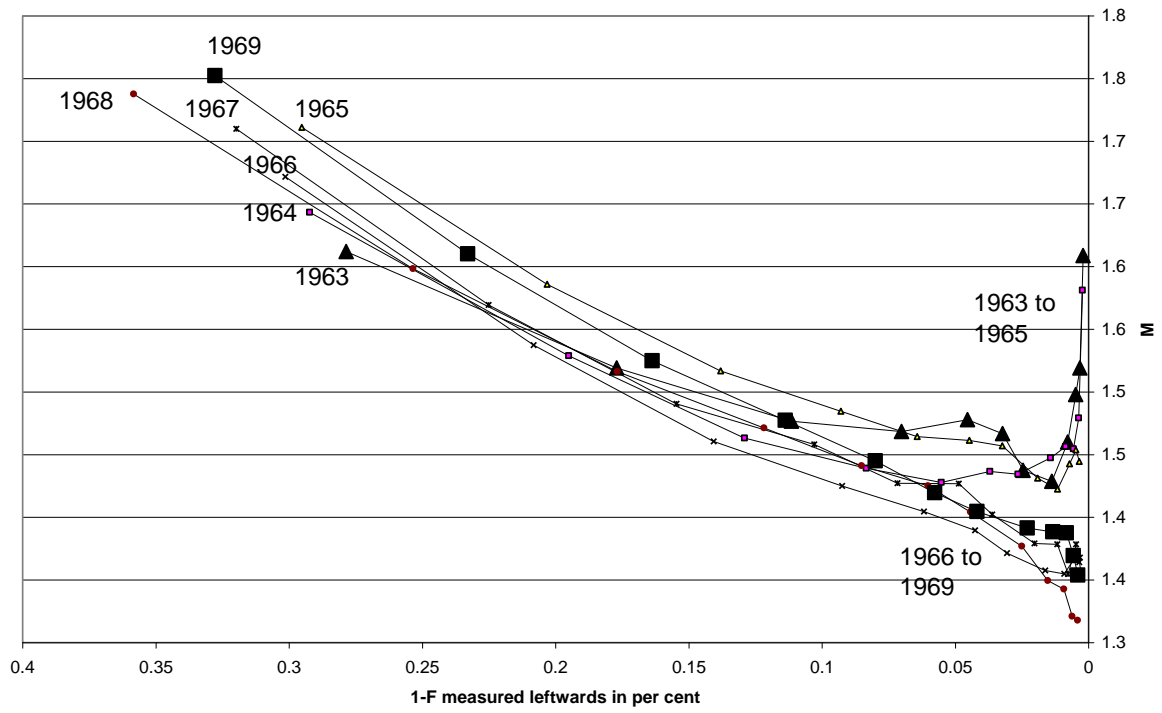


Figure 303

Figure 303 Malawi (min 50 obs) post-independence Even years

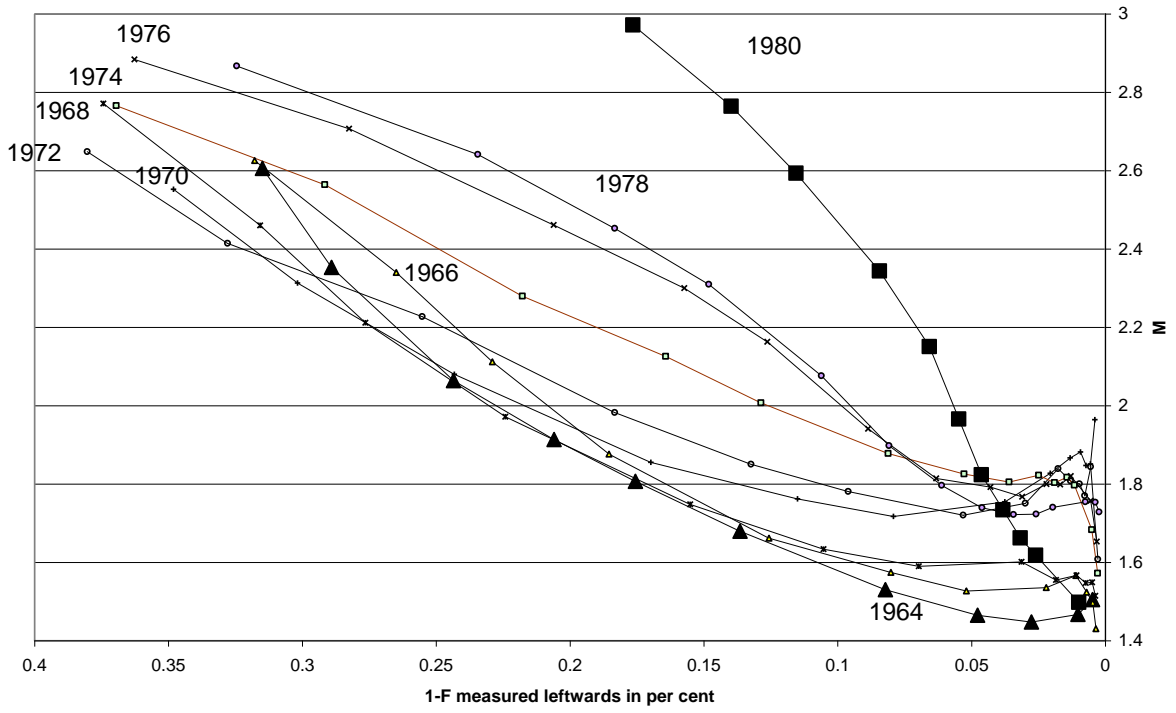


Figure 308 Zimbabwe (min 75 obs) top 2 per cent

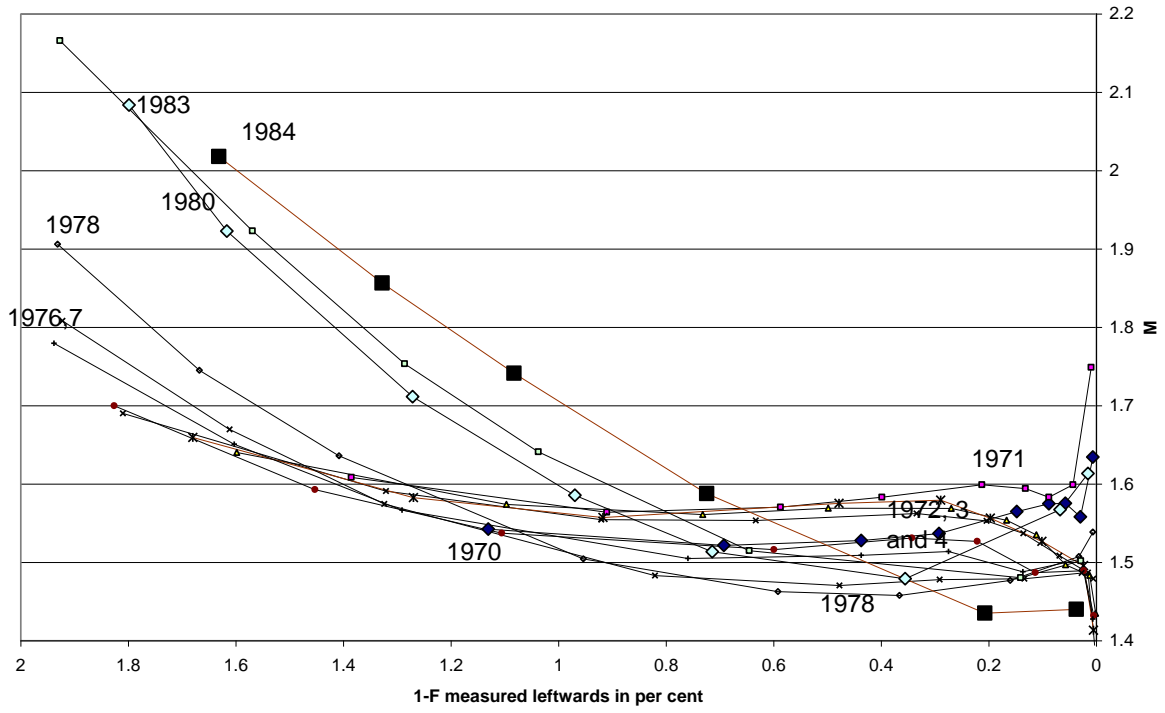


Figure 309 Zimbabwe (min 75 obs) from 1970 top 0.25 per cent

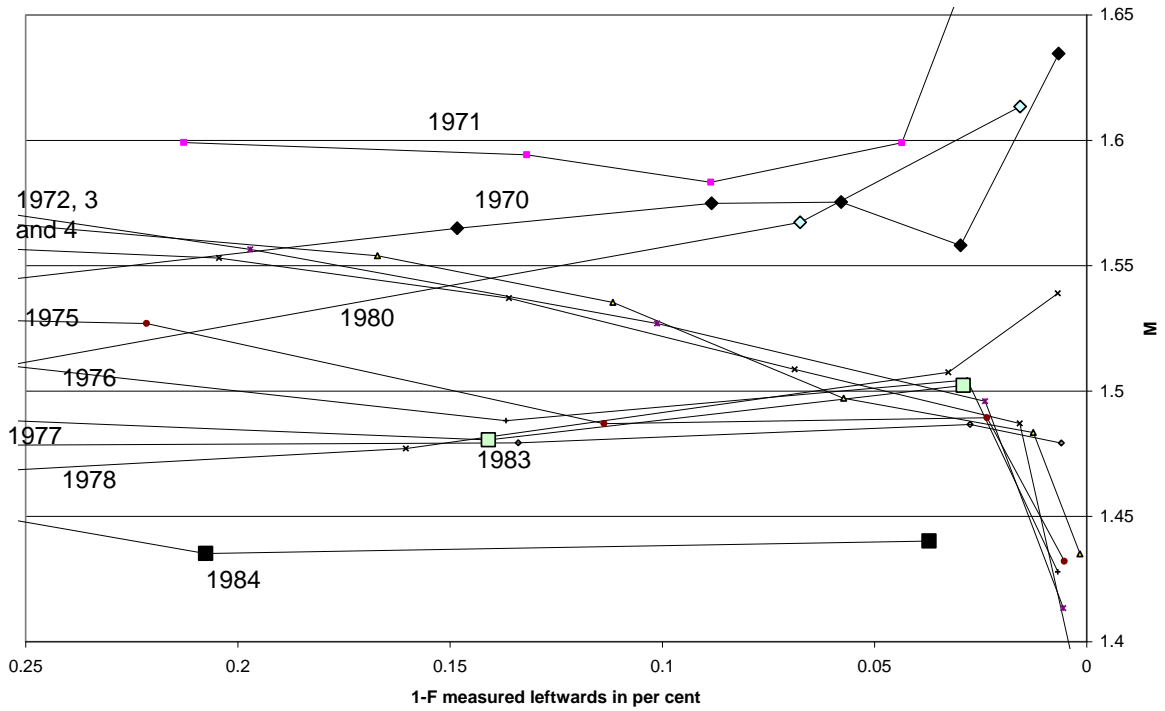
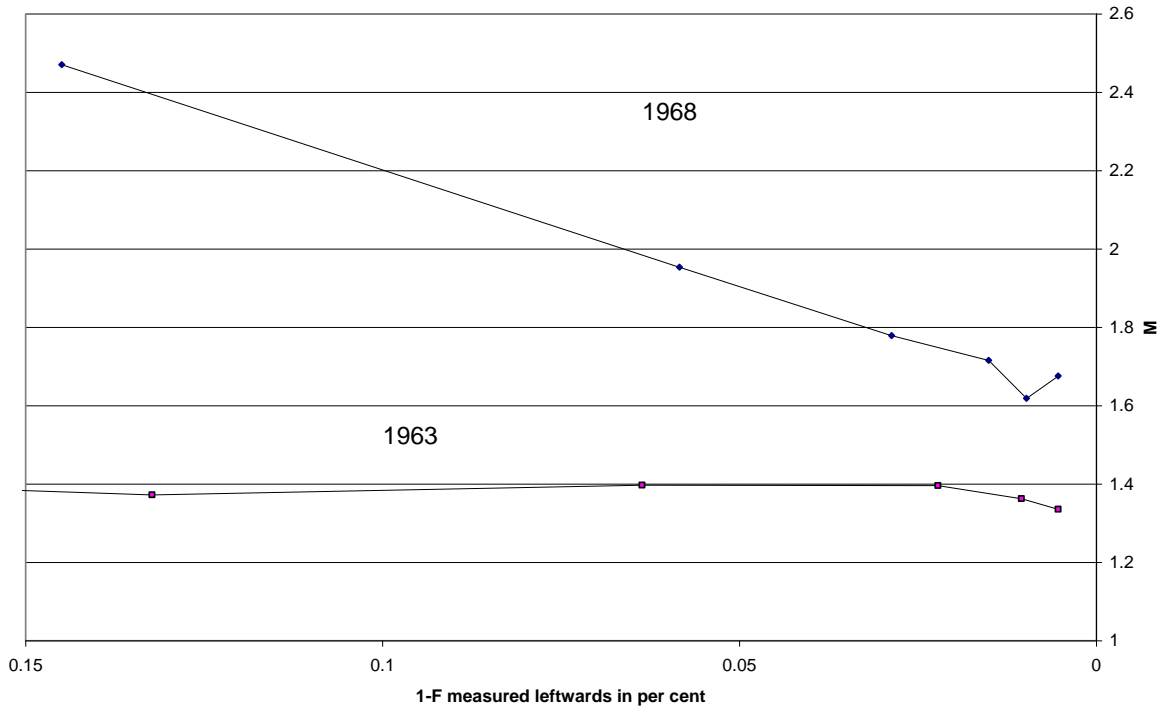


Figure 310 Zambia (min 75 obs)



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