The Political Economy of Maize in East Africa, 1900-2020: How cheap food turned expensive

Ewout Frankema, Wageningen University

ewout.frankema@wur.nl

Michiel de Haas, Wageningen University

michiel.dehaas@wur.nl

Tanik Joshipura, Wageningen University

tanik.joshipura@wur.nl

Thomas Westland, Wageningen University

thomas.westland@wur.nl

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Ewout Frankema, Michiel de Haas, Tanik Joshipura and Thomas Westland

(Wageningen University)

Abstract

When agrarian societies urbanize their governments face a policy dilemma: farmers seek fair prices, while urban workers and employers desire cheap food. Drawing on a new dataset of historical food prices in 146 markets, we explore the political economy of maize markets in East Africa (1900-2020). We show that from the 1940s onwards, maize prices soared from far below to well above world market levels. Instead of 'urban bias', we argue that prolonged evasion by late-colonial and early post-colonial governments of the socio-economic trade-offs inherent in the dilemma triggered the 1980s food crises and turned East African maize expensive.

1. Introduction

As countries industrialize, their governments are bound to confront a classic dilemma of political economy. Farmers and landlords seek high farmgate prices for their crops, while a growing class of urban (including rural off-farm) workers and their employers want cheap food. This dilemma becomes especially pressing in times of accelerated structural change, when emerging industrial classes gain political clout and economic importance, or when shielded domestic food markets are suddenly exposed to fierce foreign competition provoking calls for agricultural price protection. States often choose to intervene to preserve food autarky and stabilize food prices to curb social unrest and secure political stability. The British Corn Laws (Schonhardt-Bailey 2006), the Thai rice export tax (Choeun et al. 2006), heavy Japanese protection for domestic farmers (Horiuchi and Saito 2010) and the massive subsidies for Egypt's *baladi* bread consumers (Gutner 2002) are all examples of governments trying to resolve the dilemma of food pricing in favor of one segment of society or another.

While the 'new' African economic history has devoted ample attention to the economics and politics of the 'cash-crop revolution' (Austin 2014, Frankema et al. 2016, De Haas 2021), food crop agriculture for domestic markets has received surprisingly little attention.[1] This omission warrants correction. During the 20th century, the populations of African cities have exploded, and many more Africans, even in rural areas, found work outside of agriculture; meanwhile, imports, and in particular imported grain, have become crucial for African food security. Moreover, while subsistence farming still accounts for a considerable share of agricultural output, there is a clear long-run shift to commercialization. Hence, there is a pertinent question of how African (post)colonial states and societies have grappled with the food price policy dilemma (FPPD henceforth), as well as a hitherto unfulfilled task to reconstruct long-run price trends to explore the FPPD in a comparative historical perspective. Studying the FPPD in African economic history is even more urgent considering that, today, staple foods in Sub-Saharan Africa appear to be comparatively expensive, a fact that continues to threaten the food security of millions of low-income households.[2] Exploring historical trajectories of food prices and price setting policies can help to understand why this is the case, and to figure out *when* cheap food actually began to turn dear?

To be sure, sizeable and long-standing political science and agricultural economics literatures exists which analyze African food markets and the policies and institutions governing these (Bates 1989; Bryceson 1993; Jayne and Jones 1997). Recent literature offers detailed explanations of why food in major parts of Sub-Saharan Africa is comparatively expensive (Allen 2017, Gelb and Diofasi 2015, Okou et al. 2022, Frankema 2025), why African food markets suffer from high transaction and transportation costs (Teravaninthorn and Raballand 2009, Brenton et al. 2016; Barrett et al. 2019; Porteous 2019; Zant 2021) and why agricultural productivity in general has remained undesirably low (Djurfeldt et al. 2005; Larson

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[1] To underline this point, in historical reconstructions of Sub-Sahara African GDP, the size of the so-called 'traditional' sector is never measured directly using agricultural output or price data, but always indirectly inferred from changes in the population (assuming constant subsistence consumption) or as a function of capital city real wage trends (Broadberry and Gardner 2022, p. 3).

[2] In 2022, the median Sub-Saharan African household spent 56 percent of its budget on food, with national averages ranging from 28 percent in Mauritius to 73 percent in Burundi. Benin, Mozambique, and Uganda are around the regional median (World Bank 2022, pp. 30-31). High food prices not only threaten food security, constrain nutritional diversification and reduce expenditure budgets for basic needs such as schooling, health care, clothing, transportation and housing, they also put upward pressure on subsistence wages, which adversely affects the international competitiveness of tradable sectors (Frankema 2025).

and Otsuka 2013, Suri and Udri 2022; De Haas and Giller 2025). To explain these adverse conditions, some scholars allude to the legacies of colonial policies prioritizing export crop specialization over food security (Bjornlund et al. 2022), to aggressive marketing by Western countries (Watkins, 1991) or to the reckless dismantling of agricultural support under 'structural adjustment' in the 1980s and 1990s (for overviews of the debate, Kheralla et al. 2002; Heidhues and Obare, 2011). Others have pointed to internal factors such as the lack of urgency felt by short-sighted African governments to address rural development constraints (Henley 2015). The neglect has also been linked to explicit 'urban biases' in monetary, trade and fiscal policies (Lipton 1977, Bates 1981).

While illuminating in many respects, this voluminous body of scholarship has three main shortcomings. First, there have to date been no attempts to reconstruct long-term trends in African food prices. By implication, and second, no systematic historical analyses have been conducted of how successive regimes have approached the FPPD. Consequently, third, an overarching understanding of when, how and why African staple foods turned expensive remains to be developed. These three omissions motivated a larger research project underpinning this paper.

We explore the political economy of maize markets in East Africa over the long 20th century (1900-2020), bridging colonial and post-colonial eras and policy regimes. Our study focuses on five East African countries – Kenya, Uganda, Tanzania, Rwanda and Burundi – which were all predominantly agrarian economies with very low levels of urbanization around 1900 and which all specialized in tropical export agriculture under colonial rule.[3] While the political and policy trajectories of the five independent countries differed significantly, they all continued to specialize in a limited range of export crops, coffee most importantly. Becoming East Africa's most consumed staple crop during the 20th century, maize is an excellent candidate to study the evolution of food prices and policies. Though far from the only important food crop, maize is the most widely consumed and often cheapest staple in the region. Indeed, in Kenya "food security has generally been taken as synonymous with maize security by policy makers and other segments of society" (Ariga and Jayne 2010, p. 222). Unlike various millets and sorghum, plantains, or roots and tubers such as cassava, yam or sweet potatoes, maize has also been exposed to international trade. During the interwar period, the region was a net exporter. Since the 1980s, the region has become a net importer (Appendix Table F1 and Appendix Figure F1). Given maize's importance in diets, markets were also more often regulated than those of other food crops. These regulations usually served to *control* and to *stabilize* prices.

Our contribution is threefold. First, we introduce the East Africa Food Price Database (EAFPD 1.0), a new, large dataset of historical food prices covering 146 markets in five East African countries. Out of the 7,545 documented prices, many of which were manually retrieved from more than fifty primary and secondary sources, 3,396 relate to fresh maize or maize flour. We have prices for all years in the period 1901 to 2020, with the lowest number of observations in a given year in 1921 (4), but for most years such as 1935 (68) considerably more. The EAFPD thus allows us to reconstruct long-term maize price series and to study overarching patterns that go beyond deviations due to local market specificities, seasonality, or different stages of processing. Our key finding is that from the 1940s onwards, when urbanization started

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[3] While mining has become increasingly important as a source of export revenue in many Sub-Saharan African economies, the role of minerals has remained insignificant in most African economies outside of Southern Africa until very recently (Frankema and Meier zu Selhausen 2025).

to accelerate (Appendix Figure G2), maize prices began to soar from considerably below to far above world market levels. While East African prices expressed in relation to world markets are obviously not solely determined by local conditions, a comparison of long-term price trends suggest that the first-order causes of the price hike pertain to political economic dynamics within East Africa.

Our second contribution, then, is to introduce an analytical framework which allows us to understand the evolution of food prices and policies in a comparative perspective. The framework stipulates four ways in which governments can, at least temporarily, resolve the FPPD: 1) raising agricultural productivity so that increasing output can complement farmers' incomes while consumer prices remain low; 2) reducing marketing margins to lower the mark-up between farmgate and retail prices, the benefits of which may be shared among food producers and consumers; 3) raising nominal wages of urban workers to compensate for high (or rising) producer prices, which involves the risk of provoking a self-reinforcing wage-price spiral; or 4) handing out fiscal subsidies to farmers and/or consumers, which involves an intergenerational debt transfer. Importantly, while policy options 3 and 4 are hardly Pareto efficient, state debt and inflation risks may be the outcome of political bargaining processes, rent-seeking and policy capture, and may be considered acceptable outcomes when the negative effects can be mitigated through the dynamism of alternative sectors, such as a strong and expanding agricultural export sector, which can be taxed and which may achieve significant labor productivity growth. As we will show, such agricultural export revenues, which were a continuation of a colonial pattern of specialization, crucially shaped the political economy of maize pricing in East Africa.

Third, we develop a diachronic analysis of the long-term price trends. Our argument goes against the purported 'urban bias' of East African state interventions in agriculture, at least when it comes to the most important food staple. We argue that long-term food price inflation was caused by the region's heavy reliance on export agriculture in combination with a range of failed or even perverse food market regulations. Export revenues drove up inflation, increased the (perceived) debt capacity of the state and economy, and caused policy makers to pursue higher farm-gate prices, fearing that famers would switch away from maize to export crop cultivation which would compromise food autarky. As a result, when cash-crop exports boomed (e.g. during the Korean war and 1970s OPEC crisis) maize prices soared in their wake. Meanwhile governments, in various degrees and at different times, tried all four approaches to resolve the FPPD. However, these attempts failed or even contributed to higher consumer prices, because of poor implementation capacity and misplaced optimism regarding the *effectiveness* of state interventions in food markets (e.g. marketing board monopsonies, pre-harvest price setting schemes, centralized milling). In the absence of meaningful productivity growth and under pressure of declining world market prices, policies to mitigate food price inflation proved increasingly untenable. During the 1970s, heavily subsidized marketing boards became increasingly inefficient and captured by rent-seeking. Prices continued to rise and debts to accumulate, until the mid-1980s when rigorous structural adjustment programs (SAPs) forced governments to, at least partially, liberalize maize markets. After East African economies overcame their deep, albeit variegated, economic and fiscal crises, maize prices converged back to world market levels, but settled far above the relative price levels enjoyed during the 1900-1940s, as well as above those in many other developing countries.

2. The food price policy dilemma: context and theory

After its introduction from the Americas in the early 16th century, maize was taken up much faster in the Western than in the Eastern parts of Africa.[4] Maize was probably introduced on the East African coast in the 16th century, but only in the 20th century maize became the region's dominant staple.[5] By the 1870s, maize was widely grown on the western shores of Lake Tanganyika (Miracle 1966, p. 85), but millet and sorghum were still leading crops in most of East Africa, and green bananas in parts of Uganda and Tanzania. During the colonial era maize spread rapidly in Kenya and Tanzania as staple food and rations for workers hired by European planters and mining companies. Key advantages of maize over 'traditional' staples like sorghum and millet were its relatively short cultivation cycle, climatic resilience, pest resistance, and comparatively easy elaboration into a coarse flour (meal, or "posho", a corruption of the word "portion" revealing the initial prominence as a workers' ration). The spread of maize was catalysed by a famine during World War I, when farmers ate their millet seeds, and which were replaced by maize in the next season (McCann 2005, p. 170). Whereas East African farmers had grown a large variety of maize types, the 'white maize', probably imported by settler farmers from Southern Africa, gained prominence.

Figure 1 shows the growing importance of maize in land use between 1930 and 2020, as well as considerable intra-regional differences. In Kenya and Tanzania the dominance of maize stands out. While maize was mainly a smallholder crop in Tanzania, in Kenya European settler farmers accounted for about a quarter of the total maize crop in 1930 and the lion's share of marketable surpluses and exports to neighbouring countries and beyond (Kenya Census of Agriculture 1930). In Uganda, maize diffused gradually during the interwar years as a famine relief crop and via returning labor migrants. In some cases the colonial government stimulated the cultivation of maize, in others discouraged it.[6] In Burundi and Rwanda, where urbanization was particularly slow, maize was probably an unimportant staple as late as the 1920s, but its cultivation, often intercropped with beans, increased over subsequent decades there as well (Miracle 1966, p. 132-33). During World War II, the production and trade of maize in the region was actively stimulated to support the allied war effort. In Dar es Salaam in 1950, a sample of 95 workers obtained 69% of their starchy-staple calories from maize, while among 349 families in Nairobi this share was 80% in 1957-58. maize surpluses filled deficits in Kenya and Tanzania (Miracle 1966, p. 133-36). In Uganda, maize vied with cassava and bananas as the major urban staple (Miracle 1966, pp. 115-18).

Today, maize and maize products make up about a fifth of total calories consumed by the East African population (see Appendix Table A1). In terms of daily caloric intake maize is the dominant staple in Kenya, Tanzania and Uganda. The crop has remained of lesser importance in Burundi and Rwanda, where cassava and beans provide more calories, but also in these smaller countries the contribution of maize is substantial. Partly as a result of rapidly growing demand, East Africa as a whole is no longer maize self-sufficient. Since the 1980s the

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[4] Perhaps also because maize enhanced the logistics of slave raiding and trading, a practice that developed much earlier in West Africa (Dalrymple-Smith and Frankema 2017; Cherniwchan and Moreno-Cruz 2019).

[5] Maize pollen research shows that it had reached Lake Naivasha, in the Kenyan interior, by the late 17th century; Mount Shengena in Tanzania by the mid-18th century, and Lake Baringo in Kenya by 1800 (Hannaford 2023, p. 952). It probably took much longer for maize to reach Uganda, potentially until Arab caravans, whose porters were partially paid in maize meal, reached there in the mid-19th century (Miracle 1966, p. 98).

[6] Which did not always stop smallholders from adopting maize (Carswell 2007, p. 38-39).

region has become a modest net maize importer, mainly in the form of flour (Appendix Table F1 and Appendix Figure F1).

Figure 1. Land cultivated with maize as % of total crop land
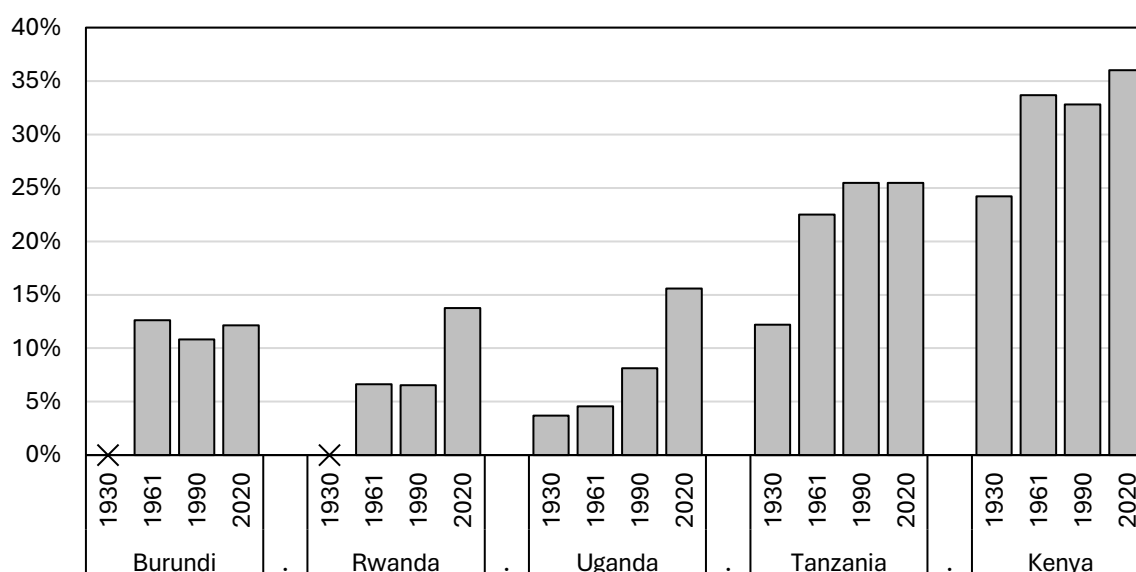
Notes: Data for Burundi and Rwanda in 1930 is missing. Appendix Figure A1. visualizes the maize share in 1930 by district. Appendix Figure A2. shows expresses the maize surface per 1000 of the population.
*Sources:* For 1930, Kenya *Agricultural Census 1930*; Uganda *Blue Book 1930*: Tanganyika *Blue Book 1930.* All other years, FAOStat.

Even though colonial governments had adopted famine relief programmes and had long given institutional support to European settler farmers in Kenya (including maize planters), the 1940s can be regarded as the decade in which the FPPD definitively surfaced. As discussed in more detail below, strategic hoarding of preservable food for the allied war efforts led to direct intervention of the colonial state in maize production and price setting. Moreover, urbanization began to accelerate from the 1940s onwards and international trade of maize and maize meal began to pick up after the slack of the 1930s depression. Outside Africa, and especially in the United States, rapid land and labour productivity gains put downward pressure on world market maize prices, which were not yet affecting East African markets, partly shielded as they were by high transportation costs and a large gap between export and import price parities.

Figure 2 presents an overview of the key actors shaping the FPPD, as well as four policy options open to governments to resolve it. It is important to keep two things in mind before we review the policy options and their associated trade-offs. First, this framework offers a stylized picture of political economic relations in a closed economy. The absence of foreign competition on domestic food markets reflects the situation in the 1940s, but this assumption must be relaxed as we approach the 1980s (more on this below). Second, the main reason why the dilemma has been (and still is) politically relevant in East Africa, is that colonial and post-colonial governments have sought to preserve food self-sufficiency, so that one way or another, the interests of food producers could not be entirely sacrificed to the demands of (urban) food consumers.

Figure 2. The political economy of the food price policy dilemma

Government policy options to resolve the food price policy dilemma
and their inherent socio-economic trade-offs
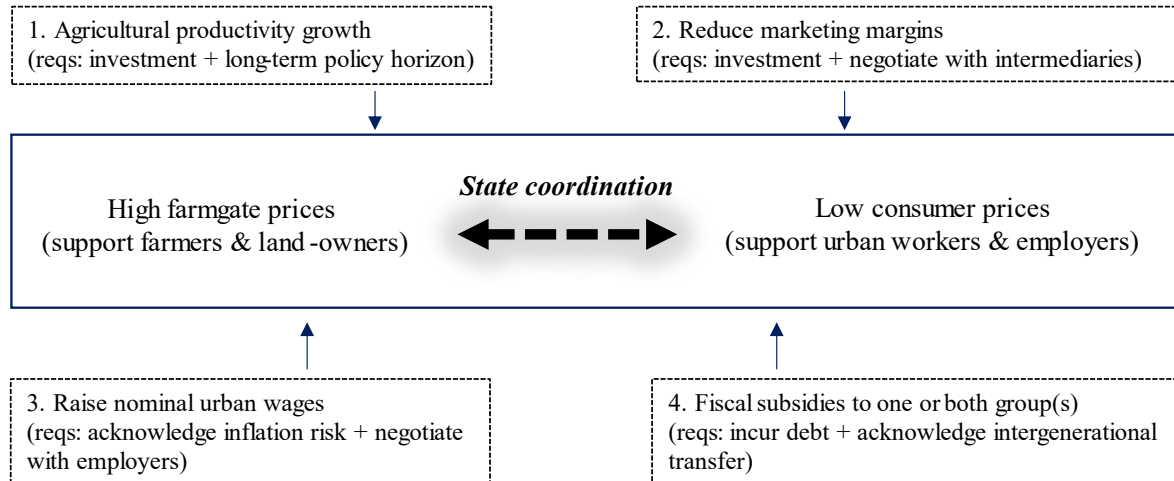
Source: Authors' own

1. *Agricultural productivity growth* is arguably the optimal strategy to resolve the dilemma, as it can keep farmgate prices low without harming the income position of food producers. Yet, this policy goal is probably also the hardest to achieve. It requires large upfront investments in improved cultivation technologies and practices (seeds, mechanization, irrigation), and a long-term policy horizon to develop rural extension and credit services. Moreover, productivity gains may only affect consumer prices if institutional and infrastructural constraints to food marketing are removed simultaneously (see 2.). As we have argued elsewhere, such physical and institutional market constraints were comparatively large in East Africa when compared to other tropical regions such as Southeast Asia (Frankema and Westland 2025, also see Platteau and Hayami 1998). To finance upfront investments, debts will have to be incurred or fiscal transfers will have to made from other sectors of the economy for an extended period of time. Urban consumers can subsidize such investment programmes by accepting high farmgate prices, but they will have to be convinced that this is necessary to benefit later on.

2. *Reductions of marketing margins* can be achieved, for example, through improved transportation infrastructure, better storage facilities that lower food losses, or by narrowing the margins of intermediaries. This is only viable if there are sufficient inefficiencies that can be removed in the value chain between the farmer and the consumer, so that consumer prices can fall without requiring a reduction in farmgate prices. This policy option also requires large upfront investments and is likely to meet with resistance from market brokers who fear their profits will be squeezed. One of the key aspects of East African government policies with respect to marketing were attempts to centralize the maize trade and place major parts of the value chain under control of parastatal marketing boards. As we will see below, reducing marketing margins was a key objective of post-colonial governments in East Africa, but their attempts proved unsuccessful, and even counterproductive.

3. *Raising nominal wages* of urban workers is a third option open to policy makers to compensate for high or rising food prices. They can do so by adopting minimum wage legislation or yielding power to trade unions, which were in the late-colonial African context often connected with independence movements. Especially after World War II, when the justification for colonial rule shifted decisively from a 'civilizational' to a more welfare 'developmental' narrative, the idea to raise living standards via wage regulation quickly gained prominence (Cooper 1996). Apart from the notable risk of a wage-price spiral in case wage increases are not matched by labour productivity growth, generic wage increases would be resisted by employers. Notably, in colonial Kenya, these employers were not only Africans or Indians, but also the European planters who relied on hired labour.

4. *Fiscal transfers* to one or both groups are a final option to resolve the FPPD. Structural government subsidies for particular social classes are a common phenomenon in modern welfare states, but they are obviously more problematic in poor societies with shallow state pockets. Structural transfers can either be financed through incurring government debts or by taxing other economic sectors with sufficient carrying capacity and enduring dynamism. In the East African context, without meaningful high productivity industries, the options were limited to the main source of export revenue: tropical cash-crops such as coffee, cotton, tea, sisal and a range of crops of lesser importance. This gave a specific dimension to the political economy of the FPPD in the region: *many of the region's food producers were, or could relatively easily become, export crop producers*. As we will argue below, the partial substitutability between maize and coffee affected long-run maize price trends.


3. Long-run food prices: data and patterns

The East African Food Price Database (EAFPD 1.0) contains over 7,500 food price observations in 146 distinct market locations (major cities or towns) in five countries (Burundi 17; Kenya 49; Rwanda 17; Tanzania 40; Uganda 23) for the period 1900-2020. The markets are shown in Figure 3, a country/decade breakdown of maize price observations is given in Appendix Table B1 and a breakdown by markets/decade in Appendix Table B3. With just under 3,400 price observations, the maize series are the most extensive (temporally) and balanced (spatially) of the EAFPD. Especially in the colonial era, maize prices were much more frequently reported than those of other food crops, testifying to the crop's importance. Colonial sources we consulted include the annual *Blue Books* for Kenya, Tanzania, and Uganda, the *Rapports de l'administration du Ruanda-Urundi*, unpublished district reports from the Kenyan colonial administration and a range of newspapers and gazettes published by local presses which occasionally reported food prices in local markets, as well as occasional surveys into the cost of living in specific localities. For the post-colonial era, and especially more recent decades, we gathered price data from a variety of reports published by national statistical agencies, for example by the Kenya National Bureau of Statistics (KNBS), as well as international agencies, including the ILO October inquiries, the World Bank ICP (International Comparison Program), the UN World Food Programme (Tanzania), and the FAO Food Price Monitoring and Analysis (FPMA). Most of the observations refer to wholesale or retail prices and can be linked to a single geographic market, but the EAFPD also includes producer, import and export prices. For some markets, prices were published on a weekly or a monthly basis, often recorded in newspapers. A particularly rich early source were the colonial newspapers of

German Tanganyika (1900-1914), which furnished weekly then monthly price reports on major staple crops. The longest consistent weekly price series pertains to the Nakuru maize market (1972-1982), published by the *East African Standard*, one of Kenya's leading newspapers. Monthly price series are more common, especially for recent decades. We map the locations for which we have price series in Figure 3, which also depicts population densities for the earliest year for which detailed, spatially disaggregated data is available (2000).

Since we are interested in long-term trends, we generated annual average price series. These series were created by averaging weekly or monthly price series when possible, and fewer or even single point estimates when necessary. This procedure implies that occasionally, seasonal price fluctuations, which in the East African context are substantial (Cardell and Michelson 2023), may bias specific country-year observations. Since our price data comes from multiple sources and was recorded during different times of the year, we are not concerned that this introduces systematic bias in our series. We also had to convert a variety of local quantity or volume measures such as bags, bushels or litres into a standard unit of weight, i.e. kilograms. Bags can refer to different weights, which are not always stipulated in the source and then must be inferred from surrounding years or markets. When we were unable to make a reasoned inference, we dropped the observation.

Figure 3: Locations of markets in the EAFPD
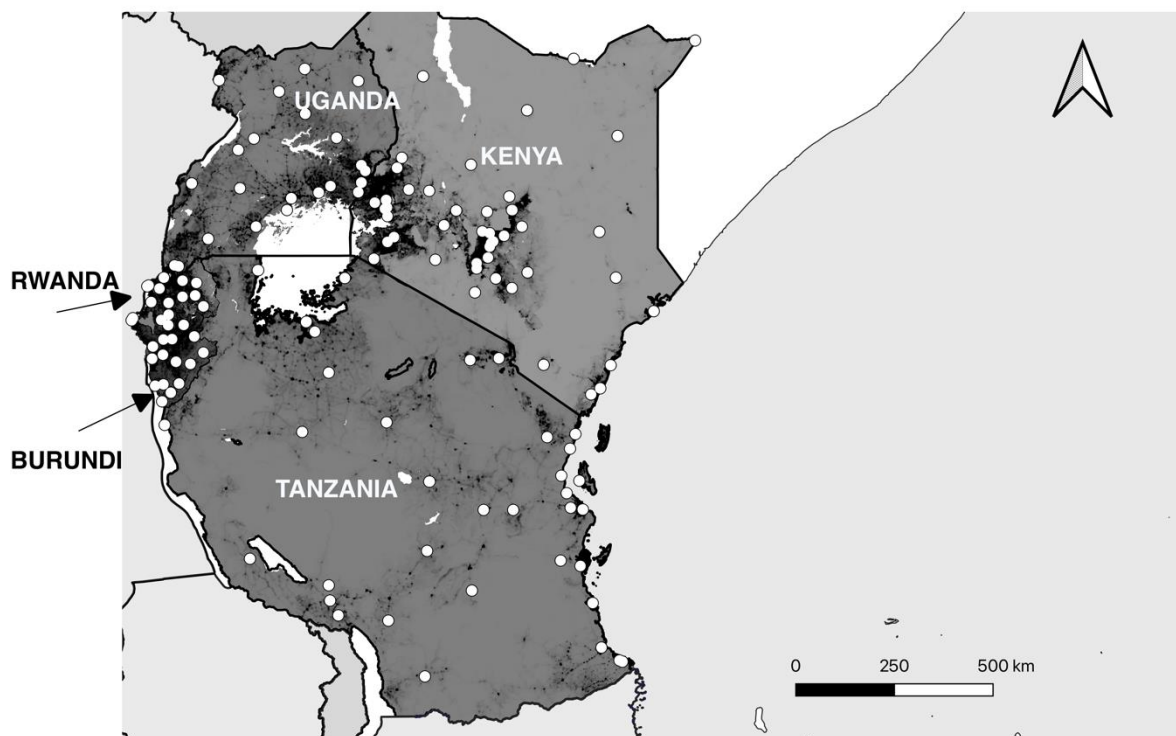
Source: Created by authors using QGIS. For the five countries under study, darker grey indicated denser population in the year 2000. Source of population density: WorldPop.org.

We had to take three additional steps to assure comparability of price data across markets, including the world market. First, we converted all prices into wholesale prices of dry, unprocessed maize (grain). We marked down maize flour and meal prices by 25% to account

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for their higher value-to-weight ratio. This ratio is inferred from a few sources that recorded maize prices at different processing stages. Second, we applied a fixed ratio of 1.5 to convert farmgate prices into wholesale prices, and a ratio of 0.75 to convert retail into wholesale prices. Although these margins of course varied in reality, we adopt this rule consistently for the sake of transparency and consistency. Appendix Figure B2. shows the number of observations per price-type/decade. As a robustness check, we also created series that are exclusively based on wholesale prices of dry maize. The results, shown in Appendix Figures C4 and C5, suggest that the adoption of these conversion rates does not introduce systematic bias in our series.

Second, our East African price data pertains to white maize, which has been dominant in the region for the entire period of interest, whereas most globally-traded maize is of the yellow variety. Within the region, white maize obtains a substantial price premium over yellow maize, the latter being widely associated with food aid. McCann (2005, p. 117) reports white-variety markups of 25% for maize grain and between 15 and 30% for maize flour in Mozambique in the mid-1990s, and even higher premiums in Zimbabwe. Another study on consumer preferences for white maize in Kenya found that "on average, consumers need a price discount of 37% to accept yellow maize" (De Groote and Kimenju 2008). However, these large mark-ups can be explained as much by the low quality of yellow maize traded in the region during periods of food shortage as by some inherent difference in the valuation of the two varieties when of comparable quality. Checking our world market price series against South African producer price series for white and yellow maize (1936-2021) we draw two reassuring conclusions. First, white and yellow maize prices in South Africa are very similar to each other, with white maize fetching only a 3.2% premium over yellow maize on average for the period 1956-2021 (Sagis 2025). Second, South Africa white maize prices closely track the world market price for yellow maize, both in terms of level and (long-term) trend (Appendix Figure C6). This observation suggests that having white maize prices in the numerator and yellow maize prices in the denominator does not introduce a bias in the long-run trend.

Third, to compare local with international prices we converted domestic currencies into current US dollars using official average nominal annual exchange rates. Such conversions are unproblematic in periods when exchange rates are stable or pegged, which was true for most of our period, but in times of rapid change, the early 1980s especially, such conversions can create (temporary) noise. Moreover, black market exchange rates sometimes deviated considerably from the official rate. Appendix Figure D1 shows the nominal annual average exchange rates for 1921-2020 and Appendix Figure D2 reports the effects of using black exchange rates. During the colonial period, the three Anglophone countries all used the East Africa shilling (which succeeded the rupee used in German and British East Africa), pegged at par with the sterling shilling, and adopted their own shillings from 1966. While there was some volatility in the GBP-USD rate in the 1930s and 1940s, the post-war period was one of stability under Bretton Woods. The East African and national shillings were pegged first to sterling and then to the US dollar. The francs used in Burundi and Rwanda first followed the Belgian franc and then the US dollar. Only in the early 1980s did the value of the three national shillings and the two national francs collapse. The stability of exchange rates between 1949 and 1980 is important for our argument: it suggests no major role for exchange rate fluctuations in the relative price trends we document and seek to explain.

To compare East African maize prices with world market prices we have selected the series from the World Bank Commodity Price Database for the post-1960 years, which refer to the export price of yellow maize, grade 2, f.o.b. at US Gulf ports. We trace this series back

with the price index series provided by Grilli and Yang (1988) for 1900-1960. These two series closely track on another for overlapping years (1960-1992), which justifies the backward projection. The resulting world market benchmark series also align with the British wholesale maize prices (for "American mixed") for 1900-1950 from Sauerbeck, aside from temporary discrepancies during the Great Depression and World War II (see Appendix Figure C6).

A comparison of long-term levels and trends is presented in Figures 4a and 4b. Because we have uneven coverage by country, with more observations for Kenya than for other countries, we first averaged at the country level and then took the mean of the five country-level aggregates. The five countries followed very similar trends and levels for most of the period of interest. Indeed, the maize price reversal that we document is not explained by country-level idiosyncrasies (Appendix Figure C2). Appendix Figure C3 shows the full set of datapoints underpinning the trendline. Figure 4a presents the development of the average of the East African maize price and the world market price in constant US$ per kilogram, using the US CPI as the deflator.[7] Note that while the long-term trend of constant maize prices in East Africa is flat, they increase (doubling) in our period of interest (1946-1986), while world market prices decrease (halving) (Appendix Figure C1). Figure 4b presents the regional average as a ratio of the world market price. This figure clearly shows how maize prices after the end of the Second World War started to increase in East Africa relative to the world market leaders (i.e. the US). This shift from relatively cheap to relatively expensive maize occurred in roughly four decades between 1946 and 1986. The East African price has remained substantially above world market levels, despite some convergence in the 1990s and 2000s. Two periods in particular contributed to the stark price reversal, which we date approximately from 1947 to 1957 and from 1973 to 1986, which are indicated in the figure.

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[7] Ideally, one would also want to deflate East African maize prices with East African CPIs, but these do not exist (yet) for such a long time period. Moreover, in these CPIs staple foods will have to play a large role in light of the fact that staple crops are a major source of household consumption expenses.
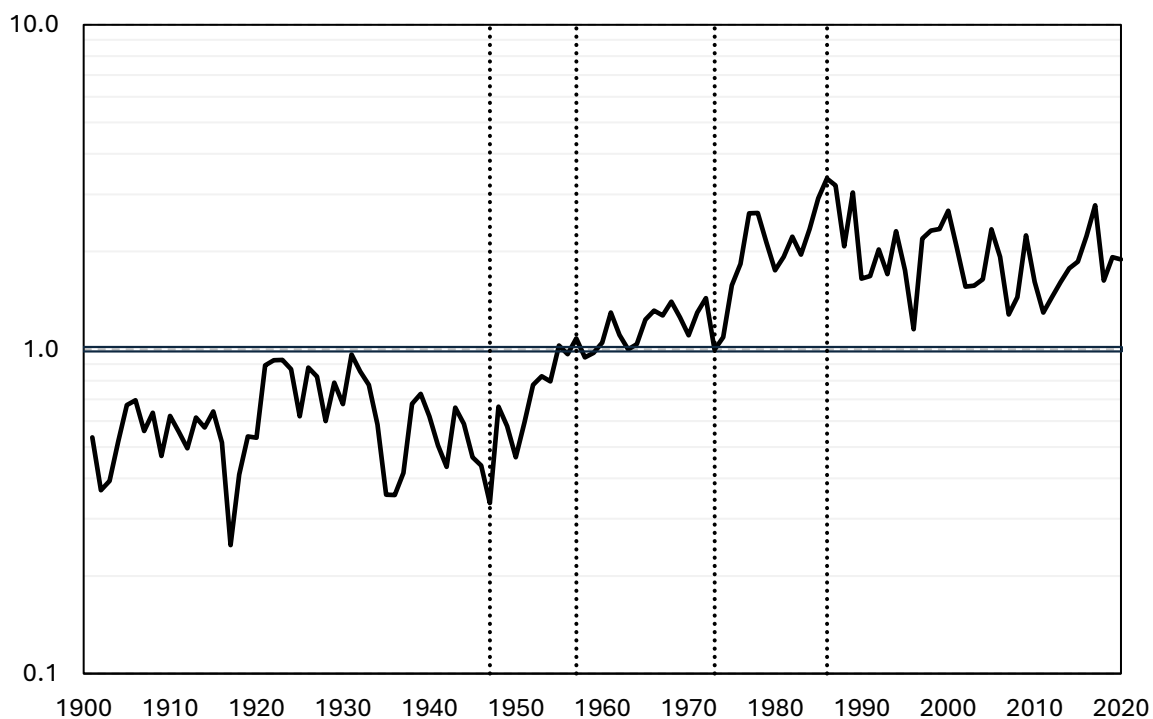
Figure 4a. Average East African maize price vs world market maize price, 1900-2020 (constant USD/kg), log scale
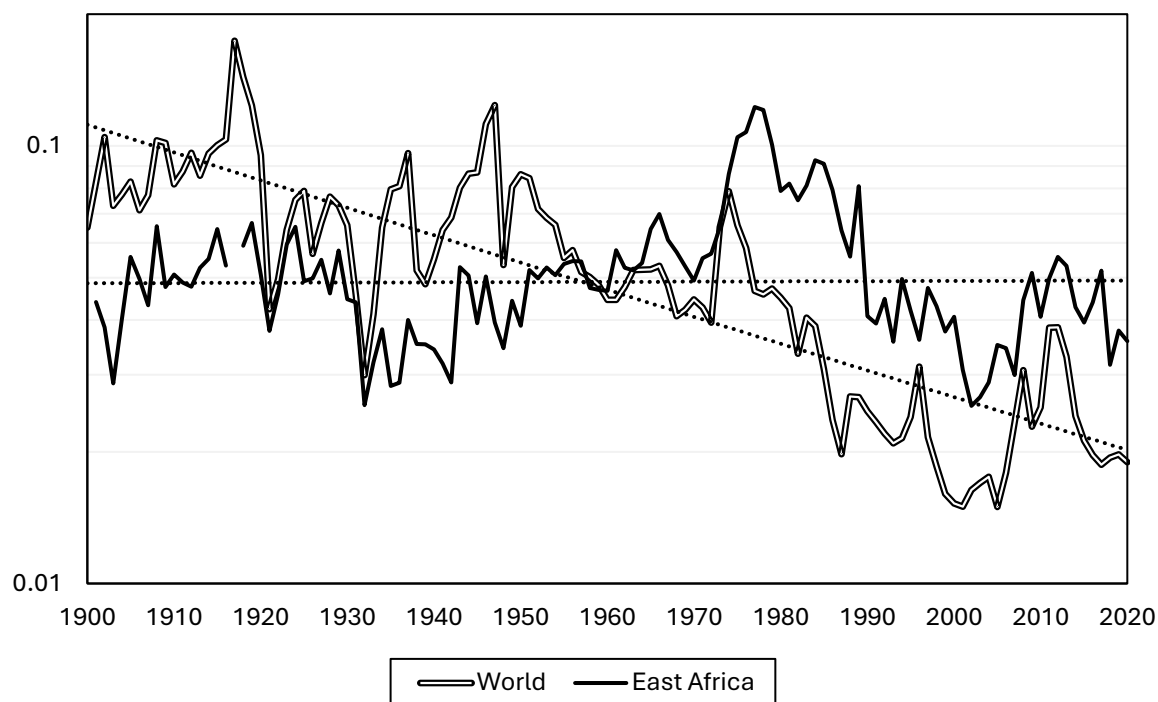
Notes: USD/kg, deflated by the US CPI at 1960=1; log scale).
Sources: Maize prices from EAFPD. US CPI from Officer and Williamson (2024)

Figure 4b: Average maize price in East Africa relative to the world market price (=1), 1900-2020, log scale

Source: EAFPD 1.0

4. How cheap maize became expensive

The rest of the paper explores, diachronically, the political economics that determined the steep and consequential rise of East African maize prices relative to international prices from the 1940s to the 1980s. We subdivide this period into distinct phases based on visual inspection of the price series and a basic structural break test.[8] Our periodization refers to East Africa as a whole (cf. Figure 4b), but we have ascertained that it also applies to each of the five individual countries. Up to 1947 we observe comparative low but fluctuating prices across East Africa. Next, we observe a sharp convergence of East African maize prices with the world market level in 1947-1957, followed by some 17 years from 1957 to 1974 in which the East African and world market prices are more or less at par. Next, from 1974 to 1986 we observe a strong divergence between East African and world market maize prices. Between 1986 and 2011, East African price gradually reverted to the world market baseline, before rising well above it again.

4.1. World War II and an emerging maize market (c. 1900-1947)

In the first four decades of the 20th century maize prices in East Africa varied and fluctuated widely, but were on average about half of the world market price. Governments did not systematically intervene in food markets. In terms of the dilemma, farmers received low prices for their food crops, which pushed them towards growing export crops like coffee and cotton instead. The exception to this general rule were maize-growing settlers in Kenya who, due to their scale and access to cheap labor and markets, could profitably grow maize for domestic and export markets. Low consumer prices facilitated a low nominal wage regime, which benefited European private employers and the colonial state (Frankema & van Waijenburg 2012). Exceptions, again, occurred usually in favour of the politically vocal European settlers rather than African peasant farmers: during the worst of the Great Depression, European farmers abandoned maize production on a scale that worried colonial officials, and received export subsidies from the colonial government. Even then, however, they were paid with reluctance (Anderson and Throup, 1985).

The sole focus of colonial food policy was on avoiding irregular local shortages and in the worst cases to respond to famine. In Ruanda-Urundi, severe famines in 1916-1917 (the *Rumanura* famine) and 1927-30 (the *Rwakiayihura* famine) occasioned interventionist measures, including terracing efforts to expand cropland, the forced cultivation of cassava and (sweet) potatoes, roadbuilding and porterage (Brunner 2024). In Uganda, episodes of local food shortage (in 1908, 1918-19, 1927-28) resulted into the establishment of a famine preventions system that revolved around household and community millet granaries, the planting of 'famine reserve crops' and, where necessary, imports from other parts of the colony or from Kenya. Colonial authorities sought to avoid farmers' overspecialization in cash crops – cotton and coffee most importantly – if this would compromise food self-sufficiency, on a national, regional, community and even household level.

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[8] A very simple Bai-Perron test of the 'real' East African price of maize (i.e. deflated by the world maize price) suggests three breakpoints, at 1956, 1976 and 2001. These breakpoints correspond roughly to our own periodization, which suggests that the post-war period and the late 1970s as decisive moments in the transition to higher maize prices, with a return to relative stability, though not to low prices, in the last two decades or so.

In Kenya and Tanganyika, which both faced food shortages in the late 1910s, 1920s, as well as the mid-1930s, famine prevention and relief policies were even more incidental and haphazard. Local shortages, which could lead to very sudden and sharp price hikes, often resulted in interregional trade by the local population and Indian middlemen, or large-scale temporary migration to more fortunate areas. In some cases relief efforts were made, often in exchange for labour service. Colonial authorities temporarily prohibited exports from specific districts (or the use of grain to brew beer) to avoid local shortages. These policies were often initiated and implemented by native authorities or other local bodies, tailored to local circumstances (Bryceson 1981). In this period, Kenya exported substantial but sharply fluctuating quantities of maize to Tanzania which struggled to consistently maintain self-sufficiency.

Whereas in Uganda and parts of Tanzania peasant export production was the backbone of the colonial economy, in Kenya African smallholders only began to produce sizeable crops for exports during the 1930s. Their participation in coffee production, the territory's main export crop, was curtailed until the 1950s, to avoid competition with European farmers and cut off an alternative to wage employment. While the interests of settler farmers, who wanted cheap African labour rather than competing African producers, played an important role in this policy, food security was its main justification. An Agricultural Commission in 1929 argued that due to the threat of famine, "it is desirable to encourage food crops of which the surplus can be sold; rather than inedible crops, though the latter may yield a higher cash return" (cited in Zwanenberg 1974, p. 206).

A turning point came with the war years, coinciding with poor harvest conditions across large parts of the region. With world trade disrupted and shipping capacity constrained, the East African colonies were called on to supply food for Allied armies, while preserving domestic food security. For these purposes, the "East Africa Cereals Pool" was established, which distributed cereals between British East African territories, but also supplied other parts of the British Empire (Mosley 1975). Meanwhile, external demand for cash crops remained strong, and their trade was put under strict metropolitan control. This led to the establishment of various "Coffee Controls" throughout the region and the "Cotton Control" in Uganda in 1943. Later these organizations would be transformed into full-fledged marketing boards with monopoly buying rights (Yoshida 1973, p. 249-56). Meanwhile, the size of the non-food producing population, including troops, refugees and prisoners of war, increased substantially. Partly as a result of food hoarding, a widespread drought in parts of the region resulted in food shortages and, in the case of Ruanda-Urundi where food was subtracted to support the Allied war effort in the Belgian Congo, the *Ruzugayura* famine (Singiza 2011).

A heavier government hand began to interfere more deeply in production and distribution. Local actors determined how and when this interference occurred. In Kenya, from 1942 onwards, high prices were paid primarily to European settlers to encourage greater supply. A "Maize Control" was established which purchased maize at a guaranteed price. Although price guarantees dated back to the 1930s, this was a new institutional apparatus in which the farmers themselves had a large stake and would later evolve into the Maize Marketing Board (Llewellyn 1968; Bates 1989; pp. 21-3). Prices for African farmers were considerably lower, allegedly due to the inferior quality of their harvest and the incidental nature of their supply (Anderson & Throup 1985; Mosley 1983, p. 92-93). High prices were used to induce greater maize cultivation in Uganda and Tanzania; in the former, which was largely spared the drought that hit other parts of the region, there was a rapid expansion of

maize cultivation in parts of the colony and large exports to fill gaps elsewhere (Miracle 1966, pp. 135-36).

The war years can also be seen as the point at which the FPPD began to impose itself. Maize farmers had to be offered higher prices in order to produce enough maize for local consumption and war requirements, and these higher prices were allowed to flow through to higher prices for consumers, at least initially. The colonial government, faced with the dilemma, sided with producers.. While European and Asian farmers in Kenya received 6.34 shillings per bag in 1941-42, and 15.90 shillings in 1946-47 (a 150% increase), consumer prices in Nairobi rose almost to the same extent, from 10 shillings per bag of 200 lbs of maize in 1941 to 22.25 shilling in 1946 (a 123% rise). In other parts of the region, such as Ruanda-Urundi, rationing boards in the major urban centres were introduced, but these were a response to the effects of shortage-induced price spikes and not an attempt to structurally suppress food prices for consumers (Feltz and Bidou 1994; Mwambari 2024).

East African prices increased, but so did world market prices, at approximately the same pace. The war did not make East African maize particularly expensive, but it did lay the institutional foundations for later government interventions after the war ended. It also lit a fire under the until-then relatively slow process of urban growth, and the major institutional innovations of the war years would, after peace returned, be turned towards securing a supply of food for the growing urban workforce.

4.2. A price-wage spiral (1947-57)

After the end of the war, a steady supply of affordable maize was considered crucial. Maize was already the most important staple in Kenya and Tanzania, and was rapidly gaining ground in Uganda and, to a lesser extent at this point, in Rwanda and Burundi. Foreign exchange was scarce and global food markets were not well-functioning: a reliance on large-scale imports was out of the question. Achieving a steady supply, self-sufficiency, first regionally and later on a territorial level, was elevated to a key policy aim (Llewellyn 1968). Contributing to a fear that farmers might abandon maize and shortages might occur was as an awareness that maize prices on the world markets were undergoing a strong decline in this period. Kenyan colonial officials did not interpret this as the consequence of a structural shift towards higher yields and lower price levels, but rather attributed to "world overproduction of maize in recent years," apparently believing that this was a temporary situation (Sessional Paper No. 6 of 1957/8, cited in Mosley 1975, pp. 12-13).

A full-blown liberalisation was therefore not considered desirable, even if this meant paying farmers a higher price. The Kenyan Ibbotson Committee (1952) pointed out that "it is the Government's duty to ensure the stability of the Colony's food supplies. We do not believe that anyone would advocate a return to a policy of laissez-faire" (cited in Mosley 1975, p. 8). L.G. Troup (1952) concluded that "the risks involved in farming in this country, and indeed in Africa as compared with the United Kingdom, are on average greater, and this factor must be taken into account in arriving at a fair price" (cited in Mosley 1975, p. 12). The fact that prices had risen beyond export parity level was not considered to be a key problem: domestic demand was sufficient and export should be discouraged. This risk of liberalizing maize markets was compounded by the Korean War (1950-53), which drove up global commodity prices and made the production of coffee, cotton and tea an increasingly attractive proposition to farmers, which

could cause at least some of them to abandon maize production for more lucrative export crops, which would threaten food security.

In Tanzania, the policy focus in the postwar years quickly began to settle on reducing the volatility of the relatively thin maize market: the monopsonist Grain Storage Department was established in 1949, and it immediately ran into a major drought. As in Kenya, producer prices were kept high, to the chagrin of planters in the export sector. The Department's downfall proved to be the 1955 bumper harvest, which had to be exported at a loss given the high producer prices paid, and for a time marketing was entirely liberalised, until in 1963 the state would once again impose a marketing board on maize farmers (Bryceson 1993). The FPPD was resolved in favour of producers, with consumers (and their employers) forced to swallow higher consumer prices.

Maize prices rose particularly fast in East Africa in years of high coffee prices (Figure 6), which was already the region's dominant export crop at the time, accounting for half of the agricultural export value (Appendix Figure H3). Further contribution to a potential decline of maize supply, in Kenya the 1954 Swinnerton Plan relaxed restrictions on African participation in cash crop cultivation, which resulted in a large expansion of native coffee cultivation. The large volatility of maize production, depending on the amount and timing of rainfall as well as pests, diseases and farmers' planting decisions, incentivized governments to maintain an interventionist stance, buying and storing the maize, and exporting (at a substantial loss) in the case of a surplus. In Kenya and Tanzania, maize controls were thus maintained. In Uganda, where food supplies were less precarious due to its bimodal rainfall distribution and a much lower degree of urban and rural wage employment than in Kenya and Tanzania, maize controls were abandoned in the early 1950s, only to be instated in the late 1960s (see below). In Burundi and Rwanda maize markets were not controlled at this stage.

Figure 5. Nominal coffee prices and relative maize prices
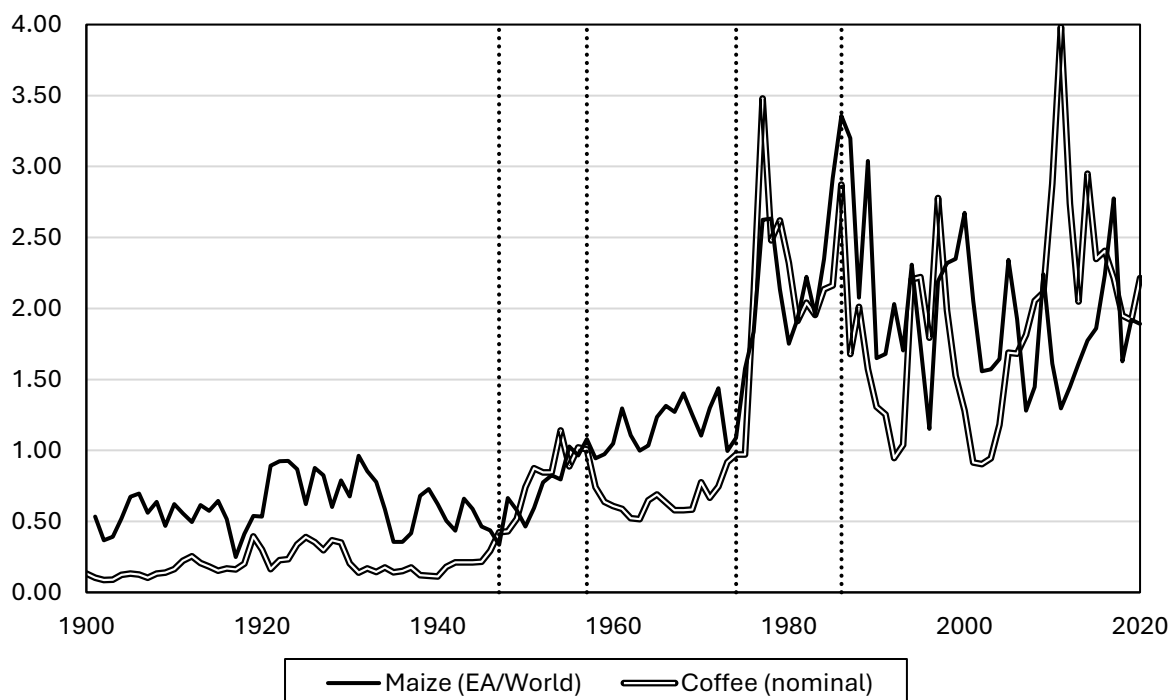
Meanwhile, urban living standards were also a key policy concern in the immediate post-war context and all the way up to independence in the early 1960s (Cooper 1996). As urbanisation accelerated, urban workers intensified demands for family wages, sometimes culminating in widespread strikes and protests. In Uganda, for example, large strikes broke out in 1945 and 1949. The key demand was a wage increase to compensate for inflation (Thompson 1992). European colonizers, in their turn, realized that tangible welfare improvements of Africa's urban populations were essential to sustain the last parts of their crumbling empires, or at least to orchestrate an orderly exit (Cooper 2002). In Kenya, the political pressure was further raised by the *Mau Mau* insurgency (1952-1960) and the ensuing State of Emergency.

How did colonial governments deal with the constraints imposed by the FPPD in a context where both high farm-gate prices and urban living standards were considered important policy goals? Policy makers were certainly aware of the trade-offs they were facing. As the generally pro-African former District Commissioner Shirley Cooke argued, "since maize is the staple food of the majority of the people in this country and consequently its selling price affects the wage structure of the whole economy of Kenya, no increase in the price to the producer shall be passed on direct to the consumer", a feat which would be achieved "by the means of a subsidy from the general revenue". In this suggestion, he was opposed by the settler colonist Lawrence Maconochie-Welwood, who objected that any subsidy on maize prices would be paid by the major capitalist industries of postwar Kenya, including settler farmers producing non-maize export crops (Kenya National Assembly Official Hansard, 1951, pp 610-616). What both sides of the debate seemed to agree on was that the dilemma existed and was potentially costly to resolve.

A preferred policy outcome, as expressed in the Ibbotson Report in 1952, was to control consumer prices. The main aim was to avoid shortages, in years where high world prices would encourage exports and in years when low prices would discourage planting maize.[9] In practice, however, this policy resulted in higher prices. By 1957, nominal maize prices in Nairobi had doubled relative to their 1950 level and were well above export parity (Appendix Figure X). Neither in Kenya, nor any of the other colonies in East Africa, was there a general fiscal subsidy towards African agricultural producers: farmers had to pay a levy to compensate for excess maize which had to be exported at an inflated price (Mosley 1975, p. 12).

Policymakers in East Africa attempted to resolve the dilemma by increasing nominal wages, even though, as observed by the Ibbotson Report, this increased production costs. Higher nominal wages would mean that higher maize prices could be compatible with higher real incomes for urban workers. In all five of our countries, statutory minimum wages were introduced, covering at least some parts of the territory, usually beginning with the main urban centres. Annual nominal increases were rapid — in Nairobi, on average 8.3% annual growth from 1944-1953 and 11.9% annual growth from 1954-1963. Minimum wages rose from 2 francs per day in 1949 to 12.50 francs in Burundi's capital Bujumbura by 1960. In all five economies, major nominal wage increases were driven by a transition from the idea of a 'bachelor' wage to one that could support a family (Weeks 1971, p. 367). Notably, the wage

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[9] Report of the Board under the Chairmanship of Sir William Ibbotson on the Marketing of Maize and other Produce, pp.3-4.

increases were not in step with rural incomes, which began to fall behind in this period (for Uganda: De Haas 2017).

Increasing nominal wages was expedient because it was a visible colonial response to worker discontent. Moreover, the booming commodity prices during much of the 1950s, which were partially skimmed off by marketing boards, created the fiscal space to increase government wages, while private coffee and tea farmers were also able to pay higher wages to their rural workers in a context of high global commodity prices. Moreover, East Africa's wage-earning sectors, though growing, were still small compared to the size of the agricultural sectors, so that the total wage bill was modest compared to revenues from commercial agriculture (Appendix Figures G1, G2 and H2). As we will see, however, in the long-run a strategy focused on increasing nominal wages rather than trying to keep the cost of living under control would prove an untenable strategy. This was already foreshadowed, to little avail, by the Kenyan Cost of Living Commission of Inquiry in 1950: "We have said that the difficulty is to avoid the vicious circle in which wages and prices constantly pursue each other...It is to be noted that in Great Britain the tendency is normally for wages to take the upward initiative. In Kenya the initiative is with prices, but the results, are of course, the same...If wages are to remain stable, prices must be pegged."[10] The dilemma, in other words, was not resolved, but merely put off. The rapid rise in wages, which did outstrip maize flour prices at least in Nairobi, but they would have to come down eventually.

4.3. Attempts to manage the market (1957-74)

The global commodity boom of the early 1950s came to an end in 1957, and the prices of East Africa's most important export commodities began to decline. For the region's governments, this meant less fiscal space to increase nominal wages and absorb rising consumer prices. For farmers, it made maize cultivation relatively more attractive compared to export crops, dampening inflationary pressures overall. In Kenya, moreover, independence meant that the white settler minority lost most of its privileged position; large farmers now had to compete more directly with peasants. As Table 1 shows, official producer prices (which applied primarily to white farmers before independence) declined substantially after 1960, to levels much more in line with prevailing world market prices. As to consumer prices, the inflationary spiral levelled off after 1957 (Figure 5).

Table 1: Maize producer prices compared to world prices

	Official producer price (USD/kg)	World price (USD/kg)	Producer price as % of world price
Kenya			
1955	0.054	0.052	104%
1960	0.051	0.044	159%
1965	0.050	0.057	88%
1970	0.034	0.058	59%
1975	0.095	0.120	79%
1980	0.135	0.125	108%

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[10] Kenya Cost of Living Commission of Inquiry 1951

Tanzania			
1965	0.036	0.057	63%
1970	0.036	0.058	62%
1975	0.102	0.120	85%
1980	0.122	0.125	98%
Uganda			
1970	0.025	0.058	43%
1975	0.101	0.120	84%
Rwanda			
1975	0.065	0.120	54%
1980	0.119	0.125	95%

Source: EAFPD.

Yet while maize prices had fallen below world market prices when export commodity prices crashed in the 1930s, this did not happen in the late 1950s and early 1960s. Instead, prices stabilized at a level more or less at par with the world market, and above export parity, which made exports costly. This upward shift of maize prices occurred in the context of the transition to independence and concomitant democratic elections, which meant that politicians had to navigate the interests of large rural and vocal urban electorates. In all five cases, and most notably in Kenya, the interests of farmers took on a central role in politicians' considerations (Bates 1989; Lofchie 1989). Maize growers, by this time, were used to favourable price controls. Their case was strengthened by a strong focus on food self-sufficiency and the stability of supply. One Kenyan Committee, in 1966, stated emphatically that "if there is sufficient maize, there is contentment among the people. If there is insufficient maize, there is distress and dissatisfaction – there may even be famine" (cited in Mosley 1975, p. 16). Indeed, "attempts to economise on export losses by cutting the guaranteed price (e.g. in 1963 and 1967) were in each case followed by shortages." Although these shortages were "due in the first instance to drought (1965, 1970)", they led to costly emergency maize imports from the United States and resulted in "allegations that the crises would never have occurred in the first place had producer prices not been cut; in each case they were raised again" (Mosley 1975, p. 13-14; also see Bates 1989).

Given these political constraints, rather than making hard political choices, East African governments attempted to resolve the FPPD itself. This time, they did this less so by increasing nominal wages, although nominal wages did continue to rise, in fact faster than maize prices until the early 1970s (Malan, 1978, also see Figure X). Rather, they followed three alternative strategies. First, in some instances, such as Kenya in the early 1960s, consumer prices were subsidized. Second, and again most importantly in Kenya, the adoption of high-yielding hybrid maize seeds was stimulated. This, it was hoped, would increase output, shrink the gap with the global yield frontier, and have a downward effect on prices. The adoption of hybrid maize by Kenyan farmers in the late 1960s and early 1970s was impressive and contributed to a substantial increase of total maize output (Gerhart 1975; Hassan and Karanja 1997). However, its downward effect on prices proved to be of merely temporary nature, and while the adoption of hybrid varieties was associated with farmers' improved living standards, it did not herald a sustained 'yield revolution' of major proportions (Byerlee and Heisey 1996, also see Appendix Figure E1 and E2).

The third and most impactful intervention was aimed at attempting to shrink the gap between farm-gate and consumer prices. This goal was pursued in an era of much optimism about the ability of governments to intervene effectively in markets. This belief, which applied particularly to agriculture, was partly a global phenomenon (Federico 2010). It was, however, especially strong in East Africa. The yoke of colonialism had just been thrown off and independence promised greater policy space. Moreover, there was a widespread belief that South Asians, who had been highly dominant as a "middleman minority" in agricultural processing and trade, and who had grown to a community of c. 300.000 people across the region by 1950, had disproportionally and unfairly benefited from colonialism. By reducing legislation that privileged Indians and excluded Africans, and by 'Africanizing' the economy, post-colonial governments believed that they could curb trade margins and thus bring farm-gate and consumer prices closer together.

The primary institution used to intervene in maize marketing were the marketing boards. They played a central role in the maize sectors of Kenya, where a maize marketing board operated continuously since World War II, and Tanzania, where, after a free market interlude between 1957 and 1962, the Nyerere regime sought to reinforce control over the rural sector via the newly established National Agricultural Products Board (NAPB) in 1963. Marketing boards played a much smaller role in Uganda, where the maize marketing board was abolished in 1954 and only reestablished in 1968 (Schubert 1970).[11] Food crop marketing boards were even less important in Burundi and Rwanda. In Burundi, a monopsony marketing body was set up for subsistence crops in the 1970s, but it did not purchase maize and even at its peak did not purchase more than 400 tonnes or so of beans and rice (African Development Bank, 'Projet de stockage et d'entreposage de produits vivriers', project evaluation). It was a similar story in Rwanda, where a government marketing body targeting food crops came late and made little impact (Pottier 1993).

The central idea behind the maize marketing boards was that maize harvests were inherently volatile and that price controls and inter-seasonal storage would stabilize maize production and supply, while centralized and government-led milling and transportation would make marketing more efficient and undermine the market power of intermediaries. Yet despite high hopes and substantial investment, none of the marketing boards achieved their primary aim of bringing retail and farmgate prices closer together. To the contrary, the marketing boards would increasingly create deadweight losses and widened price wedges. We identify three key reasons why maize marketing boards had perverse outcomes.

First, a central monopsony proved much harder to enforce on a domestically demanded and traded food crop than on internationally traded export crops like tea, coffee and cotton. Whereas export crops were centrally collected at one or two port cities to be shipped abroad, food crops could radiate in all directions. Maize producers had many more options to circumvent state-controlled marketing boards and price controls when it was profitable for them to do so. According to one estimate, 75% of all maize in Tanzania in the 1970s and early 1980s was sold in parallel markets (Johnston 1989, p. 220). Maize harvests were inherently unpredictable, so if guaranteed prices were set too low, farmers would hoard, smuggle or

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[11] Uganda's more liberal approach must be understood in the context of maize markets which were very responsive to price signals due to the prevalence of bi-modal rainfall regimes that allowed for two harvests per year. When the first harvest was poor and prices soared, farmers were keen to grow maize instead of other cash-crops (De Haas 2021). The free market for maize (and other food crops) thus functioned relatively well in terms of price stabilization. It is notable, in this context, that maize prices were indeed substantially lower in Uganda during the 1960s than in Kenya and Tanzania (Figure 2d)

substitute to other crops and state-owned maize mills would lay idle. If prices were set far above the market clearing rate, marketing boards would have to run at a loss, and export surpluses below their purchasing price.

Second, in order to compel maize producers to sell their harvest to the board, a set of rules was adopted which resulted in sharply increased transportation and transaction costs. Private traders who, despite widely held suspicions to the contrary, probably had operated at reasonably narrow margins, were replaced by licenced traders who did not feel similar competitive pressure. Most forms of private interregional and interregional trade were prohibited. Monopolies in the transportation sector were notoriously costly. In Tanzania, the NAPB monopsony was extended to smallholders thus driving out private traders, many of whom were South Asians. Unlike in Kenya, fixed producer prices were paid at the farm-gate (or the village cooperative), without taking transportation cost to the central mills into account, costs which were borne by the Board. When Rwanda deregulated its transport sector in 1994, ending a *de facto* monopoly of a parastatal trucking company (STIR), transport prices fell by a staggering 75% in real terms (Teravaninthorn and Raballand, pp. 23–24). A limited number of (new) large mills in a few urban centres was tasked with the collection and elaboration of the lion's share of the harvest. To direct the flow of maize towards these mills, cross-district trade of food crops was prohibited. This set-up caused enormous additional trade and transportation costs. Rather than trading surpluses directly with nearby areas of shortage, the central collection of the country's maize harvest, and re-distribution of maizemeal from the mills added price margins that would have been avoided in a free market context (Meilink 1999). In Kenya, these transportation costs were at least partly passed on to producers, which created many incentives for distant farmers to sell maize (or other food crops) beyond the NCPB, which, in turn, invoked transaction costs associated with illicit trading across district and country borders (Schmidt 1979).

Third, marketing boards became vehicles of lucrative job creation causing huge administrative overstretch. The rising wage and salary costs of continuously expanding and exceptionally well-paid administrative personnel became a growing burden on the budget of the boards. Like the trade licenses, these jobs became a valuable object for rent-seeking which were eagerly used for cementing political coalitions. Kenya in the final years of colonial rule already exhibited this kind of marketing inefficiency: the ratio of administrative costs to the price at railhead paid to farmers for maize by the Maize Marketing Board. As Table 2 shows, from a low of 4% of the railhead price, administrative costs soared to around a quarter of the railhead price by 1963, the year of Kenya's independence from the UK.

In summary, by the early 1970s, governments had become key players in maize markets across East Africa and especially in its two main producers: Kenya and Tanzania. Interventions focused, unsuccessfully, on reducing marketing markets, and governments avoided making hard choices between providing attractive prices to producers and limiting consumer prices. In a context of relatively low pressure on maize prices, these conditions did not lead to further price inflation. However, it set East Africa up for a complete breakdown from 1974 onwards.

Table 2: Share of administrative costs in the F.O.R. price of maize in Kenya, 1945-1963.

	Railhead price	F.O.B price	Railhead/F.O.B price	Admin costs % of railhead price
1945	13.9	17.4	75%	4%
1950	33.2	41.6	80%	5%
1955	22.5	36.9	61%	24%
1960	16.1	31.3	52%	24%
1963	15.8	32.1	49%	26%

Source: Kenya Maize Commission of Inquiry Final Report, 1966, Appendix K.

Figure 6: Index of maize flour price and minimum unskilled wage in Nairobi, log-scale, 1950=100
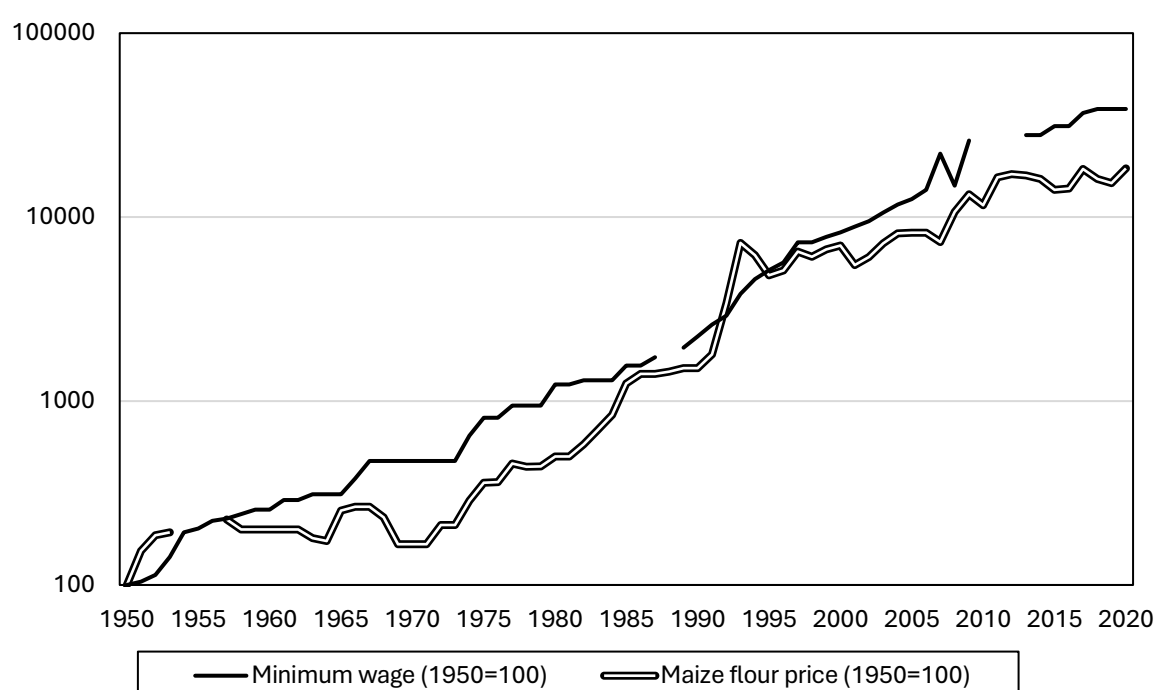
Notes: values are expressed in local currency (East African Shilling, Kenyan Shilling)
Sources: Maize flour prices from the EAFPD. Minimum wage from East African Statistical Bureau and Kenya Central Bureau of Statistics Statistical Abstract, various years, and Economic Survey, 1955-2020.

4.4. Escalating debts (1974-1986)

The second hike in East African maize prices relative to world market prices started in the mid-1970s. Several critical events contributed to this rather sudden and decisive shift in price levels, after over one-and-a-half decade of relative stability.

In Uganda, Amin had ordered the Indian minority to leave the country in 1972, a decision that majorly disrupted agricultural marketing and was followed by a succession of reckless policy decisions that put Uganda on a path of overall economic collapse and hyperinflation. Table 3 reveals how effective producer prices in 1961 and 1965 and official minimum producer prices for 1970-1980 relate to the retail price of a kilogram of maize flour in Kampala. Because

of the disturbances across the value chain as a result of looting and mismanagement of governmental agencies, maize flour became so scarce that it became basically unaffordable for the majority of the urban population who depended on retail sellers for their daily needs. In the parallel "black" market, producer prices of maize obviously rose far beyond these minimum prices. In the late days of the Amin regime, hyperinflation derailed the economy. The Ugandan shilling lost 85% of its US$ value in 1981 when devaluation had become unavoidable. In 1989, the monopoly of the PMB in foodstuffs trade was abolished and restrictions on the movement of produce across districts were lifted in 1992 (Opolot et al. 2005).

Table 3: Recorded and official minimum producer prices versus open market retail prices of maize meal, 1961-1980 (prices in EAS/kg and UGX/kg)

	1961	1965	1970	1975	1980
Maize producer (1)	0.37	0.41	0.43*	1.29*	2.00*
Maize flour retail (2)	0.68	0.86	1.00	4.00	51.60
Ratio (2)/(1)	1.8	2.1	2.3	3.1	25.8

Source: Schubert 1970, AT9 and At10; World Bank 1982, Table 2.5 and Appendix Table 7.2. Note: * producer prices 1970-1980 are the official minimum prices; retail prices 1961-65 are recorded in Kampala, 1970-1980 are national averages.

Meanwhile, in 1973 Tanzania's Nyerere government launched its notorious villagization scheme. Climate shocks, poor harvests and the disastrous implications of the mass movement of farmers into forced collectivization schemes, resulted in maize shortages and imports, which the NMC had to distribute in the form of famine relief across the country against excessively high operational costs. The collectivization schemes provoked large-scale resistance and flight away from the realms of the state. Commercial farmers would revert back to subsistence farming thereby reducing food supply to urban areas. Large amounts of emergency maize had to be imported. To incentivize farmers to grow more food, the producer price for maize was increased more than two and one-half times, resulting in a slight increase of output, but it also caused farmers to abandon the production of coffee and other export crops on which government revenues critically relied (Lofchie 1989, p. 124). The policy of pan-territorial pricing did create a boom, however, in the Southern regions of Rukwa, Mbeya, Ruvuma and Iringa. These regions were blessed with relatively fertile soils and reliable rainfall regimes, and benefitted from the implicit reduction in high transportation costs to the centre (Dar es Salaam) which extended their marketing possibilities, as did improved road and rail connections that were built during the late 1960s and early 1970s (Bryceson et al. 1999, p. 26). Overall, per capita grain production in Tanzania rose 68% between 1970-74 and 1980-84 (Jayne and Jones 1997, p. 1517). However, the effective subsidization of maize production in the southern Highlands also "discouraged expanded production of coffee and other higher value crops." (Johnston 1989, p. 221, also see Ödegaard 1985).

As Tanzania's NCPB was superseded by the National Milling Corporation (NMC) in 1973, regulations intensified as price schemes became pan-territorial (no longer allowing for regional variations). The losses incurred in the marketing of maize and the ever-increasing salary bill of the boards, led to a debt overhang at the expense of domestic tax-payers. Ellis (1982, p. 276-7) notes that in 1980, the NMC had an overdraft of 2.8 billion TZS with domestic banks, while

all crop authorities together were indebted for some 5 billion TZS. This amounted to nearly three times the total value of official crop purchase in the harvest season of 1979-80, and an equivalent of 15% of Tanzanian GDP in 1979!

A boom in coffee and tea prices in 1976 also put upward pressure on maize prices. In Kenya, this was a direct effect, as the windfall price gains were directly transmitted to the farm. In Uganda, the increase of world market prices did not translate into higher producer prices, and the boom was largely taxed away by the Amin government.[12] In Tanzania, Burundi and Rwanda producer prices did rise a bit, but not to the same degree as grain prices (Asiimwe 2013; Nkurunziza and Ngaruko 2002). In order to prevent a massive substitution out of maize farming, which the Kenyan government feared would undermine food security (Lofchie 1989, p. 168-9), producer prices for maize had to rise. And since the perceived fiscal capacity of the Kenyan state had also risen, Nairobi conceded to the demands of Kenya's large maize farmers for higher prices. The Maize Marketing Board purchased large quantities of maize above export parity prices, leading to a K£14.2 million deficit by 1981 (Bates 1898, p.106).

By choosing an essentially fiscal response to the FPPD, Kenya bought itself a limited amount of time at a high price in terms of long-run macroeconomic stability. Without productivity gains in food crops, and with failing attempts to squeeze marketing margins, rising cash crop prices would mean that either urban employees or their employers, or taxpayers in general, would have to swallow the impact of higher maize prices.

Kenya's approach to agricultural pricing was quite different to Tanzania and Uganda's: it chose to allow higher world prices for its main exports to flow through not only to tea and coffee farmers but, by necessity, to maize farmers as well through a high maize price. Kenya's neighbours chose to try to suppress cash crop *and* maize prices through the marketing boards, but, somewhat ironically, the effect was *also to push up maize prices*, since the marketing boards for maize were much more easily dodged than those for the cash crops, and, far from reducing marketing margins, the marketing boards placed a major wedge between producer prices and consumer prices that pushed the retail price of maize higher. Low state capacity, in other words, turned a theoretically *low price* policy response into one that was so inefficient that it led to high prices in reality. Moreover in Tanzania, the fiscal burden imposed by the marketing board, and of panterritorial pricing, contributed to the macroeconomic crisis of the 1980s, and in the eventual need for structural adjustment.

We end up with a paradox: Kenya and its largest neighbour Tanzania followed almost opposite policy paths to tackle high maize prices, but neither achieved the desired outcome. Does this mean that policy was irrelevant? Perhaps the shared trajectory of prices across the region simply reflects the consolidation of a regional market for maize? While there clearly was trade within the region, it was generally small-scale, outside a few narrow 'corridors' where modern, mechanized transport lowered transport costs sufficiently. Price dispersion was wide: to take a simple numerical example, the coefficient of variation of standardised prices for maize in 1977 across 30 locations in East Africa was 0.8, suggesting a very low degree of market integration in the region as a whole. Therefore, increasing market integration—between world markets and the coast, and the coast and the hinterland—cannot explain the relative price reversal in this period. Instead, as we have argued, despite a variety of institutional responses,

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[12] For example in 1976-78, when coffee prices boomed, producers in Uganda received about 1/8th the price of their Kenyan counterparts, amounting to about 2/3rd of the coffee crop value. This resulted in massive smuggling (*magendo*) to Kenya (Asiimwe 2013).

it was the nature of the FPPD, and especially the opt-out options of maize producers, that drove food prices up.

4.5 Structural adjustment and beyond (1986-present)

By the mid-1980s, Tanzania and Uganda had sunk into a major debt crisis and ultimately had to comply to conditional international lending schemes of the IMF to prevent bankruptcy and avoid being cut off from international trade. In both countries, as well as in Burundi, the first reform schemes were adopted in 1986. Kenya adopted a series of SAPs from the early 1980s onwards, but compliance was lacklustre at first and the impact only began to be felt towards the late 1980s (Rono 2002). Rwanda followed in 1990 (Storey 1999). Perhaps the most crucial policy intervention under the SAPs was a currency devaluation. The three shilling countries were forced to devaluate in 1980-1981. Before the first SAPs were implemented in 1986, all three currencies had lost more than 50% of their 1980 value. In Kenya the drop was more gradual; the Uganda shilling hit rock bottom instantly. Devaluation was expected to boost agricultural production, by making the agricultural sector more competitive internationally. The SAPs also prescribed the removal of distortionary price and trade policies. The expectation was that domestic prices would move closer to, and more in line with, world commodity prices.

Maize prices did begin to reconverge with the world level in 1986, not in the least due to austerity in urban wage sectors. And while domestic and regional markets did integrate, (Rashid 2004; Van Campenhout 2007; Jayne, Myers and Nyoro 2008), it took until the early 2000s for prices to reconverge with world market levels. In more recent years, prices have again moved to a level well above the world market. We do not aspire to comprehensively discuss the evolution of maize markets in East African in the past four decades here (see Jayne and Jones 1997; Sarris and Morrison 2010; Sitko et al. 2017), but focus this final section on two questions. Why did prices across East Africa not return to levels well below the world market as the policy interventions that contributed to their rise were scaled back? And to what extent are current price levels better understood through a diachronic historical analysis?

First, SAP implementation was not as far-reaching as it looked on paper. Arguably food crop marketing was one of the lesser affected policy domains. In Kenya, where the SAPs had a comparatively light touch, politicians remained firmly in charge of maize marketing decisions and the maize marketing board a key player in maize markets, purchasing between 15 and 57 per cent of domestic marketed maize between 1995 and 2004 (Jayne, Chapoto and Govereh 2010, p. 121). In Tanzania, even though maize market interventions like internal trade restrictions and panterritorial pricing were scaled down rigorously since 1986, the government still maintained more influence in maize markets than in other crops, with temporary trade bans, import tariffs and grain reserve requirements (Temu, Manyama and Temu, 2010, p. 324 Trade restrictions were imposed through roadblocks, associated with illegal evasion and corruption, increasing costs and retail prices (Temu, Manyama and Temu, 2010, p. 323). Whatever their successes, the SAPs certainly did not eliminate all inefficiencies in maize markets (also see Sitko et al. 2017).

Nor did the policy reforms spark agricultural transformation. Per capita production in the region first dipped in the post-SAP years, before returning to its pre-1986 level, where it remains today (Appendix Figure A3). Tanzania and Uganda have been able to capitalize on their greater inherent potential for maize production and increased their share of the region's

total production (and key sources of import for Kenya, Rwanda and Burundi), while Kenya has lost its role as the region's main supplier (Appendix Table F1 and Appendix Figures F2 an F3. That said, even in Tanzania, production growth was mainly achieved extensively, through population growth and acreage expansion. Production techniques remained traditional and productivity stagnated (Temu, Manyama and Temu 2010 p.332)

Average yield statistics confirm this picture (also see Appendix Figure E1). Between 1984-88 and 2019-23, they remained more or less constant in Burundi (1252 kg/ha, +4%), Kenya (1641 kg/ha, -7%) and Rwanda (1510 kg/ha, +12%) and rose only moderately in Tanzania (163 kg/ha +30%). Only Uganda saw substantial yield gains (+60%), but even Uganda's yields, at 1919 kg per hectare, are well below those in South Africa (5635 kg/ha, +260%), Argentina (6937 kg/ha, +99%) or France (8722 kg/ha, +31%) in the same period (FAOSTAT). The gap with the global yield frontier has only increased, despite a much lower initial productivity level in the region and despite a growing urban demand that puts pressure on maize supply (see Appendix Figure E2).

Thirdly, and this is both a cause and a consequence of the two previous factors, East Africa as a whole has become structurally dependent on maize imports, although the contribution of imports to overall maize consumption is very modest (only about 6% in Kenya, the region's largest net importer, Van Berkum and De Steenhuijsen Piters 2025, p. 103). Trade is one domain which East African governments have far from ceded to the invisible hand. Various studies have shown that maize markets across East Africa, and especially those further inland, are only weakly integrated with world prices and much more responsive to demand elsewhere in the region, particularly its largest market: Nairobi (Baffes, Kshirsagar and Mitchell 2019; Benson, Mugarura and Wanda 2008; Ihle, von Cramon-Taubadel and Zorya, 2011; Dillon and Barrett 2015). This is at least partly due to the high transportation costs that push up the import parity price and shield domestic producers from global competition, but it is also a direct effect of government intervention. In Tanzania, during the 1990s and 2000s, tariffs on maize grain and flour fluctuated between 20 and 30 percent (Temu, Manyama and Temu 2010, p. 339). Meanwhile, import tariffs in Kenya were 25 percent for most of that period. Only in times of shortages were tariffs briefly lifted (Ariga and Jayne 2010, p. 228). In recent years, the East African Community has lowered internal tariffs, but increased the external import duty for maize to 50%. In this context, the share of intraregional maize trade in total maize trade has greatly increased and Tanzania and Uganda have become the largest suppliers, replacing South Africa, the United States and Italy (Appendix Figure F3.). One of the fundamental ideas underpinning the SAPs was that African economies should specialize in export agriculture and, where necessary, import food. However, the fact that in parts of East Africa maize cannot be fully considered a tradable good can explain why export booms can still push up maize prices, even in a more liberalized market (Delgado, Minot and Tiongco 2005)

5. Conclusion

Maize was once cheap by world standards in East Africa; it became expensive in the twentieth century. Even if prices have moderated in recent decades, higher maize prices are now a feature of East African cities, keeping nominal wages relatively high and living standards low. We have explained the long-run price transition by showing that the trade-offs that exist between

the interests of (urban) consumers and (rural) food producers resulted in a set of institutions whose overall impact was to drive prices higher. ''Urban bias'-type explanations, which would predict low consumer prices, cannot not explain our documented long-run price movements. Instead, we argue that East African governments tried to evade the FPPD, by increasing nominal wages, attempting to raise agricultural productivity, and by controlling the markets and curbing margins. None of these efforts were successful in the long-run, and some were even outright counterproductive. Ultimately, the only option left was to subsidize the maize sector, mainly through price support and marketing boards, resulting in unsustainable debts that contributed to making some form of structural adjustment all but inevitable in the late-1980s.

East African governments were constrained by the nature of the economies they governed. Each of our five countries had been incorporated into the 20th century tropical cash crop boom under colonial rule, and cash crops continued to dominate economic development well after independence. The world price for tea and coffee played a determining role in the margins for maneuver in addressing the FPPD. Higher prices meant higher revenue, and higher revenue meant governments could subsidize maize or pay higher nominal wage to public employees. But higher prices for cash crops also meant that the cash crop sector could more easily compete with maize for land and labour. Thus, as we show in the data, periods of world cash crop price increases corresponded closely with maize price increases in East Africa.

Trapped between the Charybdis of high prices for urban consumers and the Scylla of low prices and hence low incomes for grain farmers, East African governments tried a number of institutional responses that ended up failing, and in their failure driving maize prices up well above world market levels.

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**Appendices**

Appendix A: Maize in East Africa

Appendix Table A1. Daily supply of calories per capita by main staple crops, 2010-2022

|	Maize	Wheat	Rice	Millets & sorghum	Cassava	Plantains	Beans	Total
Burundi	173	40	52	5	521	37	206	1.034
Kenya	666	271	126	32	50	1	104	1.250
Rwanda	268	63	95	95	278	124	284	1.207
Tanzania	549	111	218	81	203	17	123	1.302
Uganda	434	94	68	43	228	288	164	1.319
EA average	418	116	112	51	256	93	176	1.222

Source: FAO (2023a). Accessed on 04-01-2025.

Note: Average calories are taken over all available annual data points between 2010-2022. The East African average is a simple arithmetic average, not weighted for population size of the five countries.

Appendix Figure A1. Map showing the spatial distribution of maize as % of cultivated acreage
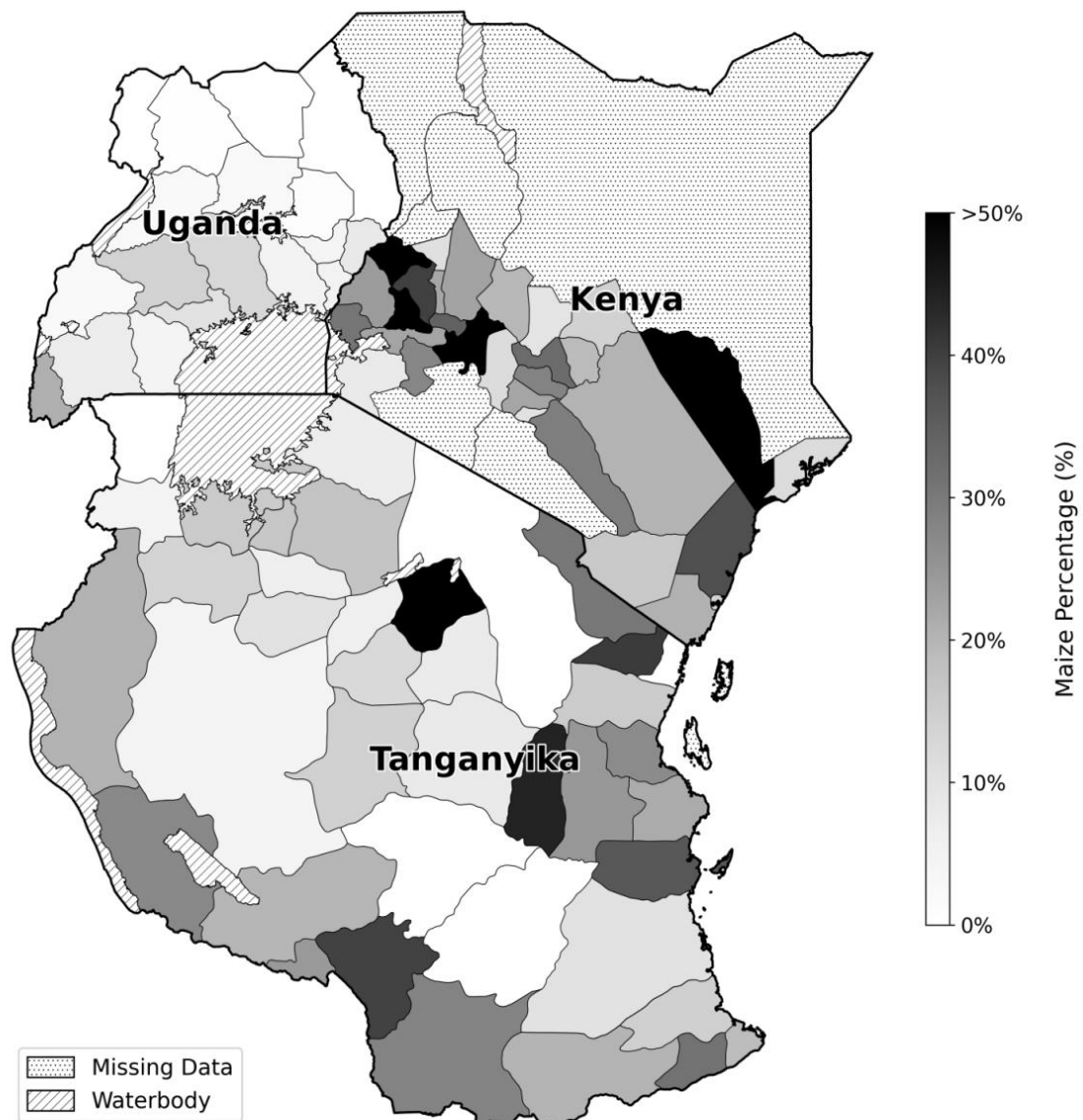
Sources: Crop surface: for 1930, Kenya *Agricultural Census 1930*; Uganda *Blue Book 1930*: Tanganyika *Blue Book 1930* (digitized data kindly shared by Sascha Klocke). Map drawn by Leonora Lesi.

Appendix Figure A2. Maize surface in East Africa, 1930-2020
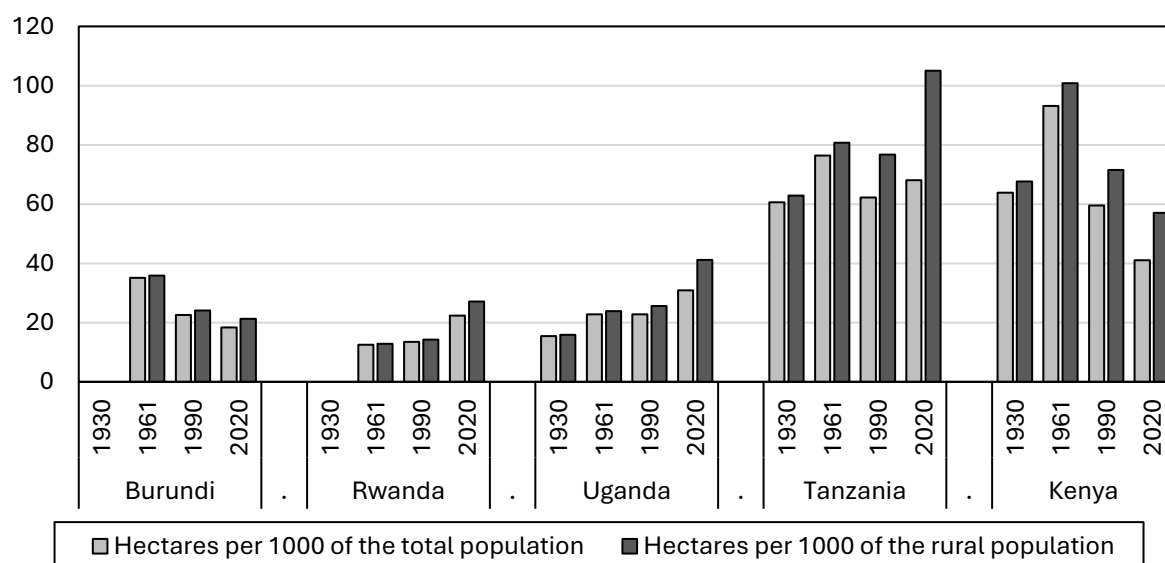
Sources: Crop surface: for 1930, Kenya *Agricultural Census 1930*; Uganda *Blue Book 1930*: Tanganyika *Blue Book 1930* (digitized data kindly shared by Sascha Klocke). All other years, FAOStat. Population: For 1930, African Population Database, v. 3.0 (Frankema & Jerven 2010). All other years: UN DESA 2022. Rural population share: UN DESA 2018.

Notes: no data for Burundi and Rwanda in 1930. In the absence of data, rural population shares for 1930 are based on urbanization shares in 1950. Urbanization rates were so low at this point (Between 1.7% in Burundi and 5.6% in Kenya) that this hardly affects the overall picture.

Appendix Figure A3. East African maize production per capita and contribution of the five countries, 1961-2023
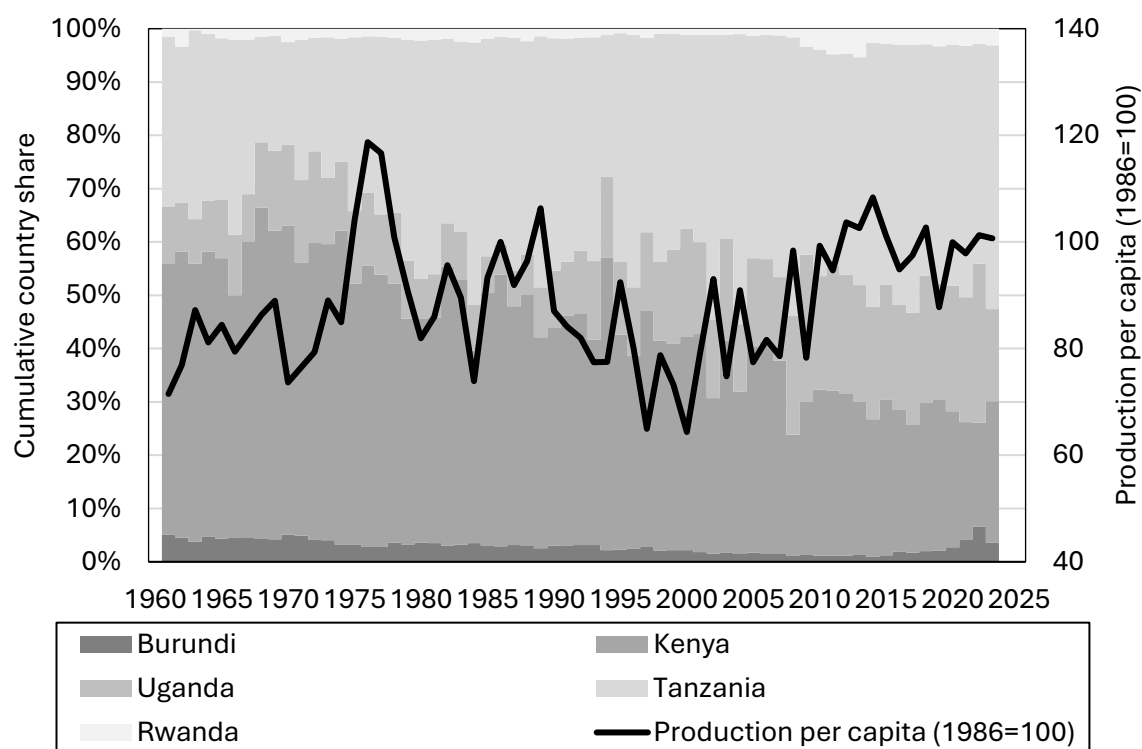
Source: FAO Stat (accessed April 2025)

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Appendix B: Maize panel data

Appendix Table B1. Observations per country per decade

	Kenya	Tanzania	Uganda	Rwanda	Burundi
1900	5	76	14	0	0
1910	15	44	63	0	0
1920	28	25	134	16	24
1930	93	37	290	65	51
1940	71	48	132	31	37
1950	64	20	24	56	67
1960	44	51	106	6	5
1970	45	165	21	139	5
1980	50	52	12	69	7
1990	117	46	26	0	35
2000	171	83	48	14	13
2010	307	70	49	17	18
2020	60	4	8	1	1

Source: EAFPD

Appendix Table B2. Observations per price type per decade

	Wholesale	Retail	Producer	Import	Export	Mill purchase
1900	78	17	0	0	0	0
1910	54	64	0	1	3	0
1920	125	69	0	2	31	0
1930	318	176	1	4	37	0
1940	151	107	15	3	43	0
1950	47	139	5	0	41	0
1960	96	6	34	0	5	71
1970	236	10	129	0	0	0
1980	86	0	104	0	0	0
1990	133	81	10	0	0	0
2000	48	281	0	0	0	0
2010	24	437	0	0	0	0
2020	2	72	0	0	0	0

Source: EAFPD

Appendix Table B3. Number of markets observed per decade

Decade	Markets
1900	18
1910	38
1920	58

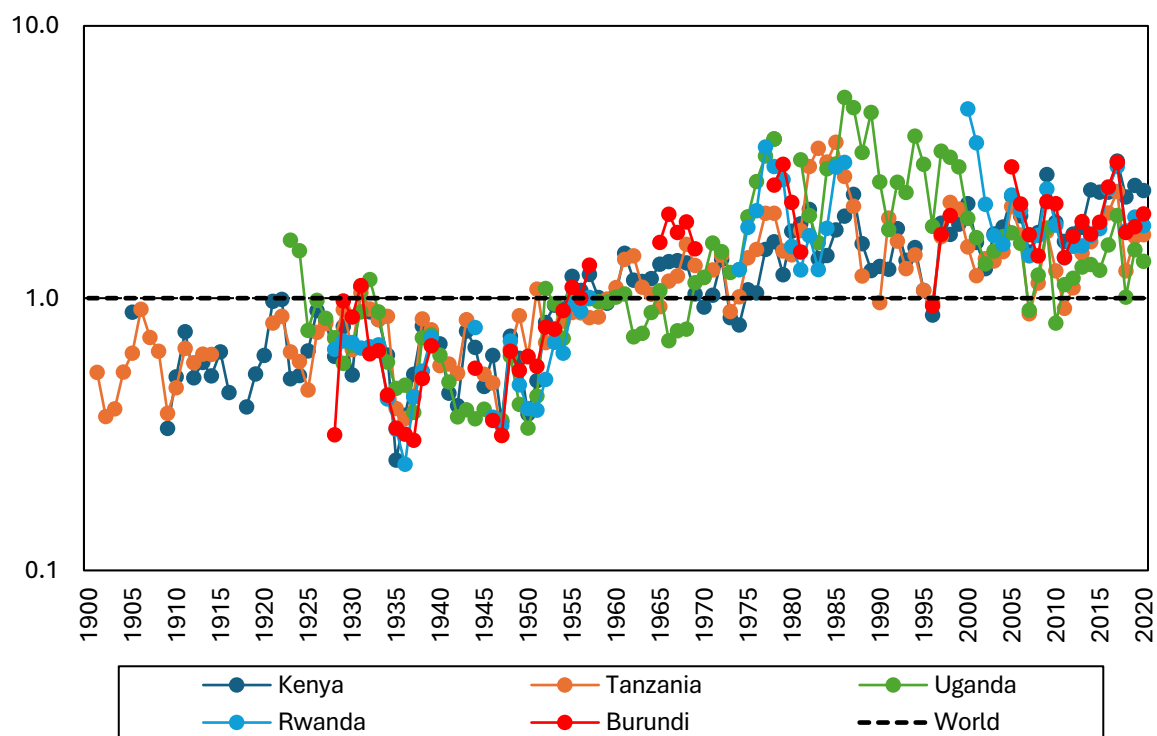| 1930	75
1940	68
1950	39
1960	35
1970	41
1980	26
1990	50
2000	57
2010	60
2020	38

Appendix C: Maize price trend (robustness)

Appendix Figure C1. Replication of Figure 4a, 1947 to 1986 only
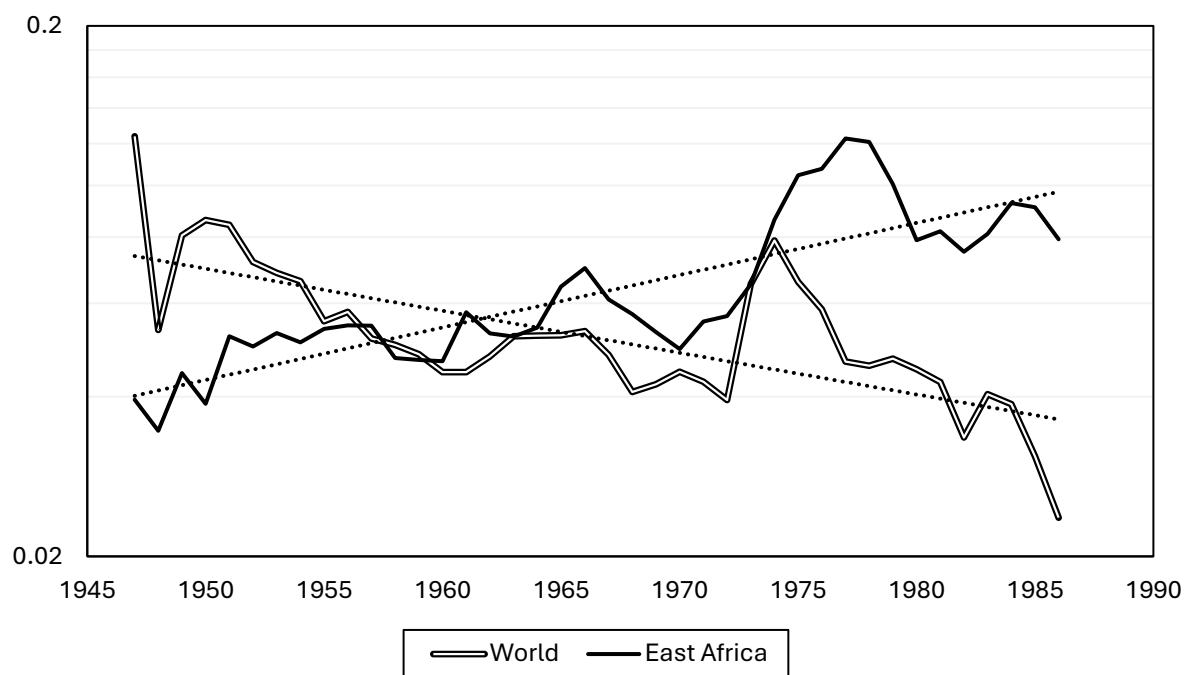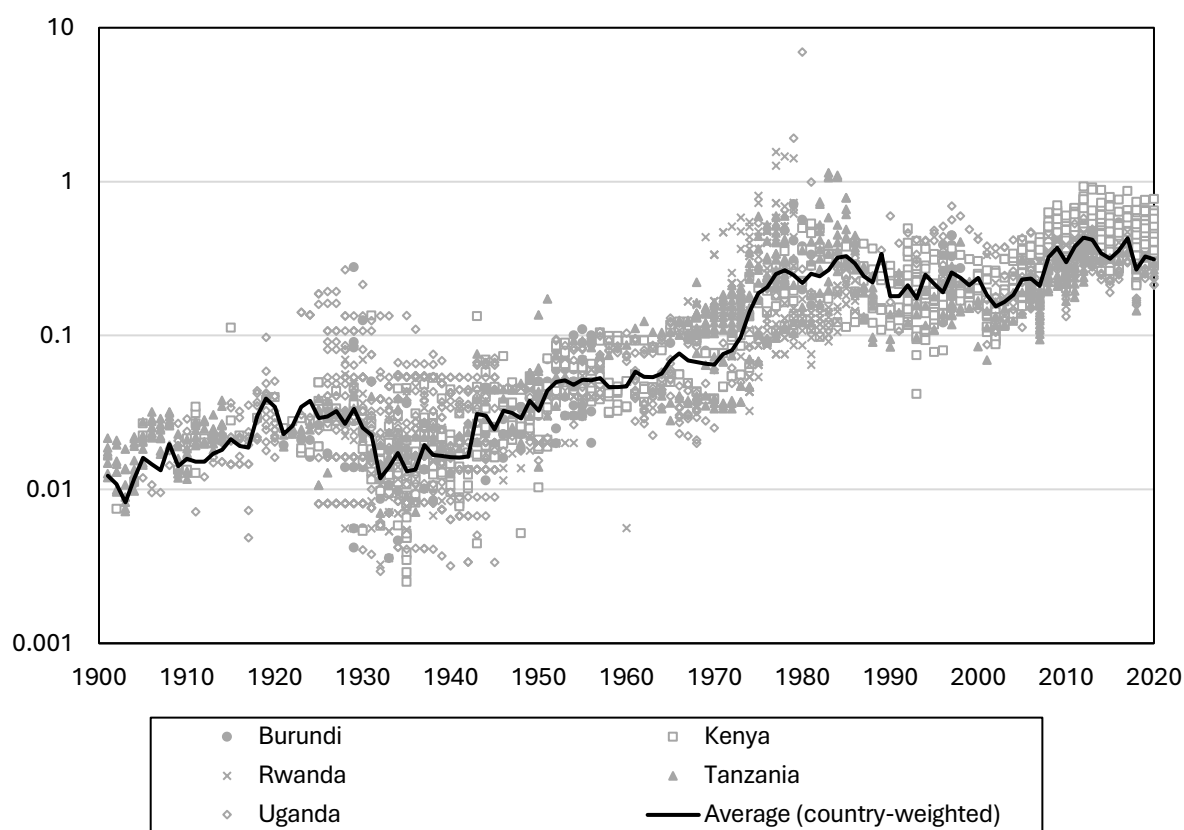

Source: EAFPD

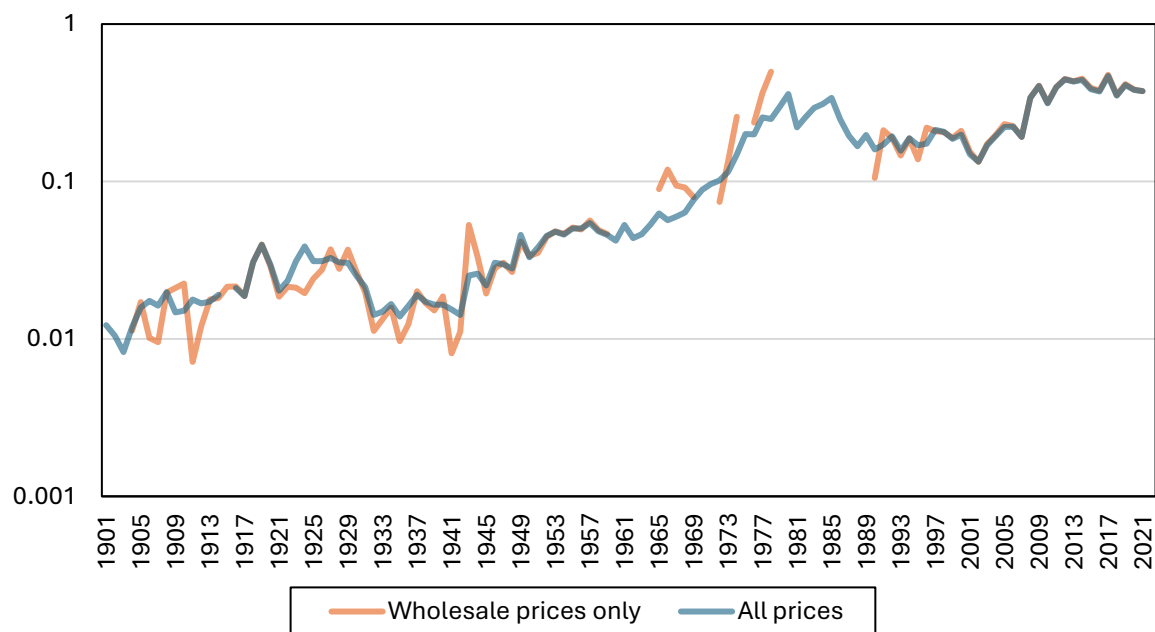**Appendix Figure C2. Replication of Figure 4b, by country**

Source: EAFPD

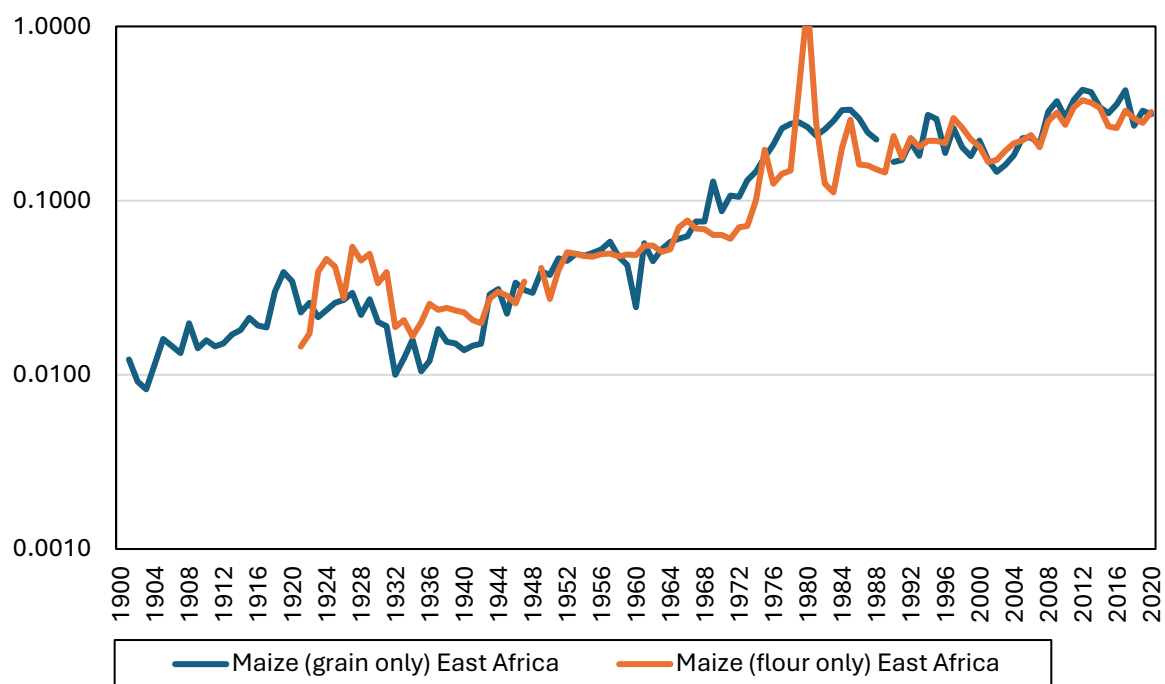**Appendix Figure C3. Individual maize price observations, by country ((USD/kg)**

Source: EAFPD

Appendix Figure C4. Wholesale maize prices versus all prices (USD/kg)

Appendix Figure C5. Maize flour versus grain prices (USD/kg)

Source: EAFPD

Appendix Figure C6. Alternative world market series (USD/kg)
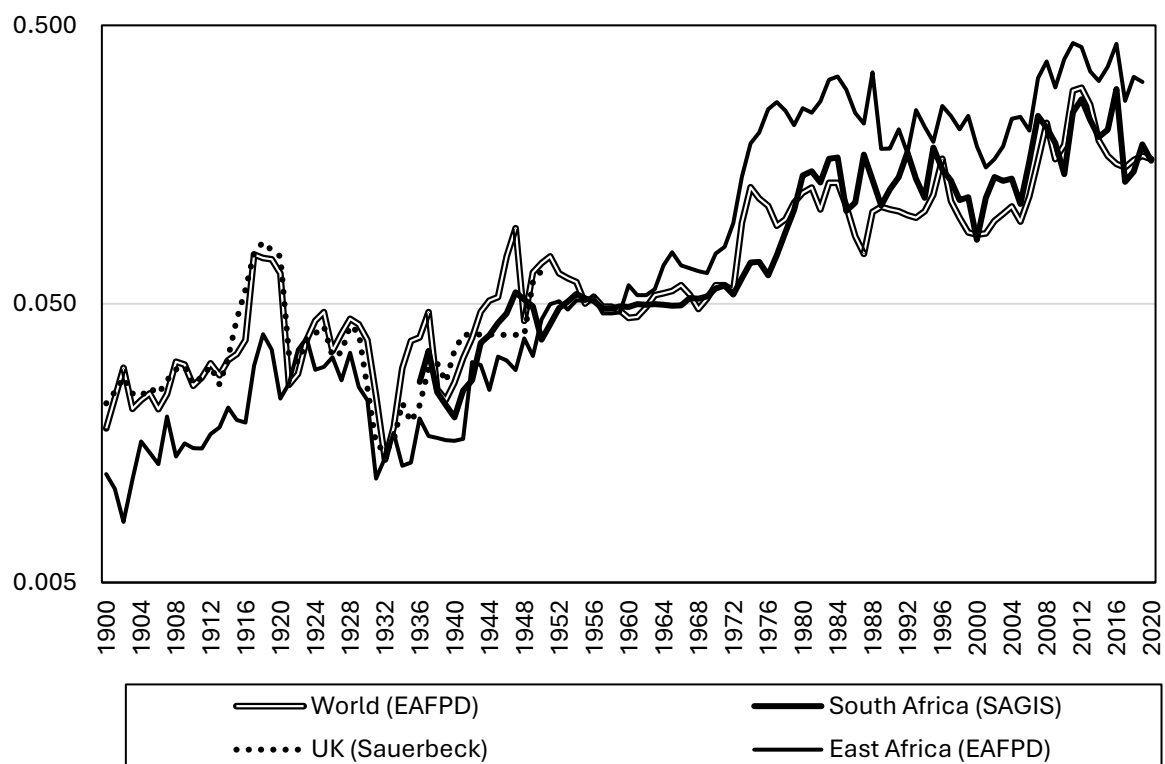
Notes: wholesale prices, except for South Africa (producer prices).

Sources: EAFPD, Sauerbeck (via Frankema et al. 2108), South African Grain Information Service (SAGIS, http://www.sagis.org.za/historical prices local.html [accessed 30-06-2025).

Appendix D: Exchange rates (potentially swap with App C)

Appendix Figure D1. Exchange rates in Kenya, Tanzania and Uganda, 1921-2021.
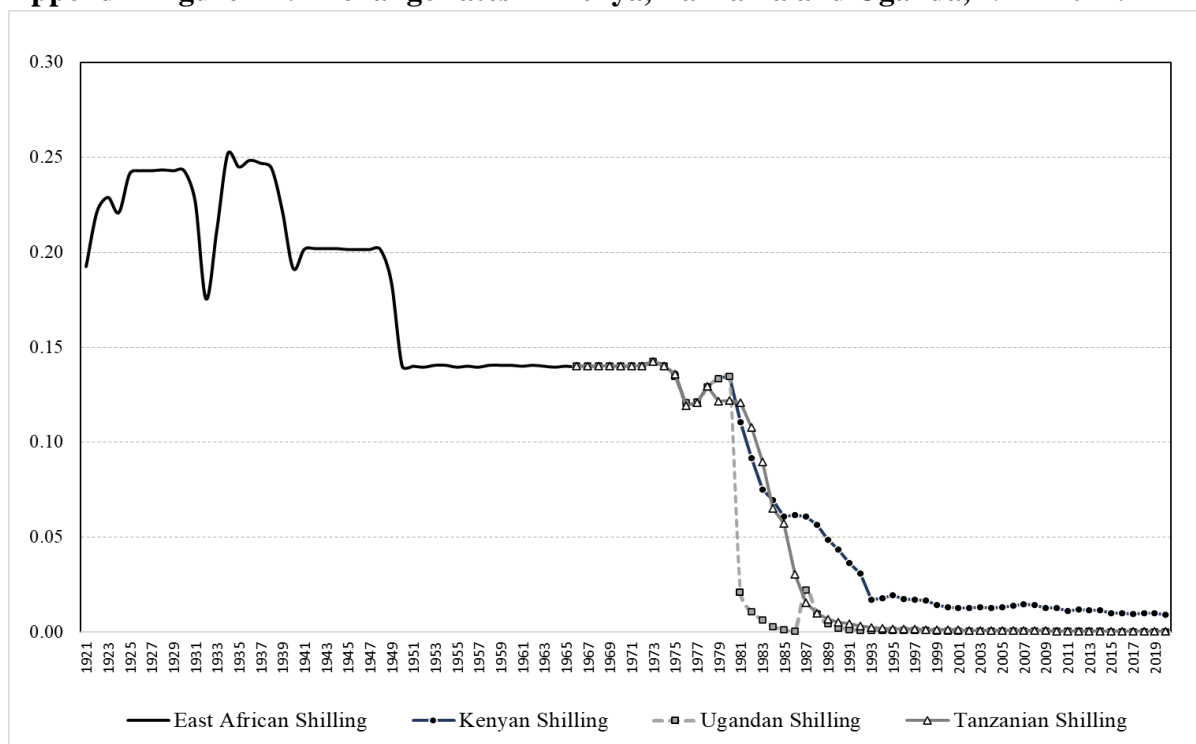
Sources and notes: From 1921 to 1966 one East African Shilling equalled one GBP Shilling. After 1966 the three national Shillings retained parity with the British Shilling until 1980. Nominal annual average exchange rates from the IMF (2025), International Financial Statistics.

Appendix Figure D2: Nominal exchange rates in Rwanda and Burundi, 1916-2018.
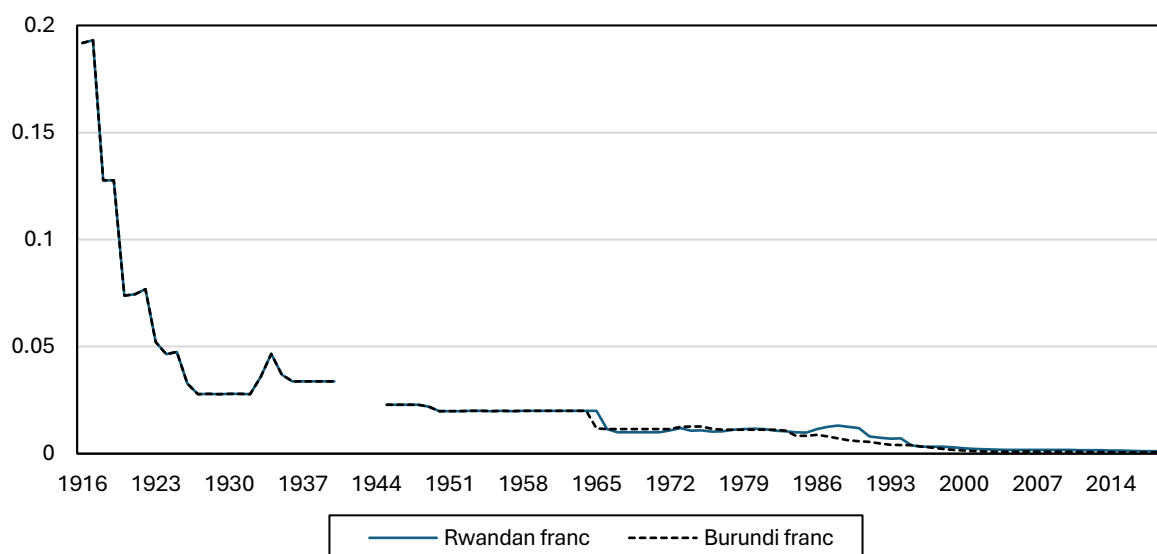
Sources and notes: For 1916-1960, Belgian franc from Officer and Williamson, with belgas converted into francs at the rate of 5 francs = 1 belga. For 1960-present, Penn World Tables.

Significantly overvalued currencies contributed to macroeconomic fragility in the second half of the twentieth century, particularly in Tanzania and Uganda. The black market exchange rate premium grew strongly during the 1970s in particular, meaning that it is conceptually complicated to compare world prices during this period. By the middle of the 1980s, perhaps as much as one half of Tanzania's imports were obtained at parallel rather than official exchange rates (Kaufman and O'Connell, 1997, p.255).

Which exchange rate is the more economically meaningful will depend on the conceptual underpinning of the question being asked. We argue, though that the overall story we tell about the *direction* of price changes in the twentieth century is not wholly dependent on the choice of exchange rate used to convert maize prices to compare to the world price denominated in US dollars. Though using parallel market rates tends to 'blunt' the spike in maize prices denominated in US dollars, the trajectory of prices in the long run is still upwards and by the mid 1990s, when the massive overvaluations of previous decades had mostly ended, the average maize price in all four of countries was appreciably higher than the world price. Thus the twentieth-century reversal still occurred regardless of which exchange rate we use. But using the parallel market exchange rate would, for Tanzania and Uganda, change the timing and the extent of the reversal during the key periods which we analyze in the main text.

Yet in comparing local maize prices in local currency to the world price using black market exchange rates, we should also consider that recorded local *prices* were not necessarily market-determined, with official prices often well below those prevailing in actual market sales. The existence of a black market exchange rate premium will tend to become a dominant factor in domestic price setting when central banks are not able to enforce the official exchange rate through binding capital controls, and this was the case in general in East Africa in the 1970s and 1980s. Domestic governments in these circumstances often resort to direct price controls to stem the inflation provoked by the overvalued official exchange rate. Governments that cannot impose binding capital controls, though, are unlikely to be able to impose binding price controls, so a black market in *product markets*, with higher-than-official prices, is likely to accompany a black market in foreign exchange. A fair comparison of domestic with local prices that used the black market exchange rate should also therefore use black market product prices, the latter being in part a consequence of the former. To show how this affects the relative price levels of maize, in Table D1 we have taken the official consumer price of maize in Dar-es-Salaam in the 1980s (where, as Figure D3 shows, there was a substantial black market exchange rate premium) and compared it to prevailing *parallel market* maize prices, with both converted to world prices at both *official* and *black market exchange rates*.

Consequently, we can observe that while converting the *official price* at *parallel market exchange rates* would make it seem as if the Dar-es-Salaam maize price was not particularly high by world standards, converting the *parallel market maize price at parallel market exchange rates* results in estimates of the Tanzanian price in US dollars that is usually above the world price for maize. A rather similar story can be told for Uganda. In Table D2, we take the price information from Table 3 in the main text and convert both the official producer price of maize, which was clearly set by the government, and the *observed* retail price of maize *flour* at market and parallel exchange rates to the world price for maize grain. Unsurprisingly, the overvalued Ugandan shilling results in a rapidly declining producer price for maize relative to the world price at parallel exchange rates: this is the expected result of an overvalued exchange rate, which constitutes a tax on exporters. However, when we look at the maize *flour* price

compared to world maize grain prices, we see a rather different price trajectory, consistent with the argument that the parallel exchange rate flowed through to a higher domestic price level as experienced by Ugandan consumers.

Thus while the exchange rate story in the 1970s and 1980s somewhat complicates our narrative, taking into account black market prices for both maize and for foreign exchange confirms our main argument that maize became more expensive in East Africa relative to the world price in the last quarter of the twentieth century, although the extremity of the increase is less pronounced.

Appendix Table D1. Dar-es-Salaam prices in the 1980s, official and parallel, compared to world maize price at nominal and black market exchange rates.

Year	Official price	Parallel market price	Official price as % of world price		Parallel market price as % of world price	
Exchange rate:			Official x-rate	Black market	Official x-rate	Black market
1982-83	3.4	6.9	335%	95%	680%	194%
1983-84	4.4	--	290%	82%		
1984-85	5.4	6.2	260%	70%	298%	80%
1985-86	7.6	13.9	388%	102%	709%	186%
1986-87	12.2	14.6	426%	87%	510%	104%
1987-88	12.2	18.1	251%	95%	372%	141%
1988-89	17.0	17.5	160%	75%	165%	78%

Appendix Table D2. Producer price for maize and (open market) retail prices of maize flour as a percentage of world price for maize in Uganda, at parallel and official exchange rates.

Year	Producer price	Parallel market price	Producer maize price as % of world price		Open market price for maize flour as % of world price	
Exchange rate:			Official x-rate	Black market	Official x-rate	Black market
1961	0.37	0.68	115%	115%	212%	212%
1965	0.41	0.86	103%	103%	216%	216%
1970	0.43	1	103%	73%	239%	171%
1975	1.29	4	145%	20%	450%	63%
1980	2	51.6	215%	21%	5554%	544%

Source and notes: Prices from Table 3 in main text. Parallel exchange rates from Reinhart, , < *https://carmenreinhart.com/exchange-rates-official-and-parallel/*>.
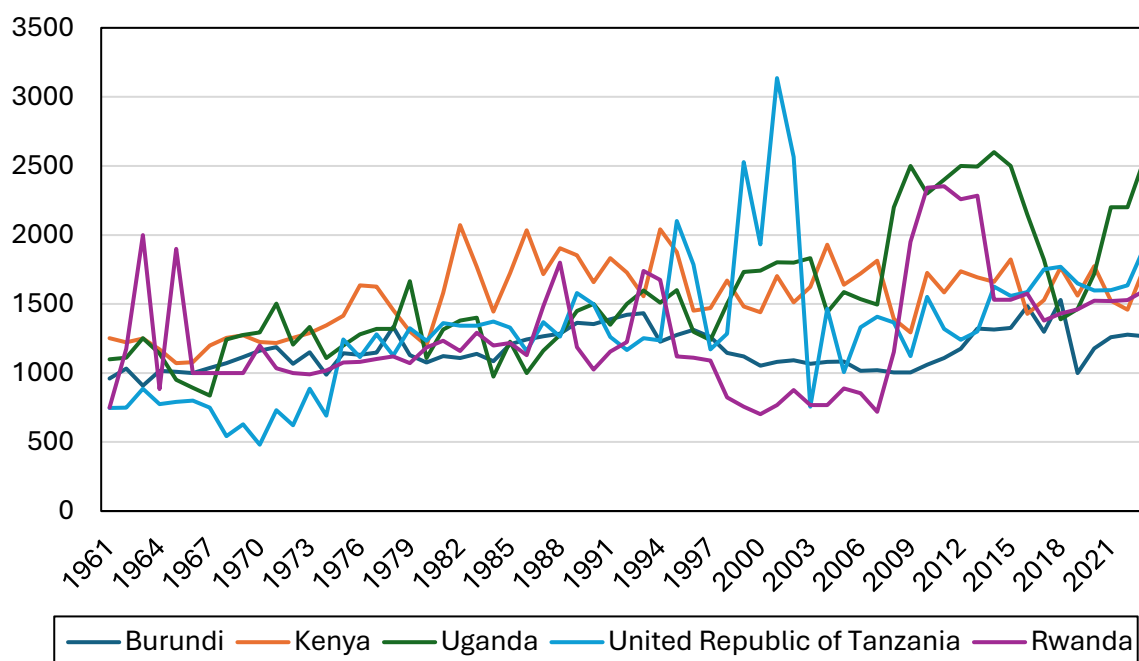
Appendix Figure D3: Relative price of maize in East Africa to world maize price as a percentage at nominal and black market exchange rates, 1965-1998.
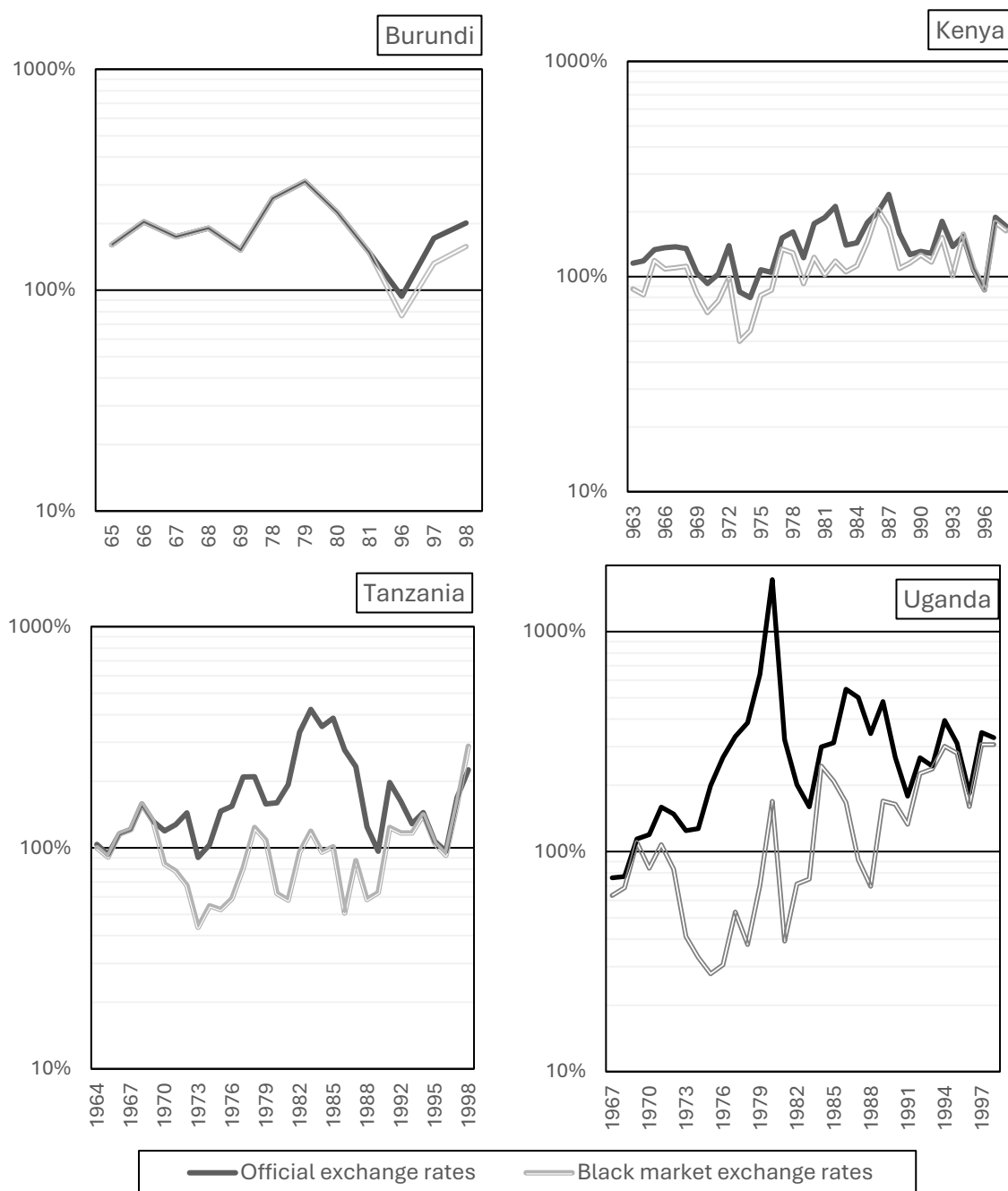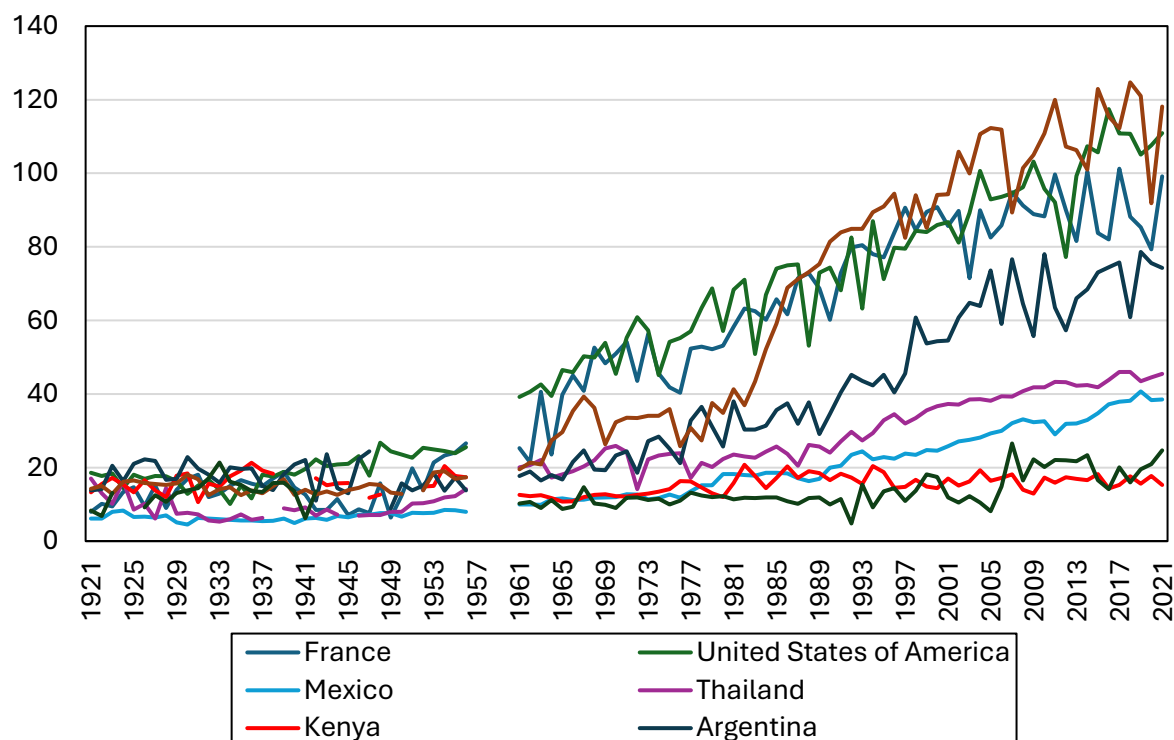
Appendix E: Maize yields

Appendix Figure E1. Average maize yields in East Africa, 1961-2023 (kg/ha)

Source: FAO Stat (accessed April 2025)

Appendix Figure E2. Maize yields in selected countries, 1921-2021 (100 kg/ha)

Sources: For 1921-1946, International Institute of Agriculture, Statistical Yearbook of Agricultural Statistics. For 1946-1961: FAO, Yearbook of Food and Agriculture Statistics. For 1961 onwards: FAOSTAT, Accessed July 2024.

**Appendix F: International maize trade**

Appendix Table F1. Net imports as % of total domestic production, 1961-2019

| years	Kenya	Tanzania	Uganda	Rwanda	Burundi	**East Africa**
1961-1969	-3.8	1.2	-0.5	0.0	0.0	**-0.8**
1970-1979	-4.7	4.3	0.2	0.0	0.0	**0.2**
1980-1989	0.9	4.9	0.2	0.1	0.0	**1.9**
1990-1999	7.2	1.9	-1.2	4.7	1.5	**3.0**
2000-2009	8.2	0.5	-0.4	2.8	5.1	**3.1**
2010-2019	7.5	-1.0	-5.3	8.4	2.4	**1.4**

Source: FAO (2023b).

Note: A value of zero may indicate that there are no records of maize imports or exports, which is often the case when traded volumes are negligible. Illicit trade is by definition unrecorded and may cause either under- or overestimations of net maize imports.

Appendix Figure F1. Net import values (lefthand y-axis) and volumes (righthand y-axis) of maize in East Africa, 1961-2021
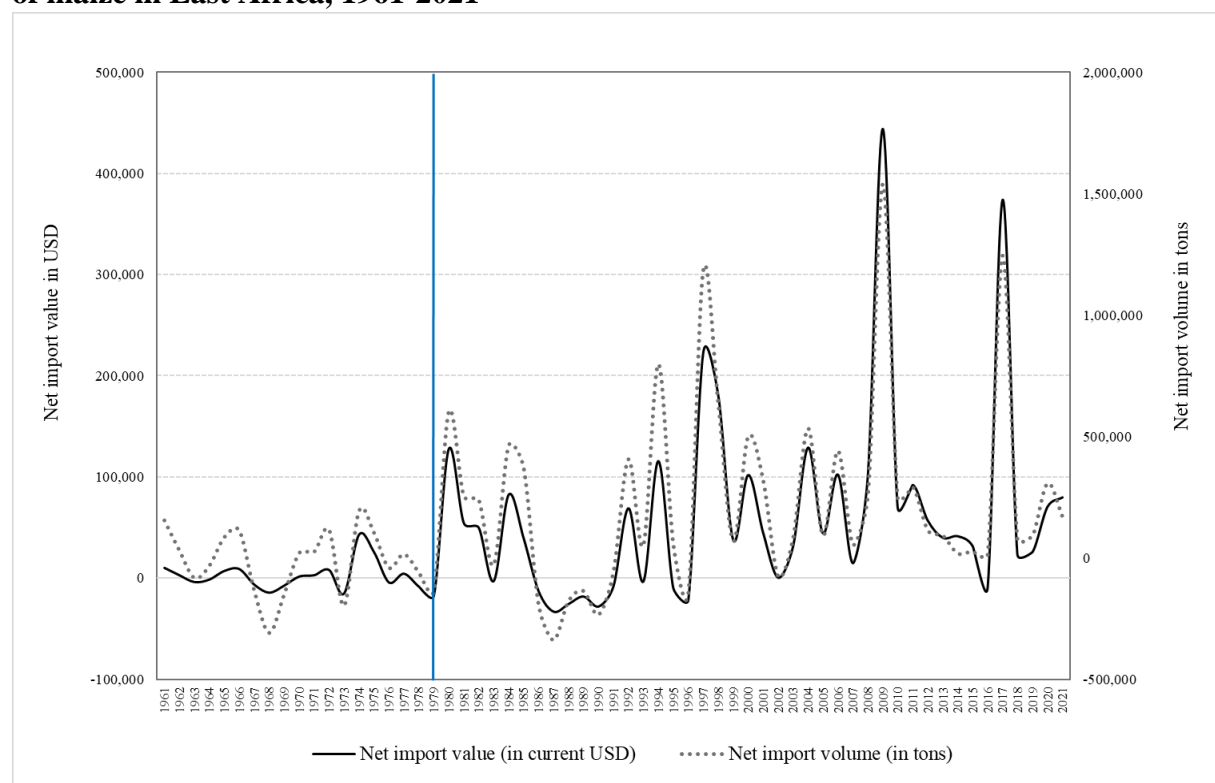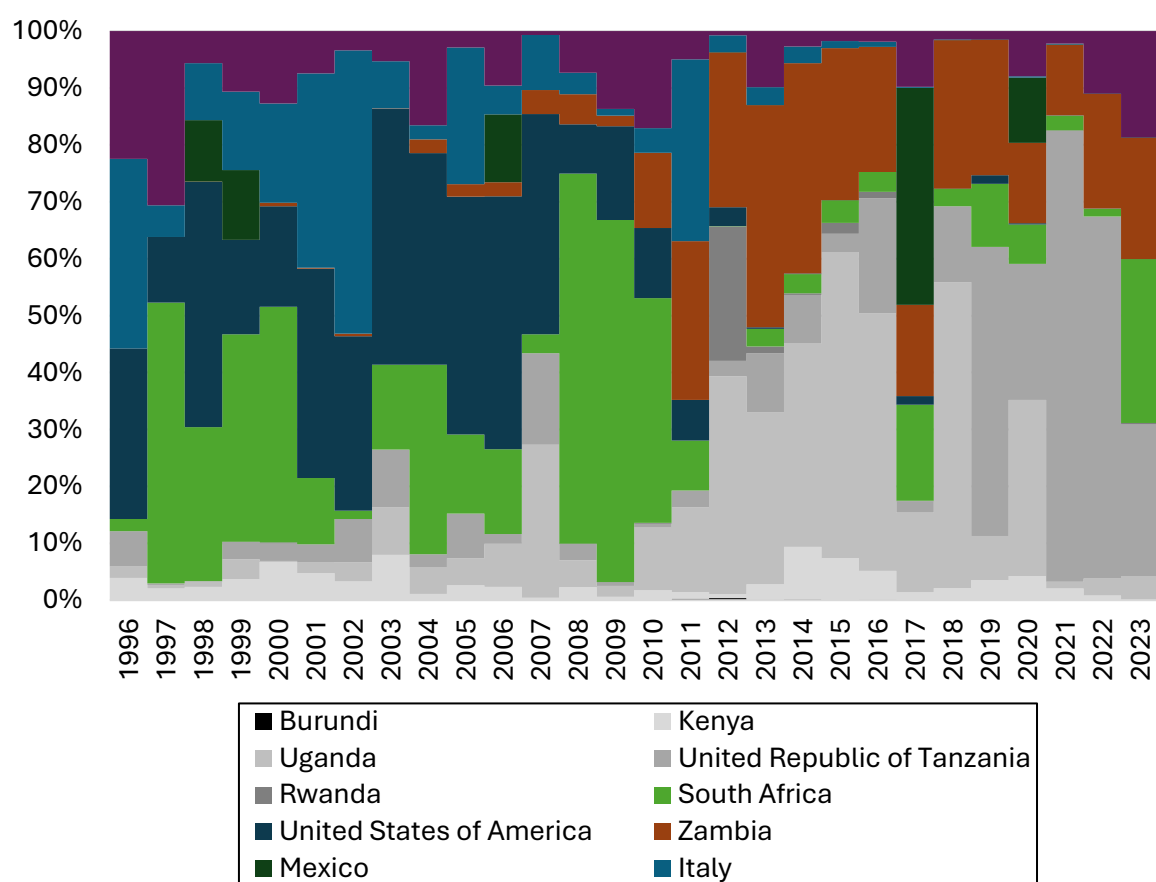

Source: FAO STAT

Appendix Figure F2. Net imports of maize in Kenya, kg/capita, 1910-2020
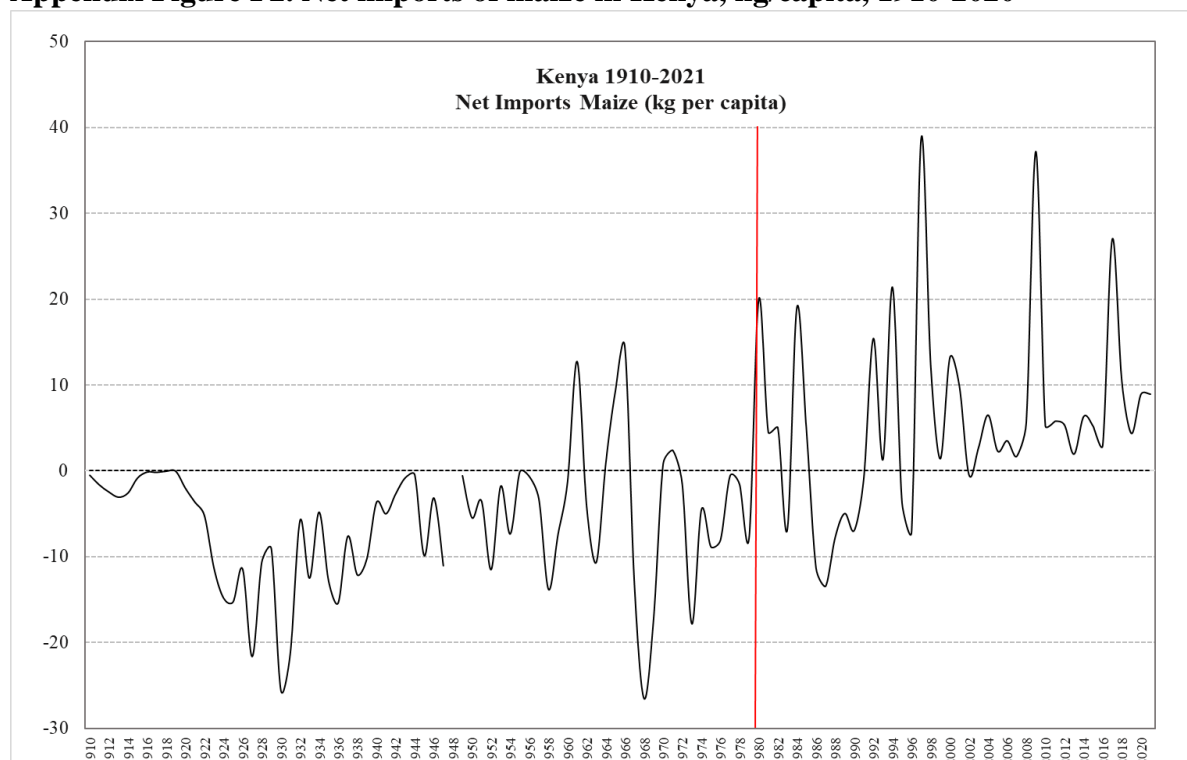
Sources: Pre-1961 from ACTD 2.0; 1961-present from FAOSTAT: Crops and Livestock Products Trade Database; https://www.fao.org/faostat/en/#data/TCL.

Accessed 18-08-2023. Kenyan population up to 1950 from Frankema and Jerven (2014); 1950-present from the UN World Population Prospects 2022, mid-year estimates.
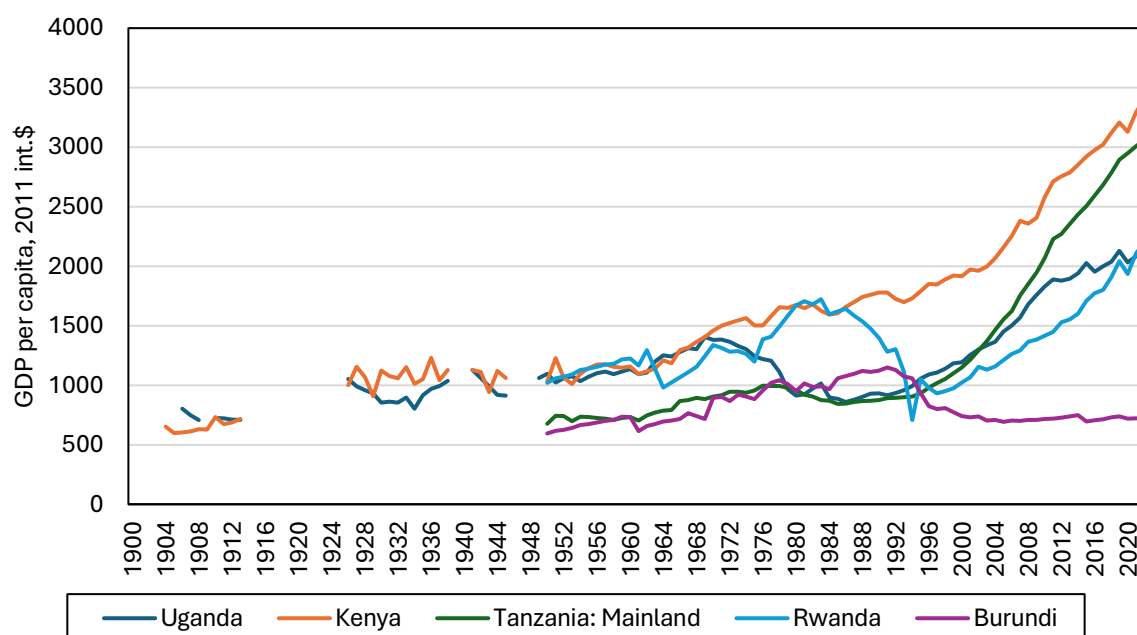
Appendix Figure F3. Origins of maize imports in East Africa, 1996-2023.
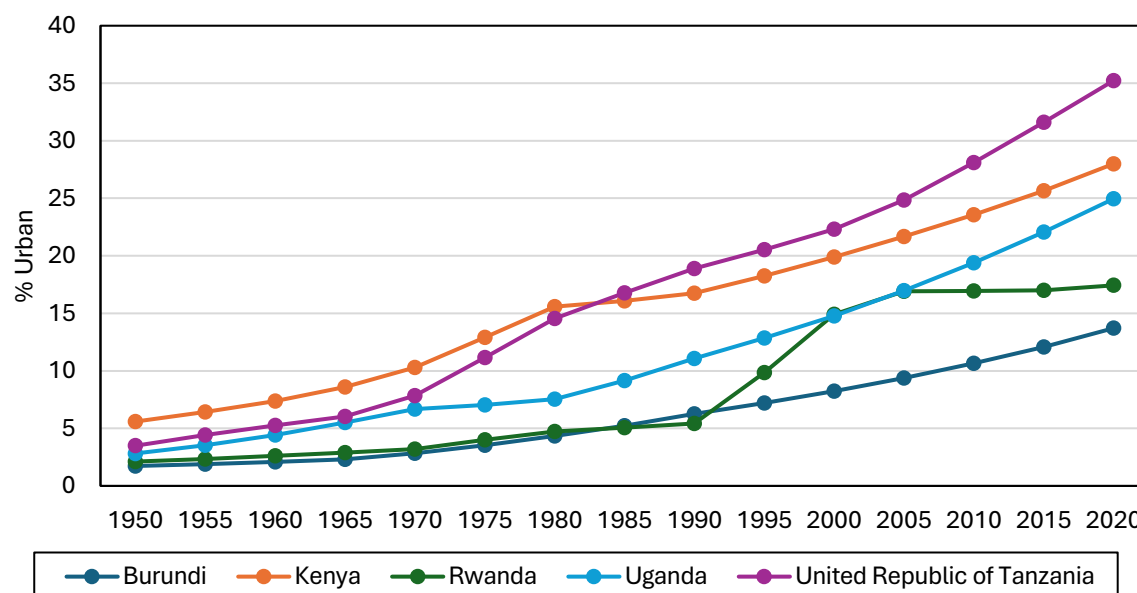

Source: FAOSTAT

Appendix G. Economic growth, urbanization and the non-agricultural labor force

Appendix Figure G1. GDP per capita, 1904-2022

Source: Bolt and van Zanden - Maddison Project Database 2023

Appendix Figure G2. Urbanization rates (%) in East Africa, 1950-2020

Source: United Nations Urbanization Prospects 2018

Appendix Table G1. Absolute size of wage labour force (000s)

	Kenya	Tanzania	Uganda	Rwanda	Burundi
1950	460	472	215	117	
1960	590	401	236		
1970	691	393	312		
1980	1024	622			
1990	1442		1309	1779	355
2000	1677	819	1483	2044	389
2010	2084	1363	1817	3050	602
2020			1793	4242	926

Sources: Uganda 2010 Byamugisha, Shamchieyva and Kizu, 'Labor market transitions of young women and men in Uganda', 2014
https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@dgreports/@dcomm/documents/publication/wcms_326255.pdf. For Burundi and Rwanda 1950: Rapport de l'Administration de Urundi-Ruanda, 1950.


Appendix Table G2. Share of the wage labour force in the working age population (15-64)

|	Kenya	Tanzania	Uganda	Rwanda	Burundi
1950	15.2%	11.6%*	7.9%*	4.8%	
1960	14.3%	7.7%	6.6%		
1970	12.5%	5.7%	6.6%		
1980	12.9%	6.6%			
1990	12.2%	9.5%	15.3%	49.5%	13.1%
2000	9.9%	4.6%	16.8%	48.4%	12.2%
2010	9.2%	5.8%	19.9%	53.9%	12.2%
2020			19.%	56.6%	14.5%

Source: Kenya 1950-2010, Tanzania 1950-1980 and 2000-2010, and Uganda 1950-1970: calculated from data in Simson (2017), appendix 1. Tanzania, Uganda, Rwanda and Burundi 1990-2020: World Development Indicators, wage and salaried workers total (% of total employment); raw figures then estimated by using UN Population data for the total number of people aged 15-64 in each country respective. All values given for 1990 are from 1991 from this source. Values for Tanzania and Uganda for 1950 are from 1951.
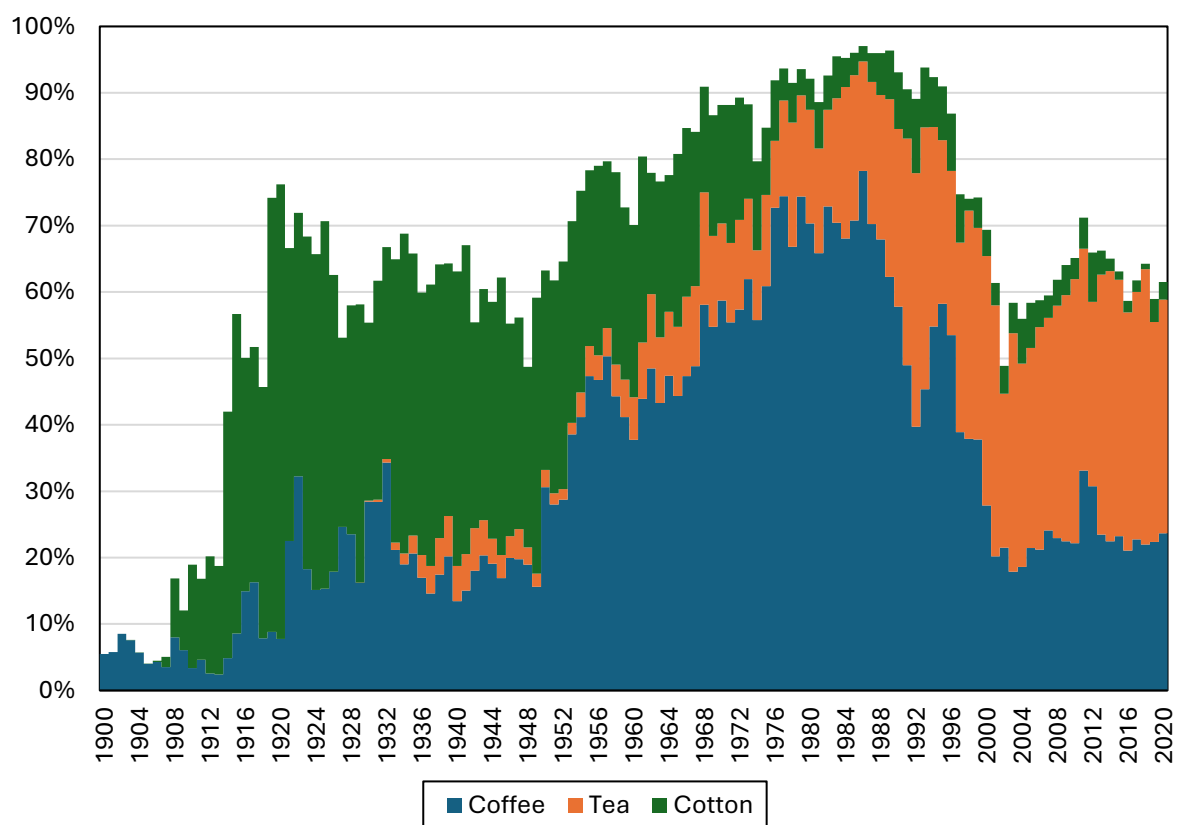
Appendix H. Export agriculture

Appendix Figure H1. Agricultural commodities exported from East Africa, 1990-2020 (US CPI deflated value)
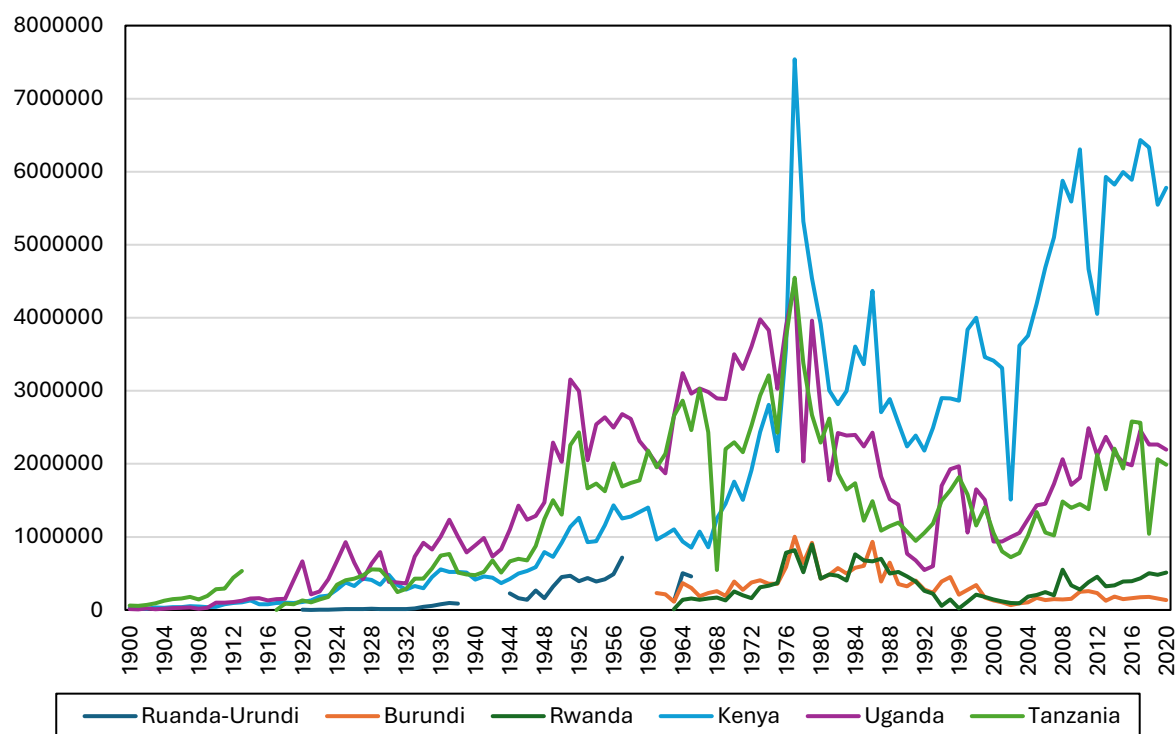
Appendix Figure H2. Agricultural commodities as share of total export value in East Africa
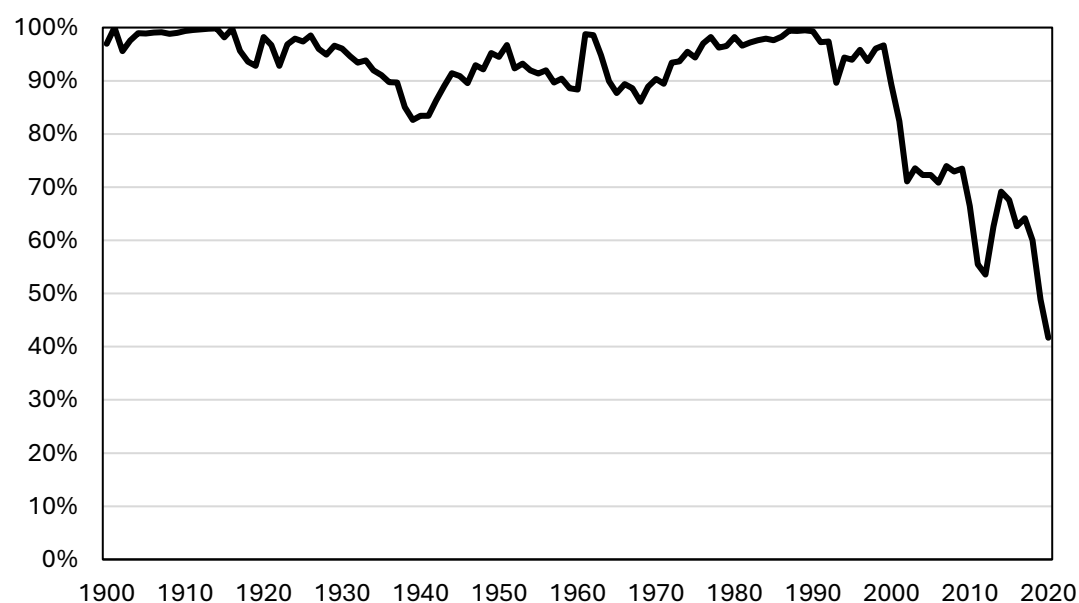
Appendix Figure H3. Cotton, coffee and tea as share of total agricultural export value

Source: ACTD v.2.0

Note: only commodities that ever (in any year) reach 5% of total export value are included in the denominator

Appendix Figure H4. Real coffee prices and relative maize prices