AFRICAN ECONOMIC HISTORY WORKING PAPER SERIES

No. 18/2014

MEASURING RURAL WELFARE IN COLONIAL UGANDA:

Why farmers would not work for wages

Michiel de Haas

Wageningen University

The Netherlands

michiel.dehaas@wur.nl

Abstract

The majority of Africans in the colonial era pursued composite livelihood strategies of which commercial and subsistence agriculture were crucial components. So far, however, evidence on the contribution of these sources of non-wage income in African long-term welfare development is understudied. This paper presents a new approach to measure smallholder incomes in a temporal perspective. It introduces the concept of 'model farms' and exploits price series to arrive at 'smallholder welfare ratios'. The paper applies this approach to the cash crop regions of Uganda (1915-1970). The key finding of the paper is that during the colonial era ordinary rural dwellers in these regions of Uganda were slightly better off than previous estimates based on urban wages have suggested, but that living standards on individual smallholdings remained close to subsistence and did not develop much over time. The paper provides qualitative evidence to show how labour migration can explain low wage rates in the context of a thriving colonial cash crop economy. It also shows that in the late colonial and early post-colonial period, while real wages took off from the subsistence floor, the majority of smallholders began to fall behind.

Keywords: Living standards, welfare development, Uganda, agriculture, rural livelihoods

1. Introduction[1]

Scholarship on historical welfare development in Sub-Saharan Africa is progressing rapidly, uncovering long-term trends in human development, the biological standard of living and urban real wages. What is still notably missing in the emerging literature on African historical living standards is a perspective that focuses specifically on the nature, level and direction of *rural welfare development*. Adding a agricultural perspective to the living standards debate is especially important because, as is widely acknowledged, the majority of African households were tied to the 'formal' economy as either agricultural labourers or as small-scale producers of agricultural commodities, while they also continued to cultivate for their own subsistence. These patterns persist until today in large parts of Sub-Saharan Africa.

This paper aims to offer two contributions. First, it presents a new comparative 'smallholder welfare ratio' approach to study African rural living standards. This approach aims to reconstruct the income of ordinary smallholders, using rich and detailed data about agricultural production, including price series and sub-national household-level surveys and censuses. I argue that, rather than to solve all of the intricacies involved in the reconstruction of rural income development, this new approach offers an important first step towards opening the black box of rural African welfare development and offers scope for future comparative research. Second, the paper applies the approach to one particular African case study, Uganda in the colonial and early post-colonial era. In interplay with additional qualitative evidence from a range of archival and secondary sources, the approach elucidates some of the questions surrounding Uganda's colonial economic development.

Uganda is an excellent first case study for a number of reasons. First, Uganda's smallholders produced export crops, mainly cotton and coffee during the colonial era, on a scale only matched by some West African counterparts.[2] However, the impact of this 'cash crop

[1] I would like to thank Jutta Bolt, Corinne Boter, Angus Dalrymple-Smith, James Fenske, Ewout Frankema, Kate Frederick, Oscar Gelderblom, Erik Green, Ellen Hillbom, Dácil Juif, Bas van Leeuwen, Jan Luiten van Zanden, Felix Meier zu Selhausen, Alexander Moradi, Elise van Nederveen Meerkerk, Kostadis Papaioannou, Jop Woltjer, Susan Zimmerman and the participants of the session "Colonial Legacies in African Economic History" at the Tenth Swedish Economic History Meeting at Lund University (5 October, 2013), the "Rural and Environmental History Seminar" at Wageningen University (11 March, 2014), the "Social Economic History Graduate Seminar" at Utrecht University (31 March, 2014) and the panel on "Imperial Connections and Household Labour Relations" at the Tenth European Social Science History Conference, Vienna (25 April, 2014) for helpful feedback on earlier drafts and presentations of this paper. I am grateful to Grace Carswell for kindly sharing unpublished rural survey data form Kigezi district, Uganda which she retrieved from the personal archives of J.W. Purseglove. Finally, I thankfully acknowledge the financial support of the European Research Council under the European Community's Seventh Framework Programme (ERC Grant Agreement no 313114) as part of the project "Is Poverty Destiny? A New Empirical Foundation for Long-Term African Welfare Analysis".

[2] Tosh 'Cash-crop revolution', Austin 'Explaining and evaluating'

revolution' on the living standards of the majority of the population is a contentious issue. Even though Ugandan households retained control over their own land and labour, previous research has shown that taxation was high and wages low, as in neighbouring settler-dominated Kenya.[3]

The paper presents two key findings. First, In regions were export crops were cultivated, ordinary Ugandans were better-off as farmers rather than wage labourers. Nevertheless, smallholder incomes, in most cases, continued to be close to subsistence and the 'rural premium' disappeared around the time of independence, as (urban) wages took off from the subsistence floor. Second, rather than reflecting conditions in Uganda's cash crop regions, the low wages which prevailed for most of the colonial era were the outcome of a large influx of labour migrants from Uganda's underdeveloped and peripheral regions, as well as from neighbouring territories.

The paper is structured as follows. Section two argues why attention for African rural welfare development is due. Section three introduces the new approach to study rural welfare. Section four briefly introduces the case study of Uganda. Section five constructs smallholder welfare ratios for Uganda's cash crop regions. Section six discusses the results. Section seven puts rural incomes in the context of urban unskilled wages. Section eight introduces the issue of labour migration to explain low wages in Uganda's labour market. Section nine discusses the rural-urban reversal in the late colonial and early post-colonial period. Section ten concludes and discusses the broader implications of this paper for the study of African welfare development.

2. Opening the rural black box

Researchers have recently made major advances to strengthen the empirical basis for the analysis of African historical welfare development. Contributions to this "new economic history" of Africa push back our knowledge of African living standards into the colonial period, and put African welfare development in a global perspective. A range of studies has pioneered the application of tried methods to an African context, including GDP reconstruction, anthropometrics and real wage estimation.[4] Studies on taxation, education, and

[3] On taxation see Frankema 'Raising revenue' Frankema 'Colonial taxation'. On wages see Frankema and van Waijenburg 'Structural impediments'

[4] For GDP reconstruction see Bigsten 'Welfare and economic growth', Prados de la Escosura 'Output per head', Prados de la Escosura 'Human development in Africa' and Jerven 'West African experiment'. For anthropometrics see Moradi 'Confronting colonial legacies', Moradi 'Towards an objective account', Austin, Baten and van Leeuwen 'Biological standard of living' and Cogneau and Rouanet 'Living conditions in Côte

gender also feed into the debate on welfare development.[5] Independently, and based on distinct methods and source materials, all of these studies come to the conclusion that ordinary Africans experienced some degree of improvement in their standards of living during the era of colonial rule. Moreover, some of these studies argue that (British) West Africans were better off than (British) East Africans,[6] while others substantiate the long-standing claim that ordinary Africans thrived more in peasant export colonies than in settler colonies.[7]

However, as is widely acknowledged, each of these approaches remain subject to data limitations and potential biases, and conclusions must be treated with care. African historical *anthropometric studies* give valuable insight into the biological standard of living of a broad section of the population. However, they focus on only one development outcome (heights), and are unable to disentangle the different mechanisms that feed into this outcome, whether they be improvements in medical facilities, nutrition or sanitation. Furthermore, their inevitable reliance on a specific sub-population of army recruits has invited criticisms of sample-selection bias.

GDP reconstructions provide information about the size, composition and temporal dynamics of colonial economies on the macro (country) level. However, they suffer from the fact that they are largely driven by those parts of the economy for which most reliable aggregate data is available, such as the public sector and foreign trade. In his recent attempt to reconstruct Ghanaian GDP (1891-1950), Morten Jerven indeed admits that "we lack data on agricultural production, general consumption, rural wages, and in particular all market exchanges that were not recorded by the colonial administration."[8] GDP reconstructions also offer little insight into economic realities on the micro (household) level.

Real wage studies address the temporal development of living standards of ordinary Africans, using annual series of local prices and unskilled wages to shed light on the purchasing power of urban unskilled labourers. As such, they skilfully circumvent the pitfalls and shortcomings of aggregate approaches. By constructing time series of urban real wages for British African

d'Ivoire'; Also see Moradi, Austin, and Baten. "Heights and development in a cash-crop colony: living standards in Ghana, 1870-1980." *African Economic History Network Working Paper, No. 7* (2013). On real wages see Bowden et al. 'Measuring and explaining poverty'; De Zwart 'South African living standards', Frankema and van Waijenburg 'Structural impediments'; Ronnback 'Pre-colonial Gold Coast'. Also see; Bolt & Hillbom 'Real wages and standards of living'

[5] On taxation see Frankema 'Raising revenue' Frankema 'Colonial taxation', Gardner *Taxing colonial Africa* and Frankema and Van Waijenburg 'Metropolitan blueprints'. On education see Frankema 'Origins of formal education'. On gender see Meier zu Selhausen 'Missionaries and female empowerment' and Meier zu Selhausen and Weisdorf. "A colonial legacy of African gender inequality? Evidence from Christian Kampala, 1895-2011." *CGEH Working Paper Series No. 60* (2014).

[6] Frankema and van Waijenburg 'Structural impediments'

[7] Bowden, Chiripanhura and Mosley 'Measuring and explaining poverty'

[8] Jerven 'West African experiment', p. 10

colonies, Frankema and van Waijenburg have made an important contribution to gain a better insight into historical African welfare development on the micro (household) level.[9] They divide an annual unskilled male wage by a household's costs of living at subsistence level to arrive at a "welfare ratio". The cost of living is calculated using a 'family barebones basket' which includes the cheapest available staple and small quantities of meat, oil, sugar, cloth, soap and fuel providing for three adult male equivalents, plus an additional 5% of the basket price to account for rent. This methodology, based on the seminal work of Robert C. Allen, has proven to be an elegant and feasible approach to measure the *purchasing power of urban male wages*.[10] However, the representativeness of real wage estimates as an indicator of welfare of large sections of the population is debatable: the assumed male breadwinner in stable wage employment supporting wife and children constituted only a very small (albeit growing) section of the population in an African colonial setting.

Rather than relying mainly on a male wage, African households managed diversified livelihood portfolios which often involved temporary or seasonal wage labour, farming for home consumption and markets, livestock keeping and a variety of crafts and trades. As a rule, even if one of the family members was a wage labourer, households continued to rely on farm income. The goal of most unskilled labourers was to earn as much as possible in a short span of time at low costs, in order to limit their period of absence from home while maximize the cash earnings. Rather than providing for the proverbial 'bread', the remitted wage could be used to pay taxes and other monetary obligations, to obtain additional consumption items, such as cloth, to invest in a bicycle, a corrugated roof, farming implements, or to acquire livestock.

3. A new approach to measuring rural welfare

This paper aims to articulate a method to measure the income of Africa's rural majorities. The estimation of the material standards of living of self-employed households whose income is for a large part composed of subsistence production is less straightforward than that of a household that obtains the bulk of its income from a full-time wage breadwinner, as is hypothesized in the real wage literature. To arrive at an estimate, we need to overcome formidable *source-related* and *conceptual-methodological* obstacles.

[9] Frankema and van Waijenburg *Structural impediments*

[10] The methodology is developed in Allen 'Great divergence' and Allen *British Industrial Revolution*. See Frankema and van Waijenburg *Structural impediments* apply the method to British colonial Africa and cite further global studies using Allen's welfare ratios.

First of all, detailed and reliable rural statistics do not figure prominently in the colonial archival records. However, I argue that some of the source-related obstacles that have been pinpointed by previous researchers can be overcome for at least some regions and for some periods of the colonial era. While statistics on individual smallholdings are scarce in the early colonial period, during the interwar years colonial governments throughout Africa began to study rural communities more intensively, aiming to increase export crop production, and motivated by newly emerging concerns such as soil erosion and rural food supply.[11] Further stimulus was given by the International Institute of Agriculture, which conducted the first World Agricultural Census in 1930, even though the African contributions to this census were still very modest.[12] In the post-war period, comprehensive survey programs were set up in the framework of several world agricultural censuses conducted by the Food and Agriculture Organization.[13]

Uganda's rural statistical record, for example, includes annual acreage statistics on the district level,[14] at least 26 detailed village surveys conducted from the 1930s onwards[15], and a large scale, representative agricultural census, based on 12614 sampled farms (corresponding with approximately one percent of all farms in the country), conducted in the early 1960s as its contribution for the 1960 World Census of Agriculture.[16] These different statistics provide us with detailed farm-level data on household composition, crop acreages and livestock ownership. They also inform us about the social and spatial distribution of these variables.[17]

A second key challenge is to find ways to conceptualize and measure the composite or 'diversified' livelihoods of rural households. I propose to use the available data sources to construct *model farms*,[18] defined as follows:

[11] Anderson "Depression, Dust Bowl"
[12] International Institute *World Agricultural Census*
[13] Food and Agriculture Organization *1950 World Census*, Food and Agriculture Organization *1960 World Census*
[14] See the annual Uganda *Blue Book* and Uganda *Annual Report*
[15] See Table 2 for references
[16] Uganda *Census Volume 1*, Food and Agriculture Organization *1960 World Agricultural Census*
[17] The limitations of rural data are discussed, for example, in Berry *No condition* and Jerven "West African experiment". Others, including Austin *Land, labour and capital* and Green "Diversification", have shown that rural survey data can offer important insights.
[18] With model farms, I do not mean 'experimental farms', which have in the past been used by governments to disseminate and promote certain farming methods. Instead, I model stands for 'typical' or 'common'. For an application of farm modelling in a historical study, constructing model farms for pre-plague England, see Kitsikopoulos "A peasant budget model". Allen *Great Divergence*, p. 75-76 uses a model farm to compare rural and urban income development in England before and during the Industrial Revolution.

> *"A stylized representation of the common production and consumption unit of a geographically and temporally defined median smallholding, allocating the bulk of its resources, including that of (optionally) hired labour, to 1) farming for home consumption and 2a) commercial farming and/or 2b) seasonal wage labour."*

A model farm can describe smallholdings in a wide range of times and places during the colonial era, such as cocoa farmers in the West African forest belt, cotton smallholders in Uganda and squatters in the Kenyan 'white highlands', whose livelihood strategies consisted of maize cultivation, cattle and wage labour. Model farms are constructed to represent median, 'ideal typical' smallholdings.[19] They do not capture inequality between households, nor do they account for different stages in the household life cycle.[20] It is important to note that model farms focus on the micro (household) level and are not meant to capture developments on the macro (country, province or district) level. For example, Map 1 (Appendix) uses district level macro-statistics to shows how cotton and coffee diffused throughout Uganda during the colonial era. The map shows that per capita acreages of these cash crops increased over time. However, it tells us little about the effects of this expansion on the individual household level. The model farms, on the other hand, are meant to do exactly that.

To construct model farms, a range of time- and location-specific characteristics of rural households need to be studied. Ideally, we would like to have a complete overview of the income, expenditure and consumption. Such information, however, is only very rarely present in rural surveys from the colonial era. More commonly, we find observations on farm sizes, cultivated acreages, yields, livestock ownership, household sizes and rural prices. Only if a wide range of such variables are available, can we estimate the dimensions of an ordinary farm and use this information to reconstruct model farms.

To make the use of a model farm approach feasible, we also need to make assumptions. Firstly, I simplify livestock ownership by expressing all animals in terms of the most common species. For the conversion, I use the concept of "Tropical Livestock Units" (TLU's), which is a standard conversion for the value of different types of livestock, developed by the Food and

[19] Survey and census results show that farm size distributions in Uganda are positively skewed. To prevent the upward bias resulting from this distribution, the median is preferred over the mean.

[20] Such an approach is to some degree comparable to the typical urban household constructed in the real wage literature. The rural household, however, necessarily needs to be embedded in its local environment.

Agriculture Organization.[21] Second, I exclude minor crops and convert the variety of cultivated crops into only one staple crop and one protein crop. For example, while surveys indicate that Uganda's farmers cultivate small acreages of beans, peas, groundnuts and sesame seeds, I assume that the collective acreage of all of these crops is cultivated with beans only. Third, I exclude additional sources of income from activities such as household industries, trade, hunting and gathering, inferring from primary and secondary accounts that these sources of income were only of minor importance in Ugandan rural livelihoods.

A huge literature has described long-run agrarian change in colonial Africa, pointing at the transformative effect of a wide range of factors, including colonial policy, population growth, commercialization, technology and environmental change.[22] Before model farms can be generalized in time, it is important, therefore, to specify clearly the temporal frame to which they apply. As most data on rural communities comes in the form of labour-intensive surveys taken only in specific (and often quite random) sample years, we need to decide meticulously for which period such data can be used as a benchmark.

I am fully aware that the model farms, defined as such, are constructs with limitations. In reality smallholders cultivated a wide range of minor food and cash crops. We know that in the short-run, farmers changed their crop mix in reaction to price incentives. Also, in some cases, activities such as fishing, trading or household industry could contribute significantly to the household's income. Moreover, it is very difficult to incorporate weather fluctuations into the annual estimates of agricultural production, even though, in reality, rural households' income is in fact likely to have been affected by weather shocks. Finally, the model farms are abstracted from their social context. They focus on the value of production and less on questions such as whether the described households were landowners, tenants or sharecroppers and what degrees of extraction they faced.[23] They also take at face value the concept of the household as used by the surveyors. I argue, however, that these simplifications and assumptions are necessary to put rural incomes in a broader comparative perspective, allowing us to generate useful insights into the level and development of rural incomes in across colonial Africa. Nevertheless, the caveats and potential biases must be constantly born in mind and scrutinized in the context of specific case studies, as I will do in the following sections on colonial Uganda.

[21] See for an application of the TLU concept to an Sub-Saharan African context: International Livestock Centre for Africa. "Livestock Production in Tsetse Affected Areas of Africa : Proceedings of a Meeting Held in Nairobi, Kenya from the 23rd to 27th November 1987." Nairobi, Kenya, 1988.
[22] (Review) articles discussing the topic include Berry "Food Crisis", Berry *No Condition*, Niemeijer "African Agricultural History" and Austin "Resources, Techniques and Strategies"
[23] Isaacman "Rural social protest"

4. Smallholders and cash crops in Uganda

Like many other African colonies, Uganda experienced a 'cash crop revolution' during the period of colonial rule.[24] Suffering prohibitive transportation costs, Uganda's pre-colonial participation in overseas trade was limited to overland trade of a small trickle of a few highly valued commodities, carried to the Swahili coast by human porters (often human captives). The kingdoms in the interior Great Lakes Region as well as their lesser centralized neighbours traded items such as salt, bark cloth, iron hoes and food crops, as well as human captives.[25]

Late 19th century British missionaries initiated the first experiments in cotton cultivation. Commercial growing became viable after the completion of the Uganda railway in 1903, connecting Lake Victoria to the harbour of Mombasa. At first planters and settlers had high hopes for Uganda, and tried to gain a foothold. However, their eventual contribution to the country's exports was minor compared to that of African smallholders.[26] By the 1920s, most plantations had collapsed and smallholders constituted the unquestionable backbone of Uganda's colonial economy.[27] In both the southern plantain-based and north-eastern millet-based farming systems, cotton caught on. By the 1930s, cotton had spread to all but a few areas in the remote north and west and was still expanding. At the same time Robusta coffee (henceforth referred to simply as coffee) gradually began to overtake cotton in the most commercially developed parts of the fertile plantain regions adjacent to Lake Victoria.

During the great depression, cotton and coffee prices plummeted, but smallholder production continued to expand. In the final post-war colonial decades, coffee soon surpassed cotton as Uganda's main export crop. Relatively small amounts of other cash crops, such as Arabica coffee, tobacco, sugar and tea were cultivated in specific areas. Some surplus food crops, most notably groundnuts and sesame seed were also exported in small quantities. Table 1 shows the rapid development of Uganda's two key export crops. Map 1 (Appendix) shows their spatial expansion and eventual reach.

[24] Tosh 'Cash-crop revolution', Austin 'Explaining and evaluating'

[25] See for some examples Gray and Birmingham *Pre-colonial African trade,* Reid *Political power,* Médard and Doyle *Slavery*

[26] The literature often refers to small-scale famers who only produce for markets on a small scale and continue to rely on subsistence production as *peasants* (see Isaacman 'Peasants'). However, the term has political overtones which are not the subject of this paper. I have therefore chosen use the more neutral term *smallholders*

[27] See Youe 'Peasants, planters and cotton capitalists', Taylor 'European plantation sector' and Wrigley *Crops and wealth*

Table 1: **Yearly contribution of cotton (ginned) and coffee (unroasted *Robusta* and *Arabica*) to Uganda exports, 1901-1970 (5-year-averages)**

Period	Volume of exports (tonnes)		Value of exports (£000)			Share of total domestic export value		
	Cotton	Coffee	Cotton	Coffee	Total exports	Cotton	Coffee	Both
1901-05	*negligible*	*negligible*	*negligible*	*negligible*	n/a	*negligible*	*negligible*	*negligible*
1906-10	1442	10	71	0.2	175	41%	*negligible*	41%
1911-15	4837	829	307	33	446	69%	7%	76%
1916-20	4671	1964	1388	98	1739	80%	6%	85%
1921-25	19680	2112	2472	121	2829	87%	4%	92%
1926-30	28458	2105	2417	165	3127	77%	5%	83%
1931-35	44632	5443	2304	223	3014	76%	7%	84%
1936-40	61521	14753	3488	407	4748	73%	9%	82%
1941-45	42775	19269	4486	920	6737	67%	14%	80%
1946-50	50258	29608	10847	3564	17526	62%	20%	82%
1951-55	63712	50804	22548	14231	42057	54%	34%	87%
1956-60	65462	94926	17052	18762	43073	40%	44%	83%
1961-65	57853	136586	14385	25427	51090	28%	50%	78%
1966-70	64079	164821	14459	36033	67217	22%	54%	75%

Notes: Totals in the final column do not always add up, due to rounding. Total domestic export volume only includes exports of domestic produce, re-exports are excluded. For a comparison with cocoa exports in the Gold Coast, see a similar table in Austin 'Vent-for-surplus', p. 6. Export figures are fairly representative for total production. During the 1950s and 1960s, some 5000 additional tonnes of cotton were produced for a locally established textile factory (Jameson and Tothill *Agriculture in Uganda*, p. 121) .

Sources: 1901-1945: Uganda Protectorate *Blue Books*, 1946-1949: Annual Board of Trade Statistical *Abstracts for the Commonwealth*, 1950-1961-1970: Uganda *Statistical Abstract*

Export crops had a profound impact on Uganda's economy and society. The success of export crop cultivation enabled Uganda's administration to collect direct and indirect taxes with relative ease. As a result, by the First World War the local colonial administration no longer required aid from Britain.[28] Tax proceeds were, at least partly, reinvested in the local economy. They paid for the salaries of European administrators, but also boosted investments in public goods, such as roads, schools and hospitals. Even though colonial Uganda's national income development before 1950 has never been reconstructed, export crops are likely to have exerted a positive influence on the growth of the economy as a whole. More contested, however, is their impact on individual ordinary households.

[28] Youe 'Peasants, planters and cotton capitalists'

5. Rural welfare in Uganda, 1915-1970 (2000)

I limit my reconstruction of rural welfare development in Uganda to smallholdings cultivating either cotton or coffee. An agricultural sample census conducted in 1963, just after independence, estimated that Uganda counted 1.2 million agricultural holdings, of which 46 percent cultivated coffee and 63 percent cultivated cotton.[29] Cotton was grown in the southern districts where plantain was the main food crop, as well as in the northern and eastern districts were grains (especially millet) dominated. Coffee was only cultivated in the southern plantain districts (see Map 1, Appendix). Cash cropping was only one aspect of *composite* livelihood strategies. The majority of households cultivated cotton to obtain a cash income, but not at the expense of food production. Christopher Wrigley, Uganda's agricultural historian, described a common smallholding in the interwar period as cultivating "two or three acres of food crops and [an] acre or two of cotton, tilled entirely or mainly by the members of the family."[30] An extensive overview of agriculture in Uganda published in 1970 could still claim that "all farms tend to contribute to both [the monetary and the subsistence sector]. [F]ew farmers specialize to the extent of devoting all their resources to cash crop production and relying on the local markets to supply their food requirements."[31]

Indeed, survey data indicates that, at independence, practically all smallholdings in the cash crop regions of Uganda cultivated both food crops and cash crops.[32] In the southern regions, households combined a perennial plantain garden (*lusuku*) with small rotating fields of cotton and food crops, such as beans, groundnuts and maize. In the northern and eastern regions, cotton was integrated into a system of fallow farming, in crop cycles which also included millets, groundnuts, sesame seed and sweet potatoes. In some of these regions, ploughs were used to prepare the fields.[33] In the south, coffee and plantain fit in together very well. Both are perennial crops, and they were often interplanted.[34] A budget survey in 1962/63 shows that even the most advanced coffee farmers in Buganda, who were considered the most 'progressive' and 'developed' farmers, continued to devote substantial resources to the

[29] Assuming an average household size of five, this means that three quarters of Uganda's population of 8 million could be classified as smallholders, and that approximately half of Uganda's population made a cash income from the cultivation of cotton. See Uganda *Census Volume 1*, Uganda *Census Volume 3*

[30] Wrigley *Crops and wealth*, p. 56

[31] Jameson and Tothill *Agriculture in Uganda*, p. 116.

[32] Uganda *Census Volume 3*

[33] Vail *History of agricultural innovation*

[34] For a general overview of Ugandan agriculture see Tothill *Agriculture in Uganda* and Jameson and Tothill *Agriculture in Uganda*. For more detailed descriptions of Uganda's different agricultural regions, see Parsons *Systems of Agriculture* and McMaster *Subsistence crop geography*. Regional reports on land use and agricultural practices were drafted in preparation for the East Africa Royal Commission (Dow Commission). See The National Archives (Kew), file CO 892/15. The surveys referred to in the notes to Table 2 also give insight into different local cultivation systems.

cultivation of food crops.[35] Cash crops were clearly the dominant source of cash income for most rural households. The 1963 census estimated that only 16% of all smallholdings in Uganda had a substantial source of income next to farming.[36] Additional employment was highest in regions in the north and west of the country, where few to no cash crops were cultivated.

Even though Ugandan agriculture in the colonial era is full of local specificities, a large and growing number of smallholdings can be classified as either: "plantain-cotton", "plantain-coffee" or "millet-cotton".[37] On the basis of these ideal types I construct three model farms, to capture the basic characteristics of median smallholdings within each of these three types.[38] The available sources used to construct model farms do not provide us with a fully balanced sample nor do they always report farm characteristics at the level of detail which we would be desirable. However, even though the estimates are inevitably rough and slight biases cannot be ruled out, the general characteristics of Uganda's smallholdings seem to be well-captured by the available sources and the resulting model farm estimates. Table 2 reports the key dimensions of the three model farms, as well as a range of sources on which I have based these estimates. To get some impression of the distribution of assets among different households, estimated *mean* farm size estimates are also stated in brackets.

Table 2: Key median dimensions (mean in brackets) of three model farms in colonial Uganda

Farm	Household size	Staple crop acreage	Bean acreage	Cash crop acreage	Livestock (TLU)	Seasonal wage labour
Plantain-Cotton	4* (5)	1.5 (2.25)	0.5 0.75)	1.5 (2.0)	0.3 (1.5)	None
Plantain-Coffee	4* (5)	1 (1.5)	0 (0.25)	1.0 (1.5)	0.15 (0.5)	None
Millet-Cotton	5 (6)	3 (4.5)	1 (1.5)	2 (2.5)	0.85 (4.0)	None

Sources: The model farms are based on 15 village surveys in the mid-1930s, of which 12 fell within the regions of one of the three model farms. See Tothill *Nineteen Surveys*. An additional 2 surveys of cotton-millet villages were conducted in the mid-1950s. See Wilson "Moruita Erony" and Wilson and Watson "Kasilang Erony". I collected additional village surveys for food crop farms in southwest Uganda and cotton-cassava-millet farms in west Uganda. These were consulted but eventually dropped because they represented only quite specific farming areas. Additional information on farm size distribution and crop acreages in the 1960s has been obtained from Uganda *Census Volume I, III* and *IV* and Nelson *Baseline survey*. The estimates were 'crosschecked' with more general observations by Tothill *Agriculture in Uganda*, Nye "Some results", Wrigley *Crops and wealth* , Parsons Systems of Agriculture, McMaster *Subsistence crop geography* Jameson and Tothill *Agriculture in Uganda*, Vail *History of agricultural innovation* as well as various Annual Reports by Uganda *Department of Agriculture*. Additional sources for estimating labour inputs are Kennedy *Economic motivation* and Masefield *Agricultural change*.

Note: A goat is counted as 0.1 TLU, a cow as 0.7 LTU. These units corresponds with an ownership of 3, 1.5 and 8.5 goats per model farm respectively. For the sake of comparison I take the household size to be 5 in all model farms in the remainder of this paper. Even though farmers in practice often intercropped their fields, the acreages refer to 'pure' fields. I have counted an interplanted acre as half a pure acre.

[35] Uganda *Coffee growers in Buganda*

[36] Uganda *Census Volume 1*, p. 27. Karamoja and Toro districts excluded.

[37] It was quite common for farmers in the plantain areas to combine cotton and coffee cultivation. However, because either one of these crops was usually dominant, I separate them.

[38] Unfortunately, too little evidence is available on (subsistence) farmers in regions where neither cotton nor coffee were cultivated to warrant the construction of model farms.

One of the most striking insights from the analysis of both quantitative and qualitative sources is the remarkable temporal constancy of farm sizes and characteristics from the interwar period up until the early post-independence period. The data reveals only slight changes in the mean and median number of livestock, household size and food and cash crop acreages per smallholding. This lack of significant change precludes the necessity of using different benchmarks over time, and justifies the assumption of using fixed model farms for the entire period studied. A deeper understanding of the lack of structural change in Ugandan agriculture is an important topic in its own right but falls outside the scope of this paper. However, it is not entirely surprising, considering the fact that few technologies beyond the iron hoe and, in some regions, the ox-driven plough were introduced. The productive capacity of a smallholding continued to depend on the amount of household labour that could be mobilized.[39] There is even some evidence that, in some regions, increasing population densities put pressure on the acreage available per household as well as on yields. As the most reliable and representative data comes from the late colonial period, this means that, if anything, my model farms might (slightly) underestimate the actual farm sizes in the interwar period.

A few remarks should accompany the model farm estimates. First, the median household sizes on each of the three model farms are lower than the average household sizes, which can be explained by the existence of a sizeable number of particularly large, often polygamous households.[40] Food and cash crop acreages are even more positively skewed, with a median that is considerably lower than the mean. This difference is probably caused by the fact that local elites consisting of landowners and chiefs, having access to communal or tribute labour, cultivated holdings with sizes far above the average.[41] The difference of median and mean livestock ownership is still larger, particularly on millet-cotton farms. Indeed, both primary and secondary sources indicate that livestock ownership in these regions was concentrated in the hands of a local elite.[42]

[39] Wrigley *Crops and wealth*

[40] Roscoe *Baganda* and Taylor *Growth of the church* note the presence of polygamy in early colonial Uganda. Fenske *African Polygamy* also finds a high instance of polygamy in Uganda, based on DHS data, especially for colonial birth cohorts. Tothill *Nineteen surveys* also reveals that polygamous households cultivated larger acreages of both food and cash crops, especially in the millet regions.

[41] The skewed distribution of farm sizes is discussed in Tothill *Nineteen surveys*, Wilson "Moruita Erony", Uganda *Census Volume III* and Nelson *Baseline Survey*.

[42] The surveys only sporadically attempted to count livestock ownership. Often, livestock of different owners were kept in a common "kraal" or attended all together by one "Bahima", a hired herder. In some cases herds moved quite far outside the village boundaries which made them difficult to count and even more difficult to assign ownership. In a few villages, surveyed in the 1930s, cattle ownership was recorded. In these cases, approximately a quarter of all households owned cattle, while half owned goats or sheep. Nelson *Baseline survey*

Interestingly, different sources suggest that food crop acreages at plantain-coffee farms were smaller than the acreages at plantain-cotton farms. This difference is likely to be the result of the fact that coffee farms were often situated in the most commercialized, densely populated regions, where land was relatively scarce, food crops could be more easily obtained from the market and, possibly, members of the household were drawn off the farm by more interesting or lucrative activities.[43] The estimates also shows that millet-cotton farms cultivated larger acreages of cash, and especially food crops, than plantain-cotton farms. The explanation is that millet yields fewer calories per acre than plantain, while agro-ecological conditions in the millet regions were generally also slightly poorer than in the plantain regions, where soils were more fertile and rainfall more equally distributed. As a result, households required larger acreages to sustain similar levels of agricultural production.

To measure *production* at the model farms, it is necessary to multiply the cultivated *acreages* with an estimate of *yields*. Several estimates of yields have been collected during the colonial era, both on the basis of field enquiries and on the basis measurements at experimental farms.[44] These estimates suggest that Uganda's yields were, at best, stagnant throughout the colonial period but, more likely, declined somewhat. The fact that most yield estimates are from the late colonial era, therefore, makes them conservative estimates for earlier periods. My yield estimates are generally meant to be conservative, accounting for seed ratios and waste during harvest and storage. Cotton yields are expressed as seed cotton. Robusta coffee yields are expressed as "Kiboko" (unhulled coffee). Table 3 reports the production estimates. It also present estimates of the total nutritional value of harvested food crops and livestock products.

---

suggest similar owneship figures for the late 1960s. An extreme example of intra-village inequality comes from Opami, a village in the millet-cotton district were one single household consisted of 9 wives, 66 acres of cultivated crops and 200 head of cattle. The two teams who surveyed the village in 1935, one of agronomists and one medical specialists, noted how the wealth and health of this household presented a 'singular contrast' to the other households in the village. See de Courcy-Ireland et al. *Health and agriculture* and Tothill *Nineteen surveys*, pp. 140-150.

[43] This implies that the model farm estimates underestimate welfare levels of median coffee-cultivating households Sources from the colonial era often mention how the plantain gardens were neglected as the result of cash crops and off-farm activities. See for example Masefield "Some recent observations", p. 16 and Parsons *Plantain-Robusta Coffee Systems*, p. 13

[44] Nye "Some results", Tothill *Agriculture in Uganda*, Masefield "Some recent observations", regional reports on shifting cultivation (1952) in The National Archives (Kew), file CO 892/15, Burgess *Calories and proteins*, Parsons *Systems of Agriculture*, McMaster *Subsistence crop geography*, Uganda *Census Volume IV*, Jameson and Tothill *Agriculture in Uganda*. Published yield data have been reviewed in A. Fermont and T. Benson. "Estimating Yield of Food Crops Grown by Smallholder Farmers: A Review of the Uganda Context." IFPRI Discussion Paper 01097, 2011.

Table 3: Production in weight and nutritional value of production at model farms

Farm	Staple crop volume	Bean volume	Cash crop volume	Meat volume	Milk volume	Calories/ AME/day	Protein/ AME/day
Plantain-Cotton	7500 lbs	400 lbs	600 lbs	15 lbs	4 gallon	2663	59
Plantain-Coffee	5000 lbs	0 lbs	1120 lbs	8 lbs	2 gallon	1417	14
Millet-Cotton	1500 lbs	400 lbs	400 lbs	43 lbs	10 gallon	2719	109

Notes: I took a household to correspond with 3 adult male equivalents (AME's). As median Ugandan households consisted of 4 or 5 members (see table 2), this estimate is in line with Allen *British Industrial Revolution* and Frankema and van Waijenburg 'Structural impediments' The estimates per AME are still likely to underrepresent actual caloric production. The majority of smallholders cultivated small acreages of either cassava or sweet potatoes. Both crops had potential yields far beyond those of either plantain or millet with comparable labour inputs per acre. However, in most cases farmers did not favour these staples and cultivated them only as complementary foods or as "famine reserves".

Sources: The estimates of yields and calories for the crops grown on model farms are as follows: Plantain: 5000 lbs/acre, 307 kilocalories per lb. of harvested product; Millet: 500 lbs/acre, 1550 kilocalories per lb. of harvested product; Beans 400 lbs/acre, 1514 kilocalories per lb. of harvested product (dried): Cotton in plantain regions: 400 lbs/acre. Cotton in millet regions: 200 lbs/acre; Robusta coffee (bearing trees): 1120 lbs/acre. I count goats and sheep as 0.1 TLU, cows as 0.7 TLU and chicken: 0.01 TLU. I express livestock yields in terms of yields from goats, as goats were more commonly kept by relatively modest households than cattle. I estimate the average slaughter age of goats at 4 years, meaning that the annual 'yield' is 0.25 goat. Following Burgess 'Calories and proteins', I estimate that a slaughtered goat yields 20 lbs of meat, which corresponds with an average 5 lbs annually. Following Foster *Rural development in Buganda*, I assume that 20% of the goat population gives milk, at an average 6 gallons of milk annually, corresponding with an average milk yield per goat of 1.2 gallon. This corresponds with 4637 calories of meat and 33273 calories of milk per TLU (10 goats), per year. The nutritional information comes from FAO. See Food and Agriculture Organization *Human Nutrition*.

The final step towards an estimate of rural welfare development is to use the production estimates to reconstruct the income of rural households. To estimate a rural household's nominal monetary income, I assign annual producer prices to the volume of export crops produced at the model farms (see Appendix 2 for annual producer prices of cotton and coffee). Production costs most often involved cash crop cultivation specifically (as in the case of production levies), or applied to holdings as a whole, regardless of their size (as in the case of buying or hiring ploughs or hoes). Sources report that production costs were generally low in colonial Uganda and were limited to some basic implements, rent and, in some cases, but not on our model farms, hired labour.[45] I estimate production costs at the millet-cotton farm at 10 percent of the cash crop value, mainly for buying hoes and hiring ploughs. The estimate for the plantain-cotton farm are set at 20 percent, as these farms were situated in the more commercialized regions where land had taken on a significantly higher value. The plantain-coffee farm are estimated to have incurred the highest hypothesized production costs, at 30 percent of the production value, to account for rent and some basic investments into coffee cultivation.[46]

[45] On the prevalence of hired labour see Richards *Economic development* and Uganda *Census Volume I.*

[46] These percentages are rough estimates, based on 1) Bluebook prices of iron hoes, 2) scattered observations on the price of plough rental in rural surveys, 3) scattered information about rent in rural surveys (usually flat rate, levied per farm rather than per acre), 4) observation on direct taxes specifically levied on the production of cash crops in Buganda (a tax known as 'Nvujjo') (Tothill et al. 1938, Tothill 1940, Jameson & Tothill 1970, Richards et al. 1973). I experimented with varying production costs over time, but outcomes were very similar.

As cash crops were, by definition, a source of cash income, it is obvious that we should assign a monetary value to them. But what to do with the food crops and livestock products, which were produced both for the market and for home consumption?

At this point, we can adopt two different strategies to construct smallholder welfare ratios:

(1) Addition to income: One could argue that food crops and livestock products are *marketed* and contribute to the households' monetary (cash) income. As the marketing of farm products adds to the household's purchasing power, the income generated by these products can be added to the household nominal income estimate.

(2) Reduction of costs: One could also argue that food crop cultivation and livestock serve to satisfy (a share of) a smallholder household's consumption needs, rather than to function as a source of monetary income. As the calories cultivated on the farm do not have to be bought on the market, this means that home-produced goods can be subtracted from the baskets of goods that households have to obtain from the market.

These two procedures lead to different estimates of rural welfare. Approach (1) assumes perfect markets for food crops and livestock products. Approach (2) expresses the value of food crops only in terms of their caloric content, refrains from assigning a monetary value to food crops and assumes that these crops were not traded. The second approach seems more feasible in an African context where households were largely self-sufficient, markets far from perfect, and trade in food crops limited. I argue, however, that a case can be made for both approaches, both on empirical and conceptual grounds. Farmers' key staples were often more highly valued than cheap staples such as cassava. If smallholders were able to market their food crops at market prices, or even willing to buy cheaper staples in return, they could generate significant incomes. Evidence from rural surveys suggest that, indeed, some trade in food crops took place and that some smallholders actually earned considerable income from the sale of protein crops and plantain.[47] Moreover, even if highly valued staple crops could not be 'cashed', the household's ability to consume them still represented a value.

Before we can measure the monetary values of food crops and livestock, we need to obtain prices. Annual average Kampala market prices are consistently available from the 1910s onwards (see Appendix 2). Some *rural* price data is available for Uganda as well. Up to 1945 Uganda's *Blue Books of Statistics* report food and commodity prices for some 20 markets throughout Uganda. Unfortunately, rural price statistics were no longer published consistently

[47] Carswell "Food crops", Tothill *Nineteen surveys*, Masefield "Some recent observations", McMaster *Subsistence crop geography*

after 1945. To see how urban and rural prices relate, I take price data from the period 1926-1945 for 8 rural markets for which consistent price series are available,[48] and compare the (unweighted) average prices of food (food crops and meat) and basic consumption goods (oil, sugar, cloth, soap and fuel) in these markets to the prices in Kampala, to obtain insight into the urban-rural price differential.[49] This analysis shows that the price level of food in rural markets hovered, on average, around sixty percent of Kampala prices over the entire 20 year period.[50] The level of other consumption goods was, on average, equal to Kampala prices.[51] Based on these average price differentials, I construct a rural price series, taking the price of food crops and livestock products at sixty percent of Kampala prices, and prices of other basic goods at the actual Kampala prices. Even though this approach gives us only a rough approximation of actual rural price levels, it is the best estimate that can be obtained with the scarcely available rural price data.

These price series give us market, rather than farm-gate prices. Even though this might overestimate the actual nominal income of the farmer,[52] the effect on the real income is limited because farmers also hypothesized to buy goods at market prices in return. Because millet prices are not reported for all years, I estimate the value of food crops at the millet-cotton farm conservatively on the basis of the cheapest (in terms of calories) of three grains: maize meal, sorghum and millet.[53] To measure the value of livestock I use beef prices.[54] Figures 1 to 3 show the *nominal* income from production at the three model farms at estimated rural price levels. Each figure also shows the hypothetical annual unskilled wage of a construction worker in Kampala. To estimate *real* income, I take approaches (1) and (2) as lower- and upper-bound estimates. To estimate smallholder welfare ratios I simply take the

[48] In the towns of Mubende, Mbale, Gulu, Fort Portal, Masaka, Arua, Lira and Masindi

[49] For the analysis of price development of the two baskets (food and other consumption goods), I used the weights from a barebones subsistence basket, which is introduced later in this section.

[50] The price differential fluctuated from year to year, but no clear trend can be observed. Further breaking down the prices of rural markets in plantain and millet areas, or rural markets in cash crop and food crop areas did not have a large effect on the differential.

[51] Unfortunately, I could obtain few rural prices for the post-war period. A few scattered observations between 1958 and 1967 suggest that both food crops and consumption goods had become more expensive in rural markets relative to Kampala. Using Kampala prices, therefore gives an optimistic view of rural purchasing power for this period. As will become clear, this is a conservative bias in my analysis.

[52] Who might have incurred costs bringing the produce to the market, or sell his produce to a trader who obtains a margin of the market price

[53] For years in which prices of either of these two grains as well as millet are available, their price per calorie were generally quite similar, except for remarkably high maize prices in 1926 and 1927.

[54] Based on an analysis of milk and beef prices in various markets in the time-period studied, I set the estimated value of the yielded milk per TLU at 0.8 of the value of the yielded meat per TLU. For purposes of price calculations, I substitute 4 lbs of meat per goat per year for the milk (in addition to the 5 lbs of meat). As such, I argue that a goat's milk and meat together yield the same monetary value of 9 lbs of meat. This corresponds with 90 lbs of meat per TLU. I use beef prices rather than mutton prices because this is the more conservative assumption (beef is cheaper) and because price series for beef are more consistently available.

average of both approaches. I express the consumption patterns of ordinary households in terms of *smallholder welfare ratios*, obtained by dividing the households' nominal income by three 'barebones baskets'.[55] See Appendix 1 for content of the barebones basket. Using these barebones baskets has two advantages. First, it expresses incomes in terms of a widely accepted standard, which clearly shows how incomes relate to a barebones subsistence level (a ratio of 1). Second, it makes my estimates comparable to real wage estimates. Figures 4 to 6 show the welfare ratio of rural households based on the average of approach (1) and (2). For comparison, they also show the welfare ratio of an unskilled construction worker.[56]

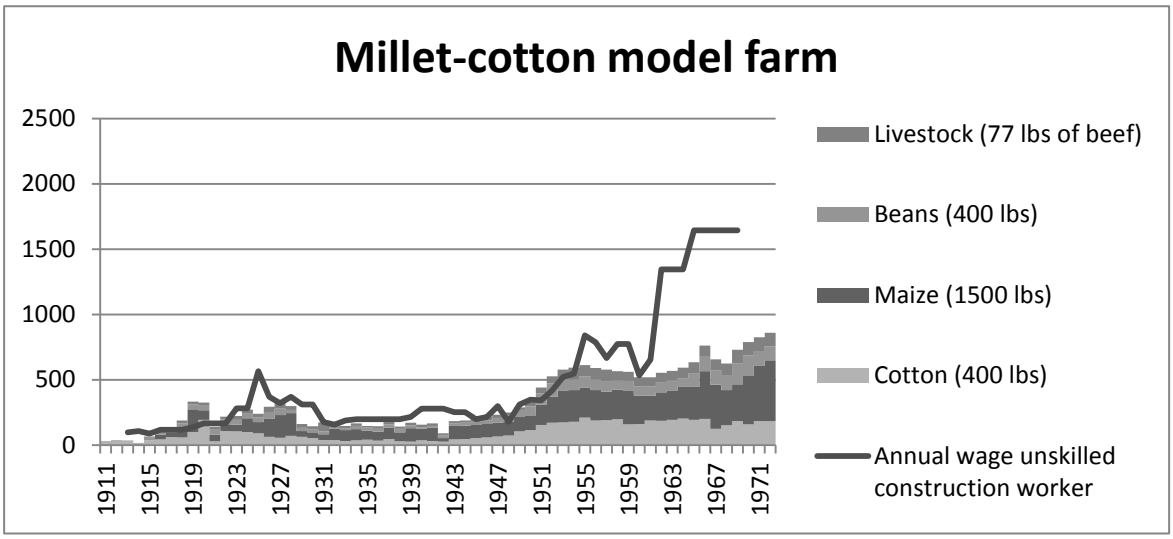
[55] Using three baskets to represent a households consumption needs is consistent with most real wage studies. It is, however, coincidental that rural household sizes in Uganda are comparable to the urban household sizes envisaged by real wage studies. In other case studies the number of baskets per households can be adapted to fit the actual household sizes, using the concept of 'adult male equivalents'.

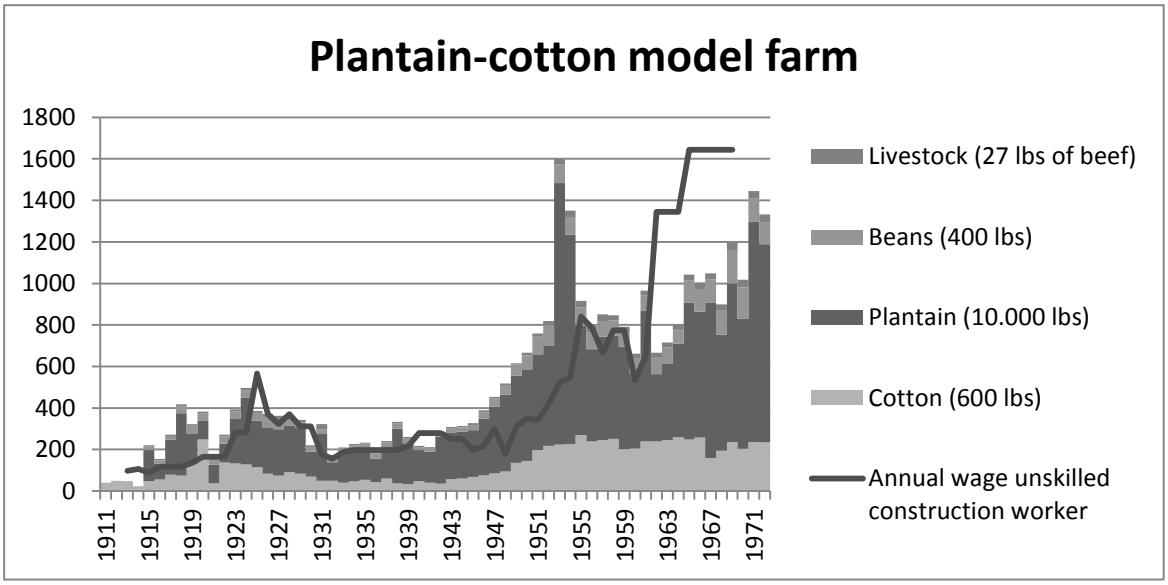
[56] These is how the two approaches are calculated:

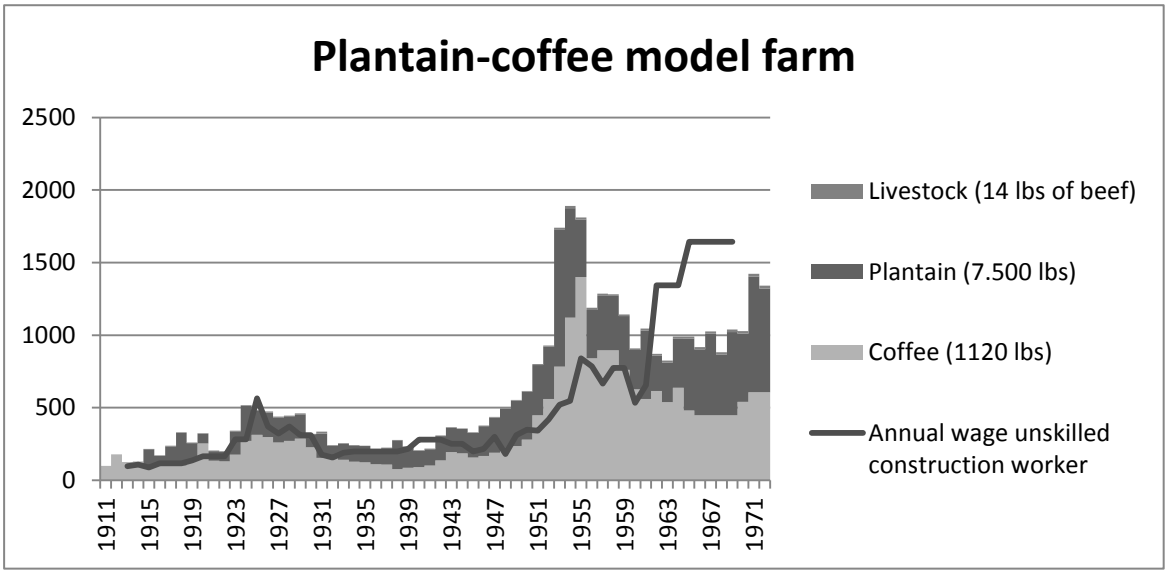
$$Approach\ (1): \frac{I\ (c,f,l)}{3.15 * b(t)} \qquad Approach\ (2): \frac{N}{b(s)} + \frac{I\ (c) - ({}^{N}/_{b(f)} * b(m)}{3.15 * b(t)}$$

Where *I* stands for Income, *c* for cash crops, *f* for food crops, *l* for livestock, *b(t)* for the total barebones basket, *b(s)* for the food components of the basket (produced at the smallholding), *b(m)* for the non-food components of the basket (bought in the market), *N* for the calories per adult male equivalent produced (see table 3).

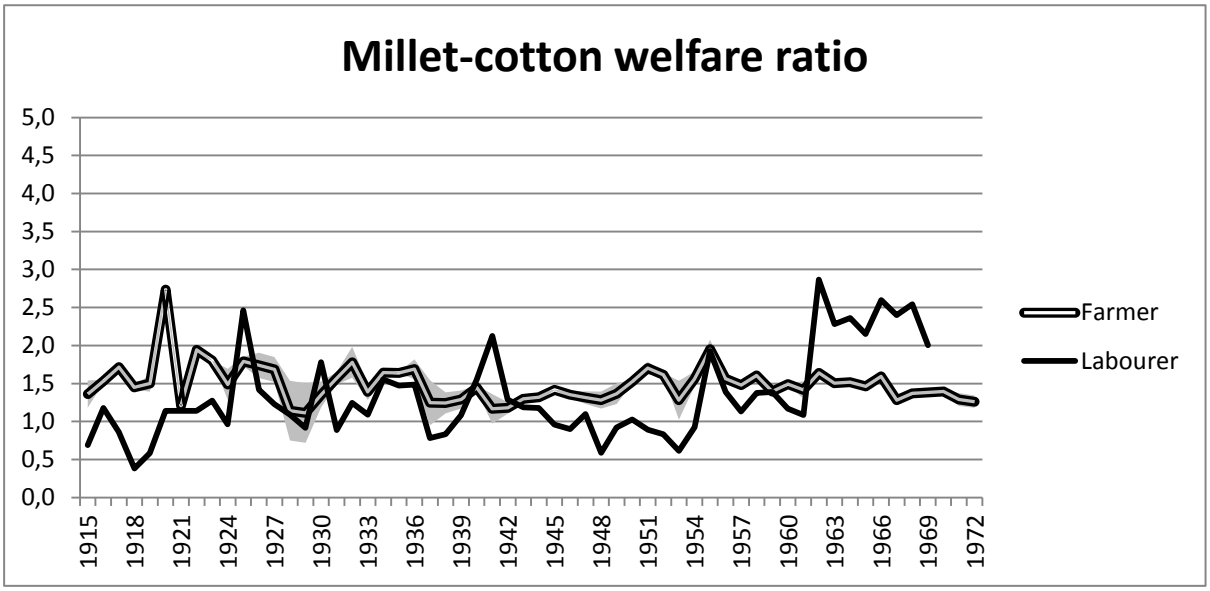
Figures 1-3: Nominal farm product value and unskilled wages

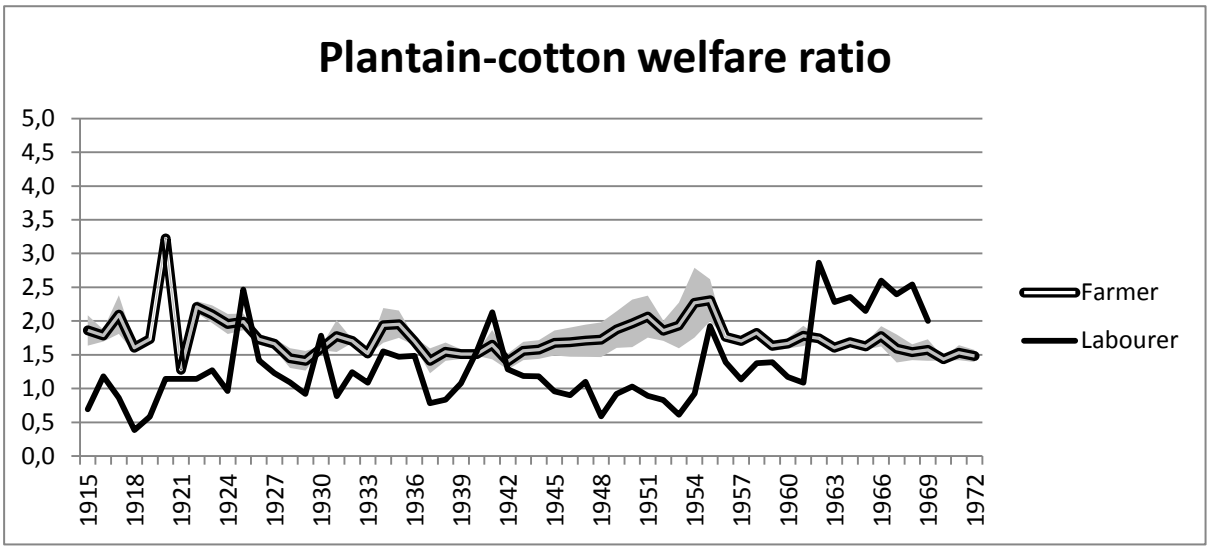


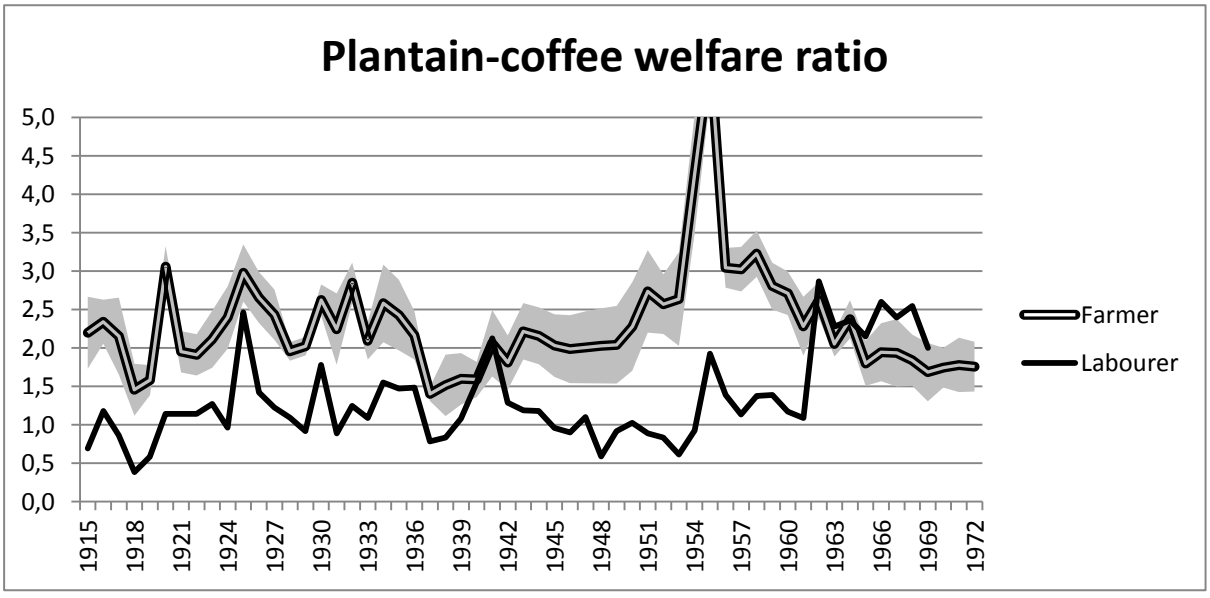




Figures 4-6: Welfare ratios and unskilled wages







6. Ugandan rural welfare development in the colonial era

What do the smallholder welfare ratios tell us about the level and direction of Ugandan welfare development in the colonial era? The *nominal* estimates (Figures 1 to 3) show that the cotton cultivators' returns to cash crops were much lower than what would have been the return to a full year of wage labour, and was also far from enough to sustain a household. The return to the small scale cultivation of coffee was much higher. If we incorporate the value of food crops and livestock, the level of income at each of the model farms rises substantially and, for most years, beyond that of a hypothetical male-breadwinner household. Evidently, the production of food crops next to cash crops was an important aspect of Uganda's rural household's livelihood strategies. At cotton farms, the bulk of subsistence needs was covered by home production of food, and, as a result, households were able to designate their export crop income to the payment of taxes, as well as for consumption and investment.

The welfare ratios (Figures 4 to 6) show that hypothesized male breadwinner households as well as median cotton farming households, especially those in the millet areas, lived precariously close to subsistence. The relatively high smallholder welfare ratios up to the mid-1920s, compared to the late-1920s and 1930s should be interpreted with some care. We know that in this early stage of cotton expansion the colonial state explicitly upheld, legitimized and transformed traditional labour and tax obligations in order to facilitate a swift expansion of cotton production.[57] Outside Buganda, the 'pacification' of local tribes, the promotion of cotton cultivation and collection of taxes were all left in the hands of Ganda agents.[58] As a result, a large share of the proceeds from cash crops probably did not end up in the hands of ordinary cultivators. Starting from the 1920s, the colonial state changed course and engaged in efforts to emancipate tenants from their unequal and dependent relationship with landowners. Rent and production levies were fixed and forced labour obligations were commuted into a cash tax.

The income of coffee farmers was somewhat more generous, even with our modest estimate of only one acre of coffee, and excluding additional sources of income such as petty trade which were probably available to a considerable share of rural households in the coffee areas. Even though coffee required more initial investments, including a period of at least three

[57] The tax burden consisted not only of a high poll tax and an additional tax to finance the native administration, but also a 'traditional' tax on crop harvests, beer brewing and cloth production (known as *nvujjo*), a 'traditional' labour obligation of one month (*luwalo*) and, in Buganda, 'customary tenancy' rent to landlords (*busulu*). Between 1908 and 1923, moreover, all adult males were obliged to work on communal projects (*kasanvu*) under the supervision of chiefs and colonial administrators.

[58] See Vincent 'colonial chiefs', Vincent *Teso in transformation*; Engdahl *Exchange of cotton*, Twaddle *Kakungulu*, Nayenga 'Commercial cotton growing'

years in which the trees had to mature and did not yet bear beans, its eventual return to labour was much higher. It is unsurprising, therefore, that coffee gradually overtook cotton as Uganda's key export crop (see table 1).

If we factor in the considerable tax burden on Ugandan households, we can only conclude that the material living standards of median rural households throughout the cash crop regions did not far exceed the subsistence level, except perhaps, in a short period of very favourable prices during the late 1940s and early 1950s. When reconciling the macro perspective of a booming and expanding cash crop economy with a micro perspective which reveals a lack of progress in terms of living standards at the household level, we must conclude that the expansion of cash crop cultivation was a process of extensive growth, in which cash crops were adopted by new households, who might have benefited from the initial adoption of cash crops, but from that moment on experienced little further gains.[59]

Previous scholars have suggested reasons for the fact that cotton cultivation expanded so rapidly nevertheless. They suggest that Ugandan Africans had few other possibilities to enter the cash economy. A share of the native population became landowners as a result of the Buganda agreement or took up skilled occupations, resulting from their contact with Christian missionaries.[60] However, most of the lucrative positions in cotton ginning and trade, as well as the higher administrative functions, were taken up by Asian migrants and Europeans, who, as a rule had more starting capital, trade connections and legislative power. Trading became a highly regulated business in Uganda, and petty traders and 'middlemen' were actively thwarted, which further biased commerce and industry against African entrants. Already in 1963, Cyril Ehrlich argued that colonial policies 'served to dampen incipient native enterprise', and even made it 'virtually impossible for small scale African entrepreneurs to penetrate'.[61] Even though Africans were not officially barred from most private and public positions, the colonial era saw the development of a de facto racially segregated labour market in which the overwhelming majority of Africans were relegated to positions of 'peasants, porters and clerks'.[62] Christopher Wrigley connects these issues to the success of the cash

[59] This is the perspective of Joan Vincent, the historian of Teso, the key cotton-millet region in Uganda, who argues in *Teso in tranformation*, p. 210-11 that "the marketing of cotton as a cash crop brought the Teso farmer no further economic advancements after [the initial adoption the first quarter of the twentieth century]. Profit did not lead him to increase his acreage, grow cotton more intensively, weed more thoroughly, or pick more opportunely. The nature of land tenure; soil erosion; poor marketing facilities; lack of investment capital for sprays, carts, weeders; banking conservatism; and rural insecurity—all contributed to this."

[60] Ongoing research by Meier zu Selhausen, van Leeuwen and Weisdorf

[61] Ehrlich *Social and economic implications*

[62] On racial segregation and the limited labour market opportunities for African Ugandans see Ehrlich *Social and economic implications*, Jamal *Asians in Uganda* and Mamdani *Politics and class formation*

crop economy, arguing that cotton production, rather than an entry to new economic opportunities, "may have been, and probably was in part, a symptom of constricted opportunity and diminished economic freedom."[63]

7. Why would Uganda farmers not work for wages?

The use of real wages as an indicator of welfare development of a broad section of the population is often justified by the argument that unskilled wages indicate "the marginal productivity of labour in the economy as a whole"[64]. It is tempting to apply this reasoning to the case of Uganda and argue that the limited gains to cash crop cultivation on the household level explain the low wages in Uganda.[65] However, the results in Figures 4 to 6 suggest that the incomes of the majority of ordinary rural Ugandan households in the colonial era were actually higher, albeit only slightly so, than those of hypothesized male breadwinner households.

However, the actual choice facing most households was to maintain food production at a smallholding and, on the side, either to cultivate cash crops or to engage in seasonal wage labour. To establish whether cash crop cultivation was indeed more lucrative that wage labour, I assume that cash crops and seasonal wage labour were perfect substitutes and calculate the number of months an adult male would have to work at unskilled wage rates to earn an income equivalent to that from the model farm's cash crops.[66] I subtract a monthly barebones basket from the monthly unskilled wage to account for the worker's cost of living in Kampala. The outcome of this exercise (five year averages) is reported in table 4, which shows that, for most of the colonial period, a millet farmer would have to work for approximately three months to be able to remit an income to his families comparable to that which he would have obtained from cotton cultivation. A plantain farmer would have to work for four months to earn the equivalent of his cotton income.[67]

[63] Wrigley *Crops and wealth*, p. 45
[64] Allen et al. 'Wages, prices, and living standards', p. 29
[65] See Frankema and van Waijenburg 'Structural impediments' for wages in Uganda relative to other British African colonies.
[66] The model farm approach would, in theory, allow for a reconstruction of rural income of a household engaging in seasonal wage labour. However, data on the amount of time seasonal wage labourers actually worked is very scarce, so is information on (subsistence) agriculture in the non-cash cropping regions. Instead I choose an approach which assumes that subsistence farming is not affected by the choice to grow cash crops or engage in wage labour and which focuses purely on the relative attractiveness of cash crops and seasonal wage labour as full substitutes.
[67] Before 1920, wage labour was highly unattractive, which should probably be attributed to the fact that a large share of the labourers was recruited through forced labour schemes (Kasanvu), which is likely to have suppressed wage rates. Coffee incomes were unattainable for unskilled wage labourers for most of the colonial

Table 4: Months of labour as unskilled construction worker in Kampala to earn the same cash income as from cash crops on the three model farms

	Months of labour to earn equivalent of		
	cotton income (millet-cotton)	cotton income (plantain-cotton)	coffee income (plantain-coffee)
1916-20	*Unattainable (>12 months)*		
1921-25	5.7	7.3	*Unattainable*
1926-30	3.1	4.0	*Unattainable*
1931-35	3.5	4.4	*Unattainable*
1936-40	3.0	3.8	8.0
1941-45	2.9	3.7	10.6
1946-50	6.5	8.3	*Unattainable*
1951-55	7.1	9.0	*Unattainable*
1956-60	4.2	5.4	*Unattainable*
1961-65	2.5	3.2	7.5
1966-70	1.4	1.8	3.8

Notes: To measure the actual income from urban employment, I have deducted the cost of living for one adult male at barebones subsistence level prices reported annually for Kampala markets. To calculate the cost of living, I have used the 'barebones subsistence basket', which includes 1940 calories and 40 grams of protein, obtained from the cheapest available source, as well as a small range of other necessities (see Frankema & van Waijenburg).

In Uganda's smallholding conditions, cotton took some four to six months to grow, which is more than the required months of wage labour to attain a similar income. However, working hours in wage employment were generally much longer than those in agriculture. Unskilled labourers are stated to work weeks up to 50 hours to earn a regular wage, while smallholders worked, on average, no more than 3 to 5 hours per day in their fields (Masefield 1962).[68] Moreover, engaging in migrant labour meant to be away and unable to participate in family and community life for a prolonged period of time.[69] If we take these economic and socio-

era. To check the robustness of my findings for the 1920s to 1970s, I have checked the estimated export crop and wage incomes with scattered rural and urban budget studies. Nye "Some results" gives estimates for the incomes from a Buganda (plantain region) smallholding. Wage earnings in the same period are extensively discussed by Powesland *Economic policy*. On rural incomes in Teso (millet region) throughout the colonial period see Vail *Agricultural innovation*. Fallers, *Bantu Bureaucracy*, p. 55 presents the average cash income of a smallholder in Busoga (plantain region). Also see a range of studies on income, expenditure and consumption by African labourers conducted in Uganda's two largest centres of employment, Kampala ((1949, 1952, 1953, 1957 and 1964) and Jinja (1952 and 1965), as well as by coffee farmers on the Buganda countryside (1962/63: Uganda *Pattern(s) of income*. Wrigley *Crops and wealth*, Elkan *Migrants and proletarians* and Richards *Economic development* also extensively discusses relative incomes from export crops and wage labour. The scattered figures in these different studies are consistent with my time series.

[68] A number of studies estimate the total labour input for an acre of cotton is estimated at approximately 100 working-days, or just over three months (Masefield *Agricultural change*, a report on shifting cultivation in Uganda, CO 892/15). Measured in working-hours, an acre of cotton only required 300 hours (Kennedy "Economic motivation", Vail *Agricultural innovation*).

[69] Wrigley summarizes these advantages of farming over wage labour: "agriculture was the normal occupation for the majority of men, but for very few was it more than a part-time occupation. Their labours in the cotton-

cultural costs into account the balance would move away from wage labour and in favour of export crop cultivation.

The edge of cotton farmers over wage labourers, despite the meagre returns to cotton cultivation was also acknowledged by contemporary colonial administrators. In 1938, for example, a commission appointed to advise upon minimum cotton prices concluded that:

> "the position of the grower [in the most advanced districts] after meeting all his commitments [...] cannot be considered entirely unsatisfactory. This becomes clearer when a comparison is made with the amounts which he would have been able to make if he had [...] worked as a labourer. [...] the cultivator is [...] appreciably better off than the labourer, with the additional advantage that after the crop has been harvested he has from five to six months available in which he can devote himself to other money-making pursuits, while in any case he produces the bulk of his food requirements from the parts of his holding which are not occupied by cotton."[70]

The advantage of cotton cultivation over seasonal wage labour, however, appears to have been small. In some cases, smallholders in export crop areas favoured wage labour over cash crops. In 1927-1929, for example, cotton prices in Buganda were suppressed as a result of a price ring among cotton ginneries, resulting in an rapid and unexpected supply of local labour.[71] A failed harvest could also lead to a sudden supply of labour. The *Administration Report* of 1934, for example, noted that in Teso district, "owing to the partial failure of the cotton crop, tax came in very slowly and many peasants left the District in search for work."[72]

---

fields left most people ample time for beer and talk, for family ceremonies and family quarrels, for village politics and the other activities which made up the normal stuff of rural life" (Wrigley *Crops and wealth*, p. 58).

[70] In Uganda *Labour situation*. A similar Agricultural officer Nye "Some results", p.462, similarly observed that "the average return [on cotton production in Buganda] is fairly satisfactory, but after payment of taxes, etc. the average sum available for the holder is only sh. 70 per year, which cannot be looked upon as a very good return for a year's work; but it has to be taken into account that his family's food has cost him nothing except his own labour, so that he is still better off than a porter earning sh. 12 a month, and in addition he is independent."

[71] P.G. Powesland in Richards *Economic development*, p. 36

[72] Uganda *Department of Agriculture*. The same passage also testifies to the adaptability and resilience of smallholders facing a failed cotton harvest, noting that 'the lack of success in cotton was compensated by the increased sale of [sesame seed] and groundnuts' Another example of farmers who preferred wage labour over cash crop cultivation comes from a rural survey in Busoga district in 1935, which states how "[There is group of Teso from Bukedea [...] who work for anyone who wants a porter. They work for periods up to a year, and then often return home. [...] They say that they get more money in this way than growing cotton [...], owing to the small yields on their own [farms]", in Tothill *Nineteen surveys*

8. How to explain Uganda's low wages?

Because ordinary Ugandans usually opted for cash crop cultivation, labourers were continuously in short supply. Already in 1908 a colonial officer commented that "the question of labour is at the moment a most difficult problem. It is so very easy to earn the hut tax now by growing cotton [...] The crop produced is sufficient to pay all necessary expenses for the year."[73] A telling reaction of the British administration to the labour shortage was the institution of *Kasanvu*, a system of forced labour through which adult males could be recruited to work for part of the year on road building. The Baganda heavily protested the system, until it was abolished in 1922.[74] The issue of labour supply, however, lingered throughout the colonial era, while wages also remained low.[75] This leaves us with a paradox: if wages were generally not high enough to attract farmers, who were Uganda's labourers?

Firstly, an important share of the unskilled labour force came from regions in western and northern Uganda where few export crops were cultivated, and where households conforming to our model farms were rare (see Map 1, Appendix). Why did these smallholders not adopt cash crops as well? The cultivation of tobacco, coffee and flax were all attempted in south-western Uganda, which enjoyed favourable agro-ecological conditions, while tobacco was introduced in the northern districts. These crops, however, did not took hold on a large scale with local smallholders, who, after a few years of low producer prices, often discontinued production.[76] The key explanation for these low prices were prohibitively high transportation costs. For example, the agricultural officer of Kigezi district in south-western Uganda noted in 1945 that "any economic crop [...] must be of relatively high value to withstand the long haul to the railroad".[77] A case in point is the district of Bunyoro, a district northwest of Buganda. Cash crops were cultivated in Bunyoro, but production was much more concentrated in the hands of large farmers employing hired labour than was the case in other districts. According to Shane Doyle, the district's historian, "[the] basic problems of poor communications and limited investment in agricultural development, combined with consistently unfair marketing policies, help explain why differentiation was so important in Bunyoro, for only people able to enjoy real economies of scale could do very well in the late colonial economy."[78]

[73] Hattersly quoted by P.G. Powesland in Richards *Economic development*, p. 19
[74] P.G. Powesland in Richards *Economic development*. The abolishment of Kasanvu explains, most likely, the sudden rise of nominal and real wages in the early 1920s (figures 1 to 6) and the sudden increasing attractiveness of wage labour vis-a-vis cash crop cultivation.
[75] See for example Elliot *Unskilled labour*, Uganda *Cotton industry*, Uganda *Labour situation*, Powesland *Economic policy*, Richards *Economic development*
[76] Carswell "Food crops"
[77] Unpublished report from 1945 by J.W. Purseglove, p. 22
[78] Doyle *Crisis and decline*, p. 191

Secondly, even more important than migrant labourers from Uganda's outlying districts, were transnational migrants. In 1923, the year after the abolishment of *Kasanvu*, large numbers of labour migrants from the neighbouring Belgian-mandated colony of Ruanda-Urundi were first mentioned in administrative sources. Soon, they came in large numbers. Ugandan migration figures from the late 1930s report up to 100.000 migrants from Ruanda-Urundi arriving to, and departing from Uganda annually. Population counts in Ruanda-Urundi indicate that, in the late 1930s, an average 40.000 labourers were absent on seasonal migration to British territories ever year on December 31st. Ruanda-Urundi was the most important source of cross-border migrants, but substantial numbers also came from Tanganyika, Congo and Kenya. Table 5 shows that the presence of migrants in Buganda rapidly expanded.

Table 5: Migrants in Buganda (as share of total population)

Census year	Share of Ruanda and Urundi	Share of other non-Baganda	Total share of non-Baganda
1931	2.6%	10.5%	13.1%
1948	15.8%	18.0%	33.8%
1959	19.3%	25.9%	45.2%

Sources: Richards *Economic development*, pp. 101-112, Uganda *Census, 1959*

Surveys of Uganda's labour market also testify to the sharp overrepresentation of migrants in the wage labour force. In 1938, Ruanda-Urundi made up 66% of all employees on sugar estates and 62% of employees in all other non-African agriculture. Of all ginnery employees, 75% were Ruanda-Urundi. By 1950, Ruanda-Urundi still made up 47% of employees on non-African farms and 31% of employees in ginneries.[79]

Why were these labour migrants willing to work for low wages in Uganda? Government studies show that the Banyaruanda and Rundi migrant labourers who annually travelled to Buganda, by foot and later by bus, arrived in a very poor physical state, often carrying disease and balancing on the brink of starvation.[80] Observers during the 1930s portrayed migrants as desperate and destitute rather than adventurous and entrepreneurial, fleeing conditions of

[79] These statistics are from Richards *Economic development*, pp. 93, 212. They probably still underestimate the dominance of migrants in Buganda's labour force: majority of migrants who were recorded in the migration and population statistics could not be accounted for in the official employment statistics because they were absorbed in the rural economy, choosing to work on the larger African coffee farms rather than on non-African plantations or other jobs in the 'formal' economy.

[80] Elliot *Conditions affecting unskilled labour*, Loewenthal *Working capacity*, Loewenthal *Survey of Diet*, Uganda *Labour situation*, Uganda *Labour migration routes*, Elkan *Migrants and proletarians*

population pressure, high taxation and forced labour in the Belgian territories.[81] Being on a mission to earn a cash income as soon as possible and to return to their homes and families, labour migrants were said to "starve themselves in their effort to accumulate money". As a consequence of their poverty and the tough overland journey to Buganda, their productivity was low.[82] Nevertheless, they were highly sought after by employees, as they were "generally willing to increase the length of their working day on the standard rate and may even be willing to work overtime at less than the standard time [...] to save as much as they can in as little time as need be and they are prepared to work to the limits of their capacity."[83]

Perhaps the most remarkable indication that cash crop cultivation was ultimately a more interesting proposition than wage labour, is the fact that even migrant labourers soon discovered the benefits of cotton cultivation over wage labour. A 1939 survey of a village without cash crops in south-western Uganda close to the Rwandan border, for example, details how for over ten years, the majority of men had left the village for a few months a year to work in Buganda on the land of one particular landowner. It describes how these migrant labourers provided contract labour for the landlord in return for food and some cash, while they also hired plots from the landowner on which they cultivated cotton during their free hours.[84] A study of migrant labour in Buganda in 1951 reveals that this practice was still common.[85] Migrants also set up their own holdings, moving with their families to Buganda to profit from the booming cash crop economy. During interviews in 1951, "settled immigrants in [Buganda] explained that they had finally taken up plots of land because they had got so tired of working for money in the morning and for food in the afternoon that they had begun to envy the much shorter working day of the Ganda peasant with whom they were associated."[86] According the 1963 agricultural census, 12% of all smallholders in Buganda were migrants from Ruanda-Urundi.[87]

[81] Richards *Economic development*, Dorsey *Rwandan colonial economy*
[82] Elliot *Condiions affecting unskilled labour*, Loewenthal *Working capacity*
[83] Elkan *Migrants and proletarians*, p. 118-20. The behaviour of labour migrants fits with the theory of a 'backward bending supply of labour', which posits that the supply of labour only increases with lower wage rates, as the labour migrants have a certain target in mind and return home once the target is reached. Indeed, the supply of migrant labourers was plenty; employers could easily find replacement if their labourers were exhausted and no longer fit to work.
[84] "Kitozho Mutala Survey, Kigezi" (1940, unpublished) by J.W. Purseglove.
[85] Richards *Economic development*
[86] Richards *Economic development*, p. 122
[87] Uganda *Census Volume I*

9. A twist in the tale?

Finally, the figures and tables reveal a striking 'twist in the tale' that has not been discussed in the text yet. A comparison of farm incomes and wages, both nominal and real, strongly suggests that an urban-rural reversal took place around the time of independence. For this paper, I collected data up until 1970, ten years after independence and a year before Idi Amin took power, which ushered a dark period in Ugandan history (also literally, as reliable statistics disappeared altogether). The data series show that, in the second half of the 1950s, while farm incomes were stagnant, wages rapidly 'took off from the subsistence floor' and the incomes of ordinary export crop cultivators began to lag behind.[88] The rise in unskilled wages is remarkable but real. Urban surveys of unskilled workers note how diets improved and inventories reveal that workers possessed increasing amounts of furniture, cutlery and clothing. Rising numbers of labourers brought their families to town, and settled more permanently at centres of employment, generating stable wage incomes.[89] At first, up until the mid-1950s, producer prices for cotton rose in tandem with nominal wages. Coffee prices showed an even more favourable trend, peaking in 1955. However, prices paid to producers stagnated afterwards and the gap began to open up.

The urban-rural reversal is also noted by contemporary observers. In a study of the agricultural development in Buganda, Richards et al. found that in the late-1960s "coffee farming was degenerating" and that " if economic growth was occurring in towns, it is likely that in many rural areas incomes had not risen in real terms for several years."[90] In a study on urban unemployment and labour migration in Uganda, Hutton noted that "from the middle of the 1950s wage earners were beginning to become much better off than their rural counterparts."[91] The reversal was so pronounced that, in a survey of Ugandan agriculture, Jameson and Tothill could argue that

> "it appears that the average employee outside agriculture is considerably better off than the self-employed farmer, and unless the level of agriculture rises rapidly this gap may be expected to widen."[92]

[88] Bowden et al. "Measuring and explaining" argue that, already from the 1920s, Ugandan real wages, like those in the West African 'peasant economies', 'rose from the subsistence floor', My series do not suggest that such a rise took place. Instead, I observe a rise in wages taking place in the second half of the 1950s.
[89] Elkan *Migrants and proletarians*. Also see a range of studies on income, expenditure and consumption by African labourers conducted in Uganda's two largest centres of employment, Kampala ((1949, 1952, 1953, 1957 and 1964) and Jinja (1952 and 1965): Uganda *Pattern(s) of income*
[90] Richards et al. *Subsistence to commercial farming*, p. 43
[91] Hutton *Reluctant farmers*, p. 18
[92] Jameson and Tothill *Agriculture in Uganda*, p. 116

Surprisingly, the shifting income earning opportunities did not have a major effect on Uganda's urbanization rates. Even though rural-urban migrants in search for work fuelled considerable growth of Kampala and other cities during the 1950s and 1960s[93], urbanization rates in Uganda remained very modest during this period: 4.7 percent in 1959 and 7.0 percent in 1969.[94] One of the explanations for the modest urbanization rates was the fact that, even though wages rose quite spectacularly, the demand for unskilled labourers did not. Although some job creation took place – the number of those in formal employment rose from some 200.000 in the 1950s and early 1960s to approximately 300.000 by 1970[95] – this rise was not enough to absorb large numbers of rural-urban migrants. Instead, most rural dwellers who made the move to town were relegated to under- or unemployment, only to return to their rural homes disenchanted. Even though they wanted to move out of the agricultural sector and work for high urban wages, they were also hardly able to give up subsistence farming for urban insecurity and unemployment. Instead, they ended up, in the terms of Caroline Hutton, being 'reluctant farmers'.[96]

The remarkable rise of unskilled wages in a context of ample supply of labour provides a paradox. Wages across the board were influenced by minimum wage policies, instituted in the late colonial era under the influence of labour unions and independence movements. Wages were also raised to stimulate the emergence of a stable, permanent and therefore more productive labour force, an objective pursued by colonial government to realize newly formulated development objectives.[97] Education became increasingly important as a criterion to enter stable employment.[98] Governments in the early post-independence period also used wage policies to buy political support.

At the same time colonial states stepped up their efforts to control agricultural markets, setting up monopoly marketing boards to buy produce at fixed prices. Marketing boards were not only an easy source of tax income, they were also used to influence farmers' decisions to grow food and cash crops. According to Wrigley, "low prices offered for exportable products were deliberately intended to have a disincentive effect,"[99] so that farmers would shift to food crops and urban prices would remain low. These dynamics continued into the post-colonial

[93] While Uganda's population grew annually with 2.5% in the 1950s, and 3.9% in the 1960s, conservative estimates attribute an annual growth rate of 4.9% to Kampala in the latter decade (Elliot 1977), while more generous estimates claim growth rates of 7.5 % and even 8.2% annually (Elliot 1977, Abbas 1982).
[94] Hirya *Spatial transformation*
[95] Elliot *Employment and income distribution*
[96] Hutton *Reluctant farmers*
[97] Elkan *Proletarians and labourers*
[98] Hutton *Reluctant farmers*
[99] Wrigley *Crops and wealth*, p. 70

era. Marketing boards began to function increasingly as extractive political and fiscal instruments, suppressing the prices that actually accrued to farmers.[100] Farmers also suffered from declining terms of trade, as world market prices for Uganda's key cash crops declined substantially during the late 1950s and the 1960s.

10. Conclusion

This paper has suggested a new approach to open the black box of rural welfare development in colonial Africa. It has employed this approach to measure the material standards of living of Ugandan households engaged in cash crop cultivation. It has concluded that, during the colonial era, cash crop cultivation was a more lucrative proposition than wage labour, but that incomes continued to be close to subsistence. The paper has suggested that the existence of large-scale migrant labour flows contribute to explain the low unskilled wages prevalent in Uganda. Finally, the paper has shown and explained how a striking rural-urban reversal took place in the late colonial and early post-colonial period. What have we learned from this method, and what are the implications of the Ugandan case for the study of African welfare development more broadly?

The paper feeds into ongoing debates about the nature and impact of Africa's colonial cash crop revolutions. Even though Uganda's population opted for the cultivation of cash crop in large numbers, their material standards of living never transcended subsistence level to an extent similar to that of West Africa's cocoa belt. Cotton was hardly a lucrative crop. The expansion of cash crop production in Uganda was not effected by increasing production on individual holdings, but rather a process of extensive growth: the expansion of number of smallholdings which entered the orbit of cash crop production. Even if Uganda's cash crop revolution was impressive in aggregate terms, its impact on the material standards of living of the majority of Ugandan households was limited. Uganda's colonial officers spoke positively of rural living standards in the colony, but they did so with 'comparable territories' as a reference point, by which they meant the other peasant export regions in Nyasaland or Tanganyika in East Africa, rather than Nigeria or the Gold Coast. The case of Uganda, therefore, substantiates the suggestion, formulated by Frankema & van Waijenburg, that East and West Africa were notably different in terms of standards of living and the productivity of labour.[101]

[100] Alibarhuho *Marketing board policy*, Bates *Markets and states*
[101] Frankema and van Waijenburg 'Structural impediments'

Previously, real wage studies have assumed that unskilled wages represent the marginal productivity of labour in large sections of the economy. Frankema & van Waijenburg have, instead, suggested the possibility that unskilled wages in East Africa were set in India. Based on this case of Uganda, both claims can be criticized. Both quantitative and qualitative evidence suggests that the majority of Ugandan households preferred cash crop cultivation over wage labour. Migrants from Indian descent dominated trade and industry, but were virtually absent from the unskilled labour force.[102] Instead, unskilled wages attracted labourers from Uganda's underdeveloped regions, as well as from neighbouring territories, most notably Ruanda-Urundi. Further, it is important to note that wages in the late colonial and early post-colonial period were the outcome of policy decisions rather than labour market dynamics. Most recent studies that measure African welfare development treat rising wages as a sign of increasing standards of living of large sections of the population.[103] However, the case of Uganda suggests that we should careful not to interpret rises of urban wages or formal sector GDP as representative of broader developments in largely rural societies.

References

Alibaruho, G. *The Impact of Marketing Board Policy on the Level and Variability of Cotton Producer Prices in Uganda, 1945-1969.* Nairobi: Institute of Development Studies, Nairobi University, 1974.

Allen, R.C. "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War." *Explorations in Economic History* 38 (2001): 411-47.

Allen, R.C. *The British Industrial Revolution in Global Perspective*. Cambridge: Cambridge University Press, 2009.

Allen, R.C., J.-P. Bassino, D. Ma, C. Moll-Murara, and J.L. van Zanden. "Wages, Prices, and Living Standards in China, 1738-1925: In Comparison with Europe, Japan, and India." *Economic History Review* 64, no. 1 (2011): 3-38.

Anderson, D.M. "Depression, Dust Bowl, Demography, and Drought: The Colonial State and Soil Conservation in East Africa During the 1930s." *African Affairs* 83, no. 332 (1984): 321-43.

Austin, G. *Labour, Land, and Capital in Ghana : From Slavery to Free Labour in Asante, 1807-1956*. Rochester, NY: University of Rochester Press, 2005.

[102] Jamal 'Asians in Uganda'
[103] Bowden et al. 'Measuring and explaining, Frankema & van Waijenburg 'Structural impediments'

Austin, G., J. Baten, and B. van Leeuwen. "The Biological Standard of Living in Early Nineteenth-Century West Africa: New Anthropometric Evidence for Northern Ghana and Burkina Faso." *Economic History Review* 65, no. 4 (2012): 1280-302.

Austin, Gareth. "Explaining and Evaluating the Cash Crop Revolution in the "Peasant" Colonies of Tropical Africa, Ca. 1890-Ca. 1930: Beyond "Vent for Surplus"." In *Africa's Development in Historical Perspective*, edited by Emmanuel Akyeampong, Robert H. Bates, Nathan Nunn and James Robinson, A., 295-320. Cambridge: Cambridge University Press, 2014.

Austin, G. "Vent for Surplus or Productivity Breakthrough? The Ghanaian Cocoa Take-Off, C. 1890-1936." *Economic History Review* (2014).

Bates, R.H. *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies*. Berkeley, CA: University of California Press, 1981.

Berry, S. "The Food Crisis and Agrarian Change in Africa: A Review Essay." *African Studies Review* 27, no. 2 (1984): 59-112.

Berry, S. *No Condition Is Permanent: The Social Dynamics of Agrarian Change in Sub-Saharan Africa*. Madison, Wis.: University of Wisconsin Press, 1993.

Bigsten, A. "Welfare and Economic Growth in Kenya, 1914-76." *World Development* 14, no. 9 (1986): 1151-60.

Bolt, Jutta, and Ellen Hillbom. "Real Wages and Standards of Living in Colonial Bechuanaland Protectorate, 1900-1960." Economic History of Developing Regions (Forthcoming).

Bowden, Sue, Blessing Chiripanhura, and Paul Mosley. "Measuring and Explaining Poverty in Six African Countries: A Long-Period Approach." *Journal of International Development* 20, no. 8 (2008): 1049-79.

Burgess, A. P. "Calories and Proteins Available from Local Sources for Uganda Africans in 1958 and 1959." *East African Medical Journal* 39 (1962): 449-63.

Carswell, G. "Food Crops as Cash Crops: The Case of Colonial Kigezi, Uganda." *Journal of Agrarian Change* 3, no. 4 (2003): 521-51.

Cogneau, Denis, and Léa Rouanet. "Living Conditions in Côte d'Ivoire and Ghana, 1925–1985: What Do Survey Data on Height Stature Tell Us?". *Economic History of Developing Regions* 26, no. 2 (2014/03/26 2011): 55-82.

de Courcy-Ireland, M.G., H.R. Hosking, and L.J.A. Loewenthal. "An Investigation into Health and Agriculture in Teso, Uganda." In *Nutrition Report*, edited by Agricultural Survey Committee, 1937.

de Zwart, P. "South African Living Standards in Global Perspective, 1835-1910." *Economic History of Developing Regions* 26, no. 1 (2011): 49-74.

Dorsey, Learthen. *The Rwandan Colonial Economy, 1916-1941*. Dissertation, 1983.

Doyle, S. *Crisis and Decline in Bunyoro: Population and Environment in Western Uganda, 1860-1955*. Athens: Ohio University Press, 2006.

Ehrlich, C. "Some Social and Economic Implications of Paternalism in Uganda." *The Journal of African History* 4, no. 2 (1963): 275-85.

Elliot, Charles M. *Employment and Income Distribution in Uganda*. Norwich: University of East Anglia, School of Development Studies, 1977.

Engdahl, Torbjörn. "The Exchange of Cotton : Ugandan Peasants, Colonial Market Regulations, and the Organisation of International Cotton Trade, 1904-1918." 1999.

Fallers, L.A. *Bantu Bureaucracy: A Century of Political Evolution among the Basoga of Uganda*. Chicago: University of Chicago Press, 1965.

Food and Agriculture Organization. *Human Nutrition in the Developing World*. Rome: Food and Agriculture Organization of the United Nations, 1997.

Foster, Phillips Yost Larry. *Population Growth and Rural Development in Buganda; a Simulation of a Micro-Socio-Economic System*. College Park: Agricultural Experiment Station, University of Maryland, 1968.

Frankema, E.H.P. "Colonial Taxation and Government Spending in British Africa, 1880-1940: Maximizing Revenue of Minimizing Effort?". *Explorations in Economic History* 48, no. 1 (2011): 136-49.

Frankema, E.H.P. "Raising Revenue in the British Empire, 1870-1940: How 'Extractive' Were Colonial Taxes?". *Journal of Global History* 5, no. 3 (2010): 447-77.

Frankema, E.H.P. "The Origins of Formal Education in Sub-Saharan Africa: Was British Rule More Benign?". *European Review of Economic History* 16, no. 4 (2012): 335-55.

Frankema, E.H.P., and M. van Waijenburg. "Structural Impediments to African Growth? New Evidence from British African Real Wages, 1880-1965." *Journal of Economic History* 72, no. 4 (2012): 895-926.

Frankema, Ewout, and Marlous van Waijenburg. "Metropolitan Blueprints of Colonial Taxation? Lessons from Fiscal Capacity Building in British and French Africa, C. 1880-1940." *Journal of African History* (in press) (2014).

Frankema, Ewout. *Africa and the Green Revolution : A Global Historical Perspective*. Wageningen: Wageningen University, 2013.

Gardner, Leigh. *Taxing Colonial Africa : The Political Economy of British Imperialism*. Oxford: Oxford University Press, 2012.

Gray, R., and D. Birmingham. *Pre-Colonial African Trade: Essays on Trade in Central and Eastern Africa before 1900*. London: Oxford University Press, 1970.

Green, Erik. "Diversification or De-Agrarianization? Income Diversification, Labor, and Processes of Agrarian Change in Southern and Northern Malawi, Mid-1930s to Mid-1950s." *Agricultural History* 82, no. 2 (2008): 164-92.

Hirya, Abbas H. *Transportation, Economic Development and Spatial Transformation in Uganda*. Dissertation, 1982.

Hutton, Caroline. *Reluctant Farmers? A Study of Unemployment and Planned Rural Development in Uganda*. Nairobi: East African Publishing House, 1973.

Isaacman, Allen. "Peasants and Rural Social Protest in Africa." *African Studies Review* 33, no. 02 (1990): 1-120.

Isaacman, Allen. "Peasants and Rural Social Protest in Africa." *African Studies Review* 33, no. 02 (1990): 1-120.

Jamal, V. "Asians in Uganda, 1880-1972: Inequality and Expulsion." *Economic History Review* 29, no. 4 (1976): 602-16.

Jamal, V. "Taxation and Inequality in Uganda, 1900-1964." *The Journal of Economic History* 38, no. 2 (1978): 418-38.

Jameson, J.D., and J.D. Tothill, eds. *Agriculture in Uganda*. London: Oxford University Press, 1970.

Jameson, J.D., and J.D. Tothill, eds. *Agriculture in Uganda*. London: Oxford University Press, 1970.

Jerven, Morten. "A West African Experiment: Constructing a GDP Series for Colonial Ghana, 1891–1950." *The Economic History Review* (2014).

Kennedy, T.J. "A Study of Economic Motivation Involved in Peasant Cultivation of Cotton." *East African Economic Review* (1965): 88-95.

Kitsikopoulos, Harry. "Standards of Living and Capital Formation in Pre-Plague England: A Peasant Budget Model." *The Economic History Review* 53, no. 2 (2000): 237-61.

Mamdani, M. *Politics and Class Formation in Uganda*. New York: Monthly Review Press, 1976.

Masefield, G.B. "Some Recent Observations on the Plantain Crop in Buganda." *East African Agricultural Journal* 10 (1944): 12-17.

Masefield, G.B. *Agricultural Change in Uganda, 1945-1960*. Stanford, California: Food Research Institute, 1962.

McMaster, D.N. *A Subsistence Crop Geography of Uganda*. London: Geographical Publications, 1962.

Médard, Henri, and Shane Doyle, eds. *Slavery in the Great Lakes Region of East Africa*. Oxford: James Currey, 2007.

Meier zu Selhausen, Felix, and Jacob Weisdorf. "A Colonial Legacy of African Gender Inequality? Evidence from Christian Kampala, 1895-2011." *CGEH Working Paper Series No. 60* (2014).

Meier zu Selhausen, Felix. "Missionaries and Female Empowerment in Colonial Uganda: New Evidence from Protestant Marriage Registers, 1880–1945." *Economic History of Developing Regions* 29, no. 1 (2014): 74-112.

Moradi, A. "Confronting Colonial Legacies - Lessons from Human Development in Ghana and Kenya, 1880-2000." *Journal of International Development* 20, no. 8 (2008): 1107-21.

Moradi, A. "Towards an Objective Account of Nutrition and Health in Colonial Kenya: A Study of Stature in African Army Recruits and Civilians, 1880-1980." *Journal of Economic History* 69 (2009): 720-55.

Nayenga, Peter F. B. "Commercial Cotton Growing in Busoga District, Uganda, 1905-1923." *African Economic History* 10 (1981): 175-95.

Nelson, Ralph E. *A Baseline Survey of Uganda Agriculture*. S.l.: s.n., 1970.

Niemeijer, D. "The Dynamics of African Agricultural History: Is It Time for a New Development Paradigm." *Development and Change* 27, no. 31 (1996): 87-110.

Nye, G.W. "Some Results from Bukalasa Experiment Station." *The East African Agricultural Journal* 5 (1940): 460-65.

Powesland, P.G. *Economic Policy and Labour, a Study in Uganda's Economic History*. Kampala: East African Institute of Social Research, 1957.

Prados de la Escosura, Leandro. "Human Development in Africa: A Long-Run Perspective." *Explorations in Economic History* 50, no. 2 (2013): 179-204.

Prados de la Escosura, Leandro. "Output Per Head in Pre-Independence Africa: Quantitative Conjectures." *Economic History of Developing Regions* 27, no. 2 (2012): 1-36.

Reid, Richard, J. *Political power in pre-colonial Buganda: economy, society and welfare in the nineteenth century*. Oxford: James Currey, 2002.

Richards, A.I., ed. *Economic Development and Tribal Change: A Study of Immigrant Labour in Buganda*. Oxford: Oxford University Press, 1973.

Richards, A.I., F.G. Sturrock, and J.M. Fortt. *Subsistence to Commercial Farming in Present-Day Buganda: An Economic and Anthropological Survey*. Cambridge: Cambridge University Press, 1973.

Rönnbäck, Klas. "Living Standards on the Pre-Colonial Gold Coast: A Quantitative Estimate of African Laborers' Welfare Ratios." *European Review of Economic History* 18, no. 2 (2014): 185-202.

Ruthenberg, H. *Farming Systems in the Tropics*. Oxford: Clarendon Press, 1971.

Taylor, T.F. "The Establishment of a European Plantation Sector within the Emerging Colonial Economy of Uganda, 1902-1919." *The International Journal of African Historical Studies* 19, no. 1 (1986): 35-58.

Tosh, John. "The Cash-Crop Revolution in Tropical Africa: An Agricultural Reappraisal." *African Affairs* 79, no. 314 (1980): 79-94.

Tothill, J.D. *Agriculture in Uganda*. London: Oxford University Press, 1940.

Twaddle, Michael *Kakungulu and the Creation of Uganda, 1868-1928*. London: James Currey, 1993.

Vail, David J. . *A History of Agricultural Innovation and Development in Teso District, Uganda*. Athens, Ohio: Ohio University Press, 1972.

Vincent, Joan "Colonial Chiefs and the Making of Class: A Case Study from Teso, Eastern Uganda." *Africa: Journal of the International African Institute* 47, no. 2 (1977): 140-59.

Vincent, Joan. *Teso in Transformation : The Political Economy of Peasant and Class in Eastern Africa*. Berkeley: University of California Press, 1982.

Wilson, P.N. "An Agricultural Survey of Moruita Erony, Teso." *The Uganda Journal* 22, no. 1 (1958): 22-38.

Wilson, P.N., and J.M. Watson. "Two Surveys of Kasilang Erony, Teso, 1937 and 1953." *Uganda Journal* 20 (1956): 182-97.

Wrigley, C.C. *Crops and Wealth in Uganda, a Short Agrarian History*. Kampala: East African Institute of Social Research, 1959.

Youe, C.P. "Peasants, Planters and Cotton Capitalists: The 'Dual Economy' in Colonial Uganda." *Canadian Journal of African Studies* 12 (1978): 163-84.

Jorgensen, J.J. *Uganda: A Modern History*. New York: St. Martin's Press, 1981.

Reports

Elliot, J.M. *Report on an Investigation into Conditions Affecting Unskilled Labour and the Supply Thereof within the Protectorate*. Entebbe: Government Printer, 1937.

Elliot, J.M. *Report on an Investigation into Conditions Affecting Unskilled Labour and the Supply Thereof within the Protectorate*. Entebbe: Government Printer, 1937.

Food and Agriculture Organization. *Report on the 1950 World Census of Agriculture, Volume 1: Census results by countries*. Rome, 1955.

Food and Agriculture Organization. *Report on the 1960 World Census of Agriculture. Volume 1, Part A: Census Results by Countries*. Rome, 1966.

International Institute of Agriculture. *The First World Agricultural Census (1930)*. Rome, 1939.

Loewenthal, L. J. A. *A Survey of Diet and Nutritional Health at Giharo and Mutanda*. Entebbe: Govt Printer, 1940.

Loewenthal, L. J. A. *The Effect of Dietary and Other Supplements on the Health and Working Capacity of Banyaruanda Labourers*. Entebbe, 1939.

Parsons, D. J. *The Plantain-Robusta Coffee Systems : With a Note on the Plantain-Millet-Cotton Areas*. Kampala: Kawanda Research Station, 1960.

Parsons, D.J. *The Systems of Agriculture Practised in Uganda*. Kampala: Kawanda Research Station, 1960.

Tothill, J.D. *A Report on Nineteen Surveys Done in Small Agricultural Areas in Uganda with a View to Ascertaining the Position with Regard to Soil Deterioration*. Entebbe: Government Printer, 1938.

Uganda. *Annual Report of the Department of Agriculture*, various years, 1915-1965

Uganda. *Annual Report of the Department of Labour*, various years, 1930-1965

Uganda. *Blue Book*, various years, 1915-1945

Uganda. *Organization of the South-Western Labour Migration Routes*. Entebbe: Printed by the government printer, 1943.

Uganda. *Report of the Commission of Enquiry into the Cotton Industry of Uganda, 1929.* Entebbe: Government Printer, 1930.

Uganda. *Report of the Committee of Enquiry into the Labour Situation in the Uganda Protectorate, 1938*. Entebbe: Government Printer, 1938.

Uganda. *Report on a Cost of Living Survey Carried out among African Labourers in Kampala and District, March-April 1949*. East African Statistical Department, 1949.

Uganda. *Report on Uganda Census of Agriculture, Volume I*. Entebbe: Government Printer, 1965.

Uganda. *Report on Uganda Census of Agriculture, Volume III.* Entebbe: Government Printer, 1966.

Uganda. *Report on Uganda Census of Agriculture, Volume IV*. Entebbe: Government Printer, 1967.

Uganda. *The Pattern of Income, Expenditure and Consumption of African Unskilled Labourers in Kampala, September 1952*. 1953.

Uganda. *The Pattern of Income, Expenditure and Consumption of African Unskilled Labourers in Kampala, September 1952*. East African Statistical Department, 1953.

Uganda. *The Pattern of Income, Expenditure and Consumption of African Unskilled Labourers in Kampala, September 1953*. East African Statistical Department, 1954.

Uganda. *The Pattern of Income, Expenditure and Consumption of African Unskilled Labourers in Jinja, November 1952*. East African Statistical Department, 1953

Uganda. *The Patterns of Income and Expenditure of Coffee Growers in Buganda, 1962/63*. Entebbe: Government Printer, 1967.

Uganda. *The Patterns of Income, Expenditure and Consumption of African Unskilled Workers in Kampala, February 1957*. East African Statistical Department, 1958.

Uganda. *The Patterns of Income, Expenditure and Consumption of African Unskilled Workers in Kampala*. Ministry of Planning and Community Development, 1966.

Uganda. *The Patterns of Income, Expenditure and Consumption of African Unskilled Workers in Jinja, June 1965*. Ministry of Planning and Community Development, 1966.

Uganda. *Uganda Census, 1959, African Population.* Nairobi: Statistics Branch, Ministry of Economic Affairs, 1961.

Uganda *Statistical Abstract*, various years, 1953-1970

Appendix 1: Barebones basket for Uganda

			Nutrients per pound (lbs)		Nutrients /person / day	
	Unit	**Quantity pp/year**	**Calories**	**Protein (gram)**	**Calories**	**Protein (gram)**
Grains (maize, millet or sorghum)	Lbs	125-129	1550-1605	42-49	547	>14
Plantain	Lbs	326	307	5	547	3
Root crops (cassava or sweet potato)	Lbs	295-419	677-477	5-8	547	>4
Beans	Lbs	44	1514	107	183	13
Beef meat	Lbs	6.6	523	100	9	2
Cooking oil	Lbs	6.6	4018	0	94	
Sugar	Lbs	4.4	1705	0	21	0
Cloth	Yard	3.3				
Soap	Lbs	2.9				
Kerosene	Gallon	0.22				
Total					*1948*	*>36*

For plantains, only the edible part is counted. The marketed bunches are twice as heavy. The content of my basket diverges slightly from that of Frankema and van Waijenburg *Structural impediments*. While they argue that urban labourers consumed the cheapest staple crop, I prefer to use a mix of staple crops consisting of the cheapest grain (maize, millet or sorghum), plantain, and the cheapest root crops (cassava or sweet potato), in equal proportions (one third each). This crop mix gives a more realistic representation of actual consumption patterns and also gives is more realistic from a nutritional point of view, providing a more balanced diet in terms of proteins and micronutrients. An additional advantage of using a staple crop mix, is that annual average price data before 1939 are very rough. Using only one crop leads to large annual fluctuations in the cost of living which are unlikely to represent real year-to-year changes. Using a crop mix smoothens out these fluctuations. My basket also differs in using beans to supplement otherwise insufficient proteins in the diet. In their cross-country study, Frankema & van Waijenburg have not been able to include beans and peas due to a lack of data availability. For Uganda, however, bean prices are consistently reported. These adaptations slightly affect the welfare ratios, but not in ways that change the conclusions of this paper.

Appendix 2: Wages and prices

	Wage rate	Producer prices		Market prices (Kampala)												
	Unskilled (Kampala)	Cotton (Uganda)	Coffee (Buganda)	Plantain	Maize	Millet	Sorghum	Cassava	Sweet Potato	Beans	Beef	Sugar	Cooking oil	Cloth	Soap	Kerosene
1915	7.3	10.5	*9.0*	2.5	4.2	4.2	4.4	2.8	4.2	7.5	25.0	33.0	25.0	29.0	31.7	1021.3
1916	9.8	12.2	*10.1*	1.3	3.7	4.5	4.5	8.3	1.4	7.5	33.0	50.0	25.0	38.0	48.0	1348.1
1917	9.8	17.2	*9.7*	2.8	8.3	16.7	*	*		7.5	41.7	58.3	25.0	44.1	56.0	1572.8
1918	9.8	16.2	*9.1*	5.0	20.0	*	*	16.7	4.7	15.0	50.0	50.0	50.0	50.6	48.0	1348.1
1919	11.4	28.0	*12.8*	2.5	10.0	8.3	8.3	*	5.4	15.0	50.0	100.0	50.0	71.2	96.0	2696.2
1920	13.8	54.0	*17.0*	1.5	6.0	*	*	2.0	3.0	15.0	50.0	83.3	50.0	64.4	80.0	2246.8
1921	13.8	8.0	*8.9*	1.5	6.0	*	*	2.0	3.0	15.0	50.0	83.3	50.0	64.4	80.0	2246.8
1922	13.8	30.0	*8.6*	1.5	6.0	*	*	2.0	3.0	15.0	50.0	83.3	50.0	64.4	80.0	2246.8
1923	23.6	29.0	*11.8*	3.6	8.0	*	12.0	10.0	4.0	15.0	66.0	60.0	50.0	53.3	40.0	1021.3
1924	23.6	28.0	25.0	5.4	15.6	*	10.0	13.0	6.0	15.0	66.0	60.0	50.0	53.3	40.0	1021.3
1925	47.1	25.0	*20.9*	3.8	15.6	*	*	3.3	*	15.0	60.0	38.0	50.0	53.3	40.0	1021.3
1926	30.9	18.0	18.8	3.8	77.9	20.0	20.0	3.3	*	20.0	100.0	35.0	40.0	50.0	40.0	1021.3
1927	26.8	16.0	*17.5*	3.8	77.9	20.0	20.0	3.3	*	20.0	100.0	45.0	40.0	50.0	40.0	1021.3
1928	30.9	20.0	*18.2*	3.8	19.5	5.0	25.0	20.0	*	10.0	66.0	40.0	40.0	70.0	60.0	1072.3
1929	26.0	18.0	*19.2*	3.8	15.6	5.0	25.0	20.0	*	10.0	66.0	40.0	40.0	70.0	60.0	1021.3
1930	26.0	15.1	*15.2*	2.0	7.8	5.0	25.0	6.7	*	10.0	50.0	25.0	40.0	55.0	86.0	1021.3
1931	14.6	10.8	*10.3*	3.8	15.6	10.0	20.0	1.7	*	10.0	150.0	25.0	28.0	60.0	20.0	868.1
1932	13.0	10.7	*11.5*	1.5	9.7	10.0	10.0	1.7	*	10.0	50.0	25.0	20.0	50.0	20.0	868.1
1933	15.8	8.8	*9.4*	2.5	15.6	10.0	10.0	10.0	4.0	6.0	33.0	20.0	20.0	50.0	8.0	663.8
1934	16.5	10.1	*8.5*	2.5	7.8	10.0	10.0	1.0	1.8	10.0	40.0	20.0	20.0	50.0	8.0	663.8
1935	16.5	11.7	*8.2*	2.5	7.8	10.0	10.0	2.0	2.0	10.0	30.0	10.0	20.0	50.0	20.0	612.8
1936	16.5	9.5	*7.4*	1.9	11.7	10.0	10.0	2.0	2.0	10.0	40.0	10.0	20.0	50.0	20.0	663.8
1937	16.5	13.2	7.5	2.5	7.8	10.0	10.0	20.0	10.0	10.0	40.0	13.0	30.0	50.0	20.0	714.9
1938	16.5	8.2	5.5	4.4	11.7	12.0	12.0	6.0	6.0	11.0	40.0	11.0	60.0	50.0	20.0	714.9
1939	18.0	7.6	5.5	3.3	19.5	10.0	10.0	6.0	4.0	10.0	40.0	14.0	30.0	60.0	24.0	817.0
1940	23.3	10.3	9.5	2.5	11.7	10.0	10.0	6.0	4.0	6.0	40.0	17.0	30.0	60.0	32.0	769.0
1941	23.3	8.8	15.5	2.5	3.0	10.0	10.0	10.0	2.0	6.0	40.0	17.0	30.0	100.0	48.0	781.3
1942	23.3	7.7	*9.1*	3.8	11.7	8.0	10.0	7.0	4.0	8.0	40.0	19.0	30.0	200.0	42.0	781.3
1943	21.0	12.6	*13.0*	3.8	11.7	10.0	10.0	7.0	3.0	8.0	40.0	18.0	30.0	200.0	55.0	781.3
1944	21.0	13.2	*12.4*	3.8	11.7	10.0	10.0	7.0	3.0	9.0	40.0	18.0	30.0	200.0	55.0	781.3
1945	16.5	14.8	14.0	3.8	11.7	10.0	10.0	5.0	2.0	10.0	60.0	22.0	30.0	200.0	55.0	723.1

1946	*18.0*	16.4	15.0	*	*	*	*	*	*	*13.0*	*56.3*	*22.5*	*39.9*	*220.8*	*63.5*	*877.9*
1947	25.0	18.5	17.0	*	*	*	*	*	*	*16.0*	*52.5*	*23.0*	*49.8*	*241.7*	*72.0*	*1032.7*
1948	15.0	20.4	19.0	*	*	*	*	*	*	*19.0*	*48.8*	*23.5*	*59.7*	*262.5*	*80.5*	*1187.5*
1949	26.0	29.6	21.0	7.0	13.0	*	*	5.0	6.0	22.0	45.0	24.0	69.6	283.3	89.0	1342.3
1950	29.0	31.8	25.0	*	*	*	*	*	*	*28.7*	*70.0*	*31.3*	*86.9*	*268.8*	*104.7*	*1505.4*
1951	28.5	43.2	40.0	*	*	*	*	*	*	*35.3*	*95.0*	*38.7*	*104.1*	*254.3*	*120.3*	*1668.5*
1952	35.0	47.6	50.0	8.0	28.0	*	*	8.0	8.0	42.0	120.0	46.0	121.4	239.8	136.0	1831.6
1953	43.4	48.6	70.0	21.0	28.0	*	*	17.0	19.0	38.0	150.0	62.0	116.0	206.3	117.0	1575.7
1954	45.5	49.4	100.0	16.8	26.0	*	*	*	*	*35.3*	189.5	44.6	*107.7*	*148.3*	*84.1*	1132.6
1955	70.0	58.8	125.0	8.8	27.0	*	*	*	*	*36.6*	190.0	50.5	*111.9*	*168.0*	*95.2*	1282.7
1956	65.5	52.1	75.0	7.4	25.0	*	*	17.5	13.0	*33.9*	190.0	54.0	136.5	143.0	146.0	1338.9
1957	55.5	53.3	80.0	8.3	26.0	*	*	17.5	10.0	32.0	199.0	54.0	273.1	*187.0*	110.0	1750.8
1958	64.5	54.9	80.0	8.3	30.0	*	*	14.0	17.0	30.0	151.0	60.0	110.9	208.0	160.0	1604.9
1959	64.5	44.2	68.0	8.2	25.0	*	*	13.3	12.0	30.0	149.0	60.0	213.3	232.0	160.0	1487.0
1960	44.5	44.8	56.0	6.0	22.0	*	*	8.4	9.0	30.0	150.0	60.0	213.3	250.0	154.0	1520.7
1961	54.5	52.2	50.0	10.5	25.0	*	*	13.0	14.0	30.0	150.0	60.0	211.2	266.0	127.0	1506.4
1962	112.0	52.1	55.0	5.4	26.0	*	*	9.8	11.0	33.0	150.0	63.0	213.3	200.0	111.0	1894.5
1963	112.0	53.6	48.0	6.1	28.0	*	*	20.3	17.0	33.0	155.0	63.0	213.3	195.0	118.0	1588.1
1964	112.0	56.5	57.0	7.5	29.0	*	*	13.3	11.0	27.0	177.0	63.0	289.7	*200.6*	118.0	1634.1
1965	137.0	54.0	43.0	11.0	41.9	*	*	18.9	20.0	44.0	180.0	65.0	266.7	200.0	133.0	1450.2
1966	137.0	56.0	40.0	10.1	39.0	*	*	7.0	10.0	45.9	185.5	65.0	264.4	200.0	181.1	1654.5
1967	137.0	34.6	40.0	12.5	30.9	*	*	10.5	19.1	45.9	180.5	65.0	307.7	200.0	131.2	1634.1
1968	137.0	42.3	40.0	9.3	32.2	*	*	10.5	13.2	48.2	194.5	65.0	305.4	299.5	180.2	1750.8
1969	137.0	51.3	40.0	12.7	43.1	*	*	10.5	20.0	67.3	223.6	70.0	394.3	409.1	166.2	1750.8
1970	137.0	44.2	48.2	10.5	49.0	*	*	19.7	13.6	62.7	224.5	68.2	296.3	319.6	225.2	1634.1

Notes: Wage rates are unskilled construction workers employed by the colonial government. Unskilled wage rates from 1915 to 1945 are from the *Blue Books*: 1915 to 1919 'native porters Buganda', 1920 to 1924 'trade and manufacture', 1925 to 1930 'government employment' (average of minimum and maximum rates), 1931 to 1945 'government employment – public works' (average of minimum and maximum rates). Wages from 1946 to 1953 are from Uganda *Department of Labour*: 1947 'public works department – central areas' 1948 to 1953 'building and construction' . Wages from 1954 to 1970 are from the *Statistical Abstracts*: 'construction'. To ensure conservative assumptions in the light of my argument (to make sure that I would not underestimate wage rates in the colonial era, and that I would not overestimate them in the late-colonial and early post-colonial period) I took the average rather than the log-average (used by Frankema and van Waijenburg 'Structural impediments') whenever minimum and maximum rates rather than averages were reported. I also multiplied the averages by 1.5 for the period up to1945 to represent the higher wage rates in Kampala relative to other areas of employment and did not make this correction for the post-war era. For the period from 1946 to 1970 wage rates were grouped in different ranges. I took the most common of these ranges (i.e. 125 to149 shilling) and took the average of this (mode) category. Producer prices of cotton are average prices paid to farmers per 100 lbs. of unginned cotton of good quality. A number of more specific breakdowns suggest that price differences for cotton paid to cultivators in the key producing regions were not very large. This is an understandable reality. Cotton was only a marginally interesting proposition for smallholders. If the producer prices for a specific region would drop significantly below this average price, local smallholders would choose alternative sources of income over the cultivation of cotton. Coffee are prices of 'Kiboko' (unhulled) coffee per 100 lbs paid to farmers in Buganda. Prices are reported in different sources, summarized in Jorgensen *Uganda*. Scattered price observations of coffee before 1945 are from Uganda *Department of Agriculture*. For years without price observations, I interpolate, taking the grower price to be 25% of the export price of Uganda coffee. Kampala prices from 1915 to 1945 are from the *Blue Books*. Prices from 1945 to 1970 are from the *Statistical Abstracts*, as well as incidental surveys on the cost of living carried out in Kampala. In the absence of cooking oil prices up until 1945, I used the price of sesame seed multiplied by two (sesame seed has approximately 50% fat content and was used widely for cooking). Plantain prices up until 1945 were reported as 'bunches'. I assume a bunch weight of 40 lbs. See Masefield "Some recent observations".

Map 1: Expansion of cash crops in colonial Uganda

Sources: Acreage and population statistics from Uganda *Bluebooks 1928, 1929, 1937, 1938*, Uganda *Department of Agriculture*